BOARD OF COMMISSIONERS REGULAR WORKSHOP
TUESDAY, OCTOBER 6, 2026 – 5:30 PM
CITY HALL CHAMBERS
10451 GULF BLVD
TREASURE ISLAND, FL 33706

MEETING NOTICE AND AGENDA

A. CALL TO ORDER AND PLEDGE OF ALLEGIANCE

B. DISCUSSION

B.1 Elnor Island
- 1924 Deed.pdf
- 1961 Deed.pdf
- 1979 Deed.pdf
- 1984 Deed.pdf
- Inspection Report- March 2003.pdf
- Res. 02-87- Grant- Habitat Restoration- Sept 2002.pdf
- Res. 03-51- Cleanup and Research.pdf
- Res. 07-49- Grant- Exotic Plant Removal.pdf
- Tamp Bay Watch- Oyster Bar Project- 2011.pdf
- SWFWMD- Seagrass Mitigation- 2012.pdf
- Pinellas County Boca Ciega Bay Management-Plan.pdf

C. PUBLIC INPUT

D. ADJOURNMENT

For any person desiring to appeal any decision made by the board, agency, or commission with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based [F.S. 286.0105]. NOTE: Any transcript shall be requested and made by the individual requesting same at his or her own expense. Therefore, a court reporter may be desired or required accordingly.

Any person with a disability who needs any accommodation in order to participate in this proceeding is entitled to assistance at no cost. Please contact the Office of the City Clerk in writing at 10451 Gulf Boulevard, Treasure Island, FL, 33706 or by phone at (727) 547-

4575 at least two working days prior to the meeting to advise what assistance is needed.

AGENDA ITEM NO. B.1

Item Cover Page

BOARD OF COMMISSIONERS AGENDA ITEM REPORT

DATE: October 6, 2026

SUBMITTED BY: Jesse Miller, Community Development

ITEM TYPE: For Consideration and Discussion

AGENDA SECTION: DISCUSSION

SUBJECT: Elnor Island

BACKGROUND: The Florida Department of Environmental Protection Division of State Lands has confirmed that it has no ownership interest in the property and that full ownership of the land rests with the City.

POLICY/PURPOSE:

Seeking direction from the Commission to proceed with placing a deed restriction on Elnor Island in order to increase the number of credits the City receives through the Community Rating System (CRS).

Further seeking direction to coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) and/or the Florida Department of Environmental Protection (FDEP) to pursue a Critical Wildlife Area designation for the island and, if necessary, develop a management plan should the island not already be covered under the Pinellas County Boca Ciega Bay Aquatic Preserve Management Plan.

STRATEGIC PLAN RELEVANCE: Community
Goal 1: Create a vibrant, active, walkable, engaging, and thriving community that welcomes locals, families, visitors, and tourists
Objective 4: Bring city owned properties into compliance

ANALYSIS/DISCUSSION: .

FUNDING: N/A

MOTION:

ATTACHMENTS:
1924 Deed.pdf
1961 Deed.pdf
1979 Deed.pdf
1984 Deed.pdf
Inspection Report- March 2003.pdf
Res. 02-87- Grant- Habitat Restoration- Sept 2002.pdf
Res. 03-51- Cleanup and Research.pdf
Res. 07-49- Grant- Exotic Plant Removal.pdf
Tamp Bay Watch- Oyster Bar Project- 2011.pdf
SWFWMD- Seagrass Mitigation- 2012.pdf
Pinellas County Boca Ciega Bay Management-Plan.pdf

INTERNAL IMPROVEMENT FUND, STATE OF FLORIDA.

DEED NO. 17,147.

NOW ALL MEN BY THESE PRESENTS, That the undersigned, Trustees of the Internal Improvement Fund of the State of Florida, under the provisions and by authority of Sections 1061, 1062 and 1063 of the Revised General Statutes of the State of Florida, for and in consideration of the sum of Five Thousand Seven Hundred Fifty Dollars ($5750.00) to them in hand paid by A. B. Archibald, of the County of Pinellas, State of Florida, the receipt whereof is hereby acknowledged, have granted, bargained and sold and by these presents do grant, bargain, sell and convey unto the said A. B. Archibald and his successors, heirs and assigns forever, the following described lands and shallow bottoms, to-wit:-

ISLAND "A"

Beginning at a point on said tract, said point being N. 6 degrees 56 ' E., 4905.4 feet from the Southwest corner of Section 14, Township 31 South, Range 15 East; thence from said point of beginning North 50 degrees 16' East 332 feet; thence North 16 degrees 17' West, 270 feet; thence South 81 degrees 30' West, 185 feet, thence South 18 degrees 24 ' West 360 feet; thence South 48 degrees 53' East 155.7 feet to the point of beginning, same being contained in Sections 14 and 11, Township 31 South, Range 15 East, Pinellas County, Florida, containing 2.47 acres, more or less.

ISLAND "B"

Beginning at a point on said tract, said point being North 13 degrees 24' East, 2729.1 feet from the Southwest corner of Section 14, Township 31 South, Range 15 East; thence from said point of beginning South 21 degrees 46' East, 115 feet, thence South 67 degrees 18 ' East, 250 feet, thence South 16 degrees 35' West 240 feet, thence South 38 degrees 32' East 70 feet, thence North 47 degrees 46' East, 200 feet, thence North 32 degrees 07' East, 290 feet, thence South 43 degrees 23' East 370 feet, thence North 42 degrees 13' East 390 feet, thence North 3 degrees 24' West 340 feet, thence North 18 degrees 45' West 465 feet, thence South 88 degrees 54' West 115 feet, thence South 38 degrees 52' West 400 feet, thence South 60 degrees 42' West 200 feet, thence South 51 degrees 31' West 455.3 feet to the point of beginning, same being contained in Sections 14, Township 31 South, Range 15 East, Pinellas County, Florida, containing 15 acres, more or less.

ISLAND "C"

Beginning at a point on the south end of said tract, said point of beginning being located as follows:- From a concrete monument at the intersection of Bridge and Third Streets in the St. Petereburg Beach Subdivision, as recorded in plat book #5 pages 28 and 29 of the public Records of Pinellas County, Florida. The aforesaid monument being North 15 degrees 18' East, 1023 feet from the quarter section corner on the south line of Section 25, Township 31 South, Range 15 East, thence from said monument North 28 degrees 06' West, 340 feet, thence North 35 degrees 21'West 1000 feet, thence North 31 degrees 11' West, 600 feet, thence North 62 degrees 29' East, 220 feet, thence North 32 degrees 31' West 321 feet, thence North 34 degrees 07' East 721.78 feet, to the point of beginning. Thence traversing said tract from said point of beginning by the following courses North 46 degrees 02' East, 160 feet, North 23 degrees 02'East 559.85 feet, North 1 degree 02' East, 169.96 feet, South 81 degrees 02' West, 110 feet, South 1 degree 02' West 90 feet, South 23 degrees 02' West 322 feet, South 34 degrees 02' West 185 feet, South 23 degrees 02' West, 125 feet, South 2 degrees 58' East, 105 feet, South 66 degrees 58'East 50 feet, to the point of beginning. Same being all contained in Section 25, Township 31 South, Range 15 East, Pinellas County, Florida, and containing 2.46 acres, more or less; and containing an aggregate of Nineteen and 93/100 acres, more or less.

TO HAVE AND TO HOLD The above granted and described premises unto the said A. B. Archibald and to his successors, heirs and assigns, forever.

SAVING AND RESERVING unto the said, The Trustees of the Internal Improvement Fund of Florida and their successors, an undivided three-fourths interest in, and title in and to an undivided three-fourths interest in all the phosphate, minerals and metals that are or may be in, on or under the said above described land, with the privilege and right to mine and develop the same.

AND FURTHER SAVING AND RESERVING unto the said, the Trustees of the Internal Improvement Fund of Florida, and their successors, an undivided one-half interest in and title in and to an undivided one-half interest in all the petroleum that is or may be in, on or under the said above described land, with the privilege to mine and develop the same.

IN TESTIMONY WHEREOF, The said Trustees have hereunto subscribed their names and affixed their seals and have caused the seal of

17147

118

"THE DEPARTMENT OF AGRICULTURE OF THE STATE OF FLORIDA" to be hereunto affixed at the Capitol, in the City of Tallahassee, on this, the 22nd. day of April, A. D. 1924.

Cary A. Hardee, Governor. (L.S.)

(SEAL)

Ernest Amos, Comptroller. (L.S.

J. C. Luning, Treasurer. (L.S.)

Deed sent to him
341 Central Avenue,
St. Petersburg, Fla.,
May 8, 1924.

Rivers Buford, Attorney General. (L.S.)

Nathan Mayo Commissioner of Agriculture. (L.S.

FORM 8-51

872418A O.R. 1258 PAGE 370

3.40 St.&
1.75 Recording
5.15

Trustees of the Internal Improvement Fund of the State of Florida

DEED NO. 22876 (932-52)

KNOW ALL MEN BY THESE PRESENTS: That the undersigned, the Trustees of the Internal Improvement Fund of the State of Florida, under authority of law, for and in consideration of the sum of One Thousand Six Hundred Twenty and 00/100 - - - ($1,620.00) DOLLARS, to them in hand paid by ELNOR A. ARCHIBALD CLARK, 15649 First Street, Redington Beach, of the County of Pinellas, State of Florida, have granted, bargained and sold, and do by these presents grant, bargain, sell and convey, unto the said ELNOR A. ARCHIBALD CLARK and her heirs and assigns, the following described lands, to-wit:

A parcel of submerged land in THE NARROWS in Section 30, Township 30 South, Range 15 East, Pinellas County, Florida, more particularly described as follows:

Begin at a point 1,193.00 feet South and 2,376.52 feet West of the Northeast corner of the SE¼ of said Section 30; run thence North 54° 00' West, 120.88 feet; thence North 34° 11' 31" West, 599.38 feet; thence North 69° 00' West, 120.60 feet; thence North 02° 05' 16" West, 383.78 feet; thence South 33° 55' 21" East, 1,137.65 feet; thence South 56° 04' 39" West, 88.81 feet to the Point of Beginning;

PINELLAS COUNTY
STATE OF FLORIDA
DOCUMENTARY STAMP TAX
SEP 26 '61
340
COMPTROLLER
P.B. 190124

SEP 26 11 29 AM '61
RECORDED PINELLAS CO., FLA.
AVERY W. GILKERSON, CLERK

containing 3.24 acres, more or less, and lying and being in the County of Pinellas, in said State of Florida.

TO HAVE AND TO HOLD the above granted and described premises forever.

SAVING AND RESERVING unto the said Trustees of the Internal Improvement Fund of the State of Florida, and their successors, title to an undivided three-fourths of all phosphate, minerals and metals, and title to an undivided one-half of all petroleum that may be in, on or under the above described land, with the privilege to mine and develop the same.

OTHER RESERVATIONS: None

IN TESTIMONY WHEREOF, the said Trustees have hereunto subscribed their names and affixed their seal and have caused the seal of THE DEPARTMENT OF AGRICULTURE OF THE STATE OF FLORIDA to be hereunto affixed, at the Capitol, in the City of Tallahassee, on this the 1st day of September, A. D. Nineteen Hundred and Sixty-One.

(SEAL)
TRUSTEES I. I. FUND
CREATED JANUARY 6, 1855

(SEAL)
DEPARTMENT OF AGRICULTURE

Governor (SEAL)

Comptroller (SEAL)

Treasurer (SEAL)

Attorney General (SEAL)

Commissioner of Agriculture (SEAL)

As and Composing the
TRUSTEES OF THE INTERNAL IMPROVEMENT
FUND OF THE STATE OF FLORIDA

O.R. 4963 PAGE 766

RECORDED
PINELLAS CO. FLORIDA
CLERK CIRCUIT COURT

Dec 28 8 13 PM '79

79222152

18 18038728 [illegible] 880079
40 13.00
41 20.00 DS
33.00 CK

01 Cash 11 Chg
40 Rec 13.00
41 DS 20.00
43 Int
Tot 33.00

FEE SIMPLE DEED

THIS INDENTURE, made this 28th day of December, 1979, between ELNOR A. CLARK, formerly ELNOR A. ARCHIBALD, joined by LAWRENCE C. CLARK, her husband, of the County of Pinellas and State of Florida, party of the first part, and WILLIS M. STEWART, as Trustee, and DONALD C. MacPHAIL, of the County of Pinellas and State of Florida, and whose address is 12929 Gulf Boulevard E., Madeira Beach, Florida 33708, party of the second part.

WITNESSETH, that the said party of the first part, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations, to it in hand paid, the receipt whereof is hereby acknowledged, has granted, bargained, sold and transferred, and by these presents does grant, bargain sell and transfer unto the said party of the second part, and its successors and assigns forever, all that certain real property, situate, lying and being in the County of Pinellas and State of Florida, more particularly described in Exhibit "A" attached hereto and by this reference made a part hereof; subject to reservations of public record, to ad valorem property taxes for the year 1980 and all subsequent years and to those matters set forth below.

TOGETHER with all the tenements, hereditaments and appurtenances, with every privilege, right, title, interest and estate, reversion, remainder, and easement thereto belonging or in anywise appertaining.

TO HAVE AND TO HOLD the same in fee simple forever.

The real property described in Exhibit "A" consists of an island known as "Elnor Island" together with certain submerged lands incident thereto. An accurate survey of Elnor Island has not been made, but it is the intent of this deed to convey all of Elnor Island to party of the second part. Accordingly, party of the first part does hereby remise, release and quit claim to party of the second part all of the right, title and interest that party of the first part has in and to Elnor Island, regardless whether all or a portion thereof may lie outside of the real property boundaries described in Exhibit "A".

The greater portion of the real property described in Exhibit "A" is submerged land and with another portion being below the mean high water line of the body of water surrounding Elnor Island. In addition, a portion of the submerged lands and wet lands and Elnor Island contains growths of mangrove plants. Accordingly, this conveyance is made specifically subject to: (i) the rights, if any, of the public and/or any governmental authority or agency to traverse and use or own the waters, whether navigable or otherwise, over the submerged or wet lands; (ii) the rights, if any, of the public and/or any governmental authority or agency to traverse or use that portion of the real property that lies below the mean high water line of the body of water surrounding Elnor Island; (iii) the rights, if any, of the public and/or any governmental authority or agency to use the beach areas surrounding Elnor Island; and (iv) the regulations and statutory or zoning limitations or requirements, if any, regarding the use of Elnor Island and/or the real property described in Exhibit "A", whether as to the right to fill or improve such premises or to affect the aforesaid mangroves. Rather, no warranties of merchantability, fitness, quality or use, whether express or implied, are made by

RETURN TO: This instrument was prepared by
ROY G. HARRELL, JR.
of HARRISON, GREENE, MANN, ROWE & STANTON, ATTORNEYS
10th Floor Florida Federal Building
St. Petersburg, Florida 33701

STATE OF FLORIDA
DOCUMENTARY STAMP TAX
DEPT. OF REVENUE
20.00

party of the first part to party of the second part, such warranties being hereby expressly disclaimed; but instead the above-described property is being sold in its "as is" condition following the full opportunity and right of party of the second part to inspect the premises.

Lawrence C. Clark has joined in the execution of this deed to eliminate and quitclaim all right, title or interest, if any, which he has in the above-described property, by virtue of the constitutional homestead laws of the State of Florida or otherwise, but for no other purpose.

Party of the second part does hereby accept the conveyance described above, subject to the matters set forth above, on the day and year first above written, and irrespective when this deed is recorded in the Public Records of Pinellas County, Florida. Party of the second part does hereby agree that, so long as either or both of them have any right, title or interest in the above-described property, that the island shall continue to be called and known as "Elnor Island" and such name shall not be altered or changed in any manner whatsoever during such period.

IN WITNESS WHEREOF, the said party of the first part and said party of the second part have executed this instrument on the day and year first above written.

Signed, sealed, and delivered
in the presence of:

Ray D Harrell Jr.
Mary L Maxwell
As to Elnor A. Clark, formerly
Elnor A. Archibald

Elnor A. Clark (SEAL)
ELNOR A. CLARK, formerly
ELNOR A. ARCHIBALD

Ray D Harrell Jr.
Mary L Maxwell
As to Lawrence C. Clark

Lawrence C Clark (SEAL)
LAWRENCE C. CLARK

PARTY OF THE FIRST PART

Ray D Harrell Jr.
Mary L Maxwell
As to Willis M. Stewart,
as Trustee

Willis M. Stewart (SEAL)
WILLIS M. STEWART,
as Trustee

Ray D. Harrell Jr.
Mary L Maxwell
As to Donald C. MacPhail

Donald C MacPhail (SEAL)
DONALD C. MacPHAIL

PARTY OF THE SECOND PART

STATE OF FLORIDA)
COUNTY OF PINELLAS)

The foregoing instrument was acknowledged before me this 28 day of December, 1979, by ELNOR A. CLARK, formerly ELNOR A. ARCHIBALD.

Mary L Maxwell
Notary Public

(SEAL)

My Commission Expires:

Notary Public, State of Florida at Large
My Commission Expires SEPT. 28, 1983

STATE OF FLORIDA)
COUNTY OF PINELLAS)

The foregoing instrument was acknowledged before me this 28 day of December, 1979, by LAWRENCE C. CLARK.

Mary L Maxwell
Notary Public

(SEAL)

My Commission Expires:

Notary Public, State of Florida at Large
My Commission Expires SEPT. 28, 1983

STATE OF FLORIDA)
COUNTY OF PINELLAS)

The foregoing instrument was acknowledged before me this 28 day of December, 1979, by WILLIS M. STEWART, as Trustee.

Mary L Maxwell
Notary Public

(SEAL)

My Commission Expires:

Notary Public, State of Florida at Large
My Commission Expires SEPT. 28, 1983

STATE OF FLORIDA)
COUNTY OF PINELLAS)

The foregoing instrument was acknowledged before me this 28 day of December, 1979, by DONALD C. MacPHAIL.

Mary L Maxwell
Notary Public

(SEAL)

My Commission Expires:

Notary Public, State of Florida at Large
My Commission Expires SEPT. 28, 1983

That certain real property situate, lying and being in Pinellas County, Florida, and being more particularly described as follows:

Beginning at a point, said point being North 13 degrees, 24 minutes East 2729.1 feet from Southwest corner of Section 14, South 21 degrees 46 minutes East 115 feet South 67 degrees, 18 minutes East 250 feet South 16 degrees 55 minutes West 240 feet South 38 degrees 32 minutes East 70 feet North 47 degrees 46 minutes East 200 feet North 32 degrees 07 minutes East 290 feet South 43 degrees 23 minutes East 370 feet North 42 degrees 13 minutes East 390 feet North 3 degrees 24 minutes West 340 feet North 18 degrees 45 minutes West 465 feet South 88 degrees 54 minutes West 115 feet South 38 degrees 52 minutes West 400 feet South 60 degrees 42 minutes West 200 feet South 51 degrees 31 minutes West 455.3 feet to point of beginning, being in Section 14-31-15.

EXHIBIT "A"

40 Rec 13.00
41 St 256.50
42 Sur
43 Int
Tot 269.50

HOLD FOR
FIDELITY TITLE COMPANY
4134 Central Avenue
St. Petersburg, Fla. 33711

84-48956

PREPARED BY:
Robert C. Decker, Esq.
P.O. Box 14034
St. Petersburg, Florida 33733

SPECIAL WARRANTY DEED

84160127

O. R. 5813 PAGE 1872

THIS DEED, made this 31 day of July, 1984, between DONALD C. MacPHAIL, a married man, as "GRANTOR", and CITY OF TREASURE ISLAND, having a post office address as P.O. Box 9578, Treasure Island, Florida, 33740 as "GRANTEE".

(Wherever used herein, the terms "GRANTOR" and "GRANTEE" include all the parties to this instrument and the heirs, legal representatives and assigns of individuals, and the successors and assigns of corporations.)

Documentary Tax Pd. $ R.S. 201.02 .....
$ ..... Intangible Tax Pd.
Karleen F. DeBlaker, Clerk, Pinellas County
By ..... Deputy Clerk

WITNESSETH:

That the GRANTOR, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable considerations in hand paid to GRANTOR by said GRANTEE, receipt whereof is hereby acknowledged, by these presents does grant, bargain, sell, alien, remise, release, convey and confirm unto the GRANTEE an undivided one-half (1/2) interest in the following described real property (the "Property"), and rights and interest in real property located and situated in the County of Pinellas and State of Florida, to wit:

24 245 31055 99 1. 31JL84
40 13.00
41 256.50
TOTAL 269.50 CHK

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

KARLEEN F. DeBLAKER CLERK CIRCUIT COURT PINELLAS CO., FLORIDA
JUL 31 4 07 PM '84

This conveyance is subject to the following:

1. Real estate taxes, and any other taxes and assessments imposed by other taxing authorities for the year in which this transaction is closed and years subsequent thereto;

2. Conditions, restrictions, limitations, dedications, existing zoning ordinances and easements of record.

3. Riparian rights, rights of accretion, reliction, submerged lands, or any other water rights of any nature whatsoever, or the rights or interest of the State of Florida, or the public generally in the area extending from the lien of mean low tide to the line of vegetation, or right of access thereto, or right of easement along and across the same.

TOGETHER with all the tenements, hereditaments and appurtenances thereto belonging or in any way appertaining.

TO HAVE AND TO HOLD the same in fee simple forever.

The GRANTOR hereby fully warrants his interest in the title to the said real property, and will defend the same, against the lawful claims of all persons claiming by, through or under the said GRANTOR.

The GRANTOR represents and warrants that the Property herein conveyed is not homestead property as defined in the Constitution of the State of Florida.

IN WITNESS WHEREOF, the GRANTOR has caused these presents to be executed in by its proper officer thereunto duly authorized, and its seal affixed, the day and year first above written.

Signed, sealed and delivered
in the presence of:

DONALD C. MacPHAIL

STATE OF FLORIDA
COUNTY OF PINELLAS

I HEREBY CERTIFY that on this day personally appeared before me DONALD C. MacPHAIL, to me known to be the person who signed the foregoing special warranty deed, and he acknowledged the execution thereof to be his free act and deed for the uses and purposes therein mentioned.

WITNESS my hand and official seal at St. Petersburg, Pinellas County, Florida, this 31 day of July, 1984.

Notary Public

My commission expires: 6/28/87

EXHIBIT "A"

That certain real property situate, lying and being in Pinellas County, Florida, and being more particularly described as follows:

Beginning at a point, said point being North 13 degrees, 24 minutes East 2729.1 feet from Southwest corner of Section 14; South 21 degrees 46 minutes East 115 feet; South 67 degrees, 18 minutes East 250 feet; South 16 degrees, 55 minutes West 240 feet; South 38 degrees 32 minutes East 70 feet; North 47 degrees 46 minutes East 200 feet; North 32 degrees 07 minutes East 290 feet; South 43 degrees 23 minutes East 370 feet; North 42 degrees 13 minutes East 390 feet; North 3 degrees 24 minutes West 240 feet; North 18 degrees 45 minutes West 465 feet; South 88 degrees 54 minutes West 115 feet; South 38 degrees 52 minutes West 400 feet; South 60 degrees 42 minutes West 200 feet; South 51 degrees 31 minutes West 455.3 feet to point of beginning, being in Section 14/31/15; Less any part of said lands lying below the mean high water line.

TO: THOSE CONCERNED

FROM: CHARLES S. COWARD
CITY MANAGER

SUBJ: INSPECTION VISIT TO ELNOR ISLAND

DATE: MARCH 4, 2003

By this letter, I would like to document that Bob Dowling, Ruth Pignatello and no more than three other persons are hereby authorized to make one inspection visit to Elnor Island. Elnor Island is the mangrove spoils area just north of the Isle of Capri in Boca Ciega Drive Bay which is owned by the City of Treasure Island

The purpose of this visit is for an inspection of the island and a documentation of its vegetation and animal/bird life. The results of this investigation are to be documented in a written format and a copy is to be provided to the City of Treasure Island.

This inspection visit is to take place sometime during the month of March 2003.

March 17, 2003

To: Mr. Charles S. Coward, City Manager
City of Treasure Island
120 – 108th Avenue
Treasure Island, FL 33706-5026

Re: Elnor Island Inspection Trip Report

Dear Mr. Coward:

As requested in your March 4, 2003 letter authorizing an inspection trip to Elnor Island, outlined below is a written report providing high-level trip highlights and documenting the exploratory trip taken by boat on Friday, March 14, 2003.

Trip participants: Ruthie Starkey
Brad Pignatello
Ralph Heath, Suncoast Seabird Sanctuary
Tara Gallagher, Suncoast Seabird Sanctuary
(Note: Commissioner Ellsworth was scheduled to attend but due to an unexpected trip out of town, did not.)

Trip Purpose: Complete a preliminary inspection of the condition of Treasure Island's Elnor Island vegetation and animal/bird life.

Trip Duration: Approximately 2 hours / High tide conditions / Inspection from boat due to high tide conditions and extensive mangrove growth

Observations:

- The island is inundated with significant trash, including very large items such as mattresses & large wood items most likely dislodged from docks, etc.
- The island appeared to be devoid of any active bird life, nesting or otherwise, with the exception of the few birds that gather in the water on the shallow sandbars west of the island directly in front of Johns Pass Bridge area. The contrast between Elnor Island's almost total lack of wild life and the proliferation of wild life (nesting birds, etc.) on the other islands in the area was visually impressive. It was unfortunately, a very stark contrast.

Recommendations:

- Launch an extensive clean-up campaign. Put a permanent process in place to conduct more frequent cleanups, perhaps on a quarterly basis.
- Conduct an additional inspection of the island at low tide to check for signs of raccoon tracks. If raccoons are present on the island, they decimate most wildlife and prevent successful bird nesting. Should there be signs of raccoons, immediate efforts should be made to trap and remove them and on-going plans should be put in place to monitor the island regularly to prevent them from re-populating the island.
- Initiate an inspection of the island in partnership with the Native Plant Society to inventory plant life and identify foreign, invasive plants. Schedule activities to remove any identified invasive plants.

- Continue educational and instructional dialogue and a partnership with Suncoast Seabird Sanctuary representatives. They are a wealth of knowledge and have many successful experiences with island clean-ups, identification of problem conditions, and ideas to promote enhanced wild life nesting areas, etc.
- Partner with associated communities such as Madeira Beach to gain from the experiences and successes they've had in preserving their islands for the prospering of wild life and nesting birds.
- Using the City's boat and personnel, immediately go to the island to retrieve a swim marker that has been dislodged (per discussions with Ralph Heath, these are expensive items to replace).

Trip Digital Photos: As part of the visual documentation, digital photos are provided on the attached CD. It should be noted that the following applies to the location of the March 14, 2003, photos:

- Elnor Island boating expedition, island conditions and photos of trash conditions: 2957 thru 2981 & 2996 thru 2998
- Madeira Beach island photos: 2985 thru 2992. These were included to show the marked difference in the successful nesting conditions and bird activity vs. the lack of bird life on Elnor Island
- 2999 thru 3010: The rescue of an obviously ill, young bird just west and in front of Elnor Island. Ralph Heath took the bird to the Suncoast Seabird Sanctuary for care and rehabilitation.

Should you have any further questions regarding the inspection trip, please don't hesitate to call me on 727.360.8717.

Sincerely,

Ruthie Starkey

Ruthie Starkey
12404 Lagoon Lane
Treasure Island, FL 33706-6026
Email Id: starkeyr@tampabay.rr.com

Cc w/ digital photo CD: Mr. Bob Dowling, Elnor Island Wildlife Habitat Project Leader ✓
Mr. Ralph Heath & Ms.Tara Gallagher, Suncoast Seabird Sanctuary

Bob Dowling

RESOLUTION NO. 02-87

A RESOLUTION AUTHORIZING THE EXPLORATION OF A PROJECT TO CREATE A WILDLIFE HABITAT ON ELNOR ISLAND AND AUTHORIZING GRANT APPLICATION.

WHEREAS, the City Commission desires to authorize Robert Dowling to explore a project that could convert Elnor Island into a wildlife habitat; and

WHEREAS, the City Commission further desires to authorize Mr. Dowling to apply for grant funding from Pinellas County for said project.

NOW, THEREFORE, THE CITY OF TREASURE ISLAND DOES RESOLVE:

That the City Commission of the City of Treasure Island does hereby authorize Mr. Robert Dowling to explore a project that could convert Elnor Island into a wildlife habitat and further authorizes him to apply to Pinellas County for grant funding for said project.

The foregoing Resolution was offered during Regular Session of the City Commission of the City of Treasure Island, Florida, sitting on the 24th day of September, 2002, by Commissioner Ellsworth who moved its adoption; was seconded by Commissioner Maloof and upon roll call, the vote was:

YEAS: Commissioners Ellsworth, Maloof, Blush, Atkinson

NAYS: None

ABSENT: Commissioner Lavino

Leon G. Atkinson, Mayor

ATTEST:

Charles S. Coward, City Clerk

Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Venice Service Office
115 Corporation Way
Venice, Florida 34292-3524
(941) 486-1212 or
1-800-320-3503 (FL only)
SUNCOM 526-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

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E. D. "Sonny" Vergara
Executive Director
Gene A. Heath
Assistant Executive Director
William S. Bilenky
General Counsel

August 16, 2001

Michael T. Wichman, Sr., Community Improvement Director
City of Treasure Island
120 - 108th Avenue
Treasure Island, FL 33706

Subject: Parcel Name: Elnor Island
Sec/Twp/Rge: 14/31S/15E
County: Pinellas

Dear Mr. Wichman:

District staff determined that the site referenced above contains wetlands and surface waters as defined by Chapter 62-340, Florida Administrative Code (F.A.C.). Elnor Island is an undeveloped coastal island that is being utilized as a bird sanctuary.

This information will be kept on file in the Tampa Service Office. Work in wetlands and surface waters as well as any site development constitutes the creation, operation, alteration, abandonment or removal of a surface water management system and requires a permit from the District pursuant to Rule 40D-4.041, F.A.C. Environmental water quality and quantity concerns related to site development will be evaluated during the District's review of the permit application.

If you have questions regarding this matter, please contact the Tampa Service Office, extension 2054. Please refer to the Project Name in future communications regarding this property.

Sincerely,

Patricia Frantz

Patricia A. Frantz
Environmental Scientist
Tampa Regulation Department

PAF:rld
cc: Preapplication File

Protecting *Your* Water Resources

(1)

Tampa Bay Estuary Program
Bay Mini-Grant Application

Project Name: Elnor Island Restoration Project

Lead Organization: Treasure Island Hotel/Motel & Hospitality Assoc.

Description of Lead Organization (Community Assn., Educational Institution): Community Assoc

Executive Director: Harry Black Phone: 367-1926 Fax: 360-9708

Federal I.D. Number or Social Security Number: 59-3733844

Address: 9980 Gulf Boulevard

City, County, ZIP: Treasure Island, Pinellas, FL 33706

Project Manager (if different from Exec. Dir.) Robert Dowling

Address: 6711 Date Palm Avenue South

City, County, ZIP: St. Petersburg, Pinellas, FL 33707

Phone: 343-1951 Fax: 343-1951 E-mail: bobdow1.@hotmail.com

Other participating organizations: Suncoast Seabird Sanctuary, City of Treasure Isl Save our Seabird Sanctuary, Beach Clean-up Committee, Beach Beaton (newspaper).

Total Amount Requested (not to exceed $7,500): $7,500

Planned Project Beginning and Completion Dates: January 2004 - December 2004

Have you ever received a TBEP Bay Mini-Grant before? NO If yes, what year(s)?

What county will the project take place in? Pinellas

Which of the CCMP goals listed below will your project address? Habitat restoration, Bay Awareness/Education

Water quality, habitat restoration, fish and wildlife conservation, bay awareness/education, dredged material management, spill prevention and response, or invasive species.

Return completed applications to:

Bay Mini-Grants
Attn: Ron Hosler
Tampa Bay Estuary Program
MS I-1/NEP
100 8th Ave. S.E.
St. Petersburg, FL 33701

For TBEP Staff Use Only: CCMP Action # (_____)

Secondary Contact
Lynn Rosetti, AIC
City Planner
City of Treasure Island
120 108th Ave
Treasure Island, FL
33706
727-547-4575 x233

Answer the following questions clearly and completely using the space provided.
(Note: If additional space is needed, please use the back of the application.)

1. Is this proposal for
education
restoration
(both)

2. Summarize the proposed project in **250 words** or less.

Community effort coordinated by Treasure Island Hotel/Motel & Hospitality Association, sanctioned by City of Treasure Island (property owner) through resolution (see attached). Upland area of 10.5 acre Elnor Island has numerous Brazilian Pepper trees that should be eradicated and replaced by native plants. We propose a 2x spray/removal in 2004 to begin this process. At the same time, we would be promoting this effort to the community as a vital effort to improve this natural wildlife/habitat. Our organization is a non-profit, State-Chartered Corporation. We have conducted island clean-ups, bird counts, and initial studies to determine this need. We envision this process to be on-going.

3. How will your project improve/impact the Tampa Bay Estuary?

The restoration of Elnor Island will help improve this natural mangrove island. Located in Boca Ciega Bay at the mouth of John's Pass, Elnor Island serves as both a wildlife refuge/bird sanctuary and fish nursery. Brazilian Pepper intrustion does not support this wildlife. The elimination of the Brazilian Pepper will greatly enhance this natural resource.

4. Describe in **150 words** or less why you and/or your organization will be successful at implementing your proposal. What are your organization's qualifications?

The Treasure Island Hotel/Motel & Hospitality Association has 49 regular/business members, and 7 associate members. We have been involved in numerous community and civic efforts. We are a strong organization, have had multiple fund raisers, work closely with other community civic associations, give back yearly donations to worthwhile local causes, and are strongly organized. Treasure Island City Planner to assist.

5. List organizations, groups, volunteers and/or partners that will participate in the activities. How will you recruit them?

Have assisted use to date (and we expect assistance to continue: Suncoast Seabird Sanctuary + Ralph Heath
City of Treasure Island
Save Our Seabird Sanctuary
Beach Clean-Up Committee
Beach Beacon (local newspaper) - Editor involved

Are contacting: ① local neighborhood associations for assistance/volunteers
② use of TITV - Channel 15 - local - to promote

A-2

6. What will participants learn from participating in this project? How will they use that knowledge to benefit the Estuary?

- How to remove Brazilian Pepper. How to spot regrowth.
- How/what to plant after eradication.
- What to do in subsequent years to keep Island healthy and native. (Quarterly clean-ups/check-ups are planned)
- Can serve as educational model for others to use.
- Will document and prepare video to air on TITV at regular time

7. What materials or supplies (if applicable) will you provide to the people participating in your project?

- Film (35 mm) + photo processing
- Film - video or digital
- Food & water on work days
- Gas for boat engines
- Limited number of trowels, clippers, for trimming/removal dead vegetation
- Boat transported to island.

8. Is your project part of an ongoing project? X Yes_____No_____ If yes, how does this mini-grant project fit into the overall effort?

This project is the kick-off effort to restore/improve Elnor Island, a 10.5 acre island in Boca Ciega Bay. We believe the first effort needed is Brazilian Pepper eradication and community awareness. We plan on-going quarterly clean-ups and evaluations. May seek future grant monies to continue eradication or further educate community.

9. How will you measure the success of your project? Please be specific. (E.g., follow-up monitoring of a habitat restoration site)

We will continue to monitor island on quarterly basis. Don't want the Brazilian Peppers to get a new foothold. We anticipate an overall 3-5 year project to rehabilitate Elnor Island. Because of its location, it is a magnet for dock boards and other debris. Racoons also inhabit the island and may pose a rabies risk. The overall intention is to leave the island native and natural and only allow specific, permissible human activities to occur there (clean-ups, specified educational tours, etc.).

A-3

Budget for Elnor Island Restoration Project

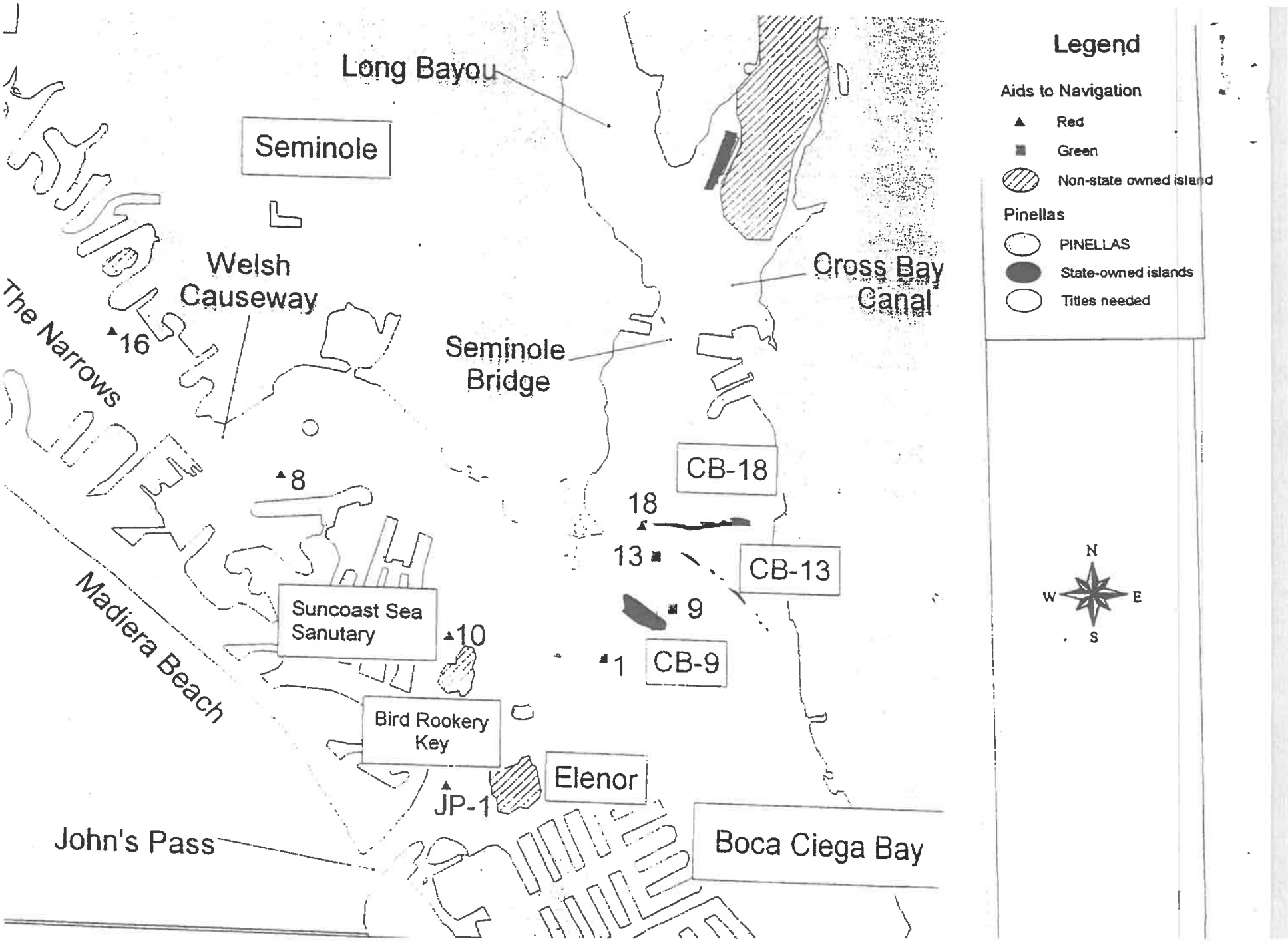
ITEM	TBEP SHARE	MATCH	TOTAL
Licensed Contractor to Spray Chemical Treatments – 2X – competitive bid – – 3 acres Brazilian Pepper – $1,000 per acre / $3,000 per spray 2X = $6,000	$6,000		$6,000
Gas for Boats	$200		200
Boat rental – in-kind/donated 4 boats @ $250/day (avg rental each) $1000/day 4 boats x 5 = $5,000		$5,000	5,000
Boat rental – local Dive Boat @ $50/hr x 8 = $400/day $400 x 5 days = $2,000		$2,000	2,000
Boats – transport volunteers & cart debris/dead limbs off Elnor Island]			
Planting & Clean-Up – Volunteer Services 20 volunteers @ 8 hrs/day = $824 using min. wage $824 x 5 = $4,120		$4,120	4,120
Film + Processing	$100		100
Native Plants – White Mangroves Button Woods – green & silver	$1,000		1,000
Trowels, Gardening Gloves, Minor Tools (most will be donated)	$200		200
Total Project Costs	$7,500	$11,920	$19,420

Audubon of Florida
Florida Coastal Islands Sanctuaries
2001 Colonial Waterbird Monitoring
Boca Ciega Bay -- Regional Survey
(note: numbers represent breeding pairs)

Colony Name	Johns Pass (all 3 islands)	Dogleg Key	Little Bird K NWR	Tarpon & Whale Keys NWR	Shell Pres
County	Pinellas	Pinellas	Pinellas	Pinellas	Pine
FFWCC #	615030			615031	
Latitude					
Longitude					
Date of Census	5-24-01	4 & 5-01	5-8-01	5-8-01/6-2-01	5-22-
Observer(s)	Ann Paul	R&A Paul, Terry and Judy Thompson	R&A Paul, Joyce Kleen, Steve Reese	R&A Paul, Joyce Kleen, Steve Reese	Rich anc Paul
Species					
Brown Pelican		143		143	
Double-crested Cormorant	10	33		94	
Anhinga			Island Abandoned; Raccoon Present. Removed.	3	
Least Bittern					
Great Blue Heron	19	39		22	
Great Egret	8	152		55	
Snowy Egret	5	136		55	
Little Blue Heron	√	17		15	
Tricolored Heron	√	18		20	
Reddish Egret	1			5	
Cattle Egret					
Green Heron	1			1+	
Black-crowned Night-Heron	2	2		10+	
Yellow-crowned Night-Heron				10+	
White Ibis				30	
Glossy Ibis					
Roseate Spoonbill		1		16	
Wood Stork					
Snowy Plover					
Wilson's Plover					
American Oystercatcher					
Willet		2		1	7
Laughing Gull					2
Gull-billed Tern					
Caspian Tern					
Royal Tern					
Sandwich Tern					
Least Tern					
Black Skimmer					12
Total pairs	34	543	0	480*	21*

*Raccoons are present on Tarpon Key NWR; 10 raccoons were removed from Shell Key Preserve this spring

Island No	Latitude/Longitude	Ownership	Island Status
BP-15	57 52m 8s / -82 50m 56s 27.868970 / 82.848762	Need information	
BP-17	27 51m 22s / -82 50m 33s 27.856172 / 82.842571	Need information	
BP-17b	27.858703 / 82.842829	Need information	
BP-17c	27.857877 / 82.842393	Need information	
BP-17d	27.857236 / 82.842642	Need information	
BP-18	27 51m 12s / -82 50m 30s 27.853423 / 82.841792	Need information	
BP-18a	27.855087 / 82.842059	Need information	
BP-18b	27.854691 / 82.841821	Need information	
BP-18c	27.851789 / 82.840963	Need information	
BP-19	27 50m 52s / -82 50m 29s 27.847692 / 82.839969	Need information	
BC-2 North	27 50m 5s / -82 49m 43s 27.834613 / 82.828668	Private	Same island with two different owners, do not know if it is spoil or natural
BC-2 South	"	State of Florida	"
BC-24 (BC-2)	27 50m 6s / -82 49m 18s 27.834911/ 82.821667	State of Florida	Spoil-Conservation
BC-21 (BC-4)	27 49m 45s / -82 48m 50s 27.829126/ 82.813789	State of Florida	Spoil-Recreation
BC-20	27 49m 34s / -82 48m 29s 27.826219 / 82.808169	Private	Spoil
BC-18	27 49m 30s / -82 48m 26s 27.825020 / 82.807240	Private	Spoil
BC-16	27 48m 59s/ -82 47m 57s 27.816492 / 82.799125	Private	Spoil
BC-10	27 47m 36s / -82 46m 40s 27.793195 / 82.777856	Suncoast Seabird Sanctuary	Bird Sanctuary Audubon posted
BC-8	27 48m 26s / -82 47m 15s 27.807098 / 82.787388	Need information	Spoil-eroded
JP-6 (Eleanor Island)	27 47m 14s / -82 46m 26s 27.787085 / 82.773888	City of Treasure Island	Audubon posted
JP-6	27 47m 13s / -82 46m 31s 27.786979 / 82.775369	City of Treasure Island	Same island as above, has grown attached
CB-9 (BC-16)	27 47m 50s / -82 45m 59s 27.797144 / 82.766376	State of Florida	Spoil-Conservation
CB-1	27 49m 12s / -82 45m 31s 27.819875 / 82.758475	Private	
CB-2	27 49m 12s / -82 45m 31s 27.823259 / 82.758490	Private	
CB-3	27 49m 32s / -82 45m 32s 27.825550 / 82.758895	Private	
CB-4	27 49m 29s / -82 45m 22s 27.824761 / 82.755997	Private	


Long Bayou
Seminole
Welsh Causeway
The Narrows
16
Seminole Bridge
Cross Bay Canal
CB-18
18
8
13
CB-13
9
Suncoast Sea Sanutary
10
1
CB-9
Madiera Beach
Bird Rookery Key
Elenor
JP-1
John's Pass
Boca Ciega Bay
Legend
Aids to Navigation
Red
Green
Non-state owned island
Pinellas
PINELLAS
State-owned islands
Titles needed
N
W
E
S

State of Florida

Department of State

I certify from the records of this office that TREASURE ISLAND HOTEL/MOTEL/HOSPITALITY ASSOCIATION, INC. is a corporation organized under the laws of the State of Florida, filed on July 9, 2001.

The document number of this corporation is N01000004892.

I further certify that said corporation has paid all fees due this office through December 31, 2001, and its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capitol, this the Eleventh day of July, 2001

Katherine Harris

Katherine Harris
Secretary of State

CR2EO22 (1-99)

RESOLUTION NO. 03-51

A RESOLUTION AUTHORIZING A CLEANUP EXPEDITION TO THE ELNOR ISLAND WILDLIFE AND BIRD SANTUARY.

WHEREAS, an inspection tour of Elnor Island was conducted on March 17, 2003, by Mr. Ralph Heath, of the Suncoast Seabird Sanctuary, and a group of selected resident volunteers; and

WHEREAS, in a report of the results of said inspection, certain cleanup activities and additional research efforts were recommended; and

WHEREAS, a group headed by Mr. Bob Dowling has outlined a one day cleanup and research trip to Elnor Island and has requested permission from the City Commission for this effort; and

WHEREAS, the City Commission desires to authorize the proposed one day cleanup and research effort.

NOW, THEREFORE, BE IT RESOLVED BY THE COMMISSON OF THE CITY OF TREASURES ISLAND THAT:

1. A one day cleanup and research expedition to the Elnor Island Wildlife and Bird Sanctuary is hereby authorized for a day in June to be selected by Bob Dowling.

2. The expedition efforts shall target the cleanup of trash and debris that may be harmful to seabirds in particular and wildlife in general and shall seek to document the current habitat and wildlife that exists on the island.

3. The results of this expedition shall be documented in a written and pictorial report and presented to the City Commission within 30 days of its undertaking.

The foregoing Resolution was offered during Regular Session of the City Commission of the City of Treasure Island, Florida, sitting on the 10th day of June 2003, by Commissioner Kraus who moved its adoption; was seconded by Commissioner Blush and upon roll call, the vote was:

YEAS: Commissioners Collins, Ellsworth, Kraus, Blush, Maloof

NAYS: None

ABSENT OR ABSTAINING: None

_____
Mary Maloof, Mayor

ATTEST:

_____
Charles S. Coward, City Clerk

ELNOR ISLAND EXPEDITION #2

JUNE 14TH, 2003

TREASURE ISLAND, FLORIDA

CONTENTS:

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AERIAL PHOTO OF ELNOR ISLAND

EXPEDITION REPORT BY BOB DOWLING FRONT PAGE

EXHIBIT 'A' REPORT BY JESSICA VANNA AND HATSUE ASAI

BALANCE OF EXPEDITION REPORT AND RECOMMENDATIONS BY BOB DOWLING

COLOR ENLARGEMENT PHOTOS OF DRIFTWOOD DEBRIS AND 'HURRICANE HOLE"

COLOR PHOTOGRAPHS DOCUMENTING TRIP OBSERVATIONS AND DEBRIS COLLECTION.

ELNOR ISLAND EXPEDITION REPORT
By: Bob Dowling
July 11, 2003

TO: City of Treasure Island
City Manager, Chuck Coward
120-107th Ave.
Treasure Island, Fl 33706

Dear Mr. Coward:

The following is a basic report on the city authorized clean up expedition that took place on June Saturday, June 14th, 2003:

Twelve volunteers with 4 power boats and 5 kayaks participated.

Upon arriving at our rendevous location at the South-Southwesterly portion of the Elnor island shoals kayak clean up teams were dispersed to various locations around the areas that were most accessible. At the same time a 4 person expedition team comprised of the two dive instructors from TI Divers, Hatsue Asai and Jessica Vana along with TI Commissioner Phil Collins and Tommy Blush attempted to penetrate to the center of the Eastern part of Elnor Island on foot to explore the " Hurricane Hole" that is located there..

Due to the density of the mangrove they missed the "Hurricane Hole" on their first attempt but then found their way to it on their second attempt. Along the way they recorded by photographs a tremendous amount of dock type lumber stacked in tightly around the mangrove that had worked it's way in over the years during high water and stormy conditions. Once they arrived at the perimeter of the "Hurricane Hole" or "pond " area they started documenting the site by video taping and doing a vocal narrative of what they saw. Still photo's were also taken of this site and they are an important part of this report as well as the video (all video and photos are on file at the TI Technical Information Office).

Hatsue Asai, the marine biologist and her co-worker Jessica Vana, together collaborated to write a report on their views of the expedition with great detail description... Their report should be read at this time and thus it is inserted at this location in the overall report and it is indexed and listed as exhibit "A". Both ladies are dive instructors with Treasure Island Divers.

EXHIBIT 'A'

Report on Eleanor Island Cleanup

Jessica Vana and Hatsue Asai approached the island from the west side on June 14th, 2003. The objective was to make a report on the Hurricane Hole and find evidence of bird nests and rats or raccoon existence.

The shoreline of the island was covered with red mangroves. As we moved inland, the land level rose about 1 to 2 feet but still ½ to ¼ foot deep in water and the number of black mangroves started to increase. Red mangroves were present only along the shoreline and about 30 feet inland. Empty beer bottles, fishing lines, piles of wood piece and a variety of other trash were found while we were approaching to the Hurricane Hole.

The Hurricane Hole was found on the center of the island. The shape of the hole was almost perfectly circular and no plant growth was found in the hole. The hole was relatively shallow (1/2 to 2 feet deep) with a muddy bottom. The particles of the sediments were very fine and a reddish brown color. As we walked on the sediments, they were easily stirred and we recognized the smell of sulfur from the fine mud. This indicates that the sediments are highly organic.

We found small fish swimming within the Hurricane Hole, but we could not get close enough to identify the species of the fish. We also found empty snail shells, crab claws, a dead crab, unidentified bones and a living clam. The empty snail shells can be identified as Black Horn Snail or Florida Cerith. Both Black Horn Snail and Florida Cerith inhabit near low-tide line and below in shallow water. The crab claws could be identified, as one of the fiddler crabs inhabits Florida. The dead crab may be a Wharf Crab or Mangrove Tree Crab. The habitat of the Wharf Crabs is in shallow burrows above high-tide line, and the Mangrove Tree Crabs live on red mangrove trees. The live clam we found could be identified as one of the cockles. Further identification is needed on this clam for the specific name.

Dead trees were seen along the boundary of the hole. Identification of the trees was almost impossible due to the decay. We found no indication of fresh water plant in the hole. The dead tree trucks seemed to have been blown or swept in during a hurricane, due to there were no accompanying roots or branches.

There were water flows from west side of the hole to the east side of the hole. Since the sediments was thicker on the east side of the Hurricane Hole, it is possible that water flows from west to east most of the time carrying fine sediments to the east side of the hole.

These facts indicate that the water in the Hurricane Hole is salt or brackish water.

Great Blue Herons, Egrets, Cranes, and Spoonbills were all seen wading in the hole prior to our entry, as well as a variety of other unidentifiable birds. An estimate of approximately 30 birds was in the hole. As we emerged through the mangroves all flew off. Most of the Egrets, Cranes, and Herons came back quickly and perched in the surrounding mangroves to watch our progress. The spoonbills did not return during our exploration. A blue Heron was seen feeding in the shallows on the opposite bank. One Osprey was seen flying overhead and also perched in the Mangroves. No signs of nesting were seen.

:coons or rats were seen in or near the hole.

ease contact Jessica Vana or Hatsue Asai at

..ue Asai

Treasure Island Divers
146 107th Ave
Treasure Island, FL 33706
(727) 360-3483

There were 4 primary objectives to this expedition and they are as follows:

1. To locate trash and debris deemed dangerous to the environment of the island and remove it.
2. To successfully document the status of the "Hurricane Hole"in the center Eastern island.
3. To document any non-native species of trees or shrubs.
4. To locate evidence of raccoon inhabitation.

All these mission objectives were successfully achieved and much more informative data was gathered.

As to objective #1 : An entire boat load of trash and debris were collected and removed from the island. Larger items were targeted on this trip but also multiple trash bags were filled with a variety of trash and debris. Among the larger items retrieved were a municipal swim buoy that had located itself approximately 30 yards towards the center of the western most island. It along with several blue plastic 55 gallon barrels scattered about were muscled out to the waters edge and row boated back to rendevous area where trash collections were being deposited onto the bigger boats..
Among the other debris was monofilament fishing line, fishing corks, hooks, beverage cans and bottles, all types of plastics, Styrofoam, bait buckets, broken dock lumber, furniture, coolers, ice chests and just about everything else in bits and pieces that floats on water.

As to Item #2 the "Hurricane Hole": The report by Hatsue Asai and Jessica Vana should be the best representation of this item. Along a personal observation line I would point out that after studying the video several times I noted that the Blue Herons that were startled away from the pond area returned to the area to observe the humane expedition... This action in itself indicates to me that there is likely Blue Heron nests n that immediate area even though none were observed by the expedition party. Generally, the Blue Heron is a sentry type bird that once frightened away from an area they generally keep going, but they returned to close proximity to the expedition to perhaps defend their nests and young ones... This is supposition on this writers part, however a juvenile Blue Heron was found on the ground alive and apparently well on the Western portion of the island and was left alone and undisturbed by the expedition member who found it.
A water sample was taken from the "Hurricane Hole"pond is believed to be salt water due to the tidal movement witnessed by the team members and some crustaceans (crabs) parts found in the pond. Results of lab testing are not yet complete but the lab report will be attached to this report when it arrives.

As to item #3 Non native species of trees and shrubs: Brazilian Pepper trees were found in abundance primarily on the Western ½ of the island and on the NW corner and the SW corners were the heaviest concentrations. Photographs were taken along with leaf samples of these trees that were mature and as high as 15 to 20 feet in height. This documentation was necessary to file an application for a Pinellas County Grant to fund the removal of these non-native trees. There were no experts available to identify the other unknown species of shrubs on this expedition.

As to Item # 4 To locate evidence of raccoon inhabiting of the island(s) One expedition member, Harry Black, identified droppings as those of raccoon as the droppings showed evidence of crustaceans (shells). No photograph of the droppings were made. A live catch trap was set over night and retrieved without being triggered... As the expedition was purposely planned to visit the island on the highest flood tide of the year, no raccoon tracks were observed.

Other Items of Observation:

Nesting Activity: One active nest was observed. While wading into the edge of the mangrove to retrieve an ice chest a Green Heron nest with chicks was observed and photographed. As mentioned before a juvenile Blue Heron was observed sitting on the upland portion of the Western island in apparent good health. Also as mentioned before that adult Blue Herons in the vicinity of the "Hurricane Hole" area refused to leave the area possibly indicating nesting activity around the hole area although no nests were located in the short observation time allotted.

Construction Activity: An area approximately 8 x 16 feet square where 4x4 PST where set into the high ground on the NW side of the Western most island. It was estimated that it could have been there for 2 to 3 years. There were a total of 6 posts that appeared to be designed to support a near ground deck that was never constructed or was washed away by storm waters. Also there was surveyors tape tide to trees in various places in the same area.

Oyster Bed Area Located: An area at the NW edge of the Western island was laid out with steel hurricane anchors such as used for mobile home tie downs. Within this rectangular area were found a bed of poured oyster shells as if to artificially start an active oyster bed. It was recalled by one expedition member that this was done as a result of the oil spill mitigation to help re-establish an oyster bed. From our observations it did not take or work as just dead oyster shells were observed .

Geodetic Survey Marker Found: A concrete monument that was apparently vandalized was also found in the NW part of the Western island. These type of monument were put in place along the barrier islands. The bronze identity marker was apparently hammered and chiseled away from the concrete foundation.

Rat Inhabitation: A very large and very live " Fruit Rat" was observed by one expedition member while collecting trash items. (Where there's one there's more) Rats also eat bird eggs.

Sea Bird Remains Found: Several remains of Pelicans and one of an egret were found pretty much intact and were suspected of dying from some form of injury, perhaps fish hooks or fishing line entanglements as an abundance of fishing line was found all thru the island edges and even along some of the higher ground areas attached to fishing bobbers.

Horseshoe Crabs Mating Observed: While wading the edges of the Western island on the West

side a goodly number of coupled horseshoe crabs were working their way up into the flooded mangro ve areas where they would bury themselves to lay their eggs. Possibly 20 to 30 were observed and one expedition member remembered that in their youth there were many hundreds mating at the same island, "so many that you could not take a step without stepping on one"!

Mangrove Crabs Observed: All through the island these square looking mangrove crabs were happily going on with their lives seemly being the largest number of any species observed. We used to call them " dock crabs" as they always seemed to be living under the docks above the water lines.

Huge Semi- Petrified Log Found: A huge log of approximately 50 feet in length and perhaps 18 to 24 inches around was found and photographed / video taped at the NW section perimeter of the "Hurricane Hole". How it arrived at that location and when it arrived there is a real mystery. Speculation would be that it was driven there by a hurricane possibly when the "Hurricane Hole" itself was formed by a tremendous storm. The log is void of branches or roots and may have been logged by loggers in the late 1800's or early 1900's. It would have to have been driven through 50 to 100 yards of solid mangrove growth or lifted and dropped by either a tornado or helicopter. Estimated weight 1 to 2 tons!

Recommendations:

1. On going clean up program should be instituted at least quarterly.

2. The amount of "dock" type (pressure treated) lumber accumulated on the island that was seen was estimated to be enough to build 3 to 4 houses. This chemically treated lumber in some what of a leached out condition has effectively covered much of the eastern islands fringe areas up to 100' feet in toward the " Hurricane Hole". This acts as a ground cover and is choking out the natural growth of new replacement mangrove sprouts. This should be targeted for the quickest removal from the island so natural vegetation can return.

3. Brazilian Pepper trees should be removed. It is believed that the Pinellas County Government has a grant program in place to fund this type off removal of non-native vegetation species.. One member of the expedition had experience in the removal of the Brazilian pepper trees in and around the Eckerd College area. It was reported that a tree killing chemical was dis persed by portable tank sprayers by individuals and each tree was sprayed from the ground up to 4 feet high. This would kill the trees within one year after which time they could be cut and removed with out spreading new growth. It was also noted that if the trees were cut without being sprayed it would have the effect of multiplying the existing trees many times, there fore not recommenced as a short cut to eradication of the Brazilian Pepper trees.

4. More defining data should be collected regarding raccoons on the island and a live trapping program be put in place to move them to other areas better suited for their safe release.

5. A mid winter expedition to seek out bird nests in areas that were flooded by the high

Tide water of summer. Also to seek any artesian springs that may not have been observed in the flooded conditions island wide and specifically in the " Hurricane Hole" area which may dry up during the low tides of winter which would allow fresh or sulfur water to fill pond area.

6. Continue to consult with local experts in the field of coastal estuary island management to put forth a recognized and accepted plan for the future management of Elnor Island.

7. Promote volunteer base of workers to assist in achieving island management goals.

8. Promote the construction of 8 Osprey nesting stations as the increased number of ospreys in the area seem to be searching for stable, near shore, nesting structures..Osprey consultants could best define this apparent need and designate appropriate locations through out the Treasure Island Bayside area. (Note many other coastal municipalities make an active attempt to promote Osprey nesting sites or stations.)

I would like to thank all the volunteers who helped make this expedition possible and also thank Mr. Ralph Heath of the Suncoast Sea Bird Sanctuary and Lee Fox of Save Our Sea Birds for all their contributions of consulting time for the past 6 months. Mr. Heath was invited to attend this expedition but was unable to attend however it should be noted that he personally attended the first expedition earlier in the spring and a report on that trip was filed with the City by volunteer Ruthie Pignatello. Mr. Heath and Mrs. Fox will each be sent a copy of this report.

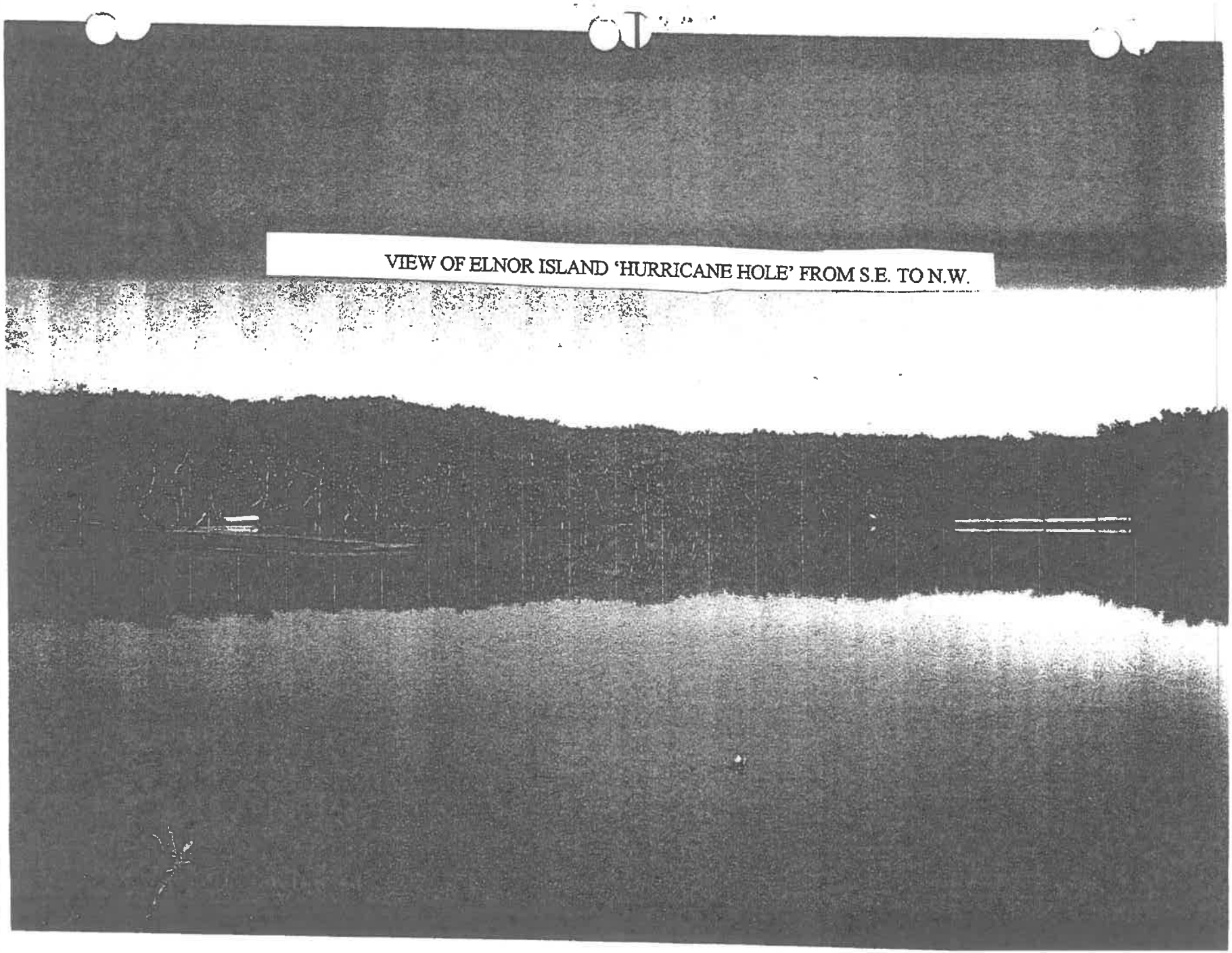
The following is a list of volunteers and interested parties who worked on this expedition: Hatsue Asai, marine biologist and dive instructor with Treasure Island Divers, Leon Atkinson, Frank Albanese, Capt. Joe Bailey and Treasure Island Divers Company, Harry Black Pres. T I. Hotel, Motel & Hospitality Assoc., Bill Blush, Tommy Blush, Treasure Island Commissioner Phil Collins, Bob Dowling Committee Chair Treasure Island Hotel, Motel & Hospitality Assoc., Treasure Island Commissioner Butch Ellsworth, Jessica Vana Dive Instructor Treasure Island Divers, Danielle Pabon student Treasure Island Divers Summer Kids Marine Program, Ruthie Pignatello Secretary and Data Processing for Elnor Island Sea Bird Project.
Project photos and video were shot by Hatsue Asia, Bob Dowling & Jessica Vana, with special Thanks to Mark Santos,Information and Technical Office of the City of Treasure Island for processing the photo data and saving still photos that were retrieved from the video cam that was accidentally dropped in salt water and processing the video data to city archives.

This report was prepared by Bob Dowling, City of Treasure Island Designee to head up this expedition.

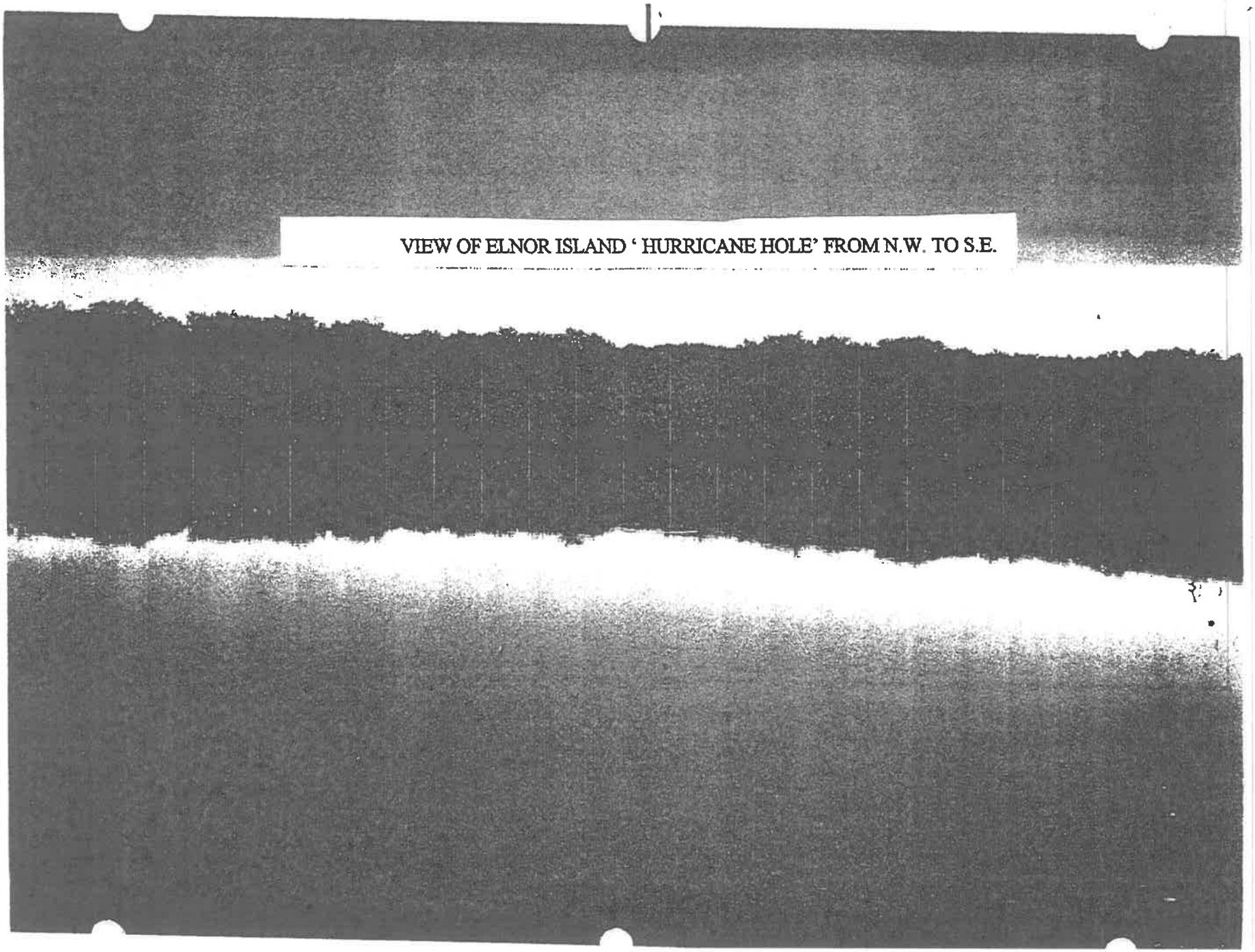
Bob may be reached by Phone @ 542-1684

AERIAL PHOTO PROVIDED BY BILL BLUSH SHOWS WHY OL TIMERS CALLED ELNOR ISLAND "BIRD ISLAND'- - SEE THE BABY BIRD LOOKING BACK TO IT'S NEST?



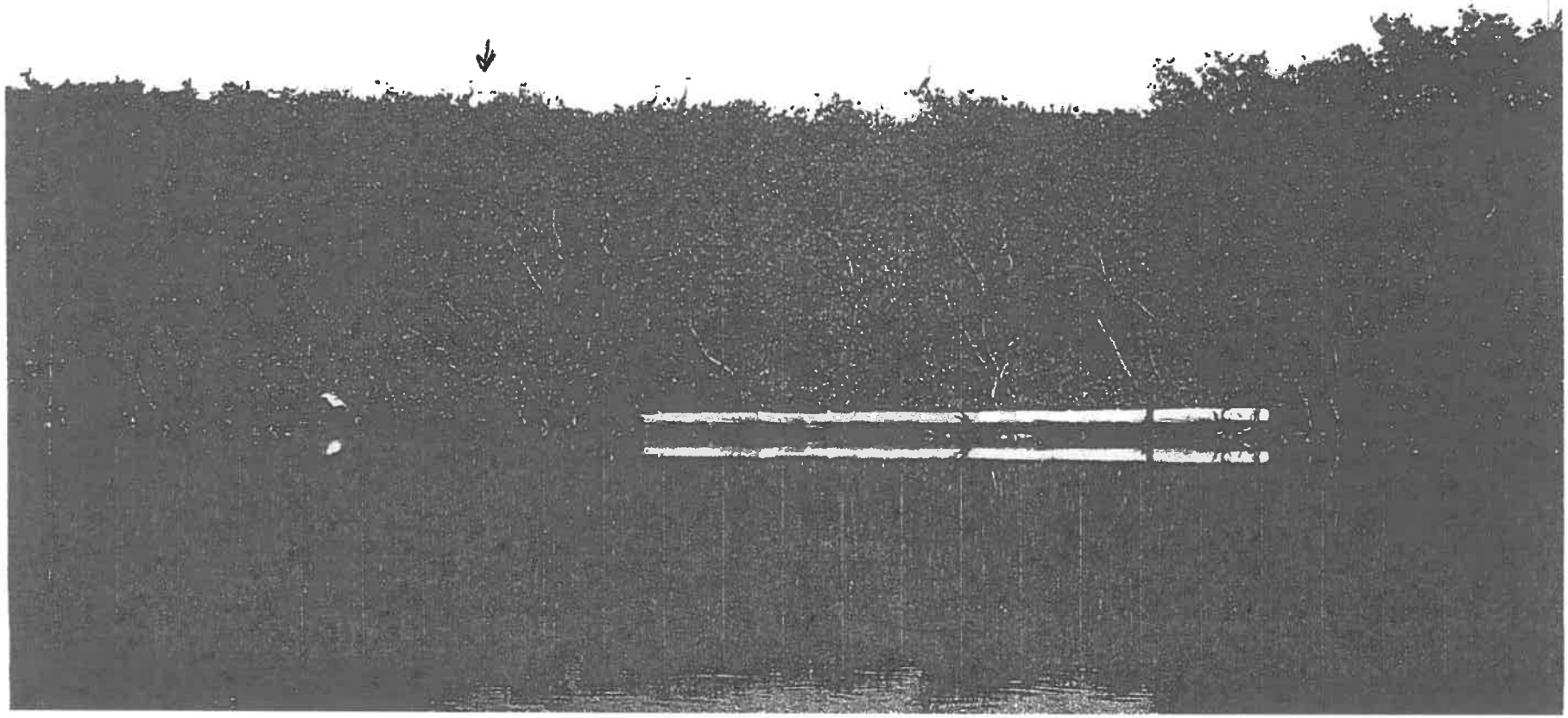


VIEW OF ELNOR ISLAND 'HURRICANE HOLE' FROM S.E. TO N.W.



VIEW OF ELNOR ISLAND ' HURRICANE HOLE' FROM N.W. TO S.E.

VIEW OF HUGE TIMBER LOCATED ON N.W. EDGE OF 'HURRICANE HOLE'
ON ELNOR ISLAND. NOTE 6 BLUE HERONS AT TOPS OF MANGROVE TREES.
WHERE THE ARROW POINTS TWO SMALLER OR BABY BLUE HERONS CAN BE SEEN
DUE TO THE BLOWING UP OF THE ORIGINAL PHOTO. THIS WAS DISCOVERED
AFTER THE REPORT WAS COMPLETED AND BEING ASSEMBLED.



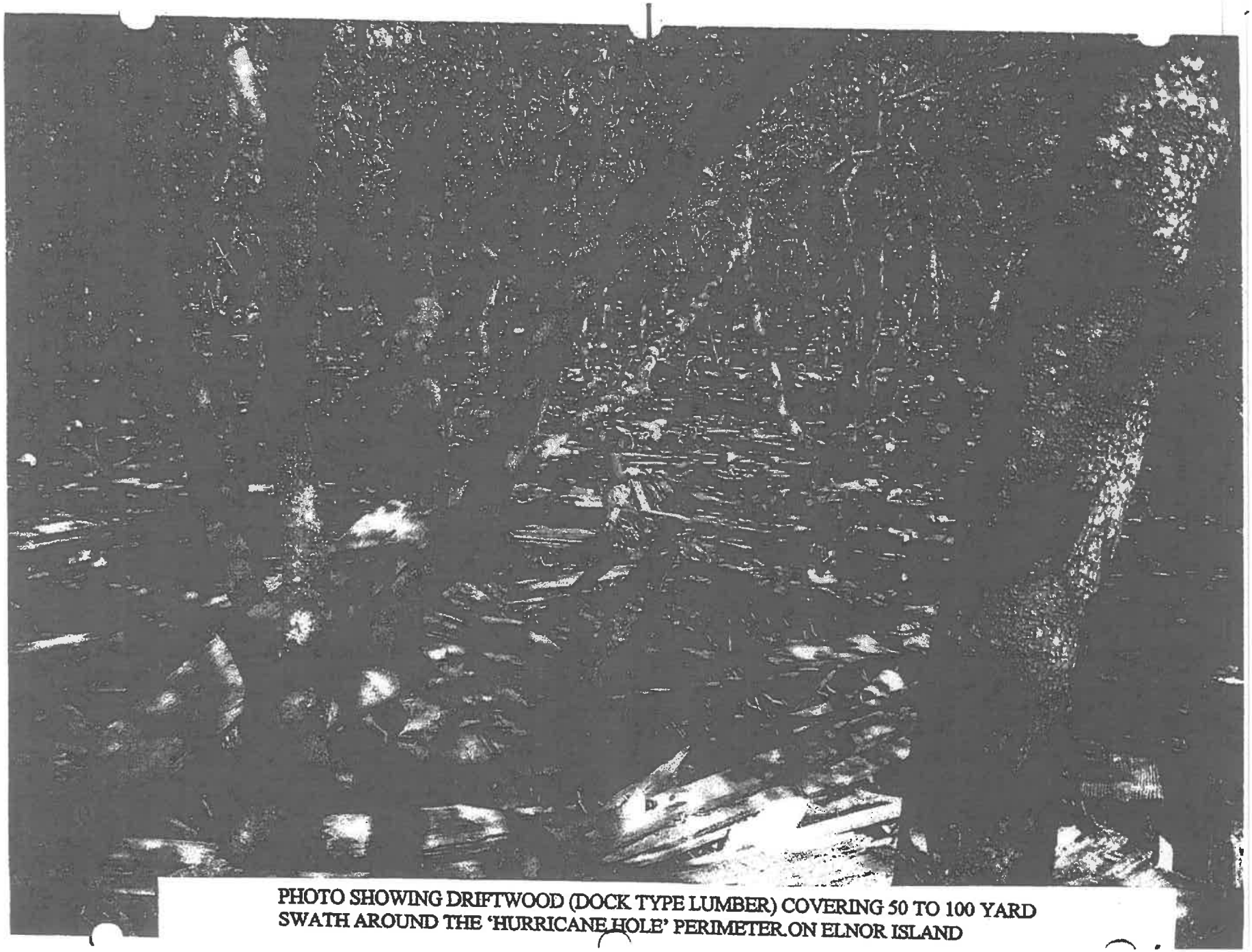


PHOTO SHOWING DRIFTWOOD (DOCK TYPE LUMBER) COVERING 50 TO 100 YARD SWATH AROUND THE 'HURRICANE HOLE' PERIMETER ON ELNOR ISLAND

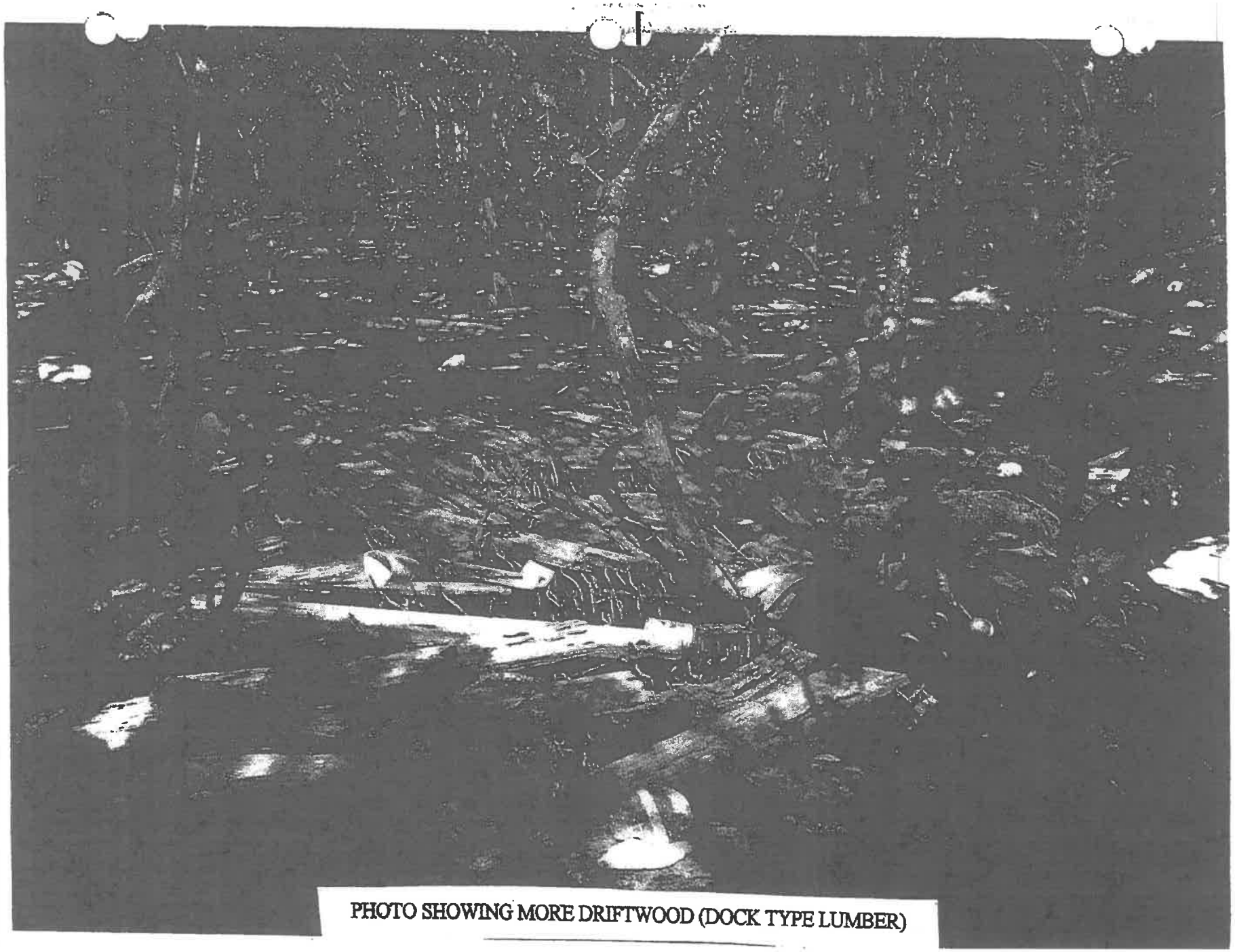
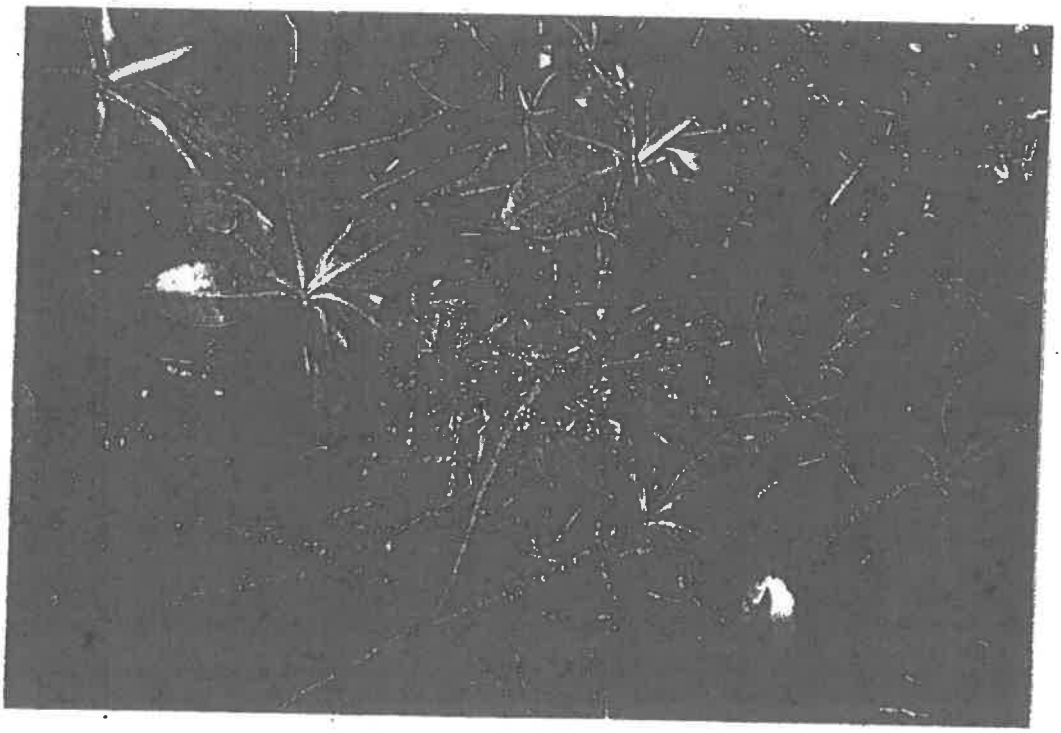


PHOTO SHOWING MORE DRIFTWOOD (DOCK TYPE LUMBER)



MOMMA GREEN HERON GUARDING HER NEST OF CHICKS FROM ABOVE (NEST NOT VISIBLE ON THIS FRAME)



ACTIVE NEST WITH GREEN HERON CHICKS DOING FINE FOUND ON THE SOUTHERN SIDE OF THE EASTERN MOST PORTION OF ELNOR ISLAND.



A LARGE PIECE OF STYROFOAM IS COLLECTED BY TI COMMISSIONER ELLSWORTH

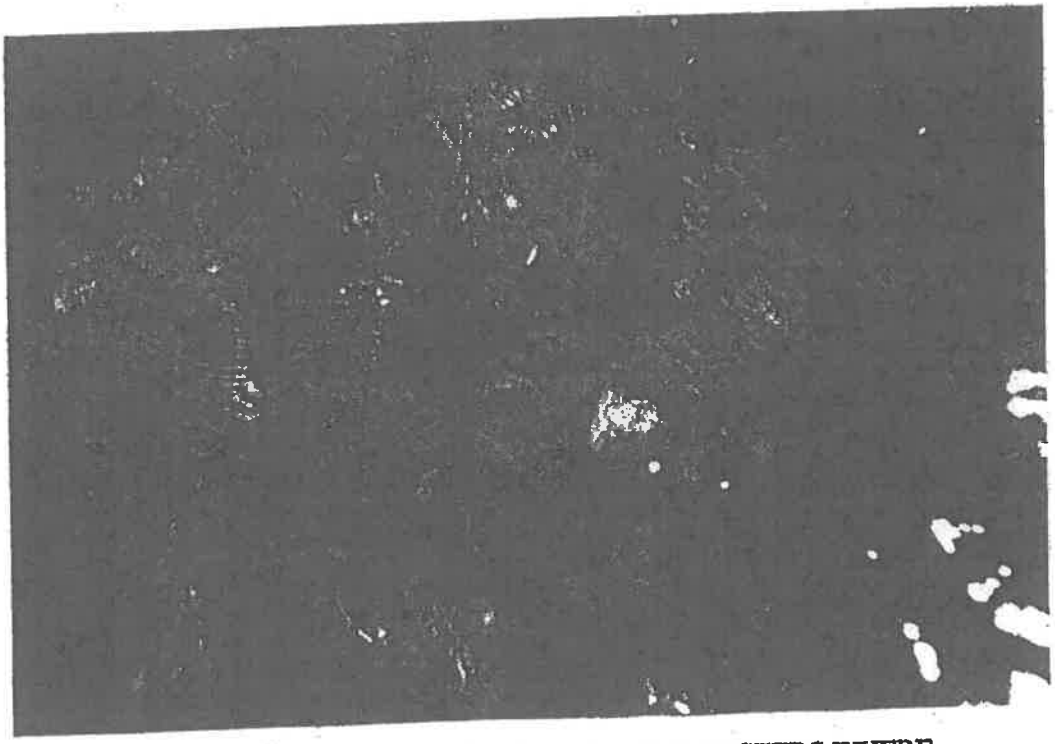
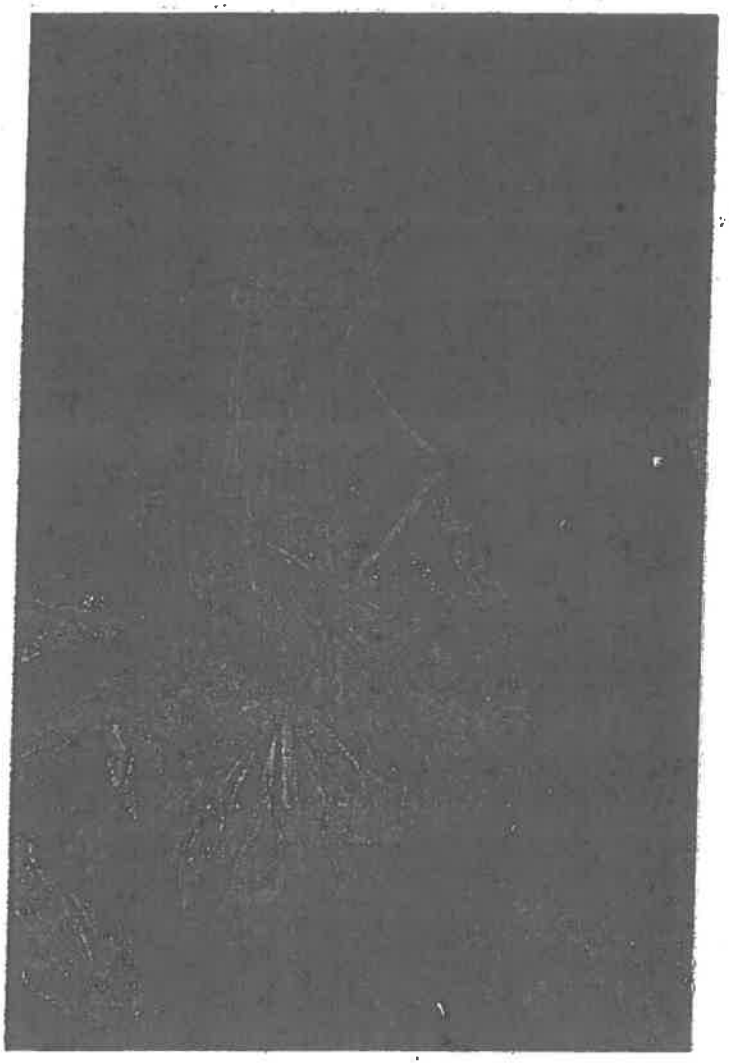
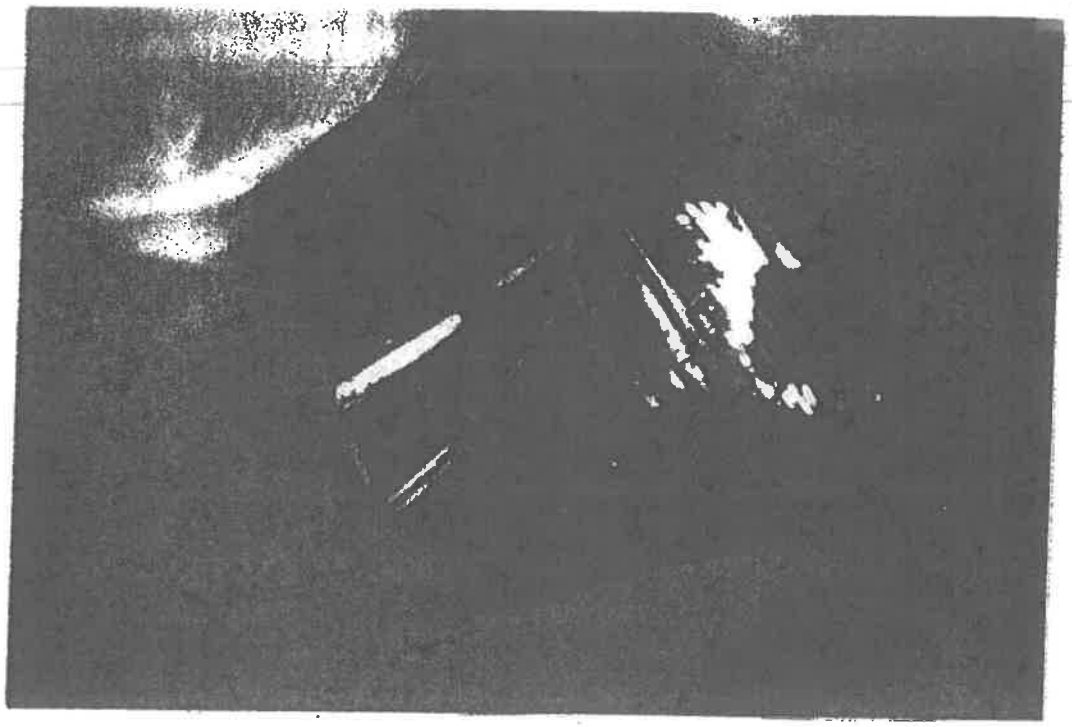


PHOTO SHOWING THE ARTIFICIAL OYSTER BED - NO LIVE OYSTERS WHERE OBSERVED THERE AT THAT LOCATION.



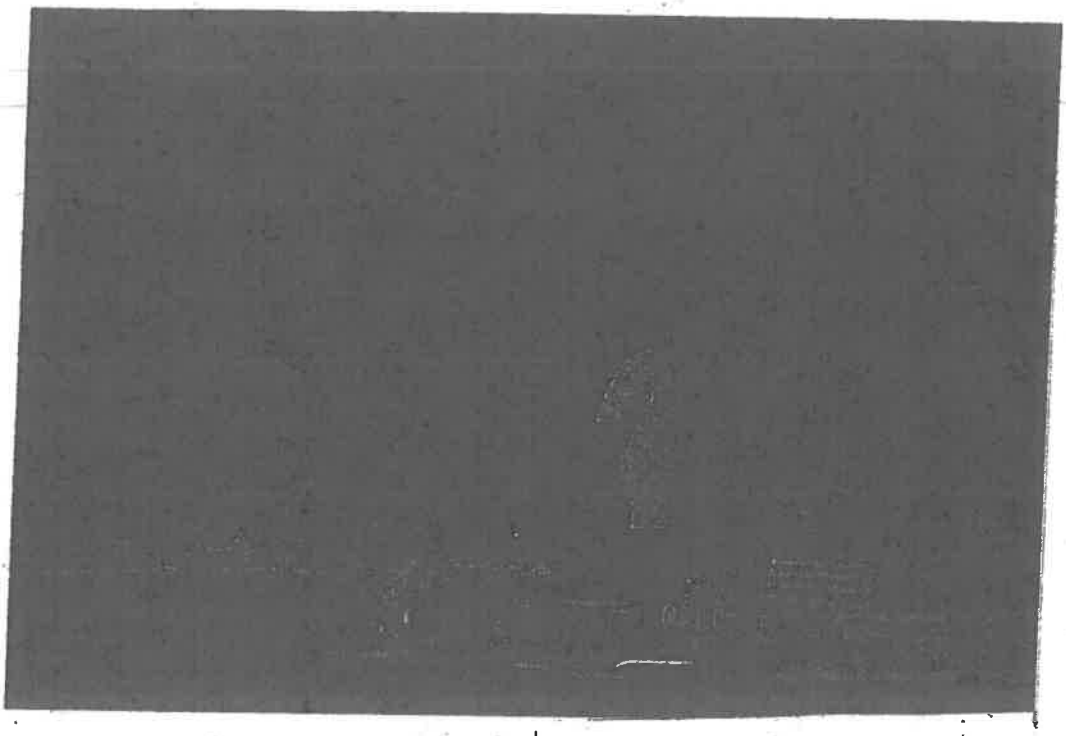
EGRET REMAINS COLLECTED FROM ELNOR ISLAND - NOTICE SKULL PARALLEL TO VERTICAL WING SECTION.



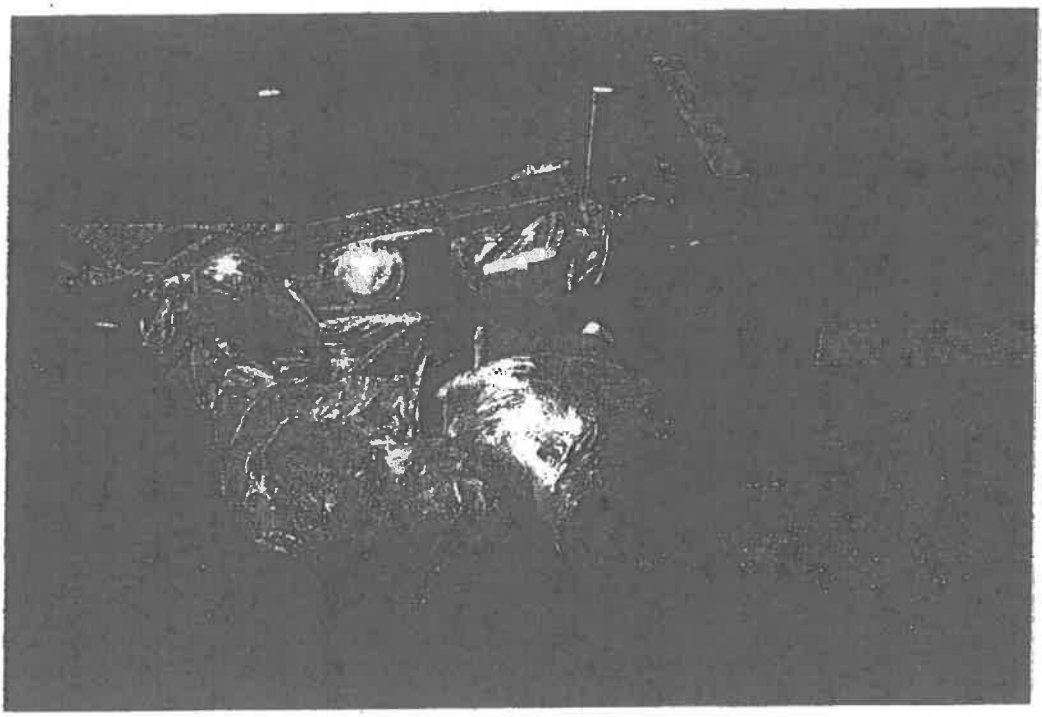
TRASH BAG CONTAINS REMAINS OF UNFORTUNATE PELICAN MOST LIKELY KILLED BY FISHING LINE ENTANGLEMENT OR FISH HOOK INJURY

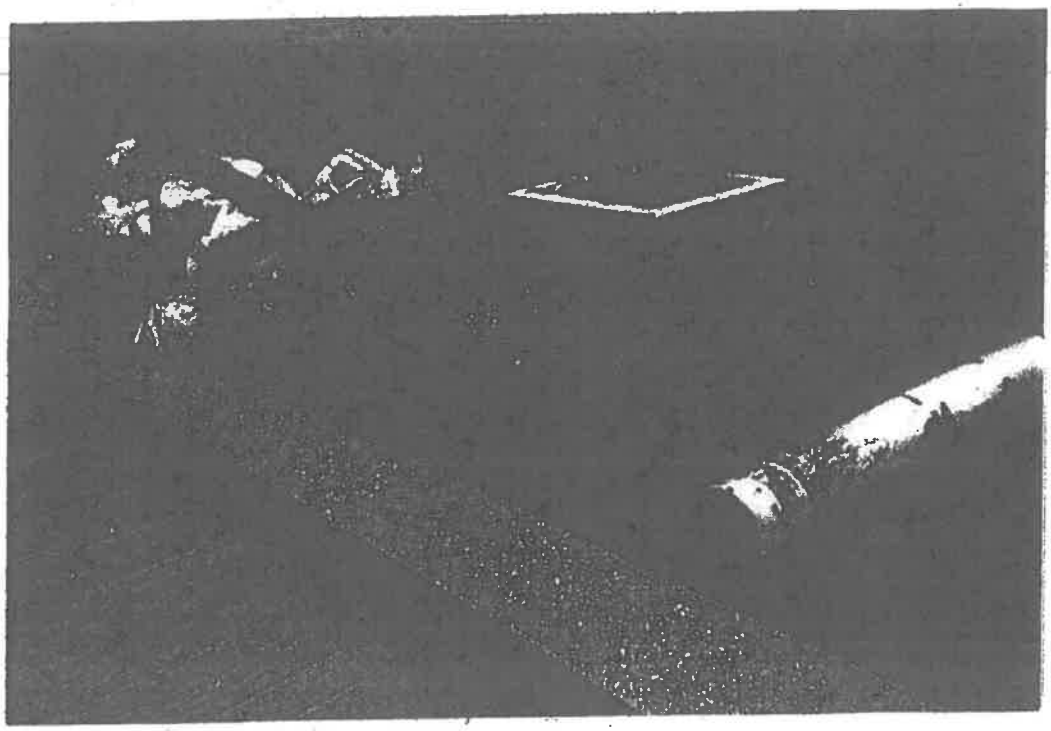
TI COMMISSIONER ELLSWORTH UNTANGLES MONOFILAMENT FISHING LINE FROM MANGROVES TO HELP SAVE SEA BIRDS FROM BECOMING ENTANGLED WITH IT .





"BOAT MEN" FRANK ALBANESE AND BUTCH ELLSWORTH WORK TO STORE LOADED TRASH BAGS ABOARD TRANSPORT BOATS.





DOCK FLOTATION BARRELS COLLECTED FROM ELNOR ISLAND ALONG WITH MUNICIPAL SWIM BUOY CLAIMED FOR TREASURE ISLAND BY COMMISSIONER ELLSWORTH.

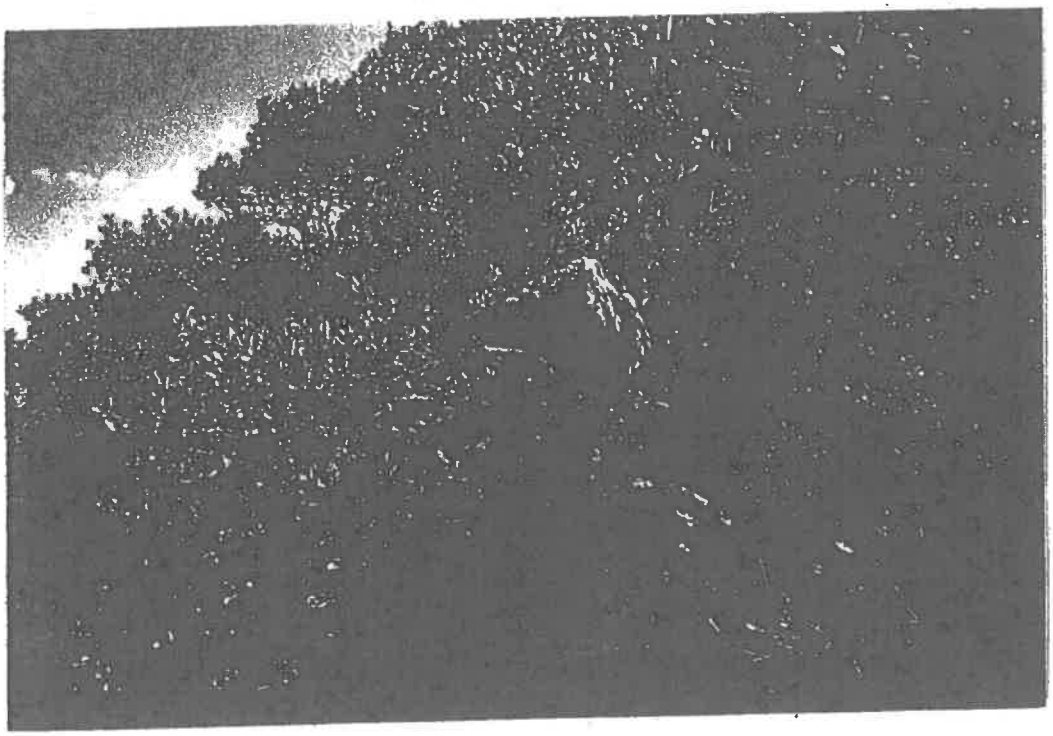
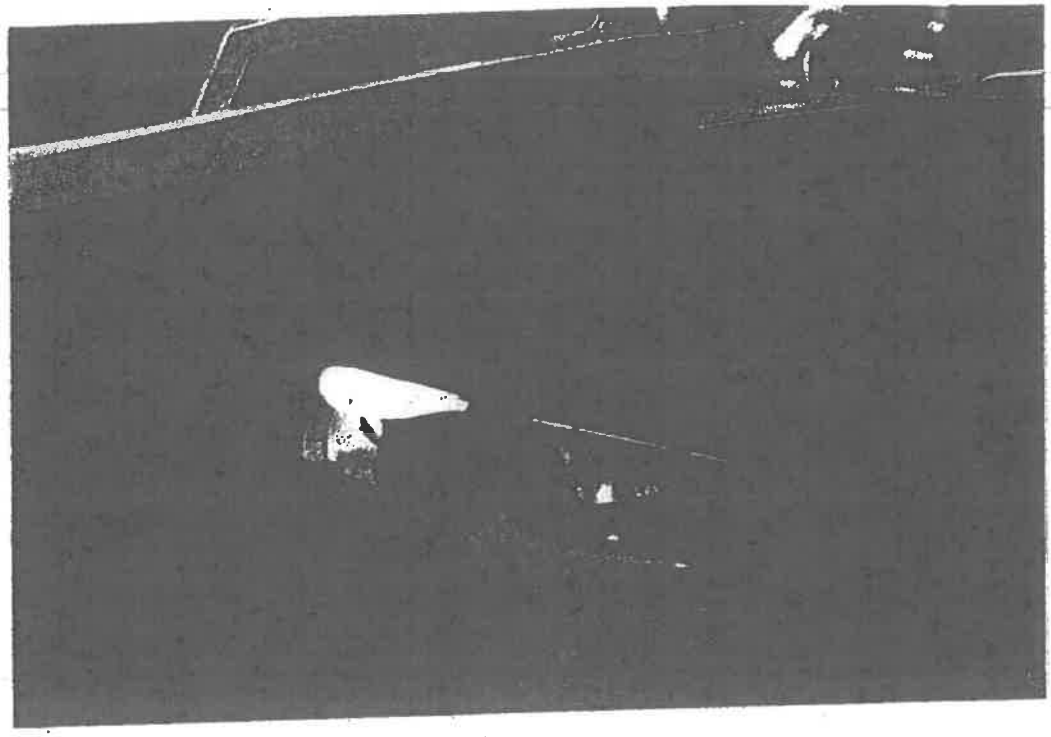


PHOTO OF ANOTHER DOCK FLOATATION BARREL FOUND ON ELNOR ISLAND.

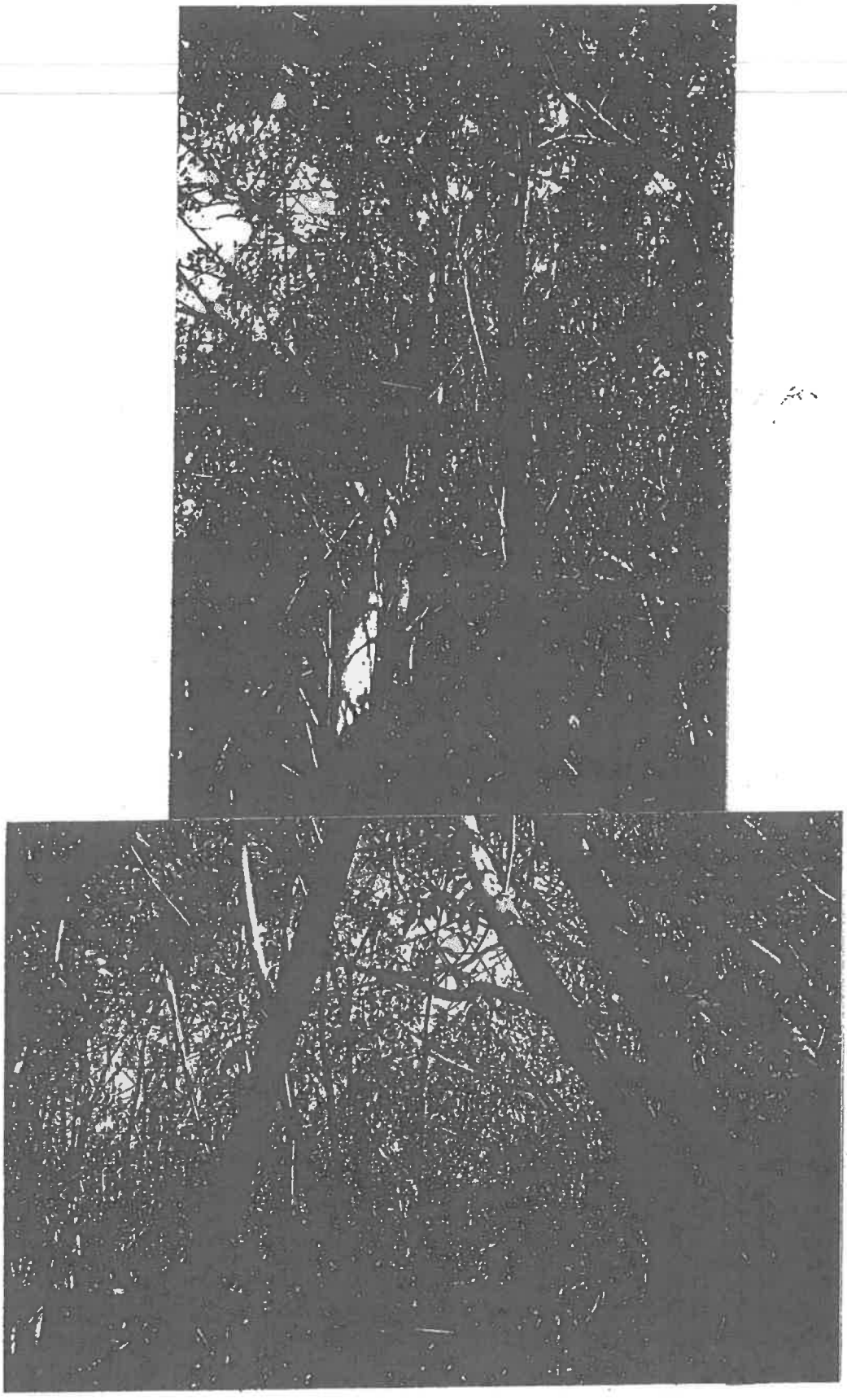




4X4 FOUNDATION POSTS CONSTRUCTION FOUND ON THE N.W. SIDE OF THE WESTERN PORTION OF ELNOR ISLAND AS SEEN AT VOLUNTEER'S LEFT SIDE.



PHOTO OF BRAZILIAN PEPPER TREES - A NON-NATIVE SPECIES



EVEN MORE BRAZILIAN PEPPER TREES IN THE CENTER AREA OF THE WESTERN PORTION OF ELNOR ISLAND.



South Pinellas Pools

Date 8/15/13

Chlorine 0

Ph 7.8

Calcium 0

Alkalinity 120

Cyanuric 0

Copper 0

Iron 0

Salt - ~~0~~ 10000+ ppm

SOUTH PINELLAS POOL SUPPLIES, INC

Elliott Island Hurricane Hole water Sample

RESOLUTION NO. 07- 49

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF TREASURE ISLAND, AWARDING A CONTRACT TO BIOLOGICAL RESEARCH ASSOCIATES FOR ERADICATION OF BRAZILIAN PEPPER TREES AND OTHER EXOTIC PLANTS ON ELNOR ISLAND.

WHEREAS, the City of Treasure Island accepted proposals from three firms for spray services to eradicate Brazilian Pepper on Elnor Island; and

WHEREAS, the City Commission has reviewed the recommendation of staff to select the firm of Biological Research Associates for its experience and qualifications both locally and throughout the State in the areas of the identification and eradication of exotic vegetation based on sound environmental considerations and implementation techniques; and

WHEREAS, the City of Treasure Island was awarded a $14,000 grant from the U.S. Fish and Wildlife Service for such identification and eradication of Brazilian Pepper on Elnor Island; and

WHEREAS, the City of Treasure Island was advised verbally on June 21, 2007 by the U. S. Fish and Wildlife Service grant project officer (Bryon Pridgeon) that the City of Treasure Island may include the identification and eradication of all exotic plant species on Elnor Island;

NOW, THEREFORE, THE CITY COMMISSION OF THE CITY OF TREASURE ISLAND DOES RESOLVE:

To award a contract to Biological Research Associates to conduct the identification and eradication of Brazilian Pepper and other exotic plants on Elnor Island which is owned by the City of Treasure Island and authorize the City Manager to finalize a contract for execution by the appropriate Officials. The maximum amount of funding available for this project is $14,000.

The foregoing Resolution was offered during the Regular Session of the City Commission of the City of Treasure Island, Florida, sitting on the 3rd day of July 2007, by Commissioner Minning who moved its adoption; was seconded by Commissioner Collins and upon roll call, the vote was:

YEAS: Commissioners Minning, Bildz, Collins, Gayton

NAYS: None

ABSENT OR ABSTAINING: None

Mary H. Maloof

Mary H. Maloof, Mayor

ATTEST:

Dawn Foss

Dawn Foss, City Clerk

Elnor Island
Oyster Bar Creation Project

Submitted by: **Tampa Bay Watch, Inc.**

I. Executive Summary

The City of Treasure Island and Tampa Bay Watch are proposing a community-based oyster creation project to install new oyster shell bars on the shoreline of Elnor Island which is owned by the city of Treasure Island (Figure 1). Creation of oyster bars is proposed to restore lost habitat ecosystems to the bay, reduce erosion along the shoreline facing the channel and improve water quality through natural biological filtration.

II. Background and Location

The City of Treasure Island owns Elnor island in northern Boca Ciega Bay (N 27°47'12.88", W 82°46'29.67") which is located just east of John's Pass (Figure 2). The mangrove covered island is home to colonial bird species such as the brown pelican, great blue heron, and white ibis.

Establishment of oyster bars along the natural shoreline will buffer the area from wave action and reverse or reduce current erosion rates. Channels to the north and south of the island converge on the west side and experience heavy boat traffic which is causing higher rates of erosion than on other parts of the island. New oyster communities will also enhance and protect local biodiversity through the creation of foraging areas for the many species of fish and birds.

III. Project Description

The goal of Tampa Bay Watch's Community Oyster Reef Enhancement (CORE) program is to increase the oyster population in Tampa Bay and at the same time, provide habitats for small organisms, prevent erosion, improve water quality and promote fish and wildlife habitats. In addition, this project benefits the Tampa Bay community by promoting



environmental awareness and offering hands-on experience in habitat restoration.

Oyster shell bars will be constructed similar to natural oyster communities found along shoreline areas throughout Tampa Bay. Fossilized oyster shell from local shell mines provide a hard surface for oyster larvae to settle upon and grow, eventually forming a natural reef. Mesh bags filled with fossilized shells will be used to create the oyster bar habitats. Each oyster shell bag is 20 inches long by eight inches in diameter and made of diamond oriented tubular mesh filled entirely with fossilized (oyster) shell. The design has been used extensively by the South Carolina Department of Natural Resources (SCDNR) to reduce movement of deployed shell for many of their oyster restoration projects. This type of mesh does not unravel and has not been shown to cause adverse affects to fish and wildlife resources.

A seagrass survey was conducted on August 27th, 2009. No oyster shell or oyster bags will be placed in seagrass areas or in any areas containing significant benthic infauna (Figure 3). Typically, natural oyster beds are located in the tidal flats ranging from +1.5 to -0.5 mean low water (MLW), which is periodically exposed and limits seagrass growth. The proposed oyster bars will be located a minimum of ten feet away from any seagrass communities.

As part of its CORE program, Tampa Bay Watch has created multiple oyster shell bars at many locations in and around Tampa Bay. The picture below depicts a one layer, three bag wide oyster bar constructed at Palonis Park, a City of Tampa Park on the eastern shore of Old Tampa Bay at the Gandy Bridge. Tampa Bay Watch has installed oyster shell bars there on several occasions; discovering that the mesh oyster bags have been successful at both sediment accretion as well as new oyster recruitment. The Palonis Park project included both shell bag bars and loose shell bars. Another successful new oyster habitat project occurred at Whiskey Stump Key, an island at the south end of Hillsborough Bay, north of TECO's Apollo Beach power plant. Whiskey Stump Key has been monitored for five years, and the sediment accretion and new oyster recruitment have proved successful for this location as well.



For Elnor Island, a total of 650 linear feet of oyster communities will be created along 395' of shoreline in the following manner:

Oyster communities created along the western shoreline of the island (Figure 4) will focus on protecting gaps in the mangroves where heavy wave action is eroding the shoreline. There are a total of eight individual units from north to south, referred to as

shell bars A through H. Cross sections of these scenarios can be found in the attached (Figure 5).

- **Shell Bar A**: A 55' bar will be constructed with one layer, four shell bags wide.
- **Shell Bar B:** A 100' bar will be constructed with one layer, four shell bags wide.
- **Shell Bar C:** An 85' bar will be constructed with one layer, four shell bags wide and will be a minimum of 10' from the waterward edge of shell bar B at it's furthest point in the arc.
- **Shell Bar D:** A 60' bar will be constructed with one layer, four shell bags wide and be a minimum of 10' from the waterward edge of shell bar C at the beginning, middle and end of its arc.
- **Shell Bar E:** A 90' bar will be built with one layer, four shell bags wide.
- **Shell Bar F:** A 110' bar will be constructed with one layer, four shell bags wide.
- **Shell Bar G:** A 110' bar will be constructed with one layer, four shell bags wide and will run parallel to shell bar F with a separation of a minimum of 10' from the waterward edge of shell bar F.
- **Shell Bar H:** A 40' bar will be constructed with one layer, four shell bags wide.

An estimated 4,400 shell bags and 70 tons of fossilized oyster shell will be used to build the proposed oyster bars. Construction is anticipated to start in the Spring of 2010 and is timed to coincide with natural oyster larval recruitment.

IV. Task Description

The project is designed to be accomplished in the following manner:

Task 1. Permitting and Interagency Coordination

Tampa Bay Watch will prepare a scope of work detailing program activities. The City of Treasure Island will submit the scope of work and request a letter of deminimus impact from the Florida Department of Environmental Protection, Pinellas County Department of Environmental Management and a letter request for a nationwide permit number will be made to the US Army Corps of Engineers.



Task 2. Solicit Volunteers

Tampa Bay Watch will begin to solicit community volunteers to accomplish the different program requirements. Volunteer solicitation will include membership newsletters, meeting notices, Web sites and media releases.

Task 3. Set Up Project Dates

Based upon receipt of the appropriate permits and consensus among project participants, the first event may be scheduled as early as March 2010 with work expected to continue into 2011.

Task 4. Arrival of Materials / Preparation



The substrate (cultch) of choice is clean washed 3" fossilized oyster shell that is mined locally and can be delivered to each oyster shell bagging site the day before or morning of the event. The event will be staged from the Jungle Prada Boat Ramp (Figure 6). Tampa Bay Watch will stake out the locations to place the oyster shell on the shoreline prior to each community event.

In addition, Tampa Bay Watch in cooperation with Crabby Bill's Restaurant in Indian Rocks Beach will recycle oysters sold at the restaurant by bagging the empty shells and using them to build the oyster bars.

Task 5. Event Coordination

Volunteers will shovel the shell into pre-cut PVC pipe "sleeved" with the mesh. The PVC form is removed; creating an oyster shell bag that is tied at both ends. These "bags" are then delivered to the site. Tampa Bay Watch staff and volunteers will transport the loose shell and bags with boats where they will be unloaded and deployed by hand. Staff from TBW will be on-site to ensure accurate placement of the oyster shell, and to minimize human impact on the sea grass beds, salt marsh habitats and any other sensitive wildlife habitat. Volunteers will be rewarded with refreshments, t-shirts and lunch as appreciation for all of their hard work.

Task 6. Follow-up Monitoring and Final Report Document



Tampa Bay Watch will monitor the newly created oyster bar units every six-months for two years for the following parameters: oyster shell migration, new oyster colonization (% coverage and live oyster size), changes in erosion patterns/sediment accretion, % survival (of new oyster growth) and wildlife usage of the new oyster communities. Tampa

Bay Watch will publish the results of the effort and distribute to program participants, permitting agencies, program sponsors and environmental organizations.

Task 7. Evaluation and future projects

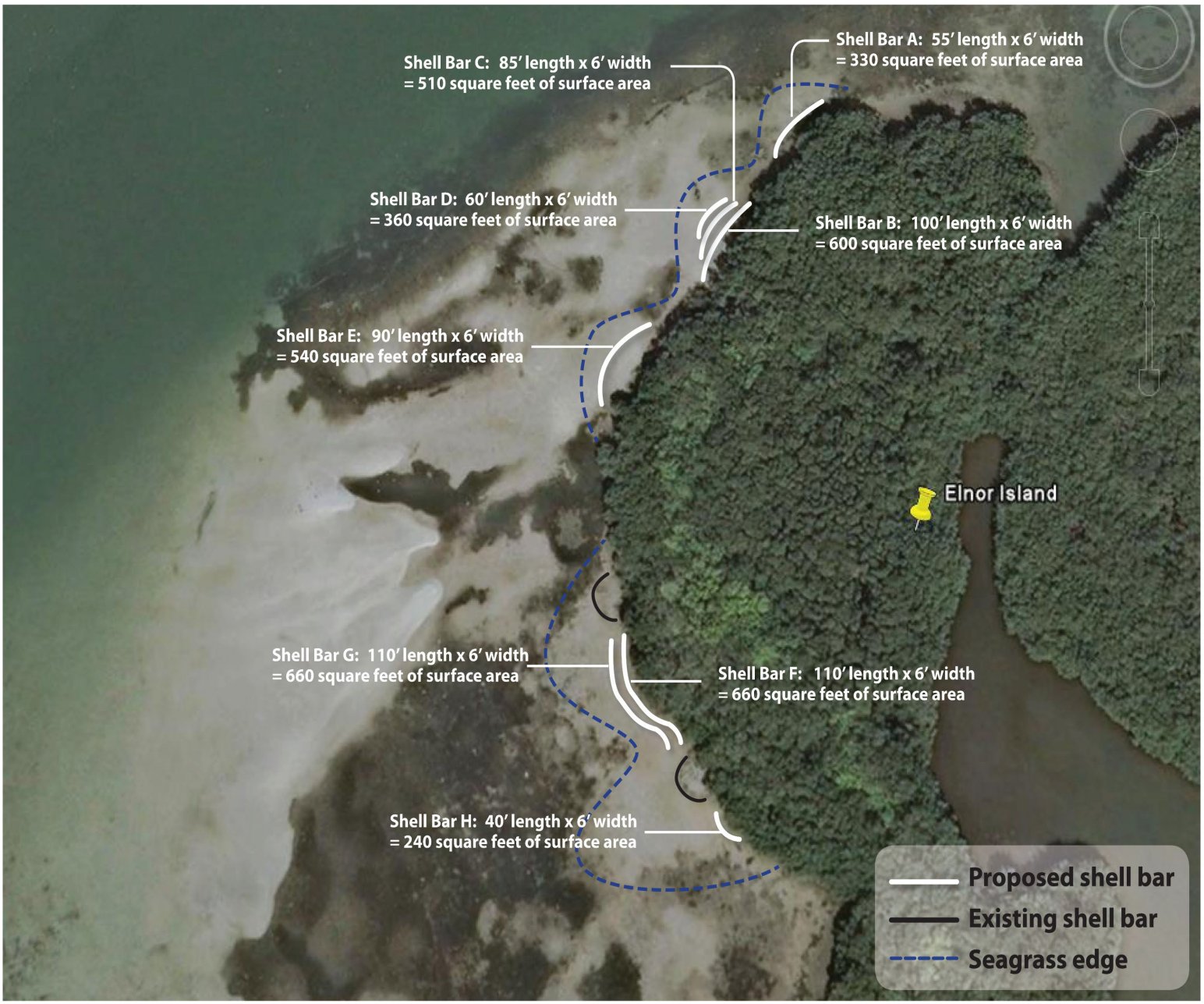
Tampa Bay Watch will evaluate construction and monitoring results in order to refine techniques and facilitate future oyster building projects in Tampa Bay.

V. Timeline



Tampa Bay Watch will begin the process of applying for permits in the summer of 2009. Volunteer coordination and equipment gathering will take place two months prior to each event. The construction of these shallow water oyster bars will be scheduled for the springs of 2010 and 2011 to coincide with natural oyster recruitment in Tampa Bay. The newly created oyster communities will be monitored every six months for a two-year period. A final report will be prepared at the end of the two-year period.

Figure 4: Existing and proposed structures



1003755767

Tampa Bay Times

Published Daily

St. Petersburg, Pinellas County, Florida

STATE OF FLORIDA
COUNTY OF Pinellas } S.S.

Before the undersigned authority personally appeared **B. Harr** who on oath says that he/she is **Legal Clerk** of the ***Tampa Bay Times*** a daily newspaper published at St. Petersburg, in Pinellas County, Florida; that the attached copy of advertisement, being a **Legal Notice** in the matter **RE: SWFWMD NOTICE - ELEANOR ISLAND SEAGRASS RESTORATION 44027197.002** was published in said newspaper in the issues of **Neighborhood Times Beaches , 6/3/2012 .**

Affiant further says the said **Tampa Bay Times** is a newspaper published at St. Petersburg, in said Pinellas County, Florida and that the said newspaper has heretofore been continuously published in said Pinellas County, Florida, each day and has been entered as second class mail matter at the post office in St. Petersburg, in said Pinellas County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement, and affiant further says that he /she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

B. Harr

Signature of Affiant

Sworn to and subscribed before me
this **5th** day of **June A.D.2012**

Joseph F. Fish

Signature of Notary Public

Personally known X or produced indentification ___

Type of indentification produced _____

JOSEPH F. FISH
MY COMMISSION #DD976007
EXPIRES: JUN 23, 2014
Bonded through 1st State Insurance

LEGAL NOTICE

NOTICE OF FINAL AGENCY ACTION BY THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Notice is given that the District's Final Agency Action is approval of the application for an Environmental Resource Permit to serve **seagrass sediment tube installation** activities on **0.08** acres known as **Mitigation at Eleanor Island – Seagrass Bed Prop Scar Restoration.** The project is located in **Pinellas** County, Section(s) **14**, Township **31** South, Range **15** East. The permit applicant is **the City of Treasure Island – Public Works** whose address is **120 108th Avenue, Treasure Island, FL 33706.** The Permit No. is **44027197.002.**

The file(s) pertaining to the project referred to above is available for inspection Monday through Friday except for legal holidays, 8:00 a.m. to 5:00 p.m., at the **Southwest Florida Water Management District, Tampa Service Office, 7601 Highway 301 North, Tampa, FL 33637-6759.**

NOTICE OF RIGHTS

Any person whose substantial interests are affected by the District's action regarding this matter may request an administrative hearing in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), and Chapter 28-106, Florida Administrative Code (F.A.C.), of the Uniform Rules of Procedure. A request for hearing must (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action, or proposed action; (2) state all material facts disputed by each person requesting the hearing or state that there are no disputed facts; and (3) otherwise comply with Chapter 28-106, F.A.C. A request for hearing must be filed with and received by the Agency Clerk of the District at the District's Brooksville address, 2379 Broad Street, Brooksville, FL 34604-6899 within 21 days of publication of this notice (or within14 days for an Environmental Resource Permit with Proprietary Authorization for the use of Sovereign Submerged Lands). Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Sections 120.569 and 120.57, F.S.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the District's final action may be different from the position taken by it in this notice of agency action. Persons whose substantial interests will be affected by any such final decision of the District in this matter have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding the District's action in this matter is not available prior to the filing of a request for hearing.

6/3/2012 755767-01

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

May 17, 2012

City of Treasure Island Public Works
Attn: Jim Murphy
120 108th Avenue
Treasure Island, FL 33706

Subject: **Consolidated Notice of Final Agency Action for Approval**
ERP General Construction Modification and Sovereignty Lands
Letter of Consent

B.O.T. File No:	N/A
SOV Record No:	40053.0
Project Name:	Mitigation at Eleanor Island - Seagrass Bed Prop Scar Restoration
App ID/Permit No:	663992 / 44027197.002
County:	PINELLAS
Sec/Twp/Rge:	S14/T31S/R15E

Dear Permittee(s):

This letter constitutes notice of Final Agency Action for **approval** of the permit referenced above. Final approval is contingent upon no objection to the District's action being received by the District within the time frames described in the enclosed Notice of Rights.

Approved construction plans are part of the permit, and construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of agency action, as well as a noticing form that can be used is available from the District's website at www.WaterMatters.org/permits/noticing.

If you publish notice of agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit.

If you have questions, please contact Robin McGill, at the Tampa Service Office, extension 2072. For assistance with environmental concerns, please contact Russell Martin, extension 2027.

Sincerely,

Michelle K. Hopkins, P.E.
Environmental Resource Permit Bureau

Enclosures: Approved Permit w/Conditions Attached
Statement of Completion
Notice of Authorization to Commence Construction
Notice of Rights

cc: U. S. Army Corps of Engineers
Florida Department of Economic Opportunity
Florida Department of State, Division of Historic Resources
Florida Fish and Wildlife Conservation Commission
Florida Department of Environmental Protection
Florida Department of Environmental Protection
Tampa Bay Regional Planning Council
Susan Durrance, URS Corporation Southern

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
CONSOLIDATED ENVIRONMENTAL RESOURCE PERMIT (ERP) AND
SOVEREIGN SUBMERGED LAND AUTHORIZATION (SL)
GENERAL CONSTRUCTION MODIFICATION
PERMIT NO. 44027197.002
AND
SOVEREIGNTY LANDS LETTER OF CONSENT

EXPIRATION DATE: May 17, 2017 **PERMIT ISSUE DATE:** May 17, 2012
SL EXPIRATION DATE:

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40D-40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

Authorization is granted to use sovereign submerged lands as outlined herein and shown by the application, approved drawings, plans, and other documents attached hereto and kept on file at the District under the provisions of Chapters 253 and 258, F.S., and Chapters 18-20 and 18-21, F.A.C.,as well as the policies of the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees). This approval does not disclaim any title interests that the Board of Trustees may have in the project site. Any subsequent authorizations by the Board of Trustees or its designated agents may contain conditions necessary to satisfy the fiduciary responsibilities of the Board of Trustees as well as other applicable statutory or rule requirements implemented by the Department of Environmental Protection's Division of State Lands or other governmental agencies authorized by Florida Statutes.

PROJECT NAME: Mitigation at Eleanor Island - Seagrass Bed Prop Scar Restoration

GRANTED TO: City of Treasure Island Public Works
Attn: Jim Murphy
120 108th Avenue
Treasure Island, FL 33706

OTHER PERMITTEES: N/A

ABSTRACT: This permit modification is for the proposed mitigation site relocation. The District issued a permit for ERP No. 43027197.000 authorizing impacts to 0.02 acre of seagrass habitat as a result of the construction of the Treasure Island Causeway Bridge. The original proposed mitigation for these impacts consisted of creating approximately 0.08 acre of suitable seagrass habitat by filling a dredge hole located approximately 700 feet northeast of the east end of the center bridge. This mitigation site subsequently failed. This proposed mitigation modification includes the installation of 0.08 acre of sediment tubes in propeller scars in Boca Ciega Bay, in the seagrass bed east of Eleanor Island. There will be no new wetland impacts with this project. Information regarding the wetlands and/or surface waters is stated below and on the permitted construction drawings for the project.

OP. & MAIN. ENTITY: City of Treasure Island Public Works

OTHER OP. & MAIN. ENTITY: N/A

COUNTY: PINELLAS

WATERBODY NAME: BOCA CIEGA BAY

AQUATIC PRESERVE: Boca Ciega Bay Aquatic Preserve

SEC/TWP/RGE:	S14/T31S/R15E
TOTAL ACRES OWNED OR UNDER CONTROL:	19.08
PROJECT SIZE:	0.08 Acres
LAND USE:	Government
DATE APPLICATION FILED:	April 10, 2012
AMENDED DATE:	N/A

I. Water Quantity/Quality

Water quality treatment and water quantity attenuation are not required.

A mixing zone is not required.
A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

Wetland/Other Surface Water Information

Wetland/Other Surface Water Comments:
There are 0.08 acre of seagrass beds (FLUCCS 911) within the project area. There are no new wetland impacts associated with the seagrass bed restoration.

In order to offset the original non-functional seagrass mitigation for the City of Treasure Island Bascule Bridge, 1,760 sediment tubes totaling 3,500 square feet (0.08 acre) will be installed in propeller scars in the 29-acre seagrass bed located east of Eleanor Island.

Mitigation Information

Name	Creation		Enhancement		Preservation		Restoration		Enhancement +Preservation		Other	
	Acres	Functional Gain	Acres	Functional Gain	Acres	unctionalGai	Acres	Functional Gain	Acres	unctionalGai	Acres	unctionalGa
Eleanor Island Seagrass	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Total:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigation Comments:
The exact location of each scar to be restored will be determined in the field at the time of the sediment tube installation. An As-Built drawing containing the sediment tube locations (with GPS coordinates) will be provided as part of the mitigation construction report after the mitigation activities have been completed.

In order to protect the seagrass bed area after restoration, the applicant proposes to install two "Caution Seagrass Area" signs near the restoration area. The signs will be placed on existing "Minimum Wake" pilings located on the south side of the seagrass bed.

IV. Sovereign Submerged Lands

Activity	Preempted Area	Dredged	Shoreline Length (Lin. Ft.)
Letter of Consent	3500	0	0
Totals:	3500	0	0

Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to the Regulation Department at the District Service Office that services this permit. The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.

3. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.

4. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Regulation Department at the District Service Office that services this permit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.

5. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.

6. WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA Eleanor Island Seagrass Bed

   Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Wetlands constructed for mitigation purposes will be considered successful and will be released from monitoring and reporting requirements when the following criteria are met continuously for a period of at least one year without intervention in the form of irrigation or the addition or removal of vegetation.

   a. The mitigation area can be reasonably expected to develop into a Seagrass bed (911) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

   b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetland/surface water type specified in criterion "a."

   c. Planted or recruited herbaceous or shrub species (or plant species providing the same function) shall meet the criteria specified:

   Zone
   Submerged

Percent Cover
50

Species
Halodule wrightii
Thalassia testudinum

d. Species composition of recruiting wetland vegetation are indicative of the wetland type specified in criterion "a."

e. Coverage by nuisance or exotic species does not exceed 5 percent at any area within the mitigation site and 5 percent for the entire mitigation site.

g. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

The mitigation area may be released from monitoring and reporting requirements and be deemed successful at any time during the monitoring period if the Permittee demonstrates that the conditions in the mitigation area have adequately replaced the wetland and surface water functions affected by the regulated activity and that the site conditions are sustainable.

7. The Permittee shall monitor and maintain the wetland mitigation area(s) until the criteria set forth in the Wetland Mitigation Success Criteria Conditions(s) above are met. The Permittee shall perform corrective actions identified by the District if the District identifies a wetland mitigation deficiency.

8. The Permittee shall undertake required maintenance activities within the wetland mitigation area(s) as needed at any time between mitigation area construction and termination of monitoring, with the exception of the final year. Maintenance shall include the manual removal of all nuisance and exotic species, with sufficient frequency that their combined coverage at no time exceeds the Wetland Mitigation Success Criteria Condition (s) above. Herbicides shall not be used without the prior written approval of the District.

9. A Wetland Mitigation Completion Report shall be submitted to the District within 30 days of completing construction and planting of the wetland mitigation area(s). Upon District inspection and approval of the mitigation area(s), the monitoring program shall be initiated with the date of the District field inspection being the construction completion date of the mitigation area(s). Monitoring events shall occur between March 1 and November 30 of each year. An Annual Wetland Monitoring Report shall be submitted upon the anniversary date of District approval to initiate monitoring.

   Annual reports shall provide documentation that a sufficient number of maintenance inspection /activities were conducted to maintain the mitigation area(s) in compliance according to the Wetland Mitigation Success Criteria Condition(s) above. Note that the performance of maintenance inspections and maintenance activities will normally need to be conducted more frequently than the collection of other monitoring data to maintain the mitigation area(s) in compliance with the Wetland Mitigation Success Criteria Condition(s) above.

   Monitoring Data shall be collected *semi-annually*.

10. Termination of monitoring for the wetland mitigation area(s) shall be coordinated with the District by:

    a. notifying the District in writing when the criteria set forth in the Wetland Mitigation Success Criteria Condition(s) have been achieved;

b. suspending all maintenance activities in the wetland mitigation area(s) including, but not limited to, irrigation and addition or removal of vegetation; and

c. submitting a monitoring report to the District one year following the written notification and suspension of maintenance activities.

Upon receipt of the monitoring report, the District will evaluate the wetland mitigation site(s) to determine if the Mitigation Success Criteria Condition(s) have been met and maintained. The District will notify the Permittee in writing of the evaluation results. The Permittee shall perform corrective actions for any portions of the wetland mitigation area(s) that fail to maintain the criteria set forth in the Wetland Mitigation Success Criteria Condition(s).

11. The construction of all wetland impacts and wetland mitigation shall be supervised by a qualified environmental scientist/specialist/consultant. The Permittee shall identify, in writing, the environmental professional retained for construction oversight prior to initial clearing and grading activities.

12. The Permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructd about the presence of manatees and manatee

b. The Permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing Manatees which are protected under the Marine Mammal Protection Act of 1972, The Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act.

c. Turbidity barriers shall be made of material in which manatees cannot become entangled , properly secured, and regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.

d. All vessels associated with the construction project shall operate at ¿no wake/idle¿ speeds at all times while in the construction area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

e. If manatee(s) are seen within 100 yards of the active construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. Any equipment closer than 50 feet of a manatee must immediately cease operation. Activities will not resume until the manatee(s) has departed the project area of its own volition.

f. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission's Hotline at 1-888-404-FWCC. Collision or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-232-2580) for north Florida or Vero Beach (1-561-562-3909) for south Florida.

g. Temporary signs concerning manatees shall be posted prior to and during all construction /dredging activities. All signs shall be removed by the permittee upon completion of the project. A sign measuring at least 3 ft. by 4 ft. which reads "Caution: Manatee Area" must be posted in a location prominently visible to water related construction crews. A second sign must be posted if vessels are associated with the construction , and must be visible to the vessel operator. The second sign must be at least 8½" by 11" which reads "Caution: Manatee Habitat. Idle speed is required if operating a vessel in the construction area. Any equipment closer than 50 feet of a manatee must immediately cease operation. Any collision or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commissions" Hotline at 1-888-404-FWCC.

13. This modification, Construction Permit No.43027197.001, amends the previously issued Construction Permit No. 43027197.000, and adds conditions. All other original permit conditions remain in effect.

14. If limestone bedrock is encountered during construction of the surface water management system, the District must be notified and construction in the affected area shall cease.

15. The Permittee shall notify the District of any sinkhole development in the surface water management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.

16. The District, upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of state water quality standards and avoid downstream impacts. Such barriers or other measures should control discharges, erosion, and sediment transport during construction and thereafter. The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed. The Permittee must provide any remedial measures that are needed.

17. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system.

18. The Permittee shall install sea grass protection area signs in the vicinity of the Eleanor Island seagrass restoration area. The signs shall be maintained in perpetuity and replaced if damaged or lost as warranted.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

PROPRIETARY GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "B" are hereby incorporated by reference and the Permittee shall comply with them.

Michelle K. Hopkins, P.E.

Authorized Signature

EXHIBIT A

GENERAL CONDITIONS:

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. For general permits authorizing incidental site activities, the following limiting general conditions shall also apply:
   a. If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit, the site must be restored by the permittee within 90 days after notification by the District. Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions. The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause. In addition, the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable, but in no case more than 7 days after notification by the District.
   b. The incidental site activities are commenced at the permittee's own risk. The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application. Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit.

4. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

5. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume dis-charged from the property or into surface waters of the state.

6. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.

10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:

    a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.

    b. Any existing septic tanks on site shall be abandoned at the beginning of construction.

    c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

11. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.

12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.

13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.

14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.

15. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.

16. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the

District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.

17. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.

18. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.

19. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.

20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.

21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.

22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.

23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.

24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.

25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

EXHIBIT B

PROPRIETARY GENERAL CONDITIONS

1. Authorizations are valid only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use shall constitute a violation. Violation of the authorization shall result in suspension or revocation of the grantee's use of the sovereignty submerged land unless cured to the satisfaction of the Board.

2. Authorizations convey no title to sovereignty submerged land or water column, nor do they constitute recognition or acknowledgment of any other person's title to such land or water.

3. Authorizations may be modified, suspended or revoked in accordance with their terms or the remedies provided in Sections 253.04 and 258.46, F.S., or Chapter 18-14, FAC.

4. Structures or activities shall be constructed and used to avoid or minimize adverse impacts to sovereignty submerged lands and resources.

5. Construction, use, or operation of the structure or activity shall not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, FAC.

6. Structures or activities shall not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity shall be modified in accordance with the court's decision.

7. Structures or activities shall not create a navigational hazard.

8. Structures shall be maintained in a functional condition and shall be repaired or removed if they become dilapidated to such an extent that they are no longer functional. This shall not be construed to prohibit the repair or replacement subject to the provisions of Rule 18-21.005, FAC., within one year, of a structure damaged in a discrete event such as a storm, flood, accident, or fire.

9. Structures or activities shall be constructed, operated, and maintained solely for water dependent purposes, or for non-water dependent activities authorized under paragraph 18-21.004 (1)(f), F.A.C., or any other applicable law.

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

NOTICE OF

AUTHORIZATION

TO COMMENCE CONSTRUCTION

Mitigation at Eleanor Island - Seagrass Bed Prop Scar Restoration
PROJECT NAME

Government
PROJECT TYPE

PINELLAS
COUNTY

S14/T31S/R15E
SEC(S)/TWP(S)/RGE(S)

City of Treasure Island Public Works
PERMITTEE

APPLICATION ID/PERMIT NO: 663992 / 44027197.002
DATE ISSUED: May 17, 2012

Michelle K. Hopkins, P.E.
Issuing Authority

THIS NOTICE SHOULD BE CONSPICUOUSLY DISPLAYED AT THE SITE OF THE WORK

Notice of Rights

ADMINISTRATIVE HEARING

1. You or any person whose substantial interests are or may be affected by the District's action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.

2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.

3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.

4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.

5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District action is not available prior to the filing of a petition for hearing.

6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28.106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.

7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy. 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 987-6746. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

JUDICIAL REVIEW

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by final District action may seek judicial review of the District's final action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.

2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.



Pinellas County and Boca Ciega Bay Aquatic Preserves

Management Plan

Florida Department of Environmental Protection
Florida Coastal Office
3900 Commonwealth Blvd., MS #235, Tallahassee, FL 32399
www.aquaticpreserves.org



A view of Boca Ciega Bay with Pinellas National Wildlife Refuge in the distance.

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November 2018

Pinellas County and Boca Ciega Bay Aquatic Preserves

Management Plan

Florida Department of Environmental Protection
Florida Coastal Office
3900 Commonwealth Blvd., MS #235, Tallahassee, FL 32399
www.aquaticpreserves.org



Working late in the field can have its benefits, like spectacular sunsets.

Mission Statement

The Florida Coastal Office's mission statement is: Conserving and restoring Florida's coastal and aquatic resources for the benefit of people and the environment.

The four long-term goals of the Florida Coastal Office's Aquatic Preserve Program are to:

1. protect and enhance the ecological integrity of the aquatic preserves;
2. restore areas to their natural condition;
3. encourage sustainable use and foster active stewardship by engaging local communities in the protection of aquatic preserves; and
4. improve management effectiveness through a process based on sound science, consistent evaluation, and continual reassessment.

Acquisition and Restoration Council Management Plan Compliance Checklist

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
Section A: Acquisition Information Items			
1	The common name of the property.	18-2.018 & 18-2.021	Ex. Sum.
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	p. 1
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	p. 1, 6-8
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	Ex. Sum & p. 12
5	A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.	18-2.018 & 18-2.021	p. 11
6	An assessment as to whether the property, or any portion, should be declared surplus. Provide Information regarding assessment and analysis in the plan, and provide corresponding map.	18-2.021	N/A
7	Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. Please clearly indicate parcels on a map.	18-2.021	N/A
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	p. 42
9	A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034 and the statutory authority for such use or uses.	259.032(10)	p. 6
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	p. 39-42
Section B: Use Items			
11	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	p. 10-12
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	p. 9-10, 26, 31-33, 36-42, 56-64, 69-71
13	A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.	18-2.018	N/A
14	A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.	18-2.018	p. 6-8, 45-72
15	Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources.	18-2.021	p. 62, App. E.2
16	Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.	18-2.021	
17	A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	259.032(10)	p. 56-62, 69-71
18	A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent "balanced public utilization," specific agency statutory authority and any other legislative or executive directives that constrain the use of such property.	18-2.021	p. 6-8
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	App. E.3
20	An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.	18-2.018 & 18-2.021	

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
21	*For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations.	18-2.021 & 253.036	N/A
22	If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.	18-021	N/A
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	
*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.			
Section C: Public Involvement Items			
24	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	App. C
25	The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	259.032(10)	N/A
26	LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.	259.032(10)	App. C
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	App. C
28	During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.	253.034(5) & 259.032(10)	App. C
29	The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. Include manager's replies to the team's findings and recommendations.	259.036	N/A
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	N/A
31	If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations.	259.036	N/A

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Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
Section D: Natural Resources			
32	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. Use brief descriptions and include USDA maps when available.	18-2.021	p. 14-15
33	Insert FNAI based natural community maps when available.	ARC consensus	p. 19, 23
34	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna and geological conditions.	18-2.021	Ex Sum
35	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns and large sinkholes.	18-2.018 & 18-2.021	p. 18-35
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	p. 13, 18-20, 30-31
37	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas and phosphate, etc.	18-2.018 & 18-2.021	p. 13-15
38	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.	18-2.018 & 18-2.021	p. 18-36, App. B.3.1
39	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.	18-2.021	p. 18-36, App. B.3.2
40	The identification or resources on the property that are listed in the Natural Areas Inventory. Include letter from FNAI or consultant where appropriate.	18-2.021	p. 18-35
41	Specific description of how the managing agency plans to identify, locate, protect and preserve or otherwise use fragile, nonrenewable natural and cultural resources.	259.032(10)	p. 18-38, 46-68, App. E.2
42	Habitat Restoration and Improvement	259.032(10) & 253.034(5)	
42-A.	Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.	259.032(10) & 253.034(5)	p. 18-38, 46-68
42-B.	Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.	259.032(10) & 253.034(5)	App. D.1
42-C.	The associated measurable objectives to achieve the goals.	259.032(10) & 253.034(5)	App. D.1
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. Include fire management plans - they can be in plan body or an appendix.	259.032(10) & 253.034(5)	App. D.1
42-E.	A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities.	259.032(10) & 253.034(5)	App. D.1
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. See footnote.	253.034(5)	Ex Sum
44	Sustainable Forest Management, including implementation of prescribed fire management	18-2.021, 253.034(5) & 259.032(10)	

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44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-C.	Measurable objectives (see requirement for #42-C).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-D.	Related activities (see requirement for #42-D).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-E.	Budgets (see requirement for #42-E).	18-2.021, 253.034(5) & 259.032(10)	N/A
45	Imperiled species, habitat maintenance, enhancement, restoration or population restoration	259.032(10) & 253.034(5)	
45-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p.18-35, 46-68
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
45-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	App. D.1
45-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
45-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. See footnote.	253.034(5)	App. B.3.3
47	Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.	BOT requirement via lease language	App. B.4
48	Exotic and invasive species maintenance and control	259.032(10) & 253.034(5)	
48-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 20-22, 36, 56-60, App. D.1
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 60, App. D.1
48-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 60, App. D.1
48-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 56-60, App. D.1
48-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section E: Water Resources			
49	A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.	18-2.018 & 18-2.021	p. 1-4

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Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
50	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C.	18-2.021	p. 1-4, 16-18
51	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes and other wetlands.	18-2.021	p. 25-27
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. See footnote.	253.034(5)	Ex. Sum
53	Hydrological Preservation and Restoration	259.032(10) & 253.034(5)	
53-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section F: Historical, Archaeological and Cultural Resources			
54	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.	18-2.018, 18-2.021 & per DHR's request	Ex. Sum, p. 36-38
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	Ex. Sum, p. 36-38
56	A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	18-2.021	p. 54, App. D.1
57	Cultural and Historical Resources	259.032(10) & 253.034(5)	
57-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 54, App. D.1
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 54, App. D.1
57-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 54, App. D.1
57-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 54, 62, App. D.1
57-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
**While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.			
Section G: Facilities (Infrastructure, Access, Recreation)			
58	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. See footnote.	253.034(5)	p. 56-62, 69-72
59	Capital Facilities and Infrastructure	259.032(10) & 253.034(5)	

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Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
59-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	p. 56-62, 69-72
61	Public Access and Recreational Opportunities	259.032(10) & 253.034(5)	
61-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	App. D.1
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
61-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	App. D.1
61-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
61-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section H: Other/ Managing Agency Tools			
62	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	Ex. Sum
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	App. D.3
64	If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.	ARC consensus	p. 46-68
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	App. D.1
66	Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, law enforcement activities.	253.034(5)	App. D.1
67	Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.	259.032(10)	N/A
68	A statement of gross income generated, net income and expenses.	18-2.018	

*** = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

Executive Summary

Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan	
Lead Agency	Florida Department of Environmental Protection's (DEP) Florida Coastal Office (FCO)
Common Name of Property	Pinellas County Aquatic Preserve and Boca Ciega Bay Aquatic Preserve
Location	Pinellas County, Florida
Acreage Total	Boca Ciega Bay Aquatic Preserve = 23,700 (included in PCAP acreage) Pinellas County Aquatic Preserve = 357,600
Acreage Breakdown According to Florida Natural Areas Inventory (FNAI) Natural Community Type	
FNAI Natural Communities	*Acreage according to GIS*
Algal Bed	unknown
Aquatic and Terrestrial Cave	unknown
Beach Dune	1403
Blackwater Stream	747
Clastic Upland Lake	2544
Coastal Berm	unknown
Coastal Grassland	72
Coastal Interdunal Swale	19
Coastal Strand	303
Consolidated Substrate	unknown
Floodplain Marsh	14
Hydric Hammock	<1
Mangrove Swamp	1768
Maritime Hammock	103
Mesic Flatwoods	173
Mesic Hammock	18
Mollusk Reef	28
Octocoral Bed	unknown
Salt Marsh	198
Seagrass Bed	33,744
Shell Mound	<1
Sponge Bed	unknown
Unconsolidated Substrate	5002
Undetermined Estuarine/Marine	302,283
Upland Mixed Woodland	145

Management Agency:	DEP's FCO
Designation:	Aquatic Preserve
Unique Features:	While the Pinellas County and Boca Ciega Bay aquatic preserves are located within one of Florida's most densely urbanized areas, the presence of vast acreages of seagrass and mangroves support productive fisheries. Pinellas County Aquatic Preserve includes submerged resources in state-owned freshwater areas, and it even includes subterranean caves and offshore hardbottom communities.
Archaeological/ Historical Sites:	More than 100 pre-Columbian archaeological sites are either within or adjacent to the aquatic preserves, including the well-known pre-Columbian assemblage at Weedon Island. Most notably, a pre-Columbian saltwater canoe has been excavated from this area. One historic shipwreck is known, but future efforts likely will identify more submerged historical and cultural resources. Because of its long history of human occupation, the area boasts 26 historic bridges and 16 resource groups.

Management Needs *(See Management Issues and Goals)*

Because of the likelihood of continued development and redevelopment, Tampa Bay Aquatic Preserves (TBAP) will continue to play an important role in the avoidance and minimization of resource impacts and to the restoration of ecosystem function in degraded areas. Island restoration will continue to be important. Efforts to better understand the nature and distribution of submerged resources will be important to identifying issues and to addressing them promptly.

Ecosystem Science	TBAP often uses data from the wealth of research and monitoring initiatives done by universities, nongovernmental organizations and governmental agencies. TBAP often plays an active role in the experimental design of these studies, and, when needed, TBAP has done research and monitoring to address information gaps.
Resource Management	Because of the large geographic area of the aquatic preserves, TBAP partners with local entities through their operating area to identify and address local issues. In recent years, the program has focused considerable attention on enhancing island habitats by removing invasive plants and establishing native communities.
Education and Outreach	TBAP does not operate educational facilities, but partners with others who do. TBAP's focus is on site-specific information to enhance appreciation for, and stewardship of, the resources. Information is often in kiosk panels, at event exhibits and on social media.
Public Use	TBAP maintains some public use amenities, like picnic tables on some islands. TBAP partners with operators of access points to provide information, and sometimes advises sites on amenities like kayak launch locations.
Public Involvement:	Public support is vital to the success of conservation programs. The goal is to foster understanding of the problems facing these fragile ecosystems and the steps needed to adequately manage this important habitat. Pinellas County and Boca Ciega Bay Aquatic Preserve staff held public and advisory committee meetings on September 18 & 19, 2018 at Tampa Bay Regional Planning Council in Pinellas Park, Florida to receive input on the draft management plan. An additional public meeting will be held in Tallahassee when the Acquisition and Restoration Council reviews the management plan.

FCO/Trustees Approval

FCO Approval: **ARC approval:** **Trustees approval:**

Comments:

Acronym List

Abbreviation	Meaning
BCBAP	Boca Ciega Bay Aquatic Preserve
CSO	Citizen Support Organization
DEP	Florida Department of Environmental Protection
ES	Environmental Specialist
F.A.C.	Florida Administrative Code
FCO	Florida Coastal Office
FNAI	Florida Natural Areas Inventory
F.S.	Florida Statutes
G	Global
GIS	Geographic information system
MANRRS	Multicultural Students in Agriculture, Natural Resources, and Related Sciences
NERR	National Estuarine Research Reserve
NOAA	National Oceanic and Atmospheric Administration
OFW	Outstanding Florida Water
OPS	Other Personal Services
PCAP	Pinellas County Aquatic Preserve
S	State
SWFWMD	Southwest Florida Water Management District
SWIM	Surface Water Improvement and Management
TBAP	Tampa Bay Aquatic Preserves
Trustees	Board of Trustees of the Internal Improvement Trust Fund
USFWS	U.S. Fish and Wildlife Service

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Pinellas County's highly urbanized barrier islands are contrasted by beautiful white beaches which bring many tourists to the region.

Part One

Basis for Management

Chapter One

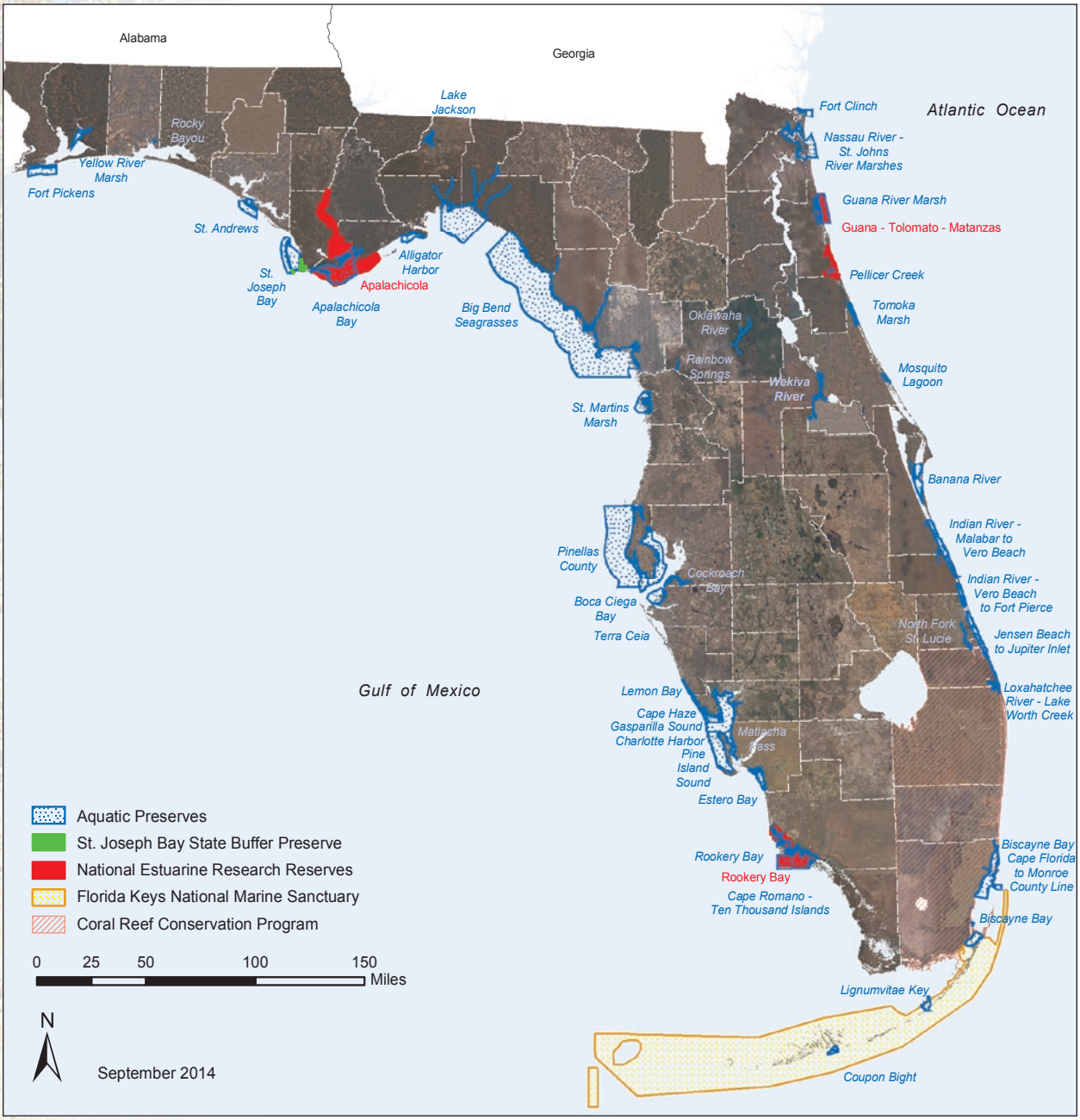
Introduction

The Florida aquatic preserves are administered on behalf of the state by the Florida Department of Environmental Protection's (DEP) Florida Coastal Office (FCO) as part of a network that includes 41 aquatic preserves, three National Estuarine Research Reserves (NERRs), a National Marine Sanctuary, Coral Reef Conservation Program, Florida Coastal Management Program, Outer Continental Shelf Program, the Clean Boating Program, and the Florida Resilient Coastlines Program (Map 1). This provides for a system of significant protections to ensure that our most popular and ecologically important underwater ecosystems are cared for in perpetuity. Each of these special places is managed with strategies based on local resources, issues and conditions.

Our extensive coastline and wealth of aquatic resources have defined Florida as a subtropical oasis, attracting millions of residents and visitors, and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality, hosting a diversity of wildlife and habitats (including economically and ecologically valuable nursery areas), and supporting a treasured quality of life for all. In the 1960s, it became apparent that the ecosystems that had attracted so many people to Florida could not support rapid growth without science-based resource protection and management. To this end, state legislators provided extra protection for certain exceptional aquatic areas by designating them as aquatic preserves.

Title to submerged lands not conveyed to private landowners is held by the Board of Trustees of the Internal Improvement Trust Fund (the Trustees). The Governor and Cabinet, sitting as the Trustees, act as guardians for the people of the state of Florida (§253.03, Florida Statutes [F.S.]) and regulate the use of these public lands. Through statute, the Trustees have the authority to adopt rules related to the management of sovereignty submerged lands (Florida Aquatic Preserve Act of 1975, §258.36, F.S.). A higher layer of protection is afforded to aquatic preserves including areas of sovereignty lands that have been "set aside forever as aquatic preserves or sanctuaries for the benefit of future generations" due to "exceptional biological, aesthetic, and scientific value" (Florida Aquatic Preserve Act of 1975, §258.36, F.S.).

The tradition of concern and protection of these exceptional areas continues, and now includes: the Rookery Bay NERR in Southwest Florida, designated in 1978; the Apalachicola NERR in Northwest Florida, designated in 1979; and the Guana Tolomato Matanzas NERR in Northeast Florida, designated in 1999. In addition, the Florida Oceans and Coastal Council was created in 2005 to develop Florida's ocean and coastal research priorities, and establish a statewide ocean research plan. The group also coordinates public and private ocean research for more effective coastal management. This dedication to the conservation of coastal and ocean resources is an investment in Florida's future.



2 *Map 1 / Florida Coastal Office system.*

1.1 / ***Management Plan Purpose and Scope***

Florida's aquatic resources are at risk for both direct and indirect impacts of increasing development and recreational use, as well as resulting economic pressures, such as energy generation and increased fish and shellfish harvesting to serve and support the growing population. These potential impacts to resources can reduce the health and viability of the ecosystems that contain them, requiring active management to ensure the long-term health of the entire network. Effective management plans for the aquatic preserves are essential to address this goal and each site's own set of unique challenges. The purpose of these plans is to incorporate, evaluate, and prioritize all relevant information about the site into a cohesive management strategy, allowing for appropriate access to the managed areas while protecting the long-term health of the ecosystems and their resources.

The mandate for developing aquatic preserve management plans is outlined in Section 18-20.013 and Subsection 18-18.013(2) of the Florida Administrative Code (F.A.C.). Management plan development and review begins with the collection of resource information from historical data, research and monitoring, and includes input from individual FCO managers and staff, area stakeholders, and members of the general public. The statistical data, public comment, and cooperating agency information is then used to identify management issues and threats affecting the present and future integrity of the site, its boundaries, and adjacent areas. The information is used in the development and review of the management plan, which is examined for consistency with the statutory authority and intent of the Aquatic Preserve Program. Each management plan is evaluated periodically and revised as necessary to allow for strategic improvements. Intended to be used by site managers and other agencies or private groups involved with maintaining the natural integrity of these resources, the plan includes scientific information about the existing conditions of the site and the management strategies developed to respond to those conditions.

To aid in the analysis and development of the management strategies for the site plans, the FCO identified four comprehensive management programs applicable to all aquatic preserves. To address the goals, objectives, integrated strategies and performance measures of the four programs, relevant information about the specific site has been collected, analyzed, and compiled to provide a foundation for development of the management plan. While it is expected that unique issues may arise with regard to resource or management needs of a particular site, the following management programs will remain constant across the resource protection network:

- Ecosystem Science
- Resource Management
- Education and Outreach
- Public Use

Each aquatic preserve management plan will identify unique local and regional issues and contain the goals, objectives, integrated strategies, and performance measures to address those issues. The plan will also identify the program and facility needs required to meet the goals, objectives, and strategies of the management plan. These components are key elements for achieving the resource protection mission of each aquatic preserve.

While Tampa Bay Aquatic Preserves developed a Pinellas Islands Management Plan in 2002, and has participated in county plans for specific publicly-owned areas like Shell Key Preserve, this will be the first formally-adopted management plan for the Pinellas County and Boca Ciega Bay aquatic preserves.

1.2 / ***Public Involvement***

FCO recognizes the importance of stakeholder participation and encourages their involvement in the management plan development process. FCO is also committed to meeting the requirements of Florida's Government-in-the-Sunshine Law (§286.011, F.S.), including:

- meetings of public boards or commissions must be open to the public;
- reasonable notice of such meetings must be given; and
- minutes of the meetings must be recorded.

Several key steps are to be taken during management plan development. First, staff compose a draft plan after gathering information of current and historic uses; resource, cultural and historic sites; and other valuable information regarding the property and surrounding area. Staff then organize an advisory committee comprised of key stakeholders, and conduct, in conjunction with the advisory committee, public meetings to engage the stakeholders for feedback on the draft plan and the development of the final draft of the management plan. Additional public meetings are held when the plan is reviewed by the Acquisition and Restoration Council and the Trustees for approval. For additional information about the advisory committee and the public meetings refer to Appendix C - Public Involvement.



Relaxing by Boca Ciega Bay at sunset.

Chapter Two

The Florida Department of Environmental Protection's Florida Coastal Office

2.1 / ***Introduction***

The Florida Department of Environmental Protection (DEP) protects, conserves and manages Florida's natural resources and enforces the state's environmental laws. DEP is the lead agency in state government for environmental management and stewardship and commands one of the broadest charges of all the state agencies, protecting Florida's air, water and land. DEP is divided into three primary areas: Regulatory Programs, Land and Recreation, and Ecosystem Restoration. Florida's environmental priorities include restoring America's Everglades; improving air quality; restoring and protecting the water quality in our springs, lakes, rivers and coastal waters; conserving environmentally-sensitive lands; and providing citizens and visitors with recreational opportunities, now and in the future.

The Florida Coastal Office (FCO) is the unit within the DEP that manages more than four million acres of submerged lands and select coastal uplands. This includes 41 aquatic preserves, three National Estuarine Research Reserves (NERRs), the Florida Keys National Marine Sanctuary as well as providing management support through the Florida Coastal Management Program, the Outer Continental Shelf Program, the Coral Reef Conservation Program, the Clean Boating Program, and the Florida Resilient Coastlines Program. The three NERRs, the Florida Keys National Marine Sanctuary, and the Coral Reef Conservation Program are managed in cooperation with the National Oceanic and Atmospheric Administration (NOAA).

FCO manages sites in Florida for the conservation and protection of natural and historical resources and resource-based public use that is compatible with the conservation and protection of these lands. FCO is a strong supporter of the NERR system and its approach to coastal ecosystem management. Florida has three designated NERR sites, each encompassing at least one aquatic preserve within its boundaries.

Rookery Bay NERR includes Rookery Bay Aquatic Preserve and Cape Romano - Ten Thousand Islands Aquatic Preserve; Apalachicola NERR includes Apalachicola Bay Aquatic Preserve; and Guana Tolomato Matanzas NERR includes Guana River Marsh Aquatic Preserve and Pellicer Creek Aquatic Preserve. These aquatic preserves provide discrete areas designated for additional protection beyond that of the surrounding NERR and may afford a foundation for additional protective zoning in the future. Each of the Florida NERR managers serves as a regional manager overseeing multiple other aquatic preserves in their region. This management structure advances FCO's ability to manage its sites as part of the larger statewide system.

2.2 / ***Management Authority***

Established by law, aquatic preserves are exceptional areas of submerged lands and associated waters that are to be maintained in their natural or existing conditions. The intent was to forever set aside submerged lands with exceptional biological, aesthetic, and scientific values as sanctuaries, called aquatic preserves, for the benefit of future generations.

The laws supporting aquatic preserve management are the direct result of the public's awareness of and interest in protecting Florida's aquatic environment. The extensive dredge and fill activities that occurred in the late 1960s spawned this widespread public concern. In 1966, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) created the first offshore reserve, Estero Bay, in Lee County.

In 1967, the Florida Legislature passed the Randall Act (Chapter 67-393, Laws of Florida), which established procedures regulating previously unrestricted dredge and fill activities on state-owned submerged lands. That same year, the Legislature provided the statutory authority (§253.03, Florida Statutes [F.S.]) for the Trustees to exercise proprietary control over state-owned lands. Also in 1967, government focus on protecting Florida's productive water bodies from degradation due to development led the Trustees to establish a moratorium on the sale of submerged lands to private interests. An Interagency Advisory Committee was created to develop strategies for the protection and management of state-owned submerged lands.

In 1968, the Florida Constitution was revised to declare in Article II, Section 7, the state's policy of conserving and protecting natural resources and areas of scenic beauty. That constitutional provision also established the authority for the Legislature to enact measures for the abatement of air and water pollution. Later that same year, the Interagency Advisory Committee issued a report recommending the establishment of 26 aquatic preserves.

The Trustees acted on this recommendation in 1969 by establishing 16 aquatic preserves and adopting a resolution for a statewide system of such preserves. In 1975, the state Legislature passed the Florida Aquatic Preserve Act of 1975 (Act) that was enacted as Chapter 75-172, Laws of Florida, and later became Chapter 258, Part II, F.S. This Act codified the already existing aquatic preserves and established standards and criteria for activities within those aquatic preserves. Additional aquatic preserves were individually adopted at subsequent times up through 1989.

In 1980, the Trustees adopted the first aquatic preserve rule, Chapter 18-18, Florida Administrative Code (F.A.C.), for the administration of the Biscayne Bay Aquatic Preserve. All other aquatic preserves are administered under Chapter 18-20, F.A.C., which was originally adopted in 1981. These rules apply standards and criteria for activities in the aquatic preserves, such as dredging, filling, building docks and other structures that are stricter than those of Chapter 18-21, F.A.C., which apply to all sovereignty lands in the state.

This plan is in compliance with the Conceptual State Lands Management Plan, adopted March 17, 1981 by the Board of Trustees of the Internal Improvement Trust Fund and represents balanced public utilization, specific agency statutory authority, and other legislative or executive constraints. The Conceptual State Lands Management Plan also provides essential guidance concerning the management of sovereignty lands and aquatic preserves and their important resources, including unique natural features, seagrasses, endangered species, and archaeological and historical resources.

Through delegation of authority from the Trustees, the DEP and FCO have proprietary authority to manage the sovereignty lands, the water column, spoil islands (which are merely deposits of sovereignty lands), and some of the natural islands and select coastal uplands to which the Trustees hold title.

Enforcement of state statutes and rules relating to criminal violations and non-criminal infractions rests with the Florida Fish and Wildlife Conservation Commission (FWC) law enforcement and local law enforcement agencies. Enforcement of administrative remedies rests with FCO, the DEP Districts, and Water Management Districts.

2.3 / *Statutory Authority*

The fundamental laws providing management authority for the aquatic preserves are contained in Chapters 258 and 253, F.S. These statutes establish the proprietary role of the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, as Trustees over all sovereignty lands. In addition, these statutes empower the Trustees to adopt and enforce rules and regulations for managing all sovereignty lands, including aquatic preserves. The Florida Aquatic Preserve Act was enacted by the Florida Legislature in 1975 and is codified in Chapter 258, F.S.

The legislative intent for establishing aquatic preserves is stated in Section 258.36, F.S.: "It is the intent of the Legislature that the state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value, as hereinafter described, be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations." This statement, along with the other applicable laws, provides a foundation for the management of aquatic preserves. Management will emphasize the preservation of natural conditions and will include lands that are statutorily authorized for inclusion as part of an aquatic preserve.

Management responsibilities for aquatic preserves may be fulfilled directly by the Trustees or by staff of the DEP through delegation of authority. Other governmental bodies may also participate in the management of aquatic preserves under appropriate instruments of authority issued by the Trustees. FCO staff serves as the primary managers who implement provisions of the management plans and rules applicable to the aquatic preserves. FCO does not "regulate" the lands per se; rather, that is done primarily by the DEP Districts (in addition to the Water Management Districts) which grant regulatory permits. The Florida Department of Agriculture and Consumer Services through delegated authority from the Trustees, may issue proprietary authorizations for marine aquaculture within the aquatic preserves and regulates all aquaculture activities as authorized by Chapter 597, Florida Aquaculture Policy Act, F.S. Staff evaluates proposed uses or activities in the aquatic preserve and assesses the possible impacts on the natural resources. Project reviews are primarily evaluated in accordance with the criteria in the Act, Chapter 18-20, F.A.C., and this management plan.

Comments of FCO staff, along with comments of other agencies and the public are submitted to the appropriate permitting staff for consideration in their issuance of any delegated authorizations in aquatic preserves or in developing recommendations to be presented to the Trustees. This mechanism provides a basis for the Trustees to evaluate public interest and the merits of any project while also considering potential environmental impacts to the aquatic preserves. Any activity located on sovereignty lands requires a letter of consent, a lease, an easement, or other approval from the Trustees.

Florida Statutes that authorize and empower non-FCO programs within DEP or other agencies may also be important to the management of FCO sites. For example, Chapter 403, F.S., authorizes DEP to adopt rules concerning the designation of "Outstanding Florida Waters" (OFWs), a program that provides aquatic preserves with additional regulatory protection. Chapter 379, F.S., regulates saltwater fisheries, and provides enforcement authority and powers for law enforcement officers. Additionally, it provides similar powers relating to wildlife conservation and management. The sheer number of statutes that affect aquatic preserve management prevents an exhaustive list of all such laws from being provided here.

2.4 / *Administrative Rules*

Chapters 18-18, 18-20 and 18-21, F.A.C., are the three administrative rules directly applicable to the uses allowed in aquatic preserves specifically and sovereignty lands generally. These rules are intended to be cumulative, meaning that Chapter 18-21 should be read together with Chapter 18-18 or Chapter 18-20 to determine what activities are permissible within an aquatic preserve. If Chapter 18-18 or Chapter 18-20 are silent on an issue, Chapter 18-21 will control; if a conflict is perceived between the rules, the stricter standards of Chapter 18-18 or Chapter 18-20 supersede those of Chapter 18-21. Because Chapter 18-21 concerns all sovereignty lands, it is logical to discuss its provisions first.

Originally codified in 1982, Chapter 18-21, F.A.C., is meant "to aid in fulfilling the trust and fiduciary responsibilities of the Board of Trustees of the Internal Improvement Trust Fund for the administration, management and disposition of sovereignty lands; to insure maximum benefit and use of sovereignty lands for all the citizens of Florida; to manage, protect and enhance sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing and swimming; to manage and provide maximum protection for all sovereignty lands, especially those important to public drinking water supply, shellfish harvesting, public recreation, and fish and wildlife propagation and management; to insure that all public and private activities on sovereignty lands which generate

revenues or exclude traditional public uses provide just compensation for such privileges; and to aid in the implementation of the State Lands Management Plan."

To that end, Chapter 18-21, F.A.C., contains provisions on general management policies, forms of authorization for activities on sovereignty lands, and fees applicable for those activities. In the context of the rule, the term "activity" includes "construction of docks, piers, boat ramps, boardwalks, mooring pilings, dredging of channels, filling, removal of logs, sand, silt, clay, gravel or shell, and the removal or planting of vegetation" (Rule 18-21.003, F.A.C.). In addition, activities on sovereignty submerged lands must be not contrary to the public interest (Rule 18-21.004, F.A.C.). Chapter 18-21 also sets policies on aquaculture, geophysical testing (using gravity, shock wave and other geological techniques to obtain data on oil, gas or other mineral resources), and special events related to boat shows and boat displays. Of particular importance to FCO site management, the rule also addresses spoil islands, preventing their development in most cases.

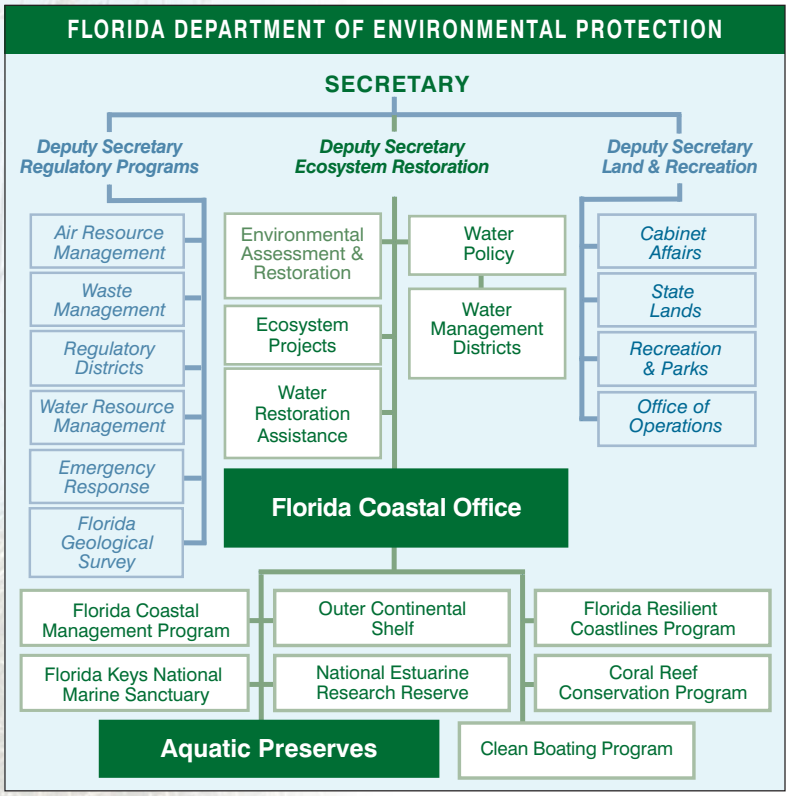


Figure 1 / State management structure.

Chapters 18-18 and 18-20, F.A.C., apply standards and criteria for activities in the aquatic preserves that are stricter than those of Chapter 18-21. Chapter 18-18 is specific to the Biscayne Bay Aquatic Preserve and is more extensively described in that site's management plan. Chapter 18-20 is applicable to all other aquatic preserves. It further restricts the type of activities for which authorizations may be granted for use of sovereignty lands and requires that structures that are authorized be limited to those necessary to conduct water dependent activities. Moreover, for certain activities to be authorized, "it must be demonstrated that no other reasonable alternative exists which would allow the proposed activity to be constructed or undertaken outside the preserve" (Paragraph 18-20.004(1)(g), F.A.C.).

Chapter 18-20, F.A.C., expands on the definition of "public interest" by outlining a balancing test that is to be used to determine whether benefits exceed costs in the evaluation of requests for sale, lease, or transfer of interest of sovereignty lands within an aquatic preserve. The rule also provides for the analysis of the cumulative impacts of a request in the context of prior, existing, and pending uses within the aquatic preserve, including both direct and indirect effects. The rule directs management plans and resource inventories to be developed for every aquatic preserve. Further, the rule provides provisions specific to certain aquatic preserves and indicates the means by which the Trustees can establish new or expand existing aquatic preserves.

Aquatic preserve management relies on the application of many other DEP and outside agency rules. Perhaps most notably, Chapter 62-302, F.A.C., concerns the classification of surface waters, including criteria for OFW, a designation that provides for the state's highest level of protection for water quality. All aquatic preserves contain OFW designations. No activity may be permitted within an OFW that degrades ambient water quality unless the activity is determined to be in the public interest. Once again, the list of other administrative rules that do not directly address FCO's responsibilities but do affect FCO-managed areas is so long as to be impractical to create within the context of this management plan.



The aquatic preserves preserve wildlife habitat in an urban landscape.

Chapter Three

Pinellas County and Boca Ciega Bay Aquatic Preserves

3.1 / ***Historical Background***

The first inhabitants of Pinellas County date back as early as the Middle Archaic Period, 5000-3000 B.C. (Pinellas County Planning Department, 2008). These pre-Columbian populations lived in isolated villages along the coast, supported by marine resources and freshwater springs. The Weedon Island culture, named so for the sophisticated artifacts extracted from the location, created the first permanent settlements known in the area between 500 B.C.-800 A.D. (Smith, Sullivan, & Reed, 2008). The Tocobaga Indians, otherwise known as the Safety Harbor culture, inhabited the northern region of the county along the coast of Tampa Bay. They created a highly organized culture based on chieftains, ceremonies and burials. There are many archaeological sites and middens that date to 1000 A.D., when the Indians were thought to be at their peak of civilization (Pinellas County Planning Department, 2008).

Pánfilo de Narvaez was the first Spanish explorer to arrive along the Pinellas peninsula in 1528. The native Indian populations declined as they were introduced to new diseases and attacked by the Spanish settlers, who were looking for treasure. In 1539, Hernando de Soto landed along the county's coasts and explored much of Tampa Bay searching for gold. Neither explorer found any such treasure, and both perished shortly after they arrived. Permanent European settlements were not established until the 1800s due to the constant conflict with the natives. The only lasting influence from that period resides in the name "Pinellas" which came from the Spanish phrase punta pinal, or point of pines (Pinellas County Planning Department, 2008). The Spanish lost control of Florida to the British in 1763 during the Seven Years War but took over again after the Revolutionary War in 1783 (Smith, Sullivan, & Reed, 2008). During this time, other indigenous groups moved to the area and became known as the Seminole Indians.

In many ways, the history of Tampa Bay's aquatic preserves reflects the history of similar trends on a statewide and national level. The Boca Ciega Bay Aquatic Preserve (BCBAP) and Pinellas County Aquatic Preserve (PCAP) were established in response to concerns about the extensive coastal

development of Tampa Bay in the first half of the 1900s. Early settlers had been attracted to some of the state's most productive and attractive coastal areas, and by the 1960s concern about the impacts of unchecked dredge-and-fill was widespread. The Riparian Act of 1856 had given landowners adjacent to the state's submerged lands the right to claim ownership of those lands through activities like dredging, filling and building docks. The Riparian Act remained in effect until 1957 (MacGrady, 1973). Similar riparian rights also were conveyed by the Butler Act of 1921. As a result, impacts to coastal habitats went largely unchecked for decades.

The Bulkhead Act of 1957 was an early attempt to limit dredge-and-fill activities. Unfortunately, a great deal of latitude in setting "bulkhead lines," seaward of which, dredge and fill activities were prohibited, provided a major loophole in that legislation. Local municipalities set their bulkhead lines far from shore. The Florida Legislature eventually conveyed ownership of any submerged lands that were not already privately owned to the state and established the Board of Trustees of the Internal Improvement Trust Fund, consisting of the governor and cabinet, to oversee them (MacGrady, 1973).

By the late 1960s, there was considerable concern about protecting remaining coastal resources in Pinellas County. In 1969, the Florida Legislature established BCBAP. By 1972, legislation was passed to protect the submerged lands of the remainder of the county as PCAP. The Aquatic Preserve Act of 1975 and subsequent legislative actions brought more aquatic preserves on board around the state.

*3.2 / **General Description***

International/National/State/Regional Significance

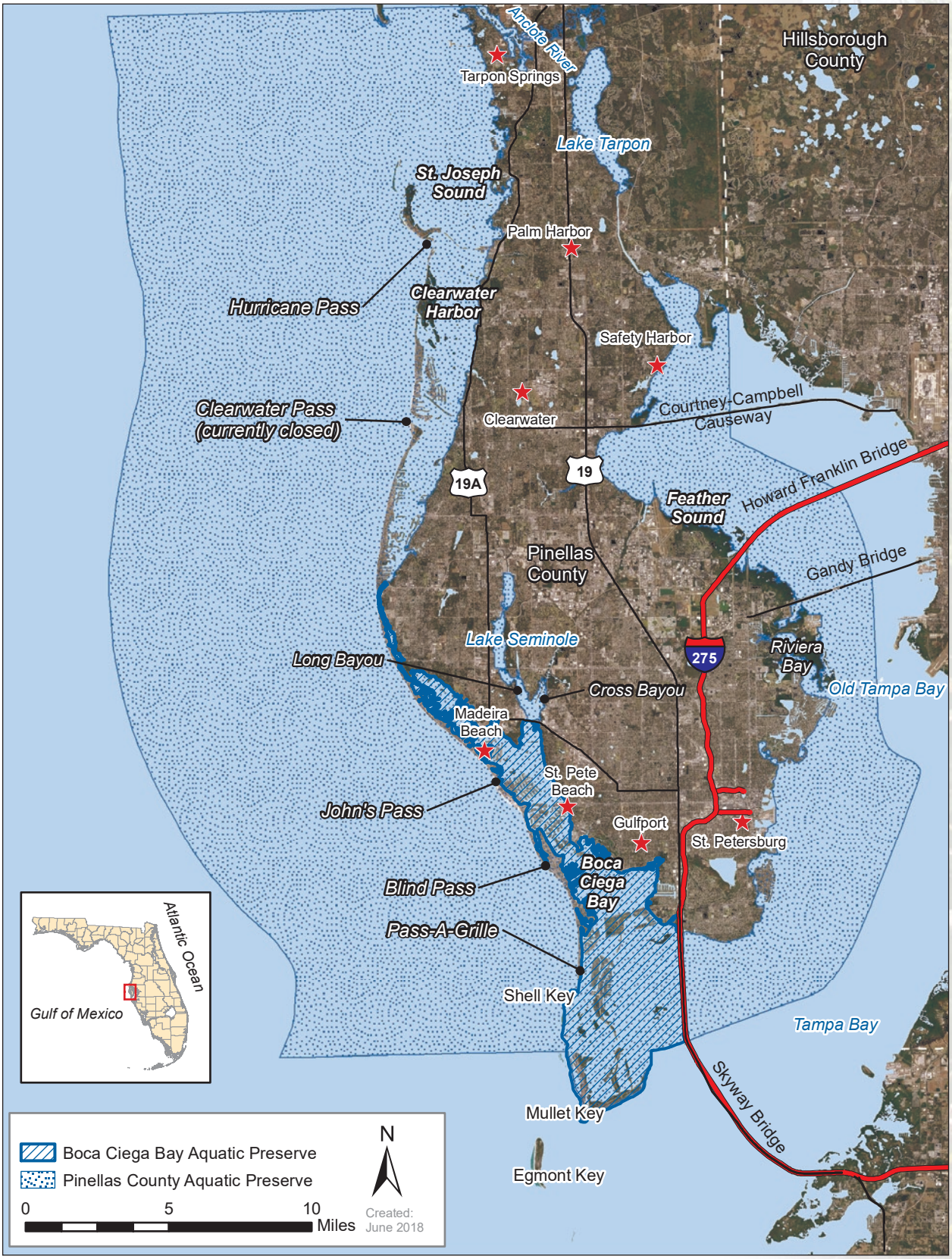
While Pinellas County may be densely urbanized, the conservation and resource management measures afforded by the designations of BCBAP and PCAP are significant locally, as well as beyond the Tampa Bay area. Despite many decades of development, spectacular submerged resources, such as seagrass beds, hardbottom corals and sponge beds, account for much of the underwater acreage of the aquatic preserves, and the aquatic preserves' islands serve important roles in an otherwise urban landscape. Conservation was not always a high priority in the Tampa Bay area, so many of today's scattered natural areas either were not developed because they were pockets of habitat that would have been relatively expensive to develop or they have been reclaimed after initially being impacted by development. As a result, the past half-century has seen numerous national, state and local agencies and organizations cobble together this patchwork of "habitat islands," most not exceeding a few hundred acres in size, across Pinellas County. These can be literal islands or natural areas surrounded by development, and the aquatic preserves help provide a connection between them for some species. Because it is interwoven with the county's most developed shorelines, PCAP faces special challenges for resource protection. However, PCAP's proximity to populated areas also offers special opportunities for engaging the community in the continued improvement of the system's ecological integrity.

BCBAP and PCAP are also of statewide significance as essential components of Florida's aquatic preserve network. Groups of individual marine protected areas are increasingly managed as networks worldwide (Laffoley, et al., 2008), and the network of aquatic preserves has led to more effective management of Florida's aquatic resources and the individual sites have benefitted in many ways from their inclusion in a larger network, allowing staff of different sites to compare management strategies and methodologies.

The Tampa Bay area is also geographically significant. Tampa Bay is Florida's largest open-water estuary and is in a climatic transition zone between the temperate climate of the northern Gulf of Mexico and the subtropical climate of south Florida. This geographic setting has made the waters and coastal uplands of BCBAP and PCAP, as well as the ongoing management and monitoring programs they support, invaluable resources for scientists focused on ecology and biogeography in a changing environment. Studies focused on issues of both state and national importance have included documentation of long-term range shifts of cold-tolerant coastal vegetation, the effects of the area's transitional climate on limiting the ranges of invasive nonnative plants and biogeography of hard and soft corals in the offshore waters of PCAP. Initiatives like the United States Geological Survey "Tampa Bay Study" in the early to mid-2000s are also reflective of the substantial research value of the habitats protected by BCBAP and PCAP.

An additional aspect of the biogeographical significance of the area is that BCBAP and PCAP are situated along major flyways for birds migrating between northern latitudes and southern latitudes. Birds like the red knot (*Calidris canutus rufa*) depend on patches of habitat where they can rest and feed as their migration takes them across urban landscapes like Tampa Bay. Such considerations help guide the strategies of the Tampa Bay Aquatic Preserves (TBAP) office in restoring and managing habitats in these important conservation areas.

Because of interest in the health of Tampa Bay beyond the local community, the Tampa Bay National Estuary was designated by the U.S. Congress in 1990. Eight years later, local governments, in partnership with the US Environmental Protection Agency transitioned the program to the more local Tampa Bay Estuary Program. With regard to Pinellas County waters, the Tampa Bay Estuary Program focuses more on the Tampa Bay side of the peninsula.



Map 2 / Pinellas County and Boca Ciega Bay aquatic preserves

Location/Boundaries

PCAP includes all state-owned submerged lands within the boundary of Pinellas County as established in F.S. 7.52. Pinellas County is a peninsula that forms the western side of Tampa Bay, and, as such, it is surrounded on the east, west and south side by PCAP. The aquatic preserve boundary begins in the northwest at the Pasco County line and extends southward along the Pinellas Peninsula, following the offshore limit of state waters (nine miles out in the Gulf of Mexico). At the southern end of the Pinellas Peninsula, the boundary follows the shoreline at a distance as close as 100 yards off Mullet Key. The boundary then runs northward through Tampa Bay, along the Tampa Port Authority's easement for the Tampa Ship Channel. The boundary follows the Pinellas County line north to the Pasco County line and then west.

The BCBAP boundary is described in F.S. 258. It follows the mean high water line along the shores of Boca Ciega Bay northward through the Narrows, and it ends at the southernmost extent of South Clearwater Harbor. It extends southward around Mullet Key, with the southern part bordered by Pass-A-Grille to the west and by the northern approach to the Skyway Bridge to the east. At the northeastern branch of Boca Ciega Bay, the aquatic preserve extends into Long Bayou, but not into Cross Bayou. BCBAP is situated completely within the boundary of PCAP.

The state-owned submerged lands within PCAP include those in freshwater areas, and this statutory inclusion is relatively uncommon among Florida's coastal aquatic preserves. As a result, large portions of Lake Tarpon and Lake Seminole, as well as other freshwater bodies are part of the aquatic preserve. Major estuarine basins include the Anclote River, St. Joseph Sound, Clearwater Harbor, Boca Ciega Bay, southwestern Tampa Bay, Riviera Bay, Feather Sound and the western side of Old Tampa Bay.

In addition to freshwater areas, the aquatic preserve has the statutory distinction, also not found in all aquatic preserves, of including state-owned islands. These islands include natural mangrove islands, as well as the dredged material (i.e., spoil) islands along the Intracoastal Waterway of St. Joseph Sound, Clearwater Harbor and Boca Ciega Bay. Islands in the Anclote River appear to be naturally formed alluvial islands to which dredged material may have been added.

As Florida's most densely urbanized county, Pinellas County includes several major cities and a number of smaller municipalities that lie along the shore of the aquatic preserves. Clearwater is the largest city in the northern part of the county, with smaller communities like Tarpon Springs, Safety Harbor and Palm Harbor also playing major roles in the history of the area's relationship with the coast. Toward the southern end of the peninsula, St. Petersburg is the largest city, but smaller communities, like Gulfport, St. Pete Beach and Madeira Beach all rely heavily on the resources of the aquatic preserves.

Communities within the county are connected with each other and with those in other counties by an extensive transportation network. U.S. Highway19 (US-19) is the major thoroughfare connecting the northern part of the county with the southern part. Interstate 275 (I-275) connects the county with Tampa via the Howard Frankland Bridge. Both I-275 and US-19 connect Pinellas County with Manatee County to the south via the Skyway Bridge. Two other east-west bridges are the Gandy Bridge, which connects St. Petersburg to South Tampa and the Courtney-Campbell Causeway, which connects Clearwater to a more northern part of Tampa. The St. Petersburg/Clearwater Airport provides direct air service to and from Pinellas County, but much of the air traffic serving the county is through Tampa International Airport, which is a short drive across one of the east-west bridges.

*3.3 / **Resource Description***

The information in this section describes the resources found in the aquatic preserve.

Surrounding Population Data and Future Projected Changes

Pinellas County's population has dramatically increased over the last 130 years. The permanent population has grown from 601 in 1890 to 960,730 in 2016, and it is now the most densely populated county in Florida (U.S. Census Bureau, 2016). By 2021, the population is expected to grow another eight percent to 1,036,369 permanent residents (Friedman, 2017). This increase may have major implications for coastal development, water quality, and water-related activities within PCAP and BCBAP – both negative and positive. An increasing population puts more strain on the natural resources and increases competition to use those resources. However, areas are being redeveloped in a manner that offers opportunities to replace older infrastructure and retrofit with more modern and environmentally friendly approaches, such as septic to sewer conversions.

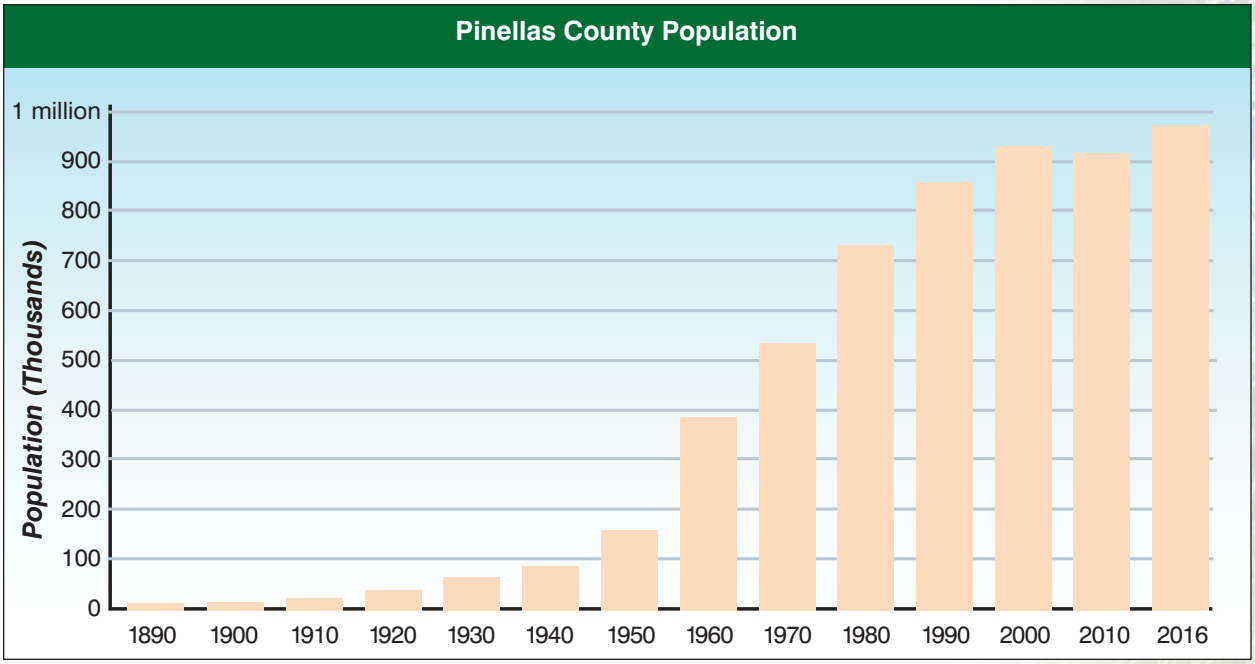


Table 1 / Pinellas County population statistics.

Topography and Geomorphology

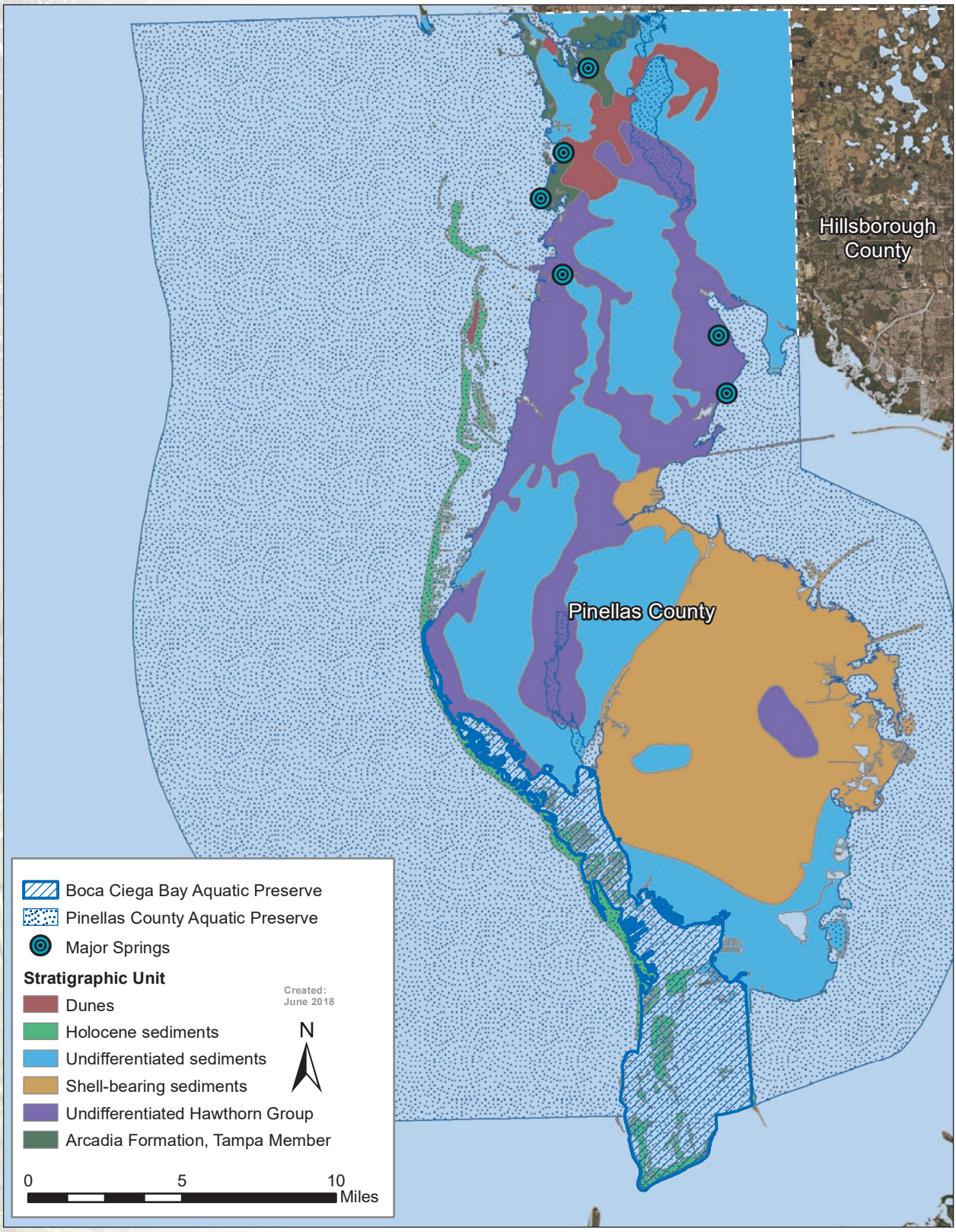
Topography is the configuration of a surface including its relief and the position of its natural and man-made features. Geomorphology is a science that deals with the relief features of the earth. As previously described, Pinellas County is a peninsula surrounded on the south, east and west by water. Elevations range from sea level to a maximum elevation of 34m (110 ft) above sea level near Clearwater. As with most of coastal Florida, Pinellas County is relatively flat, with two higher areas related to underlying limestone along the Pinellas Ridge in the northern part of the county and the St. Petersburg Platform in the southern part of the county (Hine, et al., 2003). On the western side, 11 barrier islands with 35 miles of sandy beaches separate the mainland from the Gulf of Mexico. These islands provide protection from storms and the inlets between the islands allow water to flow in from the Gulf and back out from freshwater sources. They are structured by waves, currents, and erosion, as well as by hurricanes which can completely alter the coastline and form new inlets such as the case with John's Pass. The bodies of water lying between the islands and the mainland include Clearwater Harbor and Boca Ciega Bay. Spoil islands from dredging characterize these waters. Many of the islands now undergo beach renourishment projects to maintain the coastline and protect coastal development.

Geology

Pinellas County sits atop a complex series of Oligocene and Miocene limestone layers whose geological history is part of the overall history of the carbonate Florida Shelf. These layers dip toward the south and consist of at least two recognized geological formations. The Oligocene Suwannee Limestone is deeply buried (100-250 feet) and does not have surficial exposures in Pinellas County, but it is overlain by the late Oligocene/early Miocene Tampa Member of the Arcadia Formation which outcrops in several locations. Much of the surficial geology of Pinellas County consists of undifferentiated Quaternary sediments, including Pleistocene and Holocene clays, sands and shell beds. Sea level changes from the Pleistocene Epoch to the present time eroded levels of this limestone, and stillstands in sea level left eroded platforms. While limestone layers are relatively well-known on the surface of exposed land, there does not appear to be much published information on the outcrops observed offshore. Given the depths of limestone layers, we can reasonably assume that Suwanee Limestone remains deep enough that it would not be exposed until farther north of the Tampa Bay area. Locally, the Tampa Member of the Arcadia Formation and undifferentiated Arcadia Formation, both of the Hawthorn Group, make up outcrops in PCAP, as they also make up the Pinellas Ridge to the north of the county, and the St. Petersburg Platform toward the southern end of the county. The Tampa Member has been reported near the sediment surface at the northernmost extent of the Pinellas Peninsula, but it rapidly dips to depths greater than 100 feet below the surface toward the southern end of the peninsula. Arcadia limestone may be found both over and under the Tampa Member, so much of the limestone that forms consolidated substrate in PCAP likely is undifferentiated Arcadia Formation of the Hawthorne Group (Scott, 1988).

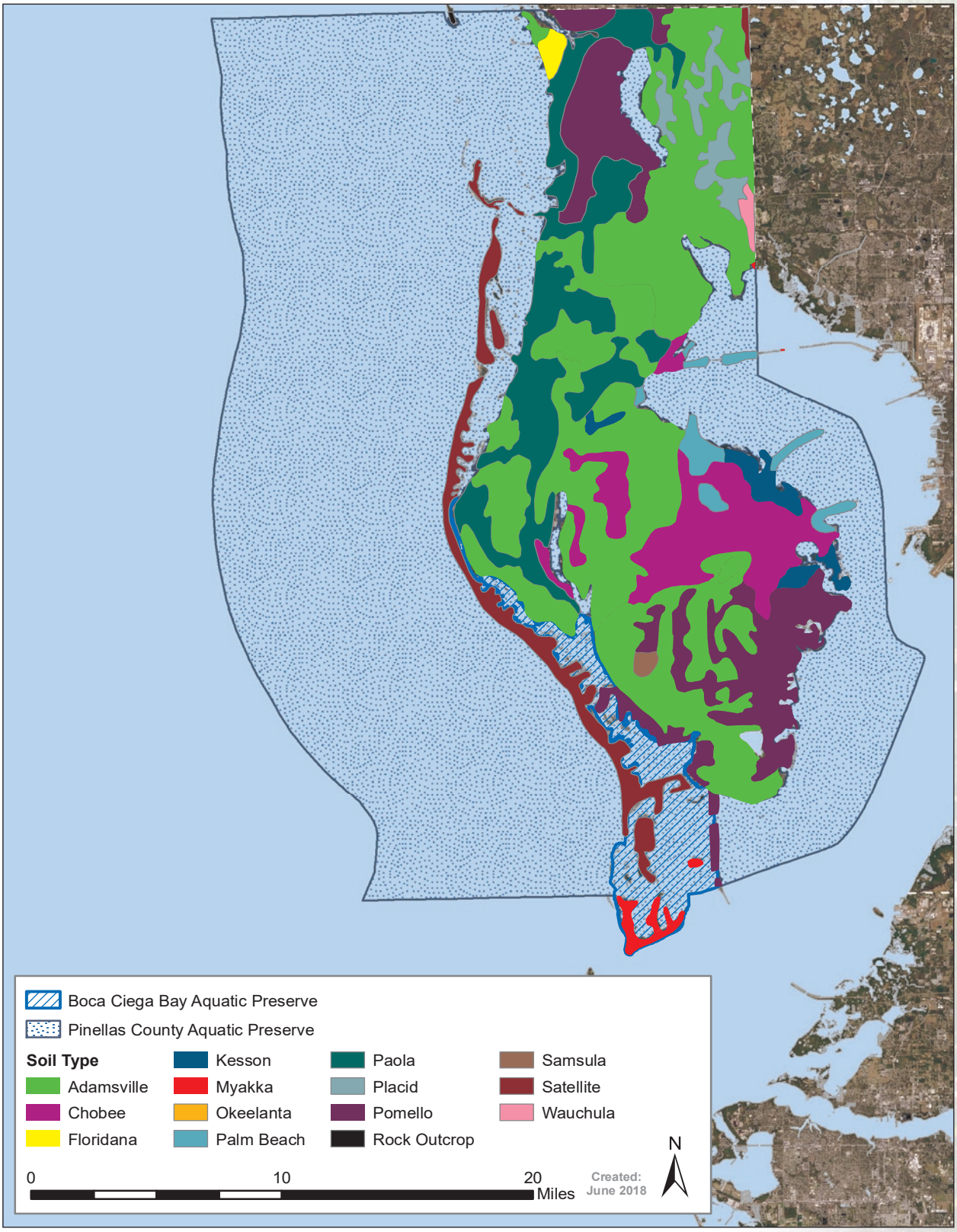
The last soil survey done in Pinellas County was in 2002. Sea level changes and periods of constant sea level, known as stillstands, have left the county covered by sand from a variety of marine terraces. Soils farther south in the county have higher clay content that impeded percolation, relative to the more permeable soils in the northern part of the county. For that reason, higher percolation in the northern part of the county appears to be connected to higher limestone dissolution rates and more sinkhole formation.

While extensive soil surveys have been done of the upland peninsula, relatively little is known regarding the sediments of submerged lands of Pinellas County. The submerged lands are known



Map 3 / Geomorphology of Pinellas County and Boca Ciega Bay aquatic preserves.

to contain limestone outcrops, however these have not been mapped in detail. Dominant northern Pinellas County soils include Adamsville, Paola and Pomello types while the southern county is primarily comprised of Adamsville, Pomello and Chobee soils. However, the soil survey from 2002 suggests that there may be a higher presence of Myakka soils throughout the county than what was previously recorded. The freshwater Lake Tarpon is surrounded by Pomello and Adamsville soils and the county's barrier islands contain Satellite soils.



Map 4 / Soils associated with Pinellas County and Boca Ciega Bay aquatic preserves.

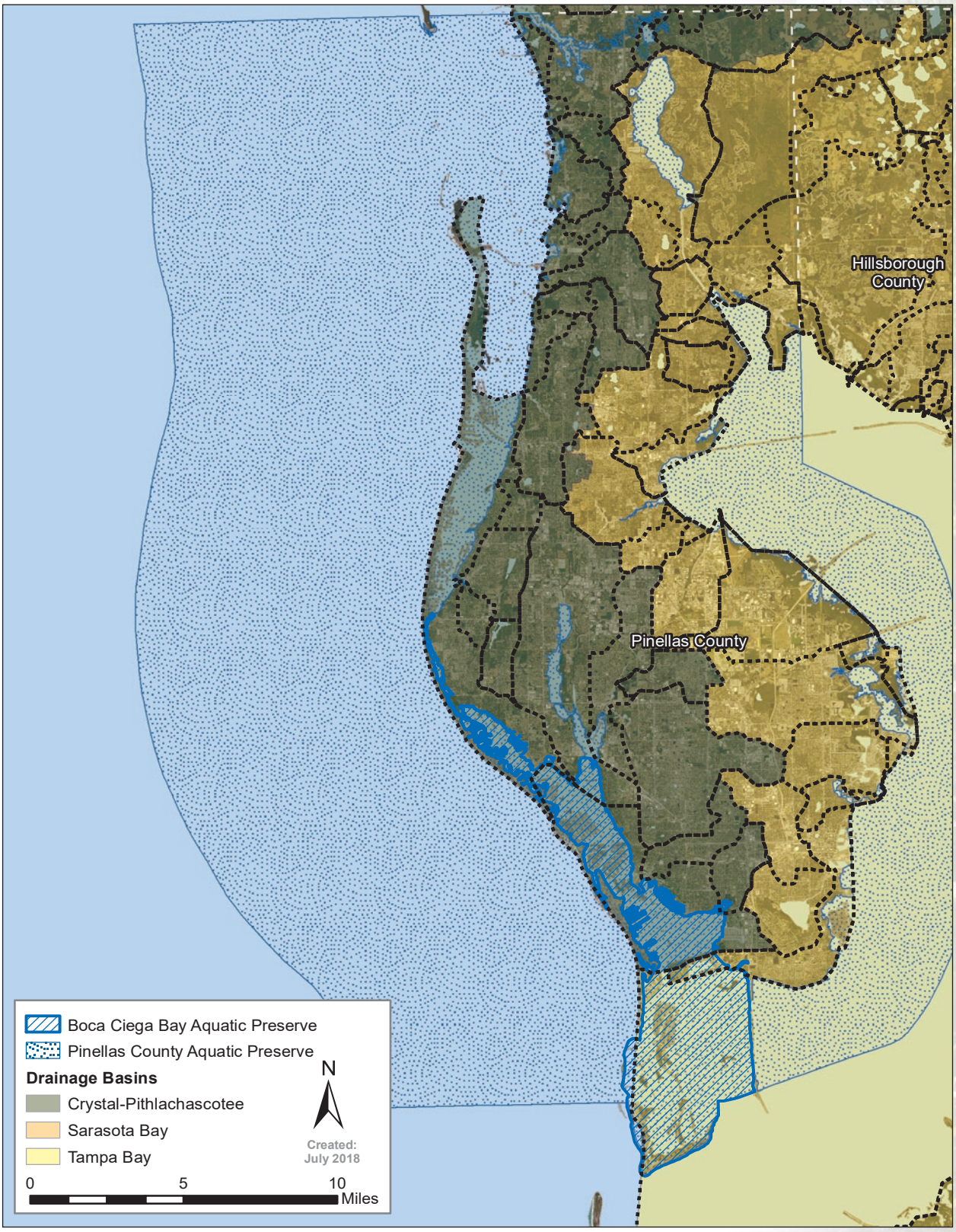
Hydrology and Watershed

The shoreline around the peninsula is incised with bayous and other embayments. On the western side of the peninsula, the mainland shoreline is mostly protected by a series of barrier islands that form a series of natural harbors between the Gulf of Mexico and the mainland. The most prominent of these, from north to south, are the Anclote River, St. Joseph Sound, Clearwater Harbor, and Boca Ciega Bay. Dynamic tidal connections between these embayments and the open Gulf include Hurricane Pass, Clearwater Pass (currently closed), John's Pass, Blind Pass and Pass-A-Grille. Nearly all of these passes are sites of



Map 5 / Hydrologic features of Pinellas County and Boca Ciega Bay aquatic preserves.

frequent scouring, shoaling and other processes that demand periodic regulatory attention. Some of the prominent smaller features in these areas behind the barrier islands include Stevenson Creek, Hurricane Hole and Clam Bayou. Because of surrounding development, most of these embayments have had water quality issues that are in some stage of mitigation through habitat creation or other restorative measures. On the eastern side of the peninsula, mangrove-vegetated shorelines lie immediately adjacent to open, albeit shallow waters of Tampa Bay. Other, more inland, waterbodies include Lake Tarpon, Lake Seminole and Lake Maggiore, and areas of these lakes with state-owned submerged lands are included in PCAP.



Map 6 / Drainage basins of Pinellas County and Boca Ciega Bay aquatic preserves.

The uplands of densely-urbanized Pinellas County are extensively altered. Roads, ditches and other linear features impede and channelize historic sheet flows, and extensive development of buildings, roads and parking lots impedes percolation of surface waters and enhances local flooding from storm events. Countless storm drains conduct runoff, including sediment, debris and other pollutants, into coastal waters with little treatment.

Most large waterbodies like Lake Tarpon and Lake Seminole have tidal histories, but, for the most part, they have been isolated from tidal connections in recent years. In the case of Lake Tarpon, a subterranean cave system that connected it with estuarine waters in Tarpon Springs has been isolated from the lake with a manmade berm. There are sinkholes scattered over Pinellas County, and they also may be found in the shallow surrounding waters. Those located on land often exist as isolated freshwater ponds or cypress domes.

The Upper Floridan Aquifer lies below most of Pinellas County, and is part of a three-layer hydro-geologic system. The Aquifer consists of limestones and dolomites and is separated into four permeable zones within the county (Broska & Barnette, 1999). Brackish waters are found from 100 to 500 feet below land surface.

Climate

PCAP and BCBAP lie in the subtropics between Tampa Bay and the Gulf of Mexico, surrounded by water on all sides. The mean annual temperature of 72.7 ° Fahrenheit (F) is buffered by the coastline, preventing temperatures from reaching extremely high or low values (World Media Group, LLC., n.d.). The area receives typically wet, hot summers with an average eight inches of rainfall per month, compared to the winter when precipitation is less than four inches per month and average temperatures reach a low of 70° F. This allows species sensitive to the cold to thrive in this region, such as the mangroves and the gumbo limbo tree (*Bursera simaruba*). The aquatic preserves are also affected during the hurricane season, when tropical cyclones produce heavy rains and destroy coastlines and submerged habitats.



Shorelines of BCBAP and PCAP offer great nesting habitat for sea turtles.

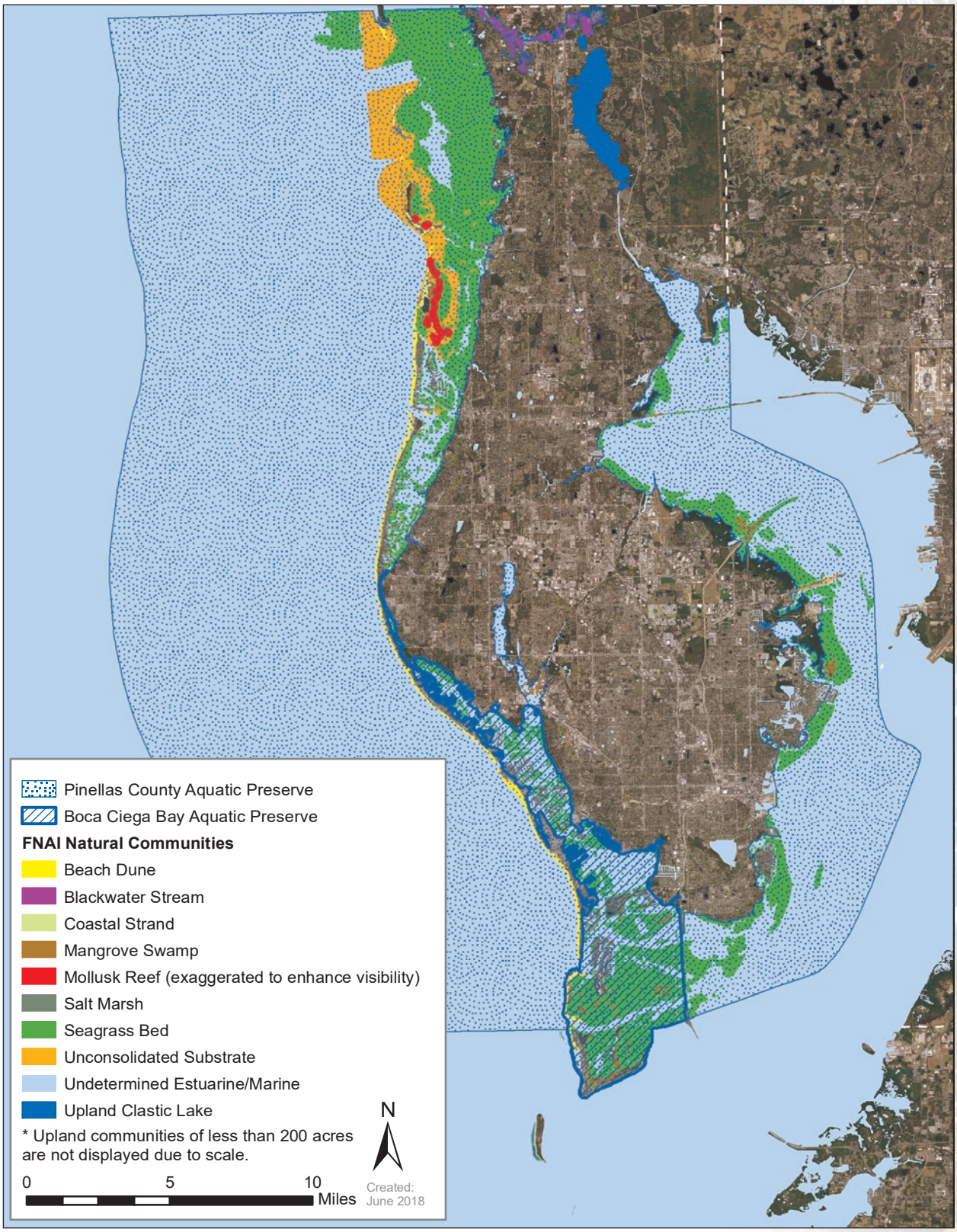
Natural Communities

The natural community classification system used in this plan was developed by the Florida Natural Areas Inventory (FNAI) and the Florida Department of Natural Resources, now the Florida Department of Environmental Protection (DEP), and updated in 2010. The community types are defined by a variety of factors, such as vegetation structure and composition, hydrology, fire regime, topography and soil type. The community types are named for the most characteristic biological or physical feature (FNAI, 2010). FNAI also assigns Global (G) and State (S) ranks to each natural community and species that FNAI tracks. These ranks reflect the status of the natural community or species worldwide (G) and in Florida (S). Lower numbers reflect a higher degree of imperilment (e.g., G1 represents the most imperiled natural communities worldwide, S1 represents the most imperiled natural communities in Florida).

Data used to produce a map delineating the major natural community types found on PCAP and BCBAP were developed by the FNAI. The descriptions of the natural community types found on PCAP and BCBAP have been adapted from the Guide to the Natural Communities of Florida (FNAI, 2010).

Beach Dune - Beach dune is a predominantly herbaceous community of wide-ranging coastal specialist plants on the vegetated upper beach and first dune above the beach (foredune). This community is usually built by sea oats (*Uniola paniculata*), a perennial rhizomatous grass, whose stems trap the sand grains blown off the beach, building up the dune by growing upward to keep pace with sand burial. Camphorweed (*Heterotheca subaxillaris*) often grows with sea oats where

sand burial is absent or moderate and beach elder (*Iva imbricata*), a succulent subshrub, is found at the seaward base of the foredune. These species may also occupy the seaward face and crests of taller backdunes or recent storm overwash plains where the sand is not stabilized by vegetation. The upper beach area seaward of the foredune is a less stable habitat, being disturbed annually by high spring tides or storm tides, and is continually re-colonized by annuals such as saltbush (*Baccharis halimifolia*), and dixie sandmat (*Chamaesyce bombensis*), by trailing species, such as beach morning



Map 7 | Florida Natural Areas Inventory natural communities in Pinellas County and Boca Ciega Bay aquatic preserves.

glory (*Ipomoea macrantha*) and railroad vine (*Ipomoea pes-caprae* ssp. *brasiliensis*), and by the salt-tolerant grasses, seashore paspalum (*Paspalum vaginatum*) and seashore dropseed (*Sporobolus virginicus*) (FNAI, 2010).

Beach dune plant assemblages cover considerable acreage on barrier islands that are state-owned, and sometimes part of the BCBAP and/or PCAP but not managed directly by TBAP. Smaller clusters of plants from this community can be found on areas of the dredged material islands in Clearwater Harbor and St. Joseph Sound, as well as on some of the alluvial islands near the mouth of the Anclote River. A nice assemblage of dune plants has been recruiting to the new island that has formed in Bunces Pass. The largest dune plant assemblages are on state-owned islands managed by other entities. Shell Key's dune plant community has benefitted from active management by Pinellas County, although some areas are being lost to erosion. Other notable dune assemblages can be found at Caladesi Island State Park, Honeymoon Island State Park, Three Rooker Bar and Anclote Key. All of these are in good condition, as the Florida Park Service has taken steps to limit foot traffic and has maintained an ongoing invasive plant removal program.

Coastal Berm - Coastal berm is a short forest or shrub thicket found on long, narrow, storm-deposited ridges of loose sediment formed by a mixture of coarse shell fragments, pieces of coralline algae, and other coastal debris. These ridges parallel the shore and may be found on the seaward edge or

FNAI Natural Community	Acreage	Global Rank	State Rank	Comments
Algal Bed	unknown	G3	S2	Not mapped.
Aquatic and Terrestrial Cave	unknown	G3	S2	Not mapped.
Beach Dune	1403	G3	S2	
Blackwater Stream	747	G4	S2	
Clastic Upland Lake	2544	G3	S2	
Coastal Berm	unknown	G3	S2	Found on spoil islands and mixed among other coastal communities, but not formally mapped.
Coastal Grassland	72	G3	S2	Honeymoon Island State Park
Coastal Interdunal Swale	19	G3	S2	Honeymoon Island State Park and Caladesi Island State Park
Coastal Strand	303	G3	S2	
Consolidated Substrate	unknown	G3	S3	Not mapped.
Floodplain Marsh	14	G3	S3?	
Hydric Hammock	<1	G4	S4	Adjacent to the aquatic preserves in many natural areas
Mangrove Swamp	1768	G5	S4	
Maritime Hammock	103	G3	S2	
Mesic Flatwoods	173	G4	S4	
Mesic Hammock	18	G3	S3?	
Mollusk Reef	28	G3	S3	Not completely mapped. Additional acreage may be within the undetermined Estuarine/Marine category.
Octocoral Bed	unknown	G2	S1	Not mapped.
Salt Marsh	198	G4	S4	
Seagrass Bed	33,744	G2	S2	
Shell Mound	<1	G2	S2	Caladesi Island State Park
Sponge Bed	unknown	G2	S2	Not mapped.
Unconsolidated Substrate	5002	G5	S5	Not completely mapped. Additional acreage may be within the undetermined Estuarine/Marine category.
Undetermined Estuarine/Marine	302,283			Not a natural community.
Upland Hardwood Forest	145	G2	S2	

Table 2 | Summary of Florida Natural Areas Inventory natural communities in Pinellas County and Boca Ciega Bay aquatic preserves.

landward edge of the mangroves or further inland, depending on the height of the storm surge that formed them. They range in height from 1 to 10 feet. Structure and composition of the vegetation is variable depending on height and time since the last storm event. The most stable berms may share some tree species with rockland hammocks, but generally have a greater proportion of shrubs and herbs. Some of the most common tree species include gumbo limbo and seagrape (*Coccoloba uvifera*). There are many characteristic tall shrub and short tree species such as the Spanish stopper (*Eugenia foetida)* and short shrubs and herbs including the rouge plant (*Rivina humilis*). More seaward berms or those more recently affected by storm deposition may support a suite of plants similar to beaches, including shoreline seapurslane (*Sesuvium portulacastrum*), saltgrass (*Distichlis spicata*), and seashore dropseed, or scattered to dense shrub thickets with buttonwood (*Conocarpus erectus*), stunted black, red, and white mangroves (*Avicennia germinans*, *Rhizophora mangle*, and *Laguncularia racemosa*), bay cedar (*Suriana maritima*), and bushy seaside oxeye (*Borrichia frutescens*) (FNAI, 2010).

Coastal berm plant assemblages can be found naturally on a few PCAP islands, like Garden Island in St. Joseph Sound. Much of TBAP's island upland acreage at coastal berm elevations has been covered by invasive plants, but TBAP has made some progress in removing invasives and planting coastal berm species at the appropriate elevations.

Coastal Grassland - Coastal grassland is a predominantly herbaceous community occupying the drier portions of the transition zone between beach dunes on the immediate coast and communities dominated by woody species, such as coastal strand or maritime hammock, further inland. It occurs primarily on the broader barrier islands and capes along the sandy coasts of Florida. The specialized dune building grasses of the beach dune community, sea oats and saltmeadow cordgrass (*Spartina patens*), are usually present, along with a variety of other herbaceous species typically found on more stable soils, such as bluestem grasses (*Andropogon* spp.), camphorweed, and earleaf greenbrier (*Smilax auriculata*) (FNAI, 2010).



Productive aquatic preserve waters are excellent foraging sites for shorebirds.

Coastal Strand - Coastal strand is an evergreen shrub community growing on stabilized coastal dunes, often with a smooth canopy due to pruning by salt spray. It usually develops as a band between dunes dominated by sea oats along the immediate coast, and maritime hammock, scrub, or mangrove swamp communities further inland. On broad barrier islands or prograding coasts, it may also occur as patches of shrubs within a coastal grassland matrix.

In north Florida, species include saw palmetto (*Serenoa repens*) and scattered dwarfed cabbage palm (*Sabal palmetto*) on the seaward edge, which are gradually joined inland by taller shrubs, including, Hercules' club (*Zanthoxylum clava-herculis*), and shrubby forms of red bay (*Persea borbonia*), red cedar (*Juniperus virginiana*), and live oak (*Quercus virginiana*). Going further south, tropical species become more prevalent, including seagrape nearest the coast, joined further inland by Florida swampprivet (*Forestiera segregata*), myrsine (*Rapanea punctata*), buttonsage (*Lantana involucrata*), white indigoberry (*Randia aculeata*), snowberry (*Chiococca alba*), Spanish stopper, wild lime (*Zanthoxylum fagara*), coco plum (*Chrysobalanus icaco*), coinvine (*Dalbergia ecastaphyllum*), yellow necklacepod (*Sophora tomentosa* var. *truncata*), and nickerbean (*Caesalpinia bonduc*).

In Pinellas County, coastal strand often grades into adjacent communities with very subtle ecotones. While much of this community has been lost to development, healthy and intact examples persist on public conservation lands of the barrier islands and on spoil islands.

Coastal Interdunal Swale - Coastal interdunal swales are marshes, moist grasslands, dense shrubs, or damp flats in linear depressions formed between successive dune ridges as sandy barrier islands, capes, or beach plains build seaward. Dominant species are quite variable depending on local hydrology, substrate, and the age of the swale. Wetter areas are often dominated by sawgrass (*Cladium*

jamaicense), cattail (*Typha* spp.), or needle rush (*Juncus roemerianus*), while shallower areas have a diverse mixture of herbs, including broomsedges (*Andropogon virginicus*, *A. glomeratus*). Atlantic St. John's Wort (*Hypericum reductum*) forms clumps in shrubby areas on the low flats in the more stable portions of the barrier islands. Moist grasslands may be dominated by hairawn muhly (*Muhlenbergia capillaris*), lovegrass (*Eragrostis* spp.), sand cordgrass (*Spartina bakeri*) or saltmeadow cordgrass. Nearer the shore, where swales are exposed to occasional salt water intrusion, they may be dominated by halophytic species such as seashore paspalum and marsh fimbry (*Fimbristylis spadicea*). Hurricanes and tropical storms can flood swales with salt water, after which they are colonized for a time by more salt-tolerant species such as needle rush, Gulf Coast spikerush (*Eleocharis cellulosa*), and yellow spikerush (*E. flavescens*). Loose, blowing sand prevalent after storms favors the spread of saltmeadow cordgrass which tolerates burial better than the other grass species.

Maritime Hammock - Maritime hammock is a predominantly evergreen hardwood forest growing on stabilized coastal dunes lying at varying distances from the shore. Species composition changes from north to south with temperate species dominating from the Georgia border to Cape Canaveral and tropical species increasingly prevalent south of Cape Canaveral.



Looking over the Boca Ciega Bay Aquatic Preserve you can see sweeping landscapes such as this summer sunset.

South of Cape Canaveral, tropical trees found in the canopy include gumbo limbo, strangler fig (*Ficus aurea*), seagrape, and Spanish stopper; tropical shrubs include wild coffee (*Psychotria nervosa*). The same species are found on the Gulf coast of the peninsula of Florida with temperate canopy species with tropical understory shrubs being the prevailing type from Pasco to Lee counties.

Maritime hammock occurs on deep well-drained acid quartz sands or well-drained, moderately alkaline quartz sands mixed with shell fragments (FNAI, 2010).

Few natural islands in the aquatic preserves have elevations suitable for maritime hammock species. Some of the dredged material islands in Boca Ciega Bay, Clearwater Harbor, and St. Joseph Sound, as well as alluvial islands near the mouth of the Anclote River have suitable elevations at which maritime hammock could occur but are presently occupied by invasive nonnative plants. Efforts are underway to replace these nonnatives with native maritime hammock species where appropriate.

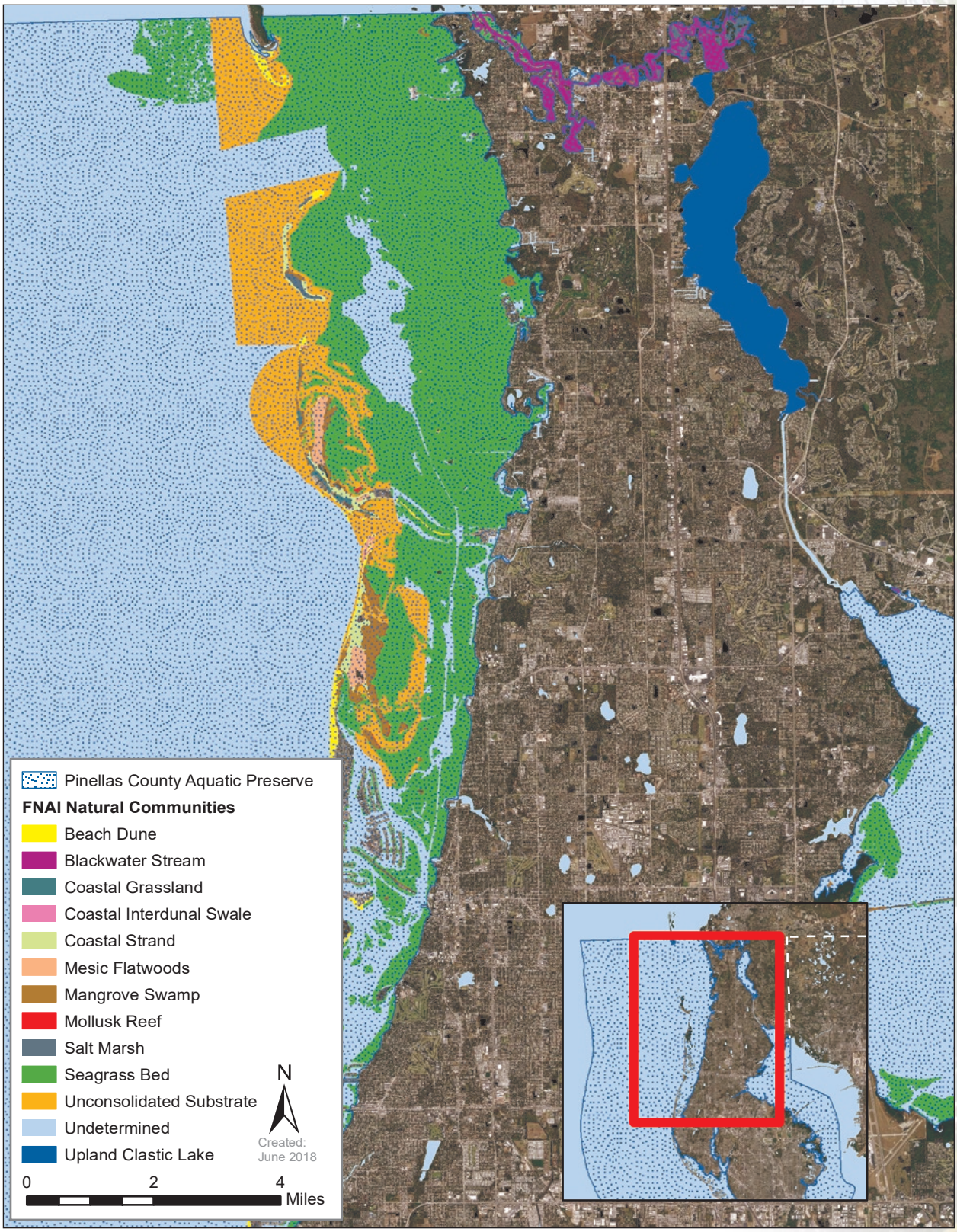
Shell Mound - Shell mounds are small hills, usually in coastal locations, composed entirely of shells (clams, oysters, whelks) discarded by generations of Native Americans which support an assemblage of calciphilic plant species. Archaeological evidence indicates they were occupied at the time Europeans first landed in Florida. Several are now surrounded by mangroves, evidence that they were built when sea level was lower than today. Originally there were many such shell mounds along coastal lagoons and at the mouths of rivers (and even inland along the St. Johns River), but most were destroyed for road building in the early part of the last century.

A rich calcareous soil develops on the deposited shells which supports a diverse hardwood forest on undisturbed mounds. Central Florida mounds are often characterized by tropical species occurring north of their normal range. Even south of Tampa and Cape Canaveral, the species composition of shell mound forests tends to be more strictly tropical than that of maritime hammocks on sandy substrates in the same region, with white stopper (*Eugenia axillaris*), Florida privet, strangler fig and gumbo limbo being the most commonly encountered woody species (FNAI, 2010).

While shell mounds are not known on the islands of BCBAP or PCAP, some higher, well-drained areas of dredged material islands, which have large amounts of limestone in the soil, may be suitable for shell mound species.

Upland Hardwood Forest - Upland hardwood forest is a well-developed, closed-canopy forest dominated by deciduous hardwood trees on mesic soils in areas sheltered from fire. It typically has a diverse assemblage of deciduous and evergreen tree species in the canopy and midstory, shade-tolerant

shrubs, and a sparse groundcover. Characteristic canopy trees include southern magnolia (*Magnolia grandiflora*), sweetgum (*Liquidambar styraciflua*), Florida maple (*Acer saccharum* ssp. *floridanum*), live oak, and laurel oak (*Quercus hemisphaerica*). The midstory layer is composed of younger canopy species as well as small trees, and tall shrubs, such as red bay. The groundcover is composed of shade-tolerant herbs, graminoids, and vines, such as Virginia creeper (*Parthenocissus quinquefolia*), and many species of sedges (*Carex* spp.) (FNAI, 2010).



Map 8 | Florida Natural Areas Inventory natural communities on select islands in Pinellas County and Boca Ciega Bay aquatic preserves.



Not many years ago, this beautiful high marsh habitat was full of invasive non-native plants. Only a few stumps remain.

Upland hardwood forest occurs on rolling mesic hills, slopes above river floodplains, in smaller areas on the sides of sinkholes, and occasionally on rises within floodplains. Limestone or phosphatic rock may be near the surface. Soils are generally sandy clays or clayey sands with substantial organic and sometimes calcareous components. These soils have higher nutrient levels than the sandy soils prevalent in most of Florida. The moisture retention properties of clays and layers of leaf mulch conserve soil moisture and create decidedly mesic conditions. The dense canopy and multiple layers of midstory vegetation restrict air movement and light penetration, which maintains high relative humidity within the community (FNAI, 2010). Intact upland hardwood forest is very scarce within the boundaries of the aquatic preserves, but component species can be found, and/or have been planted on some dredged material islands in the aquatic preserves.

Hydric Hammock - Hydric hammock is an evergreen hardwood and/or palm forest with a variable understory typically dominated by palms and ferns occurring on moist soils, often with limestone very near the surface. While species composition varies, the community generally has a closed canopy of oaks and palms, an open understory, and a sparse to a moderate groundcover of grasses and ferns. The canopy is dominated by live oak with varying amounts of cabbage palm, red cedar, red maple (*Acer rubrum*), and sugarberry (*Celtis laevigata*). Cabbage palm is a common to dominant component of hydric hammock throughout most of Florida. Loblolly pine (*Pinus taeda*) may be frequent in some areas, but slash pine (*Pinus elliottii*) is less frequently encountered. In addition to saplings of canopy species, the understory may contain a number of small trees and shrubs. Vines may be frequent and diverse; common species are greenbriers (*Smilax* spp.) and muscadine (*Vitis rotundifolia*). Herb cover, when present includes mostly graminoids and ferns as well as sedges. Epiphytes increase in frequency to the south along with other more subtropical shrubs such as wild coffee (FNAI, 2010).

Species composition is mainly influenced by flooding patterns. In saturated and frequently flooded environments, hydrophytic trees such as swamp tupelo (*Nyssa sylvatica* var. *biflora*) become more abundant. Frequency and depth of inundation have a pronounced effect on oak canopy composition as well, with saturated soils supporting more swamp laurel oak, and areas of infrequent flooding supporting more live oak. Increased salinity is a factor often limiting certain species. Rises in terrain as well as ecotones to mesic hammock and upland hardwood forest induce a greater cover of upland species, specifically southern magnolia and saw palmetto (FNAI, 2010).

Hydric hammock occurs on low, flat, wet sites where limestone may be near the surface and soil moisture is kept high mainly by rainfall accumulation on poorly drained soils. Periodic flooding from rivers, seepage, and spring discharge may also contribute to hydric conditions. Soils are variable, usually somewhat acidic to slightly alkaline with little organic matter, and in all cases, alkaline materials are available in the substrate. Hydric hammock is inundated only for short periods following heavy rains. The normal hydroperiod is seldom more than 60 days per year. Fire may be rare or occasional depending on several factors including how often the surrounding community burns and hammock size (FNAI, 2010).

Hydric hammock assemblages may be found adjacent to freshwater areas of PCAP, but extensive acreage of these species is not found within the aquatic preserve. Nevertheless, they may have considerable impacts, like supplying allochthonous material to the aquatic preserve.

Floodplain Marsh - Floodplain marsh is a wetland community occurring in river floodplains and dominated by herbaceous vegetation and/or shrubs. Sand cordgrass and sawgrass are common dominants, but various other herbs may be found distributed along a hydrologic gradient. Broadleaf emergents and floating plants occupy the deepest, most frequently flooded sites, and mixed herbaceous stands are found in the somewhat higher portions of the marsh. In wetter sites, coastalplain willow or common buttonbush (*Cephalanthus occidentalis*) may form shrub thickets. The highest part of the marsh is often a drier, wet prairie-like zone with a large diversity of graminoids and forbs. While the progression from high to low marsh occurs generally from the upland edge to the river edge, these vegetation patches may also be scattered throughout the marsh, which provides a diversity of habitats beneficial to wildlife. Additional herbs can include tickseeds (*Coreopsis* spp.), fimbries (*Fimbristylis* spp.), flatsedges (*Cyperus* spp.), and marsh pennywort (*Hydrocotyle umbellata*). Other than occasional thickets, woody vegetation is generally sparse, although some marshes can be dominated by coastalplain willow, and/or wax myrtle (*Myrica cerifera*). Occasionally, cabbage palm and other flood tolerant trees are widely scattered in floodplain marsh, becoming more concentrated in the ecotone to adjacent hydric hammocks (FNAI, 2010).

Most floodplain marshes are freshwater (salinity less than 0.5 parts per thousand); however, saltwater may influence marshes near the mouths of rivers (freshwater tidal marsh variant) and in areas where there is upwelling groundwater that is partly saline. In these situations, dominant species are those tolerant of brackish conditions, particularly sawgrass, sand cordgrass, perennial glasswort (*Sarcocornia perennis*), seashore dropseed, and shoreline seapurslane (FNAI, 2010).



Students help map habitat and learn about field methods.

Floodplain marshes are found along rivers and streams from just below the headwaters to the freshwater portions of tidally influenced river mouths. They also occur in river overflow channels and lakes with both input and output of river flow. Floodplain marshes are directly influenced by river flooding on an annual or semi-annual basis where most of the marsh is inundated from approximately 120 to 350 days per year. Soils are typically sand or a thin to thick organic layer over sand and may be saturated for most of the year. Floodplain marsh may burn periodically depending on dominant vegetation (FNAI, 2010).

Floodplain marsh is common around some of the larger freshwater bodies of the PCAP, like Lake Tarpon and Lake Seminole. Its condition varies from relatively intact to highly impacted by shoreline development and by the introduction of invasive species. It also is found upstream in the Anclote River (PCAP). In addition to the native flora, nonnative species of a number of the genera, like *Utricularia*, have been observed by TBAP staff and volunteer botanists.

Floodplain Swamp - Floodplain swamp is a closed-canopy forest of hydrophytic trees occurring on frequently or permanently flooded hydric soils adjacent to stream and river channels and in depressions and oxbows within floodplains. Trees are often buttressed, and the understory and

groundcover are sparse. The canopy is sometimes a pure stand of bald cypress (*Taxodium distichum*), but more commonly bald cypress shares dominance with tupelo. The "knees" arising from the root systems of both cypress and tupelo are common features in floodplain swamp. Other canopy trees capable of withstanding frequent inundation may be present but rarely dominant, including overcup oak (*Quercus lyrata*), red maple, and swamp laurel oak (*Q. laurifolia*). Pond cypress (*T. ascendens*) is sometimes present in backswamps and depressions of the more hydrologically isolated areas of the floodplain. Floodplain swamp can often occur within a complex mixture of communities including alluvial forest, bottomland forest, and baygall. This produces a variable assemblage of canopy and subcanopy species, with less flood tolerant trees and shrubs found on small hummocks and ridges within the swamp. Shrubs and smaller trees such as cabbage palm may be present. A groundcover of flood tolerant ferns and herbs are found in some floodplain swamps, including false nettle (*Boehmeria cylindrica*), royal fern (*Osmunda regalis* var. *spectabilis*), and string lily (*Crinum americanum*). Swamps with stagnant water typically have a mixture of floating aquatics such as duck weeds (*Lemna* spp.) and Florida mudmidget (*Wolffiella gladiata*). Eastern poison ivy (*Toxicodendron radicans*) is a frequent vine (FNAI, 2010).

Floodplain swamp is located within floodplains of any permanently moving stream or river. It ranges from narrow strips of cypress along primary and secondary streams to expansive stands along large rivers to tidally influenced freshwater swamps near river mouths. Often, floodplain swamps immediately border the stream or river channel. In many cases, however, floodplain swamps are isolated from the main channel by riverbank levees and restricted to oxbows, overflow channels, old stream beds, and expansive flats commonly called backswamps. Soils are variable mixtures of alluvial and organic materials, sometimes with layers of sand in the subsoil. Inundation is seasonal and usually prolonged, restricting the growth of most shrubs and herbs and leaving most of the ground surface open or thinly mantled with leaf litter (FNAI, 2010).

Floodplain swamp sometimes extends onto aquatic preserve areas of freshwater bodies like Lake Tarpon, Lake Seminole and some freshwater creeks, but more often it approaches the edge of the waterbodies and has considerable ecological effects, like contributing allochthonous material to those waterbodies. Much of the floodplain swamp adjacent to the aquatic preserves has been filled in, but relict tracts still exist and are generally in good condition.



Volunteers help maintain island areas previously cleared of invasive plants.

Clastic Upland Lake - Clastic upland lakes are shallow to relatively deep, irregularly shaped depressions or basins occurring in uplands on clay substrates. They are lentic water bodies with surface inflows but often without significant outflows. Water is generally dissipated through evaporation and transpiration, but it may also disappear, especially during prolonged droughts, through sinks that connect with the aquifer (FNAI, 2010).

Vegetation varies substantially in clastic upland lakes. Some portions of the water's edge may be dominated by hydrophytic shrubs, such as common buttonbush, wax myrtle and eastern swampprivet (*Forestiera acuminata*). Other shorelines may be vegetated with sedges, grasses (Poaceae), and rushes (*Juncus* spp.); or they may be dominated by hydrophytic trees, such as bald cypress, laurel oak, red bay, sweetgum, red maple, and blackgum. Shallow water zones of clastic upland lakes are generally densely vegetated by concentric bands of emergent, floating, and submersed aquatics, including pickerelweed (*Pontederia cordata*), arrowheads (*Sagittaria* spp.), and yellow waterlily (*Nymphaea mexicana*) (FNAI, 2010).

Typical animals include Florida gar (*Lepisosteus platyrhincus*), threadfin shad (*Dorosoma petenense*), golden shiner (*Notemigonus crysoleucas*), least killifish (*Heterandria formosa*), brook silverside (*Labidesthes sicculus*), American alligator (*Alligator mississippiensis*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), white ibis (*Eudocimus albus*) and belted kingfisher (*Megaceryle alcyon*) (FNAI, 2010).



TBAP also manages a floodplain swamp adjacent to PCAP at Lake Tarpon.

Clastic upland lakes generally have clay and organic substrates. Their water is characteristically clear to colored, circumneutral to slightly acidic, and soft with a low mineral content (particularly sodium, chloride, and sulfate). Clastic upland lakes may be oligo-mesotrophic, with relatively low nutrient levels, to eutrophic, with very high nutrient levels, depending upon their geologic age and nutrient supplements from the surrounding uplands. Clastic upland lakes are important breeding areas for many terrestrial and semi-aquatic amphibians. They are frequently very important feeding and nesting areas for many wading birds, ducks, reptiles, and fish. Clastic upland lakes are vulnerable to hydrological manipulations which permanently lower the water levels and hasten successional processes, and those which prevent periodic dry-downs and hasten eutrophication. They are also vulnerable to various activities in the surrounding uplands. Land clearing and timber harvests on the adjacent uplands generally increase sedimentation rates and, therefore, successional processes. Residential, agricultural, and industrial development within a lake's drainage basin generally increases pollution levels and accelerates eutrophication, which could be extremely detrimental to fish and other aquatic organisms. Human-related manipulations and activities within the drainage basin must be adequately controlled to avoid detrimental repercussions to these important communities (FNAI, 2010).

Some of the lakes and ponds in PCAP with state-owned bottomlands can be considered clastic upland lakes. Some that now are lined with clastic sediments originated as karst limestone sinkholes which became inactive and accumulated clastic sediments over time. Shoreline development, eutrophication from lawn nutrients and pesticides, and buildups of fine sediments have negatively affected the habitat value of many of these waterbodies.

Blackwater Stream - Blackwater Streams are perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The tea-colored waters of Blackwater Streams are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. They generally are acidic (pH = 4.0 - 6.0), but may become circumneutral or slightly alkaline during low-flow stages when influenced by alkaline groundwater. Water temperatures may fluctuate substantially and are generally correlated with seasonal fluctuations in air temperature. The dark-colored water reduces light penetration and, thus, inhibits photosynthesis and the growth of submerged aquatic plants. Emergent and floating aquatic vegetation may occur along shallower and slower moving sections, but their presence is often reduced because of typically steep banks and considerable



Mapping elevations of islands can give insights into appropriate vegetation for restoration work.

seasonal fluctuations in water level. Typical plants include goldenclub (*Orontium aquaticum*), smartweed (*Polygonum* spp.), sedges, and grasses. Typical animals include longnose gar (*Lepisosteus osseus*), gizzard shad (*Dorosoma cepedianum*), threadfin shad, redfin pickerel (*Esox americanus americanus*), ironcolor shiner (*Notropis chalybaeus*), channel catfish (*Ictalurus punctatus*), banded topminnow (*Fundulus cingulatus*), western mosquitofish (*Gambusia affinis*), redear sunfish (*Lepomis microlophus*), river frog (*Rana heckscheri*), American alligator, common snapping turtle (*Chelydra serpentina*), river cooter (*Pseudemys concinna*), Florida cooter (*P. floridana*), peninsula cooter (*P. peninsularis*), common musk turtle (*Sternotherus odoratus*), Florida banded water snake (*Nerodia fasciata pictiventris*).

Aquatic and Terrestrial Cave - Aquatic and terrestrial caves are characterized as cavities below the surface of the ground in karst areas of the state. A cave system may contain portions classified as terrestrial caves and portions classified as aquatic caves. The latter vary from shallow pools highly susceptible to disturbance, to more stable, totally submerged systems. Because all caves initially develop under aquatic conditions, Terrestrial caves can be considered essentially dry aquatic caves. The limestone aquifers that underlie all of Florida could be considered vast aquatic cave communities. Troglobites (also called phreatobites) are organisms specially evolved to survive in deep cave habitats. The occasional observation of various species of troglobites in deep water wells from several regions in the state suggests that this community could be widespread. However, the dependence of troglobites on detrital inputs and other nutrients imported from the surface generally limits the distribution of well developed aquatic cave communities to karst areas with surface connections (FNAI, 2010).

Animals inhabiting subterranean natural communities are generally divided into three groups according to their cave adaptations: trogloxenes, troglophiles, and troglobites. Trogloxenes spend much of their time in caves, but they must periodically return to the surface to feed or breed. Troglophiles may regularly live in caves, but they also inhabit surface communities with moist microhabitats. Crickets, fish and salamanders are typical examples of troglophiles. Troglobites are obligatory cave dwellers with special adaptations for living in complete darkness. Cave crayfish (*Procambarus* spp.), cave amphipods (*Crangonyx* sp.), and cave isopods (*Caecidotea* sp.) are typical troglobites in Florida's aquatic caves. Even though they never leave their cave environments, troglobites and troglophiles depend on outside energy sources, such as detritus that washes in through sinkholes and other cave entrances. Fecal materials derived from trogloxenes which feed outside the cave are also important nutrients for troglobites. Without these energy subsidies, the troglobitic elements could not exist (FNAI, 2010).

Two geologic processes are predominantly responsible for the development of caves: phreatic and vadose. Phreatic processes occur below the aquifer's surface where ground water is confined and subjected to hydrostatic pressure. Vadose processes occur at the top of or above the aquifer, where air enters the passageways and water flows freely under the influence of gravity. In both processes, the dissolution and corrosion of limestone play active roles in enlarging cave passageways. These forces differ primarily in the slopes of the passageways which result. Phreatic passageways are generally circular or elliptic, while vadose passageways are more triangular with the broad base of the triangle at the bottom. All limestone caves begin development under phreatic conditions in the aquifer. As water tables drop, vadose conditions eventually replace phreatic conditions. If the water table then rises, another reversal of processes occurs. Because water tables have fluctuated substantially with fluctuating sea levels during the Pleistocene and other geologic epochs, most caves in Florida exhibit both phreatic and vadose characteristics (FNAI, 2010).

Cave waters are generally clear, with deep water appearing bluish. The water may become stained brown from tannins leached from decaying plant matter nearby and carried in with rainwater. The water may also become milky white if fine limestone mud from the bottom of the aquatic cave is suspended in the water column following disturbance. A bottom substrate of organic silts can also muddy the water with suspended particles. Waters are generally circumneutral to alkaline with a high mineral content (particularly calcium bicarbonate and magnesium) and with constant temperature. Flowing water within aquatic caves generally has a lower pH, is often undersaturated with respect to carbonates, and has a relatively richer fauna. Contrastingly, pools that are fed by seepage or dripping water are generally characterized by a high pH, high concentration of dissolved carbonates, low content of organic matter suitable for food, and a sparse fauna. Cave water characteristics may also vary seasonally because of fluvial inputs from interconnected surface streams, or because of detrital pulses and other surface inputs during periods of substantial aquifer recharge. In general, however, aquatic caves are very stable environments with relatively constant physical and chemical characteristics (FNAI, 2010).

Subterranean natural communities are extremely fragile. Their faunas are adapted to very stable environments and have a limited ability to survive even minor environmental perturbations (FNAI, 2010).

Alterations in or around cave entrances will often upset detrital input levels and may also induce significant changes in air circulation patterns and the cave microclimate. Aquatic caves are threatened by pollution of ground and surface waters from agricultural, industrial, and residential sources, as well as by disturbances from divers. The unique troglobitic species generally have very low population levels and can be severely impacted by overcollection or by changes in nutrient input levels that result from surface manipulations or hydrological alterations. Thus, special precautions and management procedures must be invoked to protect these unique, fragile communities from deleterious activities (FNAI, 2010).

Because Pinellas County sits on a karst landscape, subterranean and subaqueous caves are common. Only a few are known to open into the waters of aquatic preserves. The best-known cave opens off Crystal Beach and is known as a "boiling spring" on nautical charts. It has been explored for more than a mile under the shore, and it hosts cave crayfish in its freshwater areas. TBAP staff have observed another area of considerable spring flow into the aquatic preserve farther to the north in St. Joseph Sound, but there is not much information on the cave, as it is likely not easily accessible to cave divers. Another well-known cave system in the area opens into St. Joseph Sound just north of Howard Park. A cave system also runs from Tarpon Springs to Lake Tarpon, but the Lake Tarpon end is isolated from the lake by a manmade dike. Due to the limited accessibility of these aquatic caves, little is known about the condition of this natural community.

Consolidated Substrate - Marine and estuarine consolidated substrates are mineral-based natural communities generally characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones which lack dense populations of sessile plant and animal species. Consolidated substrates are solidified rock or shell conglomerates and include coquina, limerock or relic reef materials. These communities may be sparsely inhabited by sessile, planktonic, epifaunal, and pelagic plants and animals but house few infaunal organisms (i.e., animals living within the substrate). The three kinds of consolidated substrate communities occurring in Florida are of limited distribution. Coquina, which is a limestone composed of broken shells, corals and other organic debris, occurs primarily along the east coast, in marine areas in the vicinity of St. Johns and Flagler counties (FNAI, 2010).

Limerock substrates occur as outcrops of bedded sedimentary deposits consisting primarily of calcium carbonate. This consolidated substrate is more widespread than coquina substrate and can be found in a patchy distribution under both marine and estuarine conditions from north Florida to the lower-most Keys in Monroe County. Relic reefs, the skeletal remains of formerly living reefs, are more limited in distribution than limerock outcrops but more common than coquina substrate (FNAI, 2010).

Consolidated substrates are important in that they form the foundation for the development of other marine and estuarine natural communities when conditions become appropriate. Consolidated substrate communities are easily destroyed through siltation or placement of fill, and deliberate removal by actions such as blasting or nondeliberate destruction by forces such as vehicular traffic.

Another type of disturbance involves the accumulation of toxic levels of heavy metals, oils, and pesticides in consolidated substrates. Significant amounts of these components in the sediments will kill the infauna, thereby eliminating a food source for certain fishes, birds and other organisms. A film of pollutants engulfing consolidated substrates can render these areas unsuitable for colonization by marine and estuarine flora and fauna. Such problems occur in some of the major port cities, in areas where there is heavy industrial development, and along major shipping channels where oil spills are likely to occur (FNAI, 2010).

Natural outcrops of consolidated substrate are commonplace in the offshore Gulf of Mexico part of PCAP. Overall the vertical relief of these features appears to increase northward in the aquatic preserve. Considerable natural low-relief hardbottom patches have been discovered east of Pinellas County in Tampa Bay. Neither the offshore hardbottom nor the Tampa Bay hardbottom in PCAP waters has been mapped comprehensively, and as a result, little is known about the condition of this natural community However, several projects are attempting to map limited footprints within these areas. Most species data for these hardbottom communities has come from mapping done for proposed linear features, and some offshore surveys have been done in the search for sand borrow areas (Dial Cordy and Associates, Inc., 2003). Within St. Joseph Sound, most hardbottom is seen on the limestone rubble around manmade dredged material islands. A variety of macroalgae, molluscs, sponges, the colorful sea whip (*Leptogorgia virgulata*), and at least three species of hard corals, belonging to the genera *Siderastrea, Occulina and Phyllangia*, have been observed on these subtidal island perimeters.

Unconsolidated Substrate - Marine and estuarine unconsolidated substrates are mineral based natural communities generally characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones which lack dense populations of sessile plant and animal species. Unconsolidated substrates are unsolidified material and include coralgal, marl, mud, mud/sand, sand or shell. This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms (e.g., tube worms, sand dollar, mollusks, isopods, amphipods, burrowing shrimp, and an assortment of crabs) (FNAI, 2010).

In general, marine and estuarine unconsolidated substrate communities are the most widespread communities in the world. However, unconsolidated substrates vary greatly throughout Florida, based on surrounding parent material. Unconsolidated sediments can originate from organic sources, such as decaying plant tissues (e.g., mud) or from calcium carbonate depositions of plants or animals (e.g., coralgal, marl and shell substrates). Marl and coralgal substrates are primarily restricted to the southern portion of the state. The remaining four kinds of unconsolidated substrate, mud, mud/sand, sand, and shell, are found throughout the coastal areas of Florida. The type most frequently found in PCAP and BCBAP is sand with pockets of silt or clay. While these areas may seem relatively barren, the densities of infaunal organisms in subtidal zones can reach the tens of thousands per meter square, making these areas important feeding grounds for many bottom feeding fish, such as red drum (*Sciaenops ocellatus*), southern flounder (*Paralichthys lethostigma*), spot (*Leiostomus xanthurus*), and sheepshead (*Archosargus probatocephalus*). The intertidal and supratidal zones are extremely important feeding grounds for many shorebirds and invertebrates (FNAI, 2010).

Unconsolidated substrates are important in that they form the foundation for the development of other marine and estuarine natural communities when conditions become appropriate. Unconsolidated substrate communities are associated with and often grade into beach dunes, salt marshes, mangrove swamps, seagrass beds, coral reefs, mollusk reefs, worm reefs, octocoral beds, sponge beds, and algal beds (FNAI, 2010).

Unconsolidated substrate communities which are composed chiefly of sand (e.g., sand beaches) are the most important recreational areas in Florida, attracting millions of residents and tourists annually. This community is resilient and may recover from recreational disturbances. However, this community is vulnerable to compaction associated with vehicular traffic on beaches and disturbances from dredging activities and low dissolved oxygen levels, all of which can cause infaunal organisms to be destroyed or to migrate out of the area. Generally these areas are easily recolonized either by the same organisms or a series of organisms which eventually results in the community returning to its original state once the disturbance has ceased. In extreme examples, such as significant alterations of elevation, there is potential for serious long-term impacts from this type of disturbance (FNAI, 2010).

Another type of disturbance involves the accumulation of toxic levels of heavy metals, oils, and pesticides within unconsolidated substrates. Significant amounts of these compounds in the sediments will kill the infaunal organisms, thereby eliminating a food source for certain fishes, birds, and other organisms. Such problems occur in some of the major port cities, in areas where there is heavy industrial development, and along major shipping channels where oil spills are likely to occur (FNAI, 2010).

Unconsolidated substrate, primarily sand with some pockets of silt and clay, is found throughout the CPAP and BCBAP. While there are large areas in which unconsolidated substrates do not appear to have been altered by human activity, dredge and fill activities, largely done prior to the aquatic preserve designations, have produced persistent changes in depth and sediment bulk properties (grain size distribution, porosity, and permeability) in many areas. Beach renourishment continues to alter topography and sediment bulk properties within the longshore transport system of the Gulf island beaches. In some more limited areas, alterations from events like directional drilling frac-outs have dramatically altered sediment bulk properties. Offshore surveys have indicated that unconsolidated substrate often alternates with consolidated substrate as one moves offshore. In shallow water, unconsolidated substrate often is vegetated with seagrass. Several past proposals to mine offshore sand pockets for beach renourishment have been discouraged, because these sand patches are an integral part of the ecological landscape. In a few cases, dredging of ebb-tide shoals has been permitted as a sand source.

Mollusk Reef - Marine and estuarine mollusk reefs are faunal-based natural communities typically characterized as expansive concentrations of sessile mollusks occurring in intertidal and subtidal zones to a depth of 40 feet. In Florida, the most developed mollusk reefs are generally restricted to estuarine areas and are dominated by the Eastern oyster (*Crassostrea virginica*). Numerous other sessile and benthic invertebrates live among, attached to, or within the collage of mollusk shells. Most common are burrowing sponge, anemones, mussels, clams, lightning whelk (*Busycon contrarium*), polychaetes, oyster leech (*Stylochus* sp.), barnacles, blue crab (*Callinectes sapidus*), mud crab, stone crab (*Menippe mercenaria*), amphipods, and starfish. Several fish also frequently occur near or feed among mollusk reefs, including cownose ray (*Rhinoptera bonasus*), gulf menhaden (*Brevoortia patronus*), gafftopsail catfish (*Bagre marinus*), pinfish (*Lagodon rhomboides*), spotted seatrout (*Cynoscion nebulosus*), and striped mullet (*Mugil cephalus*). Mollusk reefs that are exposed during low tides are frequented by a multitude of shorebirds, wading birds, raccoons (*Procyon lotor*), and other vertebrates (FNAI, 2010).

Reef-building mollusks require a hard (consolidated) substrate on which the planktonic larvae (i.e., spat) settle and complete development. The spat dies if it settles on soft (unconsolidated) substrates, such as mud, sand or grass. Hard substrates include rocks, limestone, wood and other mollusk shells. Hard substrates are often limited in estuarine natural communities because of the large amounts of silt, sands and muds that are deposited around river mouths. Once established, however, mollusk reefs can generally persist and often expand by building upon themselves (FNAI, 2010).

The most common kind of mollusk reef, oyster reefs, occur in water salinities from just above fresh water to just below full-strength sea water, but develop most frequently in estuarine water with salinities between 15 and 30 parts per thousand. Their absence in marine water is largely attributed to the many predators, parasites, and diseases of oysters that occur in higher salinities. Prolonged exposure to low salinities (less than two parts per thousand) is also known to be responsible for massive mortality of oyster reefs. Thus, significant increases or decreases in salinity levels through natural or unnatural alterations of freshwater inflow can be detrimental to oyster reef communities (FNAI, 2010).

Mollusk reefs occupy a unique position among estuarine invertebrates and have been an important human food source since prehistoric times. They present a dynamic community of estuarine ecology, forming refugia, nursery grounds, and feeding areas for a myriad of other estuarine organisms (FNAI, 2010).

The major threats to mollusk reefs continue to be pollution and substrate degradation. Mollusks are filter feeders, and individuals of some species can filter up to 100 gallons of water a day. In addition to filtering food, they also filter and accumulate toxins from polluted waters. Sources of these pollutants can be from considerably distant areas but are often more damaging when nearby. Substrate degradation occurs when silts, sludge and dredge spoils cover and bury mollusk reefs. Declining oyster and other mollusk reef populations can be expected in coastal waters that are being dredged or are receiving chemicals mixed with rainwater flowing off the land, or from drainage of untreated residential or industrial sewage systems (FNAI, 2010).

No comprehensive oyster reef map is available for the aquatic preserves, but most estuarine basins in BCBAP and PCAP have oyster reefs in some areas, with distributions largely dependent on local



Staging equipment for island work can be a logistical challenge.

salinities. Especially on the western side of the peninsula, considerable oyster acreage can be found in Boca Ciega Bay, Long Bayou, and Cross Bayou. Sizeable oyster reef structures can also be found adjacent to some of the dredged material islands in St. Joseph Sound. Many of these reefs appear to be healthy, with a diverse assemblage of associated fauna.

Octocoral Bed - Marine and estuarine octocoral beds are soft faunal-based natural communities characterized as large populations of sessile invertebrates of the Class Anthozoa, Subclass Octocorallia, Orders Gorgonacea and Pennatulacea. The dominant animal species are soft corals such as gorgonians, sea fans (Gorgonacea), sea feathers and sea plumes (*Pseudopterogorgia* spp.), sea fingers (*Briareum asbetinum*), sea pansies (*Renilla* spp.), sea rods (*Plexaura* spp.), and sea whips (*Leptogorgia* spp.). This community is confined to the subtidal zone since the sessile organisms are highly susceptible to desiccation. Other sessile animals typically occurring in association with these soft corals are sea anemones (Actiniaria). An assortment of non-sessile benthic and pelagic invertebrates and vertebrates [e.g., sponges, mollusks, tube worms, burrowing shrimp, crabs, isopods, amphipods, sand dollars, and fishes] are associated with octocoral beds. Sessile and drift algae can also be found scattered throughout octocoral beds (FNAI, 2010).

Octocoral beds require hard bottom (consolidated) substrate (i.e., coquina, limerock, relic reefs) on which to anchor. Hard bottom substrate occurs sparsely throughout Florida in marine and estuarine areas however, and soft corals prefer the warmer waters of the southern portion of the state, severely limiting their distribution. Octocoral beds may grade into other marine and estuarine hard bottom subtidal, intertidal, and supratidal communities, as well as soft bottom communities (FNAI, 2010).

Management considerations should include locating all true octocoral beds within the state, thought to be more prevalent off the Southeast coast, and providing protection for them from external degradation. Primary threats to octocoral beds include siltation from beach “renourishment” or “restoration” projects, anchor damage by nautical craft, trawling by commercial fishermen, collecting for tourist-oriented trade, and water pollution, particularly oil spills (FNAI, 2010).

While there are considerable numbers of the colorful sea whip on rocky areas near the dredged material islands of St. Joseph Sound, more diverse octocoral assemblages are more likely to be found in the offshore Gulf of Mexico area of the PCAP. As various hardbottom mapping projects are completed, it is hoped that octocoral beds will also be mapped, and information obtained about their condition.

Sponge Bed - Marine and estuarine sponge beds are soft faunal based natural communities characterized as dense populations of sessile invertebrates of the phylum Porifera, Class Demospongiae. The dominant animal species are sponges such as branching candle sponge (*Verongia longissima*), Florida loggerhead sponge (*Spheciospongia vesparium*) and sheepswool sponge (*Hippiospongia lachne*). Although concentrations of living sponges can occur in marine and estuarine intertidal zones, sponge beds are confined primarily to subtidal zones. Other sessile animals typically occurring in association with these sponges are stony corals (Scleractinia), sea anemones, mollusks, tube worms, isopods, amphipods, burrowing shrimp, crabs, sand dollars (*Mellita tenuis*), and fishes. Sessile and drift algae can also be found scattered throughout sponge beds (FNAI, 2010).

Sponge beds require hardbottom (consolidated) substrate (i.e., coquina, limerock, relic reefs) on which to anchor. Hardbottom substrate occurs sparsely throughout Florida in marine and estuarine areas however, and sponges prefer the warmer waters of the southern portion of the state, significantly limiting their distribution. Sponge beds may grade into other marine and estuarine hardbottom subtidal, intertidal and supratidal communities as well as soft bottom communities (FNAI, 2010).

Tarpon Springs is known for the sponge industry that once thrived on local sponge beds. While there are a number of sponge species within St. Joseph Sound wherever suitable unconsolidated substrate offers attachment, more extensive sponge beds are found in the offshore Gulf of Mexico part of the PCAP. Data specific to sponge bed health is lacking, but past water quality issues likely affected these filter feeding communities and “sponge blight” diseases are part of the history of the sponge industry. Monitoring of these communities could provide valuable insights into the health of the overall ecosystem.

Algal Bed - Marine and estuarine algal beds are floral based natural communities characterized as large populations of nondrift macro or micro algae. The dominant plant species include star algae *Caulerpa*, *Cladophora*, *Dictyota*, *Gracilaria*, *Halimeda*, shaving brush (*Penicillus capitatus*), and *Sargassum*. This community may occur in subtidal, intertidal, and supratidal zones on soft and hard bottom substrates. Vascular plants (e.g., seagrasses) may occur in algal beds associated with soft bottoms. Sessile animals associated with algal beds will vary based on bottom type. For algal beds associated with hard bottom substrate (lithophytic), faunal populations will be similar to populations associated with octocoral beds and sponge beds. Those associated with soft bottom substrate (psammophytic) may have similar benthic and pelagic species in addition to infauna species (FNAI, 2010).

Lithophytic algal beds are thought to be less widespread within Florida than psammophytic algal beds. The precise distribution of both kinds is not known; however, the distribution is thought to be less than for seagrass beds. The location of major beds must be determined before this natural community can be managed adequately. Existing state dredge and fill laws provide specific protection for seagrass beds but not for algal beds. The correction of this deficiency could prove to be the most effective management tool available (FNAI, 2010).

The primary threat to algal beds are dredging and filling activities which physically remove or bury the beds. Other damage occurs from increased turbidity in the water column which reduces available light; pollution, particularly from oil spills; and damage from boats (FNAI, 2010).

Diverse algal taxa, including *Halimeda*, *Penicillium*, *Padina* and others can be found on underwater rocky substrates in St. Joseph Sound. Dozens of algal species can be found on areas just offshore in the Gulf, but little is known about the full coverage or condition of this natural community within PCAP.

Seagrass Bed - Marine and estuarine seagrass beds are floral based natural communities typically characterized as expansive stands of vascular plants. This community occurs in subtidal (rarely intertidal) zones, in clear, coastal waters where wave energy is moderate. Seagrasses are not true grasses. The three most common species of seagrasses in Florida are turtlegrass (*Thalassia testudinum*), manateegrass (*Syringodium filiforme*), and shoalweed (*Halodule wrightii*). Nearly pure stands of any one of these species can occur, but mixed stands are also common (FNAI, 2010).

Attached to the seagrass leaf blades are numerous species of epiphytic algae and invertebrates. Together, seagrasses and their epiphytes serve as important food sources for manatees (*Manatus trichcechus latirostris*), marine turtles, and many fish, including spotted seatrout, spot, sheepshead, and red drum. The dense seagrasses also serve as shelter or nursery grounds for many invertebrates and fish, including marine snails, clams, scallops, polychaete worms, blue crab, starfish, sea urchins, tarpon (*Megalops atlanticus*), bonefish (*Albula vulpes*), seahorses (*Hippocampus* spp.), Florida pompano (*Trachinotus carolinus*), permit (*Trachinotus falcatus*), striped mullet, great barracuda (*Sphyraena barracuda*), and long-horned cowfish (*Lactoria cornuta*) (FNAI, 2010).

Seagrass beds occur most frequently on unconsolidated substrates of marl, muck or sand, although they may also occur on other unconsolidated substrates. The dense blanket of leaf blades reduces the wave-energy on the bottom and promotes settling of suspended particulates. The settled particles become stabilized by the dense roots and rhizomes of the seagrasses. Thus, seagrass beds are generally areas of soil accumulation (FNAI, 2010).

Other factors affecting the establishment and growth of seagrass beds include water temperature, salinity, wave energy, tidal activity, and available light. Generally, seagrasses are found in waters with temperatures ranging between 20° and 30°C (68°-86°F). Seagrasses occur most frequently in areas with moderate current velocities, as opposed to either low or high velocities. Although seagrass beds are most commonly submerged in shallow subtidal zones, they may be exposed for brief periods of time during extreme low tides. One of the more important factors influencing seagrass communities is the amount of solar radiation reaching the leaf blades. In general, the water must be fairly clear because turbidity blocks essential light necessary for photosynthesis. The rapid growth rate of seagrass under optimum conditions rivals that of most intensive agricultural practices, without energy input from man.

Seagrass beds are extremely vulnerable to human impacts. Many have been destroyed through dredging and filling activities or have been damaged by sewage outfalls and industrial wastes. In these instances, the seagrass beds are either physically destroyed, or succumb as a result of decreased solar radiation resulting from increased water turbidity (FNAI, 2010).

Seagrass beds are also highly vulnerable to oil spills. Low concentrations of oil are known to greatly reduce the ability of seagrasses to photosynthesize. Extreme high temperatures also have adverse impacts on seagrass beds. The area surrounding power plant outfalls, where water temperatures may exceed 35°C (95°F), has been found to be lethal to seagrasses. Seagrass beds are susceptible to long term scarring cuts from boat propellers, anchors and trawls. Such gouges may require many years to become revegetated. When protected from disturbances, seagrasses have the ability to regenerate and recolonize areas. Additionally, some successful replantings of seagrass beds have been conducted. However, the best management is to preserve and protect seagrass beds in their natural state (FNAI, 2010).

Seagrass is abundant both in Tampa Bay and on the west side of the Pinellas Peninsula. Despite the extensive acreage of seagrass, the cumulative effects of chronic prop scarring likely cause an important reduction of the ecosystem services provided by the grassbeds. There appears to have been a disappearance of seagrass beds in the northern offshore part of St. Joseph Sound, but other areas of the sound, Clearwater Harbor and Boca Ciega Bay have seen increases in seagrass acreage. The Shell Key Preserve and the waters protected by Mullet Key at Fort De Soto also have extensive seagrass beds.

Salt Marsh - Salt marsh is a largely herbaceous community that occurs in the portion of the coastal zone affected by tides and seawater and protected from large waves, either by the broad, gently sloping topography of the shore, by a barrier island, or by location along a bay or estuary. The width of the intertidal zone depends on the slope of the shore and the tidal range. Salt marsh may have distinct zones of vegetation, each dominated by a single species of grass or rush. Saltmarsh cordgrass (*Spartina alterniflora*) dominates the seaward edge and borders of tidal creeks, areas most frequently inundated by the tides. Needle rush dominates higher, less frequently flooded areas. Other characteristic species include Carolina sea lavender (*Limonium carolinianum*), marsh fimbry, and shoreline seapurslane. The landward edge of the marsh is influenced by freshwater influx from the uplands and may be colonized by a mixture of high marsh and inland species, including needle rush, sawgrass, saltmeadow cordgrass, Gulf cordgrass (*S. spartinae*), and sand cordgrass, among others. A border of salt-tolerant shrubs, such as saltbush, marshelder (*Iva frutescens*), and christmasberry (*Lycium carolinianum*), often marks the transition to upland vegetation or low berms along the seaward marsh edge (FNAI, 2010).

Salt marsh soils range from deep mucks with high clay and organic content in the deeper portions to silts and fine sands in shallower areas. The organic soils have a high salinity, neutral reaction, and high sulfur content; soil properties of salt flats on higher portions of the marsh are little studied (FNAI, 2010).

Persistent salt marsh is scarce in the aquatic preserves, as it is in Tampa Bay, in general. This likely is due to a warmer climate in recent years that has been conducive to overgrowth of cordgrass by mangroves (Rabbe, Roy & McIvor, 2012). Cordgrass does recruit in some areas after a disturbance, and stands of cordgrass persist along some shores in St. Joseph Sound, which is toward the northern extent of the range of red mangroves. Salt marsh also can be found in the upper parts of Old Tampa Bay in areas like Mobbly Bayou. Remaining salt marsh is highly fragmented by development, but the plants often appear healthy within remaining patches.

Mangrove Swamp - Mangrove swamp is a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant plants of mangrove swamp are red mangrove, black

mangrove, white mangrove, and buttonwood. These four species can occur either in mixed stands or often in differentiated, monospecific zones that reflect varying degrees of tidal influence, levels of salinity, and types of substrate. Red mangrove often dominates the lowest (or deep-water) zone, followed by black mangrove in the intermediate zone, and white mangrove and buttonwood in the highest, least tidally-influenced zone. Buttonwood often occupies an ecotone, or transition zone, to the adjacent upland community (FNAI, 2010).

The density and height of mangroves and the diversity of associated herbaceous species can vary considerably within a mangrove swamp. Mangroves typically occur in dense stands but may be sparse, particularly in upper tidal reaches where salt marsh species predominate. Mangroves may range from trees more than 80 feet (25 m) tall to dwarf shrubs growing on solid limestone rock, but most commonly exist at intermediate heights of 10 to 20 feet tall (3 to 7 m). Mangrove swamps often exist with no understory, although shrubs such as seaside oxeye, vines including nickerbean, and herbaceous species such as saltwort (*Batis maritima*) and perennial glasswort, occur most commonly in openings and along swamp edges (FNAI, 2010).





Top: Native plants, like this primitive cycad, provide a desirable seed source on islands and other coastal habitats. Bottom: Tube-dwelling anemones, often overlooked, are interesting, beautiful inhabitants of shallow waters in the aquatic preserve.

Mangrove swamp occurs in flat coastal areas along saline or brackish portions of rivers, the edges of low-energy estuaries, and the seaward fringes of salt marshes and rockland hammocks. Soils are generally anaerobic and are saturated with brackish water at all times, becoming inundated during high tides. Mangrove swamp occurs on a wide variety of soils, ranging from sands and mud to solid limestone rock. Soils in South Florida are primarily calcareous marl muds or calcareous sands and, along the Central Florida coastline, siliceous sands. In older mangrove swamps containing red mangroves, a layer of peat can build up from decaying plant material (mostly red and black mangrove roots), covering the soil (FNAI, 2010).

Mangroves do especially well farther south in the aquatic preserves, but even the more cold-sensitive red mangroves can be found into the northern part of the peninsula. Distribution of mangrove stands in Pinellas County likely is more related to patterns of development than it is to natural patterns of recruitment and persistence. Although the aquatic preserves are highly urbanized, this natural community is in good health where it persists.

Native Species

The species listed in Appendix B3 include more than 150 species of plants, more than 1100 species of invertebrates, nearly 200 species of fishes and more than 250 species of birds. Even though we have tried to limit the list to species closely associated with the aquatic preserves, this list is by no means comprehensive. The list is biased toward marine and estuarine databases, and it certainly underrepresents the flora and fauna associated with freshwater areas of PCAP. In addition, as has been pointed out in other parts of this plan, and by Ash and Runnels (2004), the biota of hardbottom in the Tampa Bay area are poorly

understood. Hundreds, if not thousands, of additional species could likely be added if extensive surveys of hardbottom epifauna and endolithic fauna were conducted.

Listed Species

According to data from the Audubon Society's monitoring program, PCAP and BCBAP host at least 17 imperiled bird species (National Audubon Society, n.d.). While much of the original habitat of these species has been lost or altered, islands and pockets of habitat on the mainland still offer some nesting, loafing and foraging opportunities. A rookery island in St. Joseph Sound is especially productive for colonial waterbird nesting, and there are some smaller island rookeries scattered throughout the PCAP and BCBAP. Ground nesting species often nest on rooftops, as many of the natural islands they historically depended on have been developed. Ground nesting still occurs on barrier islands, including Anclote Key, Three Rooker Bar, the Honeymoon Island sand spit and Shell Key, but human disturbance likely will increase on all islands, and some, like Shell Key, become less suitable for nesting success as they accrete toward the mainland and become more accessible to predators like raccoons.

At least seven species of endangered or threatened reptiles, including four species of sea turtles, may be found within the preserves. The American alligator is abundant in freshwater parts of PCAP, and at least one occurrence of the American crocodile (*Crocodylus acutus*) has been documented in Lake Tarpon.

At least one endangered fish species, the Atlantic sturgeon (*Acipenser oxyrinchus*) can be found in the coastal waters of the aquatic preserves.

The area's most well-known threatened species, the West Indian manatee, is spotted fairly often in warmer weather, and can be found in larger aggregations near warm power plant cooling water outflows in the winter months. Manatees sometimes are seen hanging around in marinas, presumably attracted by freshwater discharges.

Invasive Non-native and/or Problem Species

Florida is second only to Hawaii in the number of established invasive species (Simberloff, 1994). An invasion of a non-native species has been classified as "the second most important threat to native species, behind habitat destruction" (Ecological Society of America, 2004). Introductions of non-native marine invertebrates and seaweeds to coastal habitats in the United States have increased one hundred-fold in the last 200 years (Jacoby, Walters, Baker, & Blyler, 2003).

By virtue of their geographic position, which spans a climatic gradient, BCBAP and PCAP host a variety of nonnative species, and some of these have proven to be invasive to the extent that they upset native ecological communities and ecosystems. For instance, the Asian green mussel (*Perna viridis*) is well-established within Tampa Bay, and it may form dense mats that preempt native hard substrate species, although it does not appear to be as much of a problem on the western side of the Pinellas Peninsula, where salinities or other physical parameters may not be as suitable. Another example is the red lionfish (*Pterois volitans*) which is a concern offshore, but it does not appear to frequent nearshore waters or habitats within the bay. Many more examples can be found in a 2004 report published by the Tampa Bay Estuary Program on known nonnative species in the Tampa Bay area, including a list of other likely nonnative future recruits (Baker, Baker, & Fajans., 2004).

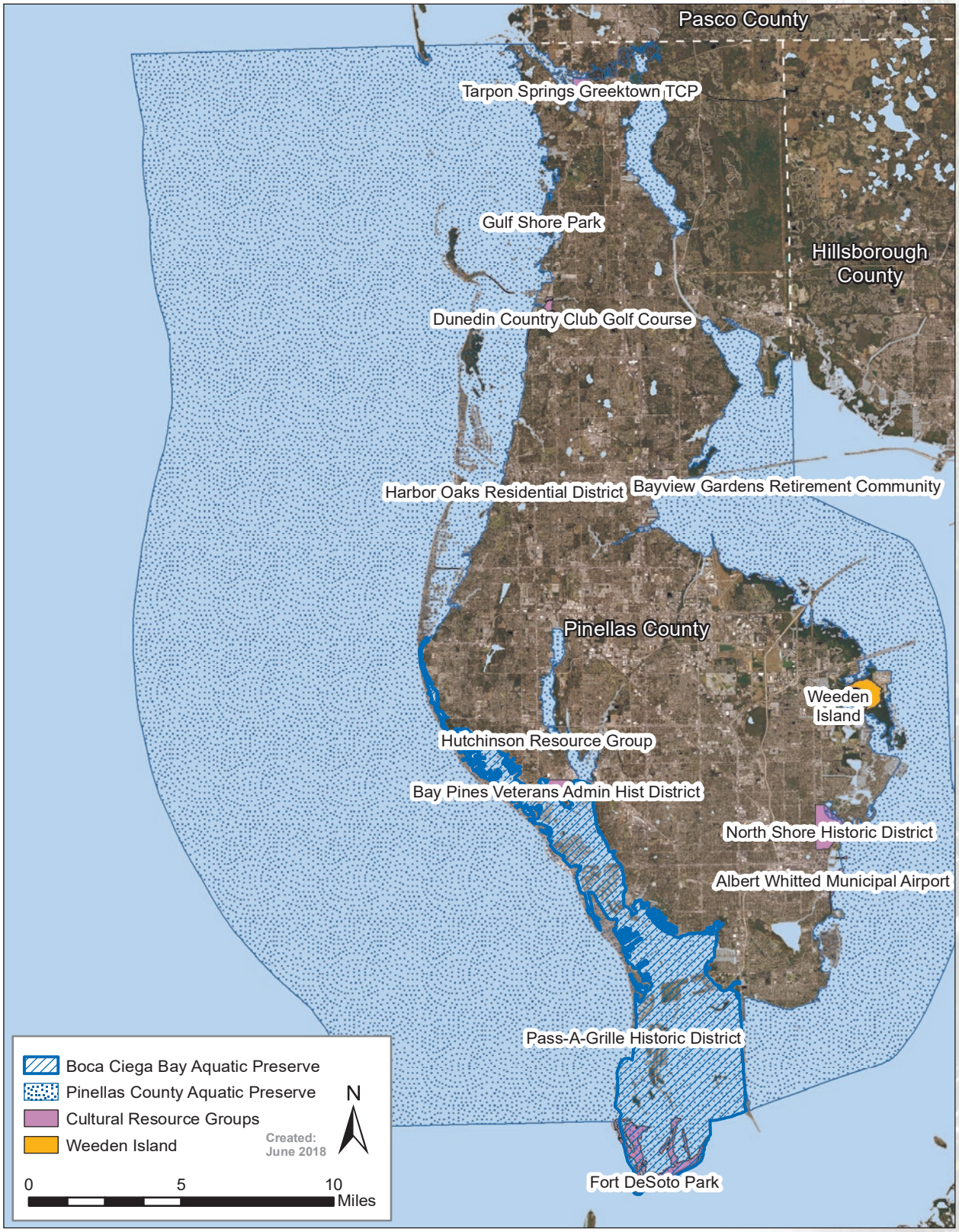
As with conservation areas on the mainland and on islands of the state parks, nonnative plants are the most prominent invasives in PCAP and BCBAP. Species that displace natives on a large scale include Brazilian pepper (*Schinus terebinthifolia*) Australian pine (*Casuarina* sp.), and, more recently, carrotwood (*Cupaniopsis anacardioides*). Guinea grass (*Panicum maximum*) also competes with native plants on islands, but it typically grows in island restoration areas where developing tree canopy does not yet outcompete it for sunlight.

Archaeological and Historical Resources

Archaeological sites and historical resources are protected under Florida Statutes Chapter 267 and are not to be disturbed unless prior permission is granted from the Division of Historical Resources. The Florida Division of Historical Resources has documented evidence of prehistoric cultures from Paleoindian (10,000 - 8500 B.C.) to Safety Harbor (1000 - 1500 A.D.) within or adjacent to the aquatic preserve boundaries, including 181 archaeological and historical sites and cultural resource areas totaling 4,489 acres, as well as bridges (Appendix B.5). There are also more than 700 historical structures within 164 feet (50 meters) of the aquatic preserve boundaries. Although some of these cultural resources are protected as conservation areas such as Weedon Island Preserve, most are privately owned. Weedon Island was acquired by the state in 1974, and it has been managed by Pinellas County under lease for the last 25 years. In addition to a visitors' center and coastal habitat trails and boardwalks, the site is rich in pre-

Columbian archaeological resources. One of the most notable was a 40+ foot long wooden canoe that was excavated and preserved in 2011. TBAP staff assisted with this recovery.

Most of the submerged areas within PCAP and BCBAP have not been surveyed, and it is expected that there are numerous unrecorded sites. Staff will update their Archaeological Resource Management training, and will watch for unidentified cultural resources during their other activities in the aquatic



Map 9 | Historical and archaeological sites associated with Pinellas County and Boca Ciega Bay aquatic preserves.

preserve. In addition, Division of Historic Resources, Bureau of Archaeological Research archaeologists will be invited to join them in the field.

Other Associated Resources

The most spectacular natural feature of PCAP may be the hardbottom outcrops in the offshore area of the aquatic preserve in the Gulf of Mexico. Little is known about the distribution of these habitats, but surveys for proposed linear features have revealed a rich biota including dozens of hard and soft coral species. From an ecological and biological perspective, these features, while growing on relict limestone and not accreting coral reefs, are very interesting. However, most residents and visitors have never seen them because, as submerged resources, they are out of sight, and, therefore, out of mind. On the Tampa Bay side of the aquatic preserve, natural resources like underwater beds of brachiopods thrill scientists, and nearly everyone has access to interesting pre-Columbian settlement sites at places like Philippe Park and Weedon Island.

Aesthetically, Pinellas County has a number of spectacular features for residents and visitors. Beaches at Caladesi Island and Fort De Soto routinely get high rankings nationally and internationally. A spectacular sunset can be observed from most beaches on the Gulf side of the peninsula. The drive across Tampa Bay on the Courtney Campbell Causeway has been designated as a National Scenic Highway.

One of the most amazing overall features of the county and its aquatic preserves is the contrast between different areas. When on the water, adjacent to cypress and tupelo shorelines at Lake Tarpon, it can be difficult to believe that one is in the same county as the equally spectacular, but dramatically different surroundings of mangroves farther south.

*3.4 / **Values***

The southwest coast of Florida is a subtropical paradise full of beaches and resorts, and is characterized by a variety of ecosystems that support high biodiversity and act as nurseries for many environmentally and commercially important species. The area is sustained by its marine resources and tourism brought in by the abundant natural beauty of Pinellas County. Rapid population growth and the consequent increasing use of coastal waterways and coastline destruction is threatening the very exceptional natural resources in this region. The population of Pinellas County is expected to grow by eight percent in the next few years, increasing to more than one million by 2021 (Friedman, 2017). Population growth is a pressing issue for maintaining and restoring our coastal resources. The continued ability of the PCAP and BCBAP to provide protection against environmental destruction is essential as the demographics of the region continue to change.

Tourism is a major driving force for the county's economy with more than 6.3 million visitors in 2016, bringing in $9.7 billion, a five percent increase from 2015 (Visit St. Pete/Clearwater, 2016). The numbers have been steadily increasing over the years. Tourists come from all over the country, and internationally, to see the white sand beaches and enjoy the warm sunny climate. St. Petersburg, nicknamed the "Sunshine City" for its average 361 days of sunshine a year, is becoming a top U.S. destination. Fort De Soto County Park, Caladesi Island State Park, and Clearwater Beach were all named the No. 1 best beaches in the nation in 2005, 2008 and 2016, respectively. Visitors come to enjoy water sports including parasailing, canoeing, kayaking, boating, and fishing. The Clearwater Aquarium and sunset dolphin cruises are popular daytime excursions. Divers can enjoy offshore artificial reefs and tournaments such as the Annual Lionfish Safari. Manmade islands within Boca Ciega Bay are friendly spots for kayakers, fisherman, and campers.

Due to the extensive use of our coastal environments, and with the projected population growth in mind, the impacts to the aquatic preserves are substantial. It is essential to educate residents and visitors on the proper use of our natural environment if we are to continue to benefit from the natural beauty that has been laid down at our fingertips.

*3.5 / **Citizen Support Organization***

Citizen Support Organizations (CSOs) are recognized by statute as citizen-led organizations with a special connection to the managed area they support. CSOs may support parks, research reserves and aquatic preserves. Some CSOs support specific managed areas, while others are formed to support groups or systems of managed areas. CSOs for specific sites typically start off with a lot of interest, but maintaining that interest requires specific goals for a specific geographic area. Over the years, TBAP has occasionally analyzed the need and likely viability of a CSO. Because Tampa Bay's four aquatic



Sunrises, like this one, can be as spectacular as sunsets.

preserves are spread over three counties and numerous basins and communities, a cohesive CSO with program-wide goals likely would be difficult to maintain. Nevertheless, there has been an ongoing need for nonprofit partnerships that could only be partially filled with the program's collaboration with various nonprofit conservation groups.

In 2014, a group of Florida citizens formed a CSO called the Aquatic Preserve Society, Inc. Since then, the Aquatic Preserve Society has gained 501(c)3 status, and it also has been given statutory authority to accept funds on behalf of aquatic preserves to be applied to their management needs. The present CSO strategy of TBAP is to rely on the Aquatic Preserve Society to receive funds donated or otherwise designated for TBAP projects. To date, funds for several public interest projects in Pinellas County have been deposited with the Aquatic Preserve Society for disbursement, as needed, for those specific projects. At present, the role played by the Aquatic Preserve Society appears to be preferable to the commitment of staff time to setting up and coordinating with a standalone CSO for Tampa Bay's Aquatic Preserves.

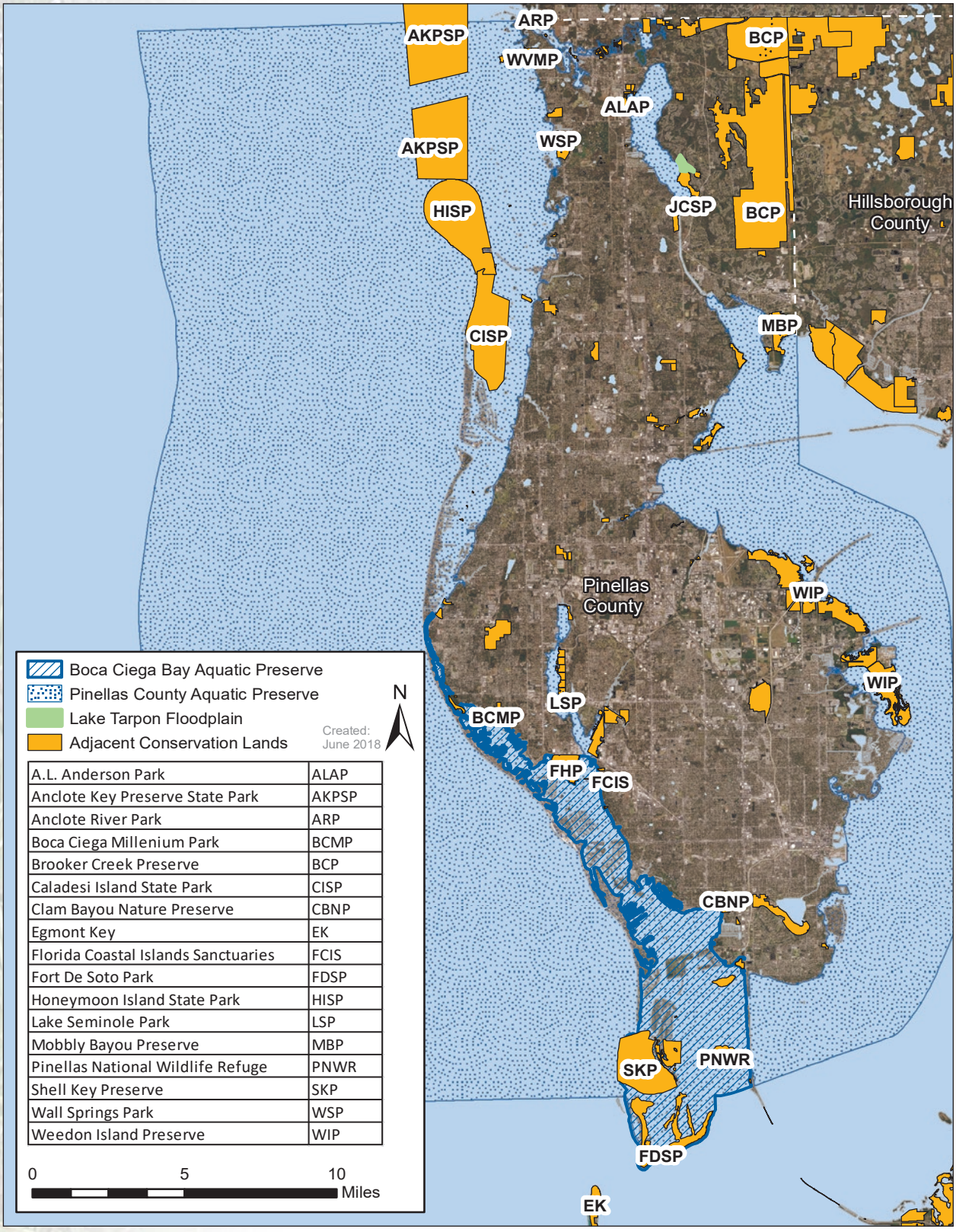
3.6 / ***Adjacent Public Lands and Designated Resources***

Pinellas County has many public sites adjacent to PCAP and BCBAP, and most play a role in conservation and/or public access related to the ecosystem of the aquatic preserves. Other than the submerged lands and islands of the aquatic preserves themselves, TBAP only manages one adjacent upland property. Several decades ago, nearly 80 acres of floodplain swamp on the southeastern shore of Lake Tarpon was given to the state as part of permitting for nearby residential developments, the permitting process largely because it is adjacent to the freshwater part of the PCAP in Lake Tarpon. However, the parcel was unmanaged until 2016, when TBAP secured a state lands lease to manage it as a buffer preserve (Chapter 18-23, Florida Administrative Code). In addition to the parcel's floodplain role, it serves as a refuge for plants and wildlife that have lost much habitat in Pinellas County over decades of development. The parcel is not managed as aquatic preserve, but, rather, it is managed by the TBAP program under the buffer preserve rule.

Immediately south of the buffer preserve property on Lake Tarpon is John Chesnut Senior Park. The park provides public access with trails, wetland boardwalks and a boat ramp. Development of any access

into the TBAP floodplain buffer preserve would require considerable expense and impact to the swamp, so having this access immediately to the south reduces the need for such impacts. On the other shore of Lake Tarpon, A.L. Anderson Park also offers boat and hiking access to the lake. Both Chesnut and Williams parks are managed by Pinellas County.

Brooker Creek Preserve, the land to the east of Lake Tarpon, is also managed by the county under the Department of Environmental Management's Environmental Lands Division. The preserve was



A.L. Anderson Park	ALAP
Anclote Key Preserve State Park	AKPSP
Anclote River Park	ARP
Boca Ciega Millenium Park	BCMP
Brooker Creek Preserve	BCP
Caladesi Island State Park	CISP
Clam Bayou Nature Preserve	CBNP
Egmont Key	EK
Florida Coastal Islands Sanctuaries	FCIS
Fort De Soto Park	FDSP
Honeymoon Island State Park	HISP
Lake Seminole Park	LSP
Mobbly Bayou Preserve	MBP
Pinellas National Wildlife Refuge	PNWR
Shell Key Preserve	SKP
Wall Springs Park	WSP
Weedon Island Preserve	WIP

Map 10 | Conservation lands adjacent to Pinellas County and Boca Ciega Bay aquatic preserves.

established in the early 1990s and is the largest natural open space in Pinellas (Pinellas County Department of Environmental Management, 2008). It consists of a mix of upland and wetland communities, including pine flatwoods, hammocks, cypress domes, and marshes.

Lake Seminole also has extensive freshwater resources in PCAP. Lake Seminole Park, located on the southeastern shore of Lake Seminole, offers boat and shoreline access. It is managed by Pinellas County, and, like its counterparts on Lake Tarpon, it also serves as a vegetated upland buffer between the aquatic preserve waters and developed areas.

The estuarine and marine shorelines of PCAP Include several large parks and preserves of regional significance, as well as smaller local pocket parks and preserves. Anclote River Park is actually just north of PCAP, but boats that launch into the river from the park almost immediately cross the county line into aquatic preserve waters. TBAP maintains a partnership with the Pasco County managers of this park to make conservation information available at a boat ramp kiosk in the park.

Howard Park, near Tarpon Springs, sits atop a long, filled causeway and T-head landmass that extends out into St. Joseph Sound. It does not offer boat ramp access, but kayaks can be launched. It also has a manmade beach area. The park includes acreage on the adjacent mainland shore that preserves natural shoreline.

Wall Springs Park, near Palm Harbor, protects freshwater input into the aquatic preserve from the park's namesake freshwater spring. The original park area preserves natural shoreline along PCAP, and a more recent addition of land on the park's northern side, purchased with funds from the Florida Community Trust, has altered shorelines. TBAP has had discussions with park management about strategies for returning those shorelines to a more natural state.

One of the most significant public areas in PCAP consists of several large islands under the management of the Florida Park Service - Anclote Key, Three Rooker Bar, Honeymoon Island, and Caladesi Island. Although Honeymoon Island and Caladesi Island have considerable infrastructure for visitors, all of these islands play an important role as refuges for coastal plant communities and nesting beaches for shorebirds and sea turtles. Both in formal management planning, as well as in more routine ongoing interactions and collaborations, TBAP works with the park service to ensure that park management goals complement aquatic preserve management goals. Honeymoon Island also serves as a venue for outreach to park visitors at events like "Honeymoon Island Earth Days."

Along the chain of Pinellas County's barrier islands, there are a number of public lands, ranging from open beaches to county and municipal parks. As relatively undeveloped areas within an urban landscape, each one offers some habitat and public access, along with opportunities to help the site operate more cleanly. Porous parking surfaces, pet waste pickup stations and monofilament line receptacles are among the environmentally-friendly enhancements frequently recommended by TBAP for these public areas.

Within BCBAP, a number of parks, including Millennium Park, War Veterans Memorial Park and Clam Bayou Nature Park provide shoreline habitat and public access to the aquatic preserve. War Veterans Memorial Park also maintains a multi-lane boat ramp that serves as one of the most significant access points to BCBAP.

Near the south end of the Pinellas Peninsula, Pinellas County has taken a very active role in managing conservation and recreation lands. The Shell Key Preserve is a conglomeration of state and county-owned lands that the county has integrated under a single management plan. This preserve was established in 2000 at the county's request, because ongoing environmental issues related to intense public use were best addressed by the county's on-site environmental and law enforcement resources. TBAP played an important role in the establishment of the Shell Key Preserve and continues to give input as appropriate. The county does not have the same budget resources as when the preserve was first established, but they have continued to actively manage the area.

To the east of Shell Key and the Pinellas Bayway is the Pinellas National Wildlife Refuge, consisting of several islands that were established as breeding grounds for colonial bird species (U.S. Fish and Wildlife Service, n.d.-a). The refuge includes Indian and Tarpon Keys and hosts numerous nesting species including herons, egrets and brown pelicans. Tarpon Key hosts the largest brown pelican rookery in Florida. These islands are closed off to the public to protect the birds and the surrounding seagrass beds.At the very southern end of the county, on Mullet Key at the end of the Pinellas Bayway, is Fort De Soto Park. Like the Shell Key Preserve, this area is surrounded by both BCBAP and PCAP. This popular destination includes campsites, a top-rated beach and an officially-designated dog beach that

was showcased in a 2010 Southern Living Magazine article (Thuston, 2010). Additional public access at the park includes kayak rentals and the county's largest multi-lane boat ramp, with fairly direct access to offshore waters of the Gulf of Mexico.

Just below the county line is Egmont Key, which was established as a National Wildlife Refuge in 1974. The island is managed by the U.S. Fish and Wildlife Service and the Florida Park Service to protect the plant and animal communities that dominate the island, including coastal berm, coastal grassland and beach dune, and species such as gopher tortoises, sea turtles and laughing gulls (U.S. Fish and Wildlife Service, n.d.-a). Egmont Key also hosts the Fort Dade lighthouse at the northern end of the island for visitors to explore. Most of the southern and eastern portions are closed off for the refuge and bird sanctuaries.

Like the Shell Key Preserve, the Weedon Island Preserve, located on the eastern shore of the peninsula along Tampa Bay, includes considerable state-owned acreage for which the county has a formal management agreement with the state and undergoes periodic state management reviews. While Weedon Island may be best known for the pre-Columbian Weedon Island Culture, which left a treasure trove of artifacts of their ancient daily life, this preserve's wealth of natural resources make it an important part of the Tampa Bay side of PCAP. Extensive mangrove forests, oyster reefs and island hammocks make up one of the county's most diverse and complex ecological landscapes. Additionally, the preserve has a visitor center that has served as a great venue for outreach efforts by TBAP and others.

Also along the Tampa Bay side of PCAP, are a number of other sites at which the county, the Southwest Florida Water Management District and others have been working to enhance habitat value. Much of the work has centered on filling certain mosquito ditches to reestablish tidal sheet flow and to reduce the ditching spoil piles as refuges for invasive plants. The Gateway Tract and Coopers Bayou are two such sites. At the northeastern part of PCAP, near Oldsmar, the county's Mobbly Bayou Preserve has also undergone restoration work to undo some of the past alterations of its landforms.

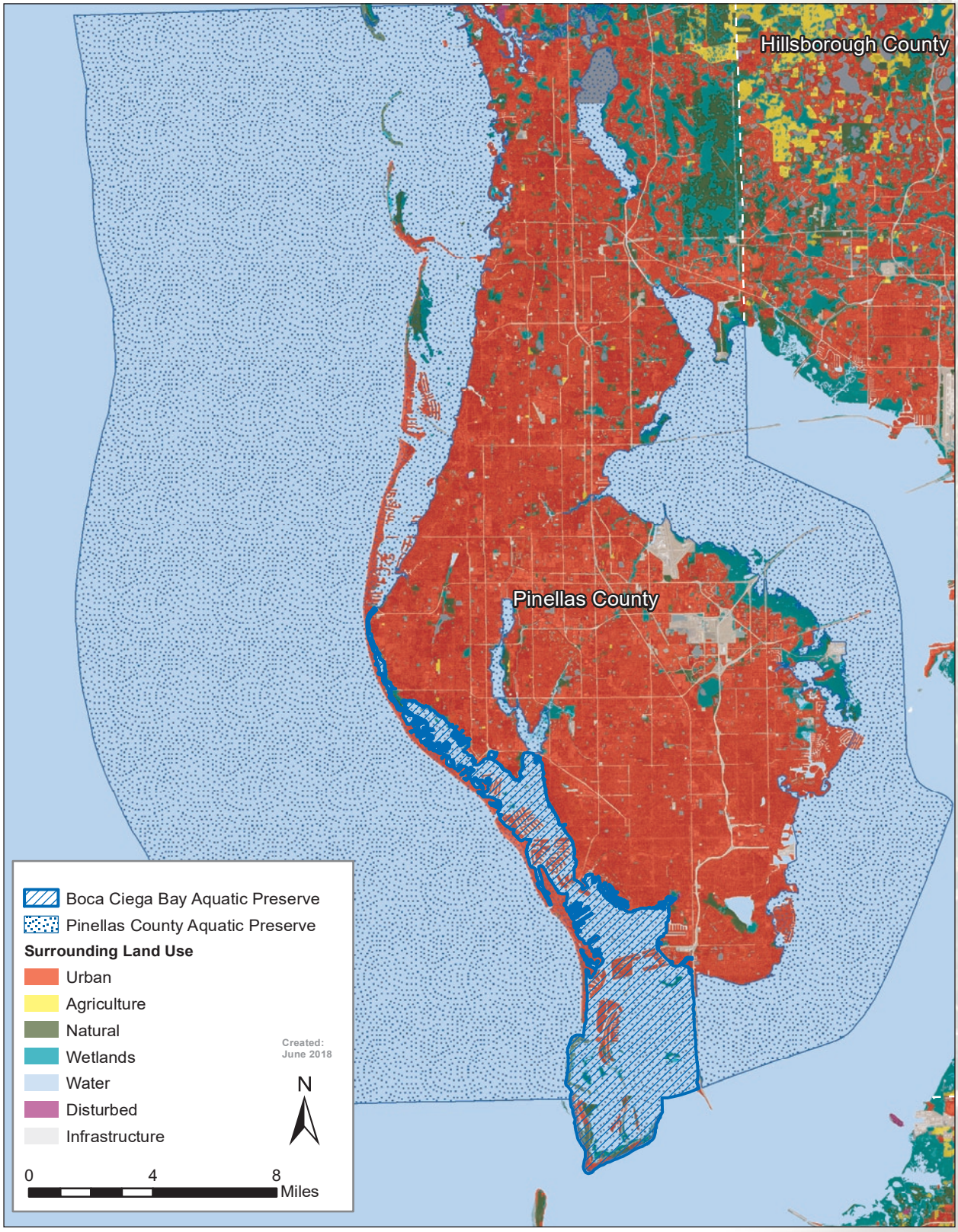
As has been mentioned, there are numerous smaller public lands around PCAP and BCBAP. Many of these were purchased with the help of state funds administered through DEP, Southwest Florida Water Management District and the Florida Communities Trust. Over the years, TBAP often has been called upon to give input on habitat and sustainable public access aspects of these smaller areas.

*3.7 / **Surrounding Land Use***

As previously mentioned, the upland land mass of Pinellas County is extensively altered. Pervasive development is mostly residential and commercial, with the commercial properties being oriented mostly towards retail rather than heavy industry. Because of a lack of mass transit, other than buses, transportation is heavily reliant on cars, and as a result, roadways often are multi-lane. In the northern part of the county, non-developed conservation areas, like Brooker Creek Preserve and Mobbly Bayou Preserve stand out on the land use map, as they are surrounded by developed land. Connections, like the one between the north and south areas of Brooker Creek Preserve, are especially valuable ecologically. The Stouffer superfund site on the north side of the Anclote River, also stands out as a large open space, but soil contamination keeps it open, and it is of little conservation value in its present state. Floodplains and cypress swamps are found near waterbodies, but their footprint has been greatly reduced by urban sprawl in recent decades.

Toward the southern end of the county, residential areas and the St. Petersburg occupy most of the upland. The less-developed area of Weedon Island Preserve and Riviera Bay is conspicuous, as is the southernmost part of the county around Fort De Soto and Shell Key.

Aside from islands designated as parks and preserves discussed in this plan, most barrier islands are covered by residences, shops, hotels and roads. TBAP has been part of discussions about light rail or other mass transit infrastructure to reduce vehicle traffic and roads on the barrier islands, but it would be difficult to reconfigure the present patterns of development.



Map 11 / Land use surrounding Pinellas County and Boca Ciega Bay aquatic preserves.



Because of the close proximity of shoreline development to natural resources, intact shoreline vegetation and other resiliency-enhancing features are especially important.

Part Two

Management Programs and Issues

Chapter Four

Pinellas County and Boca Ciega Bay Aquatic Preserves Management Programs and Issues

The work performed by the Florida Coastal Office (FCO) is divided into components called management programs. In this management plan all site operational activities are explained within the following four management programs: Ecosystem Science, Resource Management, Education and Outreach, and Public Use.

The hallmark of Florida's Aquatic Preserve Program is that each site's natural resource management efforts are in direct response to, and designed for unique local and regional issues. When issues are addressed by an aquatic preserve it allows for an integrated approach by the staff using principles of the Ecosystem Science, Resource Management, Education and Outreach, and Public Use Programs. This complete treatment of issues provides a mechanism through which the goals, objectives and strategies associated with an issue have a greater chance of being met. For instance, an aquatic preserve may address declines in water clarity by monitoring levels of turbidity and chlorophyll (Ecosystem Science - research), planting eroded shorelines with marsh vegetation (Resource Management - habitat restoration), creating a display or program on preventing water quality degradation (Education and Outreach), and offering training to municipal officials on retrofitting stormwater facilities to increase levels of treatment (Education and Outreach).

Issue-based management is a means through which any number of partners may become involved with an aquatic preserve in addressing an issue. Because most aquatic preserves are endowed with very few staff, partnering is a necessity, and by bringing issues into a broad public consciousness, partners who wish to be involved are able to do so. Involving partners in issue-based management ensures that a particular issue receives attention from angles that the aquatic preserve may not normally address.

This section will explore issues that impact the management of Pinellas County Aquatic Preserve (PCAP) and Boca Ciega Bay Aquatic Preserve (BCBAP) directly or are of significant local or regional importance that the aquatic preserve's participation in them may prove beneficial. While an issue may be the same from preserve to preserve, the goals, objectives and strategies employed to address the issue will likely vary depending on the ecological and socioeconomic conditions present within and around a particular aquatic preserve's boundary. In this management plan, PCAP and BCBAP will characterize each of its issues and delineate the unique goals, objectives and strategies that will set the framework for meeting the challenges presented by the issues. Beneficial projects, outside the current capacity of PCAP and BCBAP's funding and staffing, are identified in Appendix D.4, in case opportunities become available to support those projects in the ten-year span of this management plan.

Each issue will have associated goals, objectives, and strategies. Goals are broad statements of what the organization plans to do and/or enable in the future. They should address identified needs and advance the mission of the organization. Objectives are a specific statement of expected results that contribute to the associated goal, and strategies are the general means by which the associated objectives will be met. Appendix D contains a summary table of all the goals, objectives and strategies associated with each issue.

4.1 / The Ecosystem Science Management Program

The Ecosystem Science Management Program supports science-based management by providing resource mapping, modeling, monitoring, research and scientific oversight. The primary focus of this program is to support an integrated approach (research, education and stewardship) for adaptive management of each site's unique natural and cultural resources. FCO ensures that, when applicable, consistent techniques are used across sites to strengthen the Florida's ability to assess the relative condition of coastal and freshwater resources. This enables decision-makers to more effectively prioritize restoration and resource protection goals. In addition, by using the scientific method to create baseline conditions of aquatic habitats, the Ecosystem Science Management Program allows for objective analyses of the changes occurring in the state's natural and cultural resources.

4.1.1 / Background of Ecosystem Science at Pinellas County and Boca Ciega Bay Aquatic Preserves

Program capacity has limited the amount of in-house research and monitoring that Tampa Bay Aquatic Preserves (TBAP) has been able to do over the years, but the program has been active in helping with the planning, implementation logistics, interpretation and application of results of research with a variety of governmental, non-governmental and academic partners. In cases where TBAP has seen informational needs that were not being addressed, the program has stepped in to do research and monitoring.

While understanding the status and trends of the resources of BCBAP and PCAP is complicated by the aquatic preserves' urban location, there are benefits in the availability of research and monitoring data. Readily-available data on seagrasses, biota, water quality and other critical parameters of the aquatic preserves' ecosystems allow TBAP to focus more on connecting this knowledge base with the numerous issues like proposed projects that would impact the aquatic preserves.

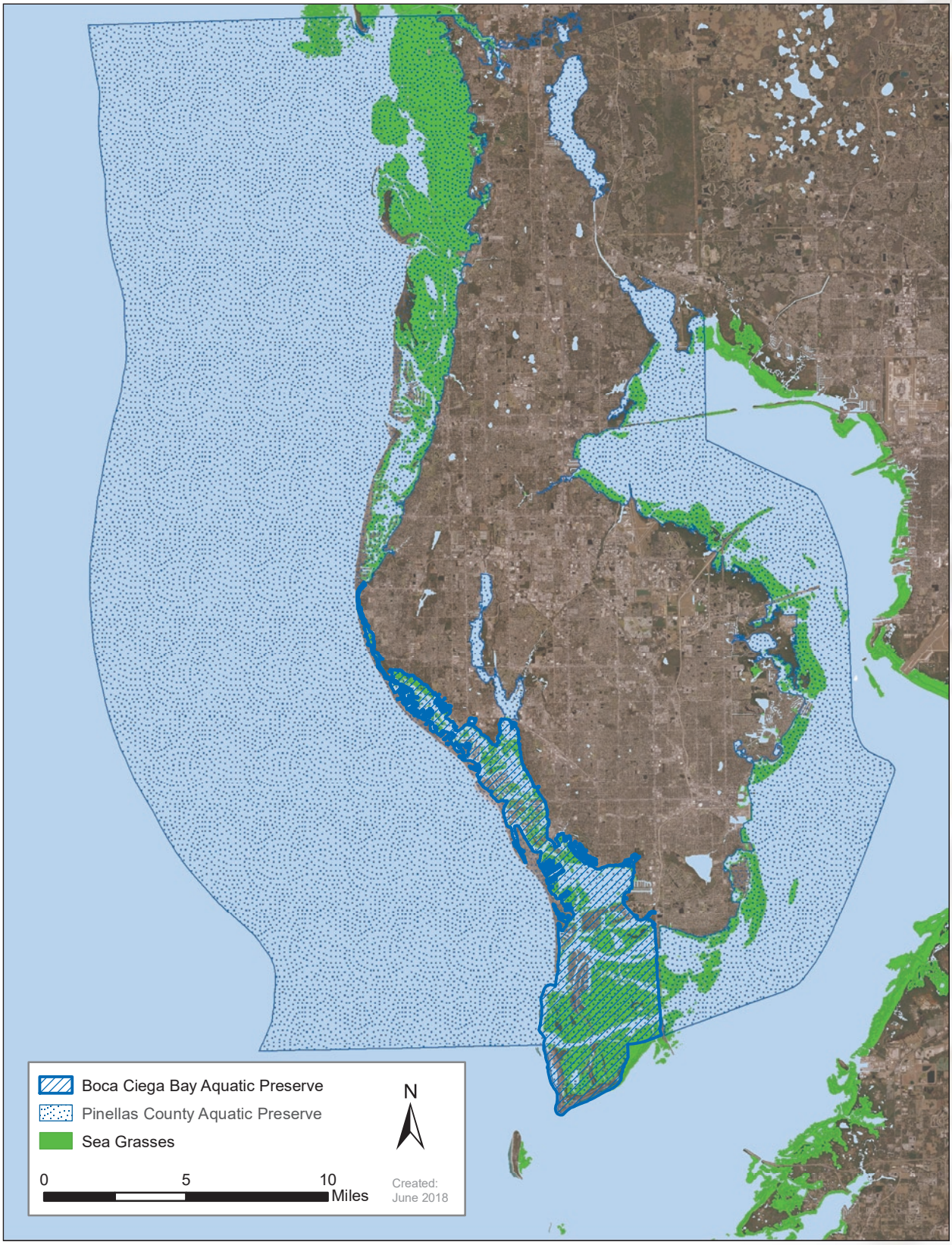
TBAP has an excellent seagrass monitoring program on both sides of the Pinellas Peninsula. On the Tampa Bay side, seagrass monitoring is coordinated by the Tampa Bay Estuary Program, and on the west side of the peninsula, it is coordinated by Pinellas County, and a variety of agencies and organizations provide trained participants to work the transects. At a minimum, Braun-Blanquet sampling is done on an annual basis (Yarbro & Carlson, 2016). Seagrass monitoring is complemented by mapping seagrass acreage using aerial imagery flown by Southwest Florida Water Management District (SWFWMD) every two years. As a result of these two programs, overall trends in seagrass coverage, as well as species and depth changes are detected in a fairly timely manner.

Water quality monitoring is done by a number of entities according to specific questions. Overall trends for basins are monitored under the coordination of the Tampa Bay Estuary Program within Tampa Bay and by Pinellas County on the western side of the Pinellas Peninsula. Other entities with specific informational needs do more specific monitoring. A good example is the monitoring done by the Florida Department of Agriculture and Consumer Service's Division of Aquaculture to detect coliforms and other pollutants that can contaminate shellfish harvesting areas.

In aggregate, the monitoring of endangered and/or threatened biota in the aquatic preserves that is done by a variety of public, private and academic entities is fairly comprehensive. TBAP is fortunate that the Audubon Society's Coastal Islands and Sanctuaries program, based in Tampa, is active in the area,

and has been for decades. Along with the St. Petersburg and Clearwater Audubon chapters, the Coastal Islands and Sanctuaries program maintains a thorough database of nesting activities on the rookery islands managed by TBAP.

While the Florida Fish and Wildlife Conservation Commission (FWC) provides overall monitoring of manatees and fishes, monitoring of other taxa often depends on the proximity of interested volunteers and site managers (Meylan, Mosier, Moody, Kendall, & Foley, 1996). For example, sea turtle nesting



Map 12 | Seagrass beds of Pinellas County and Boca Ciega Bay aquatic preserves.



Only a few years ago, this island was just an underwater shoal. Now it is developing dunes and vegetation.

often is monitored by state and local parks and municipalities that manage specific beaches, and it often involves volunteers recruited by those entities. Another example is the monitoring program for horseshoe crabs (*Limulus polyphemus*) recently begun by a retired citizen in the northern part of Pinellas County with guidance from FWC and TBAP. This important data gap is being addressed with protocols that are similar to those in other locations, like Port Canaveral, so trends beyond Tampa Bay may be detected. The horseshoe crab monitoring has begun in the northern part of Pinellas County, but TBAP will also encourage its expansion southward in the county and in other parts of Tampa Bay.

As previously mentioned, TBAP has engaged in research and monitoring where there is an outstanding need. In the early to mid-2000s, the program needed more information on how local coastal plant distributions related naturally to island topography and soil characteristics. The program partnered with a plant ecologist to conduct a grant-supported survey of plants on 12 islands. The data from this survey were subjected to an ordination analysis that gave plant assemblage insights that were directly applicable to TBAP's island revegetation work (Restom-Gaskill, Wolf, & Runnels, 2009).

More recently, the formation of a new island in Bunce's Pass (PCAP, just outside BCBAP) created a unique opportunity to see how new islands in the area evolve. TBAP began an ongoing program to map the elevations and perimeter of the island and partnered with a plant ecologist to document the recruitment and dispersion of native plant species on the island. Like TBAP's hardbottom monitoring program on the other side of the bay, this new program allowed us to create protocols and methodologies that can be applied to similar scenarios in the future.

Historically, this diverse assortment of research and monitoring programs has served the informational needs of TBAP well. From the program's perspective, we could do a better job of tracking the numerous programs and their results. TBAP is exploring ways to do that with the aid of modern GIS and interactive database technology.

4.1.2 / ***Current Status of Ecosystem Science at Pinellas County and Boca Ciega Bay Aquatic Preserves***

As previously described, ongoing monitoring programs have, for the most part, been adequate for TBAP's informational needs in the BCBAP and PCAP. Through input during the experimental design phase, TBAP has been able to enhance the decision support value of a number of specific research projects. Nevertheless, there are outstanding informational needs that likely will help guide the program's future direction in ecosystem science.

Despite the extensive seagrass mapping and monitoring and other programs described in the previous section, very little is known about the distribution and species composition of some of the aquatic preserves' other natural communities. This is especially true of the PCAP, which has extensive hardbottom outcrops offshore and considerable hardbottom acreage within Tampa Bay that is only recently being documented. TBAP has worked with SWFWMD on the bay side and with other entities like Nova Southeastern University on the offshore side to develop mapping strategies and protocols, but these programs are limited in scope, with relatively small footprints and limited species identification. Based on our work in Terra Ceia Aquatic Preserve, TBAP is developing protocols and methods that are based on real-world applications to help us encourage resource inventories that meet program needs. At present TBAP's in-house resource inventory capacity is geared toward project-specific mapping over limited areas for regulatory input, but we are looking at ways to use GIS-connected towed video and acoustic remote sensing to map larger areas in the future.

In the Tampa Bay area, hardbottom monitoring is nonexistent, but TBAP has been developing an ongoing hardbottom monitoring program across the bay at Terra Ceia. The protocols and methods for this monitoring initiative could be applied in Pinellas County waters in the future, either through expanded program capacity or through collaboration with other programs.

With numerous academic and government entities based locally in Pinellas County, there are many opportunities for TBAP to influence research and monitoring to yield more useful information. TBAP is looking at ways to better track ongoing programs and to actively engage entities seeking to establish new initiatives in the aquatic preserves.

4.1.3 / ***Ecosystem Science Issue***

Issue I: Protection of Submerged Resources

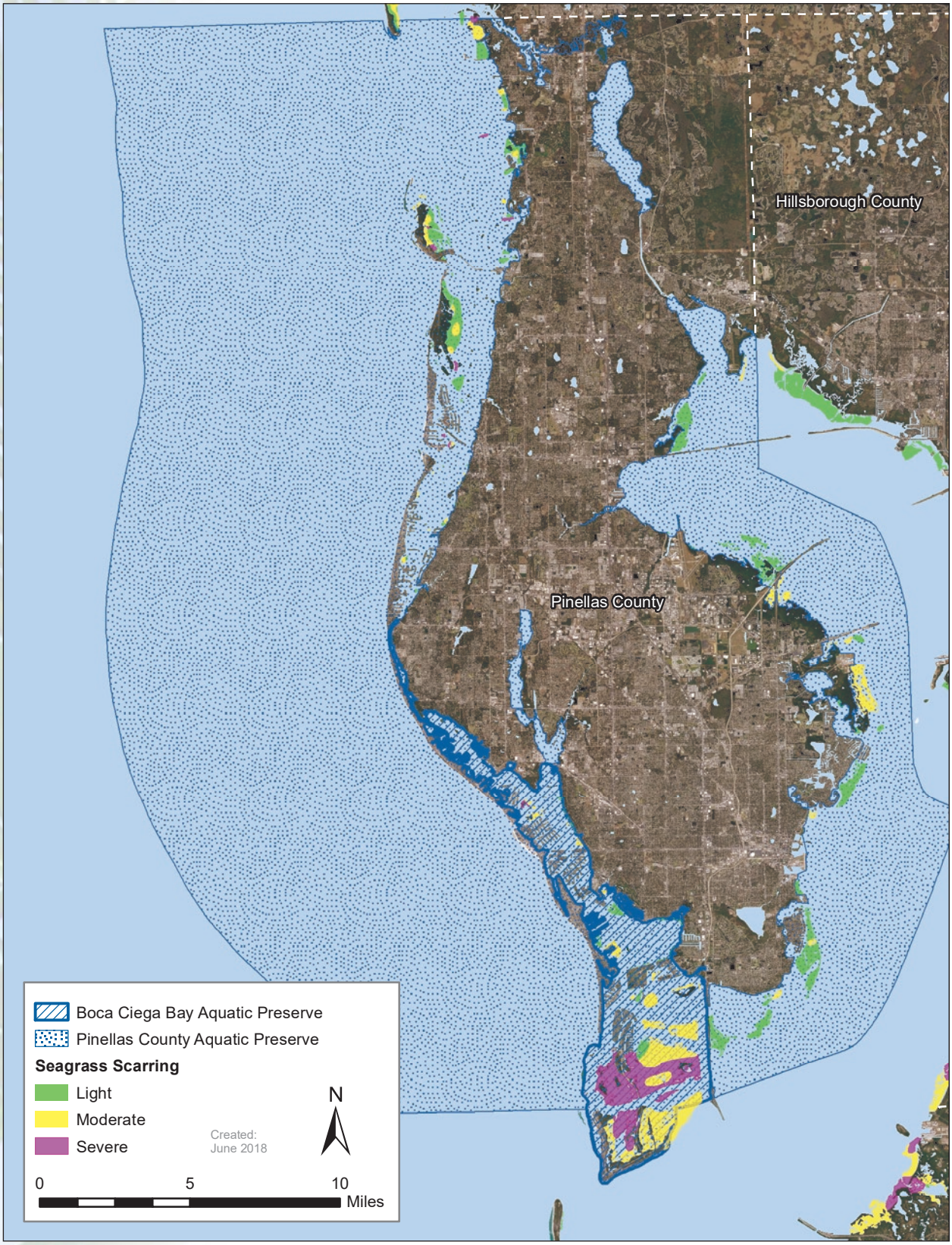
People often ask why some of Florida's most urbanized areas were designated as aquatic preserves. While the developed shorelines may offer little insight into the area's past natural history, the extensive remaining submerged resources indicate that Pinellas County likely was settled because of abundant fisheries and other important resources. Because some of Florida's most spectacular coastal landscapes were the most likely to be settled and developed, the aquatic preserve designation is an acknowledgement of the responsibility of Floridians to protect what remains.

In order to be effective in resource protection and habitat restoration priorities, TBAP must remain science-based. There are many informational gaps relevant to submerged resources in BCBAP and PCAP, and TBAP is uniquely suited to play a key role in connecting science to decision making. TBAP staff have been involved in the design of research and monitoring programs with our key agency and organization partners, and we must continue to engage these partners to ensure that experimental design reflects the needs of the program. Often, all that is needed is input in planning meetings, but TBAP also can supply logistical help and specialized equipment when it will help make a research or monitoring project possible.

In the waters of Pinellas County, there likely are not many opportunities to create or expand large areas of seagrass. However, gains can be made with the offshore expansion of existing beds as water quality improves, and with improved functionality of existing beds through the minimization and repair of damage. The most pervasive damage to the area's seagrass beds is scarring by boat propellers. High-resolution aerial images reveal numerous prop scars in nearly any area shallow enough to support seagrass (Ehringer, 1994). The establishment of caution and restricted zones have proven to reduce prop scarring in the Fort De Soto Aquatic Management Area, and this technique may be a solution in other areas as well. Additional signs, markers and enforcement of such zones can help to further protect seagrass beds. Mechanical damage also can be observed on large sponges and other biota in shallow hardbottom areas. Areas experiencing frequent and those with sudden depth changes often have the most intense scarring. Thus, when projects are proposed that increase or alter the routes of boat traffic, the entire route to deep water and/or clearly-marked channels must be carefully planned to avoid causing new scarring hotspots. Encouraging this big-picture assessment of possible impacts of projects, like marina expansions and new boat launch points, is one of the most important roles of TBAP.

Among Tampa Bay's aquatic preserves, PCAP and BCBAP require special consideration of demographics. While the Terra Ceia Aquatic Preserve, and the Cockroach Bay Aquatic Preserve on the other side of Tampa Bay have a high percentage of users with local knowledge, BCBAP and PCAP host many boaters who visit infrequently. Many are tourists who rent boats and personal watercraft as a one-time experience during their stay, and may be novices at operating watercraft. Further, even when operators of boats are aware that they need to maintain adequate depth to

prevent propeller damage to submerged resources, personal watercraft operators may be unaware of the damage that their jet drives can do to seagrasses, despite lacking propellers. When a visiting family is trying to rent a boat to get onto the water, there is a very small window for education on submerged resources and their protection. Strategies for providing at least some small amount of resource education for rentals have been the subject of much discussion over the years with no clear consensus on an approach.



Map 13 | Seagrass scarring of Pinellas County and Boca Ciega Bay aquatic preserves.

As with other issues in this densely-populated area, slight behavioral changes in large numbers of people can be beneficial. TBAP has several options for raising awareness in the boating public. Signage at boat ramps directly targets the boaters, but it must have a clear, concise message, as boaters typically are in a hurry to launch or load, and they will not read large amounts of text on a sign. Also, a glance at nearly any public launch facility in the county reveals an excess of informational signage. Sometimes there are more than one sign pertaining to a specific subject like seagrass or manatees. TBAP has taken a strategy of working with the managers of boat launch facilities to combine our information with theirs in multi-panel kiosks to keep the messages more concise. The four-panel kiosk at Pasco County's Anclote River Park, on the northern boundary of the PCAP, is a good example of TBAP working with a local government to consolidate messages.

In addition to the direct messaging of boat ramp signage, TBAP also posts information on social media. Videos showing underwater resources can be particularly effective in impressing boaters and others with the sensitivity of the area's submerged habitats. Highlighting these videos, as well as distributing boater's guides and other educational materials are important goals of TBAP's displays at boat shows and other events. Finally, invited talks to boating groups not only remind boaters of the need to protect submerged resources, but they have led to some volunteer work by boating club members.

Marinas are key partners in getting out the message of protecting submerged resources, and Florida's Clean Boating Partnership has been an important means by which TBAP has reached marina operators and boaters. For more a decade, TBAP has worked with the non-regulatory Clean Boating Partnership to present clean marina workshops for marina operators and to make best practices information available to boaters. Recently, the Clean Boating Partnership has been placed under the administrative purview of the Florida Coastal Office, and that should make collaboration even easier for TBAP.

As previously mentioned, boat and personal watercraft rental concessions pose a unique and difficult challenge for boater awareness of submerged resources. TBAP should make a special effort to reach out to these concessions to seek ways to inform their clients.

Opportunities to restore impacted submerged resources arise occasionally as part of the regulatory process, because unavoidable impacts from permitted activities usually must be mitigated. TBAP's local site knowledge can be an asset to regulators or permit applicants looking for habitat restoration opportunities that would be appropriate compensation for a given impact. Similarly, many regulatory projects in the aquatic preserves must add an additional "public interest" component to ensure that the project is clearly in the public interest as required by Florida Administrative Code 18-20. TBAP maintains a database of possible projects that permit applicants can choose to submit with their application. Public interest projects can be done in-kind by the applicant or their contractors, or the cost of the project can be submitted through the non-profit Aquatic Preserves Society to ensure that it goes toward the intended and approved purpose if implementation of the project does not meet the timetable needed to fulfill permit requirements.

Goal 1: Reduce mechanical damage to seagrass and other submerged resources by boats.

Objective 1: Increase public awareness of the importance of seagrass and other submerged resources.

Integrated Strategies

- Seagrass and other submerged resource awareness/protection information is included at access points like boat ramps and marinas.
- Information on the importance and protection of seagrass is included in exhibits, social media and other education/outreach materials.

Performance Measures

- Information about conservation of seagrass, and other habitats when appropriate, is included in signage and exhibits at six access points.

Partners

- Local governments and other boat access facility managers
- Florida's Clean Boating Partnership

Objective 2: Reduce damage to seagrass beds and other submerged resources.

Integrated Strategies

- Mark seagrass beds in high-traffic areas.
- Educate visitors who rent boats and personal watercraft about submerged resources, and how to avoid damage to them.

- Identify other activities that may harm submerged resources, and encourage and assist with the development of best management practices for those activities.
- Promote clean boating.

Performance Measures

- Seagrass beds in high traffic areas are marked, pending available funds.
- Educational package for boat rentals produced and provided to willing vendors.
- TBAP maintains active participation in local clean marina and clean boater workshops and events.

Partners

- DEP's Southwest District office
- DEP's Office of Beaches and Coastal Systems
- Florida's Clean Boating Partnership

Goal 2: Encourage and assist with restoration of damaged resources.

Objective 1: Identify "hotspots" of damaged submerged resources to target for restoration

Integrated Strategies

- Use GIS to track areas impacted by vessel groundings, prop scarring hotspots and restoration sites.
- Use aerial imagery to look for impacts, like scarring, along trafficsheds.

Performance Measures

- TBAP's geodatabase is annually updated with hotspots of submerged resource damage.

Partners

- FWC's Fish and Wildlife Research Institute
- County environmental agencies

Objective 2: Recommend restorative measures for identified hotspots.

Integrated Strategies

- Create and maintain a database of possible mitigation projects that restore hotspots.
- Create and maintain a database of possible public interest projects that restore hotspots.

Performance Measures

- Public interest database for hotspots is created and maintained.
- Mitigation project database for hotspots is created and maintained.



Balancing public access and environmental protection is one of the challenges facing Pinellas County.

Partners

- DEP's Southwest Regulatory District Office
- DEP's Office of Beaches and Coastal Systems
- SWFWMD's regulatory office
- NOAA's essential fish habitat program

Goal 3: Encourage and assist with submerged resource inventories and research.

Objective 1: Identify, encourage and assist third-party resource inventories in the aquatic preserves.

Integrated Strategies

- Compile and maintain a database of resource inventory projects in the aquatic preserves.
- Attend planning meetings for new resource inventory projects.
- Where needed, supply technical assistance for resource inventories.

Performance Measures

- Maintain a database of existing and proposed resource inventory projects.
- Establish TBAP protocols for resource inventory informational needs.

Partners

- Tampa Bay Estuary Program
- Florida Institute of Oceanography
- Colleges and universities with submerged mapping programs

Objective 2: Identify, encourage and assist third-party research in the aquatic preserves

Integrated Strategies

- Compile and maintain a database of research and monitoring projects in the aquatic preserves.
- Attend planning meetings for new research and monitoring projects.
- Where needed, supply technical assistance for research and monitoring projects.

Performance Measures

- A database of existing research related to the aquatic preserves is created.
- A "wish list" of TBAP informational needs is created, maintained and shared with research partners.

Partners

- Tampa Bay Estuary Program
- Florida Institute of Oceanography
- Colleges and universities with submerged mapping programs

Goal 4: Provide regulatory review of projects that may impact submerged resources.

Objective 1: Provide training to regulatory staff for common permitting issues.

Integrated Strategies

- Provide regulatory classroom training on aquatic preserve boundaries.
- Provide regulatory classroom training on appropriate statutes and rules.
- Provide regulatory classroom training on assistance available from TBAP.
- Provide regulatory field training on habitats.

Performance Measures

- Conduct at least one classroom training per year at the DEP regulatory office.
- Conduct at least one field training for regulatory staff per year.

Partners

- DEP's Southwest Regulatory District office
- SWFWMD's regulatory office

Objective 2: Provide comments or other feedback on avoidance, minimization and mitigation, as appropriate, in the permitting process.

Integrated Strategies

- Encourage regulatory staff to provide application information to TBAP staff in a timely manner.
- Track actions taken to provide input.

Performance Measures

- A permit tracking database is maintained.

Partners

- DEP's Southwest Regulatory District office
- DEP's Office of Beaches and Coastal Systems
- SWFWMD's regulatory office

Objective 3: Potential public interest projects are readily available to regulatory staff to share with permit applicants.

Integrated Strategies

- Create and maintain a database of possible public interest projects. This database should include a tracking component and map interface.

Performance Measures

- A public interest project database is created and maintained.
- A tracking component and mapping interface are added to the public interest project database.

Partners

- DEP's Southwest Regulatory District Office
- SWFWMD's regulatory office
- Tampa Port Authority's environmental office

Goal 5: Support assessment and protection of submerged historical and cultural resources.

Objective 1: Assess the knowledge and data gaps for historical and cultural sites in the aquatic preserves.

Integrated Strategies

- Discuss future possible information gathering with the Florida Department of State, Division of Historical Resources and academia.
- Provide technical assistance (access, mapping, etc.) where needed.
- Provide up-to-date training for TBAP staff.

Performance Measures

- TBAP staff will be trained in Archaeological Resource Management.
- Management authority for all sites within the PCAP and BCBAP boundaries will be determined.
- TBAP staff will independently, or in partnership with professional archaeologists and/or Division of Historical Resources, Bureau of Archaeological Research staff, inspect 20 percent of known archaeological and cultural sites managed by TBAP each year, and report findings to the Master Site File or as appropriate.
- Staff will invite professional archaeologists on field visits to survey for additional sites.

Partners

- Florida Department of State, Division of Historical Resources
- University of South Florida, Department of Anthropology
- Florida Public Archaeology Network

4.2 / The Resource Management Program

The Resource Management Program addresses how FCO manages PCAP and BCBAP and their resources. The primary concept of PCAP and BCBAP Resource Management projects and activities are guided by FCO's mission statement: "Conserving and restoring Florida's coastal and aquatic resources for the benefit of people and the environment." FCO's sites accomplish resource management by physically conducting management activities on the resources for which they have direct management responsibility, and by influencing the activities of others within and adjacent to their managed areas and within their watershed. Watershed and adjacent area management activities, and the resultant changes in environmental conditions, affect the condition and management of the resources within their boundaries. FCO managed areas are especially sensitive to upstream activities affecting water quality and quantity. FCO works to ensure that the most effective and efficient techniques used in management activities are used consistently within our sites, throughout our program and, when possible, throughout the state. The strongly integrated Ecosystem Science, Education and Outreach and Public Use Programs, provide guidance and support to the Resource Management Program. These programs work together to provide direction to the various agencies that manage adjacent properties, our partners and our stakeholders. PCAP and BCBAP also collaborate with these groups by reviewing various protected area management plans. The sound science provided by the Ecosystem Science Program is critical in the development of effective management projects and decisions. The nature and condition of natural and cultural resources within PCAP and BCBAP are diverse. This section explains the history and current status of our Resource Management efforts.

4.2.1 / Background of Resource Management at Pinellas County and Boca Ciega Bay Aquatic Preserve

The vast acreage of BCBAP and PCAP, historically, has necessitated a targeted approach to resource management. Relative to less developed aquatic preserves across the bay, the management of the aquatic preserves of Pinellas County typically has emphasized more resource protection through regulatory input. The large volume of regulatory activity in this urban county often requires detailed site knowledge for sound decision making in the processing of permit applications. The degree of activity of TBAP in the regulatory process has varied over the years as a result of higher-level administrative priorities and program capacity, but there have been numerous benefits to input from TBAP.

TBAP's involvement in the regulatory process can be divided into two categories: proactive and responsive. As regulatory staff tenures with DEP have shortened over the years, TBAP staff has tried



With the help of volunteers, TBAP maintains an interpretive trail on a Clearwater Harbor island.

to equip new regulatory staff with basic knowledge about preserve boundaries, statutes, rules and procedures, as being involved with day-to-day routine permitting decisions would be beyond TBAPs capacity. Occasional trainings have helped bring new staff "up to speed" on the aspects of their work associated with aquatic preserves, and collaborative field site visits with regulatory staff have been especially valuable for ongoing coordination among the agency's programs. For applications outside the normal type of permit requests, TBAP staff has been available to suggest strategies of avoidance, minimization, and, when needed, mitigation and public interest projects. These latter two have been important tools for submerged habitat restoration and protection, as they often require measures that would otherwise be outside the TBAP budget.

While education is discussed in more detail later, it is worth emphasizing that TBAP's education and outreach program is a fully-integrated part of its resource management strategy. Because TBAP's resource management activities often require informed, engaged volunteers, outreach programs that recruit new volunteers and service-learning programs that help retain existing volunteers are integral to the resource management aspects of the on-the-ground presence in BCBAP and PCAP.

TBAP's on-the-ground operations within BCBAP and PCAP are wide-ranging and largely collaborative. To operate over such a large geographic area with such limited program resources, TBAP has had to form and maintain partnerships with many local governments, as well as with other local, state and national programs and non-governmental organizations. The specific partnerships emphasized at any particular time are specific to the projects active at that time, but the partnerships, once established, have a good track record for endurance. Fortunately, Pinellas County's government, over the years, has taken the lead on managing some areas of the aquatic preserves that have had high levels of public use. While the county's staff and budget resources have decreased dramatically in recent years, they still play an active role in managing areas like Shell Key in BCBAP and Weedon Island in PCAP that otherwise would tax the program capacity of TBAP. Pinellas County has been an excellent partner and has been very receptive to input through the management planning and land management review processes, as well as through direct communication with TBAP. Likewise, TBAP has enjoyed a friendly and productive partnership with the Florida Park Service, which manages considerable acreage and shorelines adjacent to the aquatic preserves.

TBAP's in-house resource management field projects in recent years have focused mostly on island restoration and management. Unlike managing a park, with intensive operations in a relatively limited area, management operations in BCBAP and PCAP require a great deal of staging and transportation to

get equipment, staff, and volunteers to islands and other remote work sites. A key aspect of this dynamic is partnerships with local parks and marinas across the county, which often allow TBAP to stage boats, vehicles and other equipment out of their compounds. One of the most interesting partnerships in the history of the management of these aquatic preserves was TBAP's solicitation of the U.S. Coast Guard Clearwater Air Station to transport an 1800-pound wood chipper to an island (NCH-13) by tethering it to a U.S. Coast Guard helicopter. That operation, done more than 15 years ago, began a process that has converted an island covered with Brazilian pepper to an island covered with native trees and shrubs.

4.2.2 / ***Current Status of Resource Management at Pinellas County and Boca Ciega Bay Aquatic Preserve***

Because of limitations in program capacity, TBAP likely will continue on its present course for the next few years. We will maintain islands from which invasive plants have been removed and facilitate the revegetation of these islands with native plants through planting and natural recruitment. As some islands reach a maintenance level, revegetation will begin on other islands.

With the addition of another staff position, TBAP intends to do a better job of fulfilling its regulatory input opportunities. This should allow for greater protection of submerged resources through marking and restoring submerged habitats and production of educational materials. TBAP also has plans to use technologies such as acoustic and photographic imaging offer promise for more efficient and accurate monitoring of these resources.

TBAP will continue to rely heavily on volunteer help in its resource management activities. This is for reasons of cost-effectiveness for the dispersed nature of our work, as well as for the buy-in these projects create with an engaged public. We will continue to seek partnerships with existing organizations, as well as more work with assemblages of individual volunteers. Small increases in staffing for TBAP would dramatically increase the program's capacity to coordinate volunteers.

Hurricane Irma in 2016, as well as other incidents like the Deepwater Horizon spill in 2010, are reminders that TBAP needs to anticipate the need to respond to catastrophic events. Each of these past events has come with lessons learned that TBAP applies to contingency planning. TBAP is also adopting new technologies, such as the on-the-fly contour mapping that we used in the Hurricane Irma response, to enhance our resource management toolbox for both routine and episodic resource management needs.

Because of the largely built-out nature of Pinellas County, TBAP does not anticipate acquiring additional land for management. However, the recent addition of the Lake Tarpon floodplain parcel, as well as title uncertainties on some islands and other areas, highlight the need to be ready to add habitat areas to TBAP's responsibilities if such opportunities arise in this urban landscape where every acre conserved is significant.

4.2.3 / ***Resource Management Issues***

Issue II: Island Management

As mentioned previously, the statutory description of PCAP includes state-owned islands. Additionally, islands dredged from state-owned submerged land are legally state-owned submerged lands, even when they require upland management strategies and techniques. While some of the larger state-owned islands, with high visitation, are managed by the state or county park services, many of the smaller islands are under the direct management of the TBAP program.

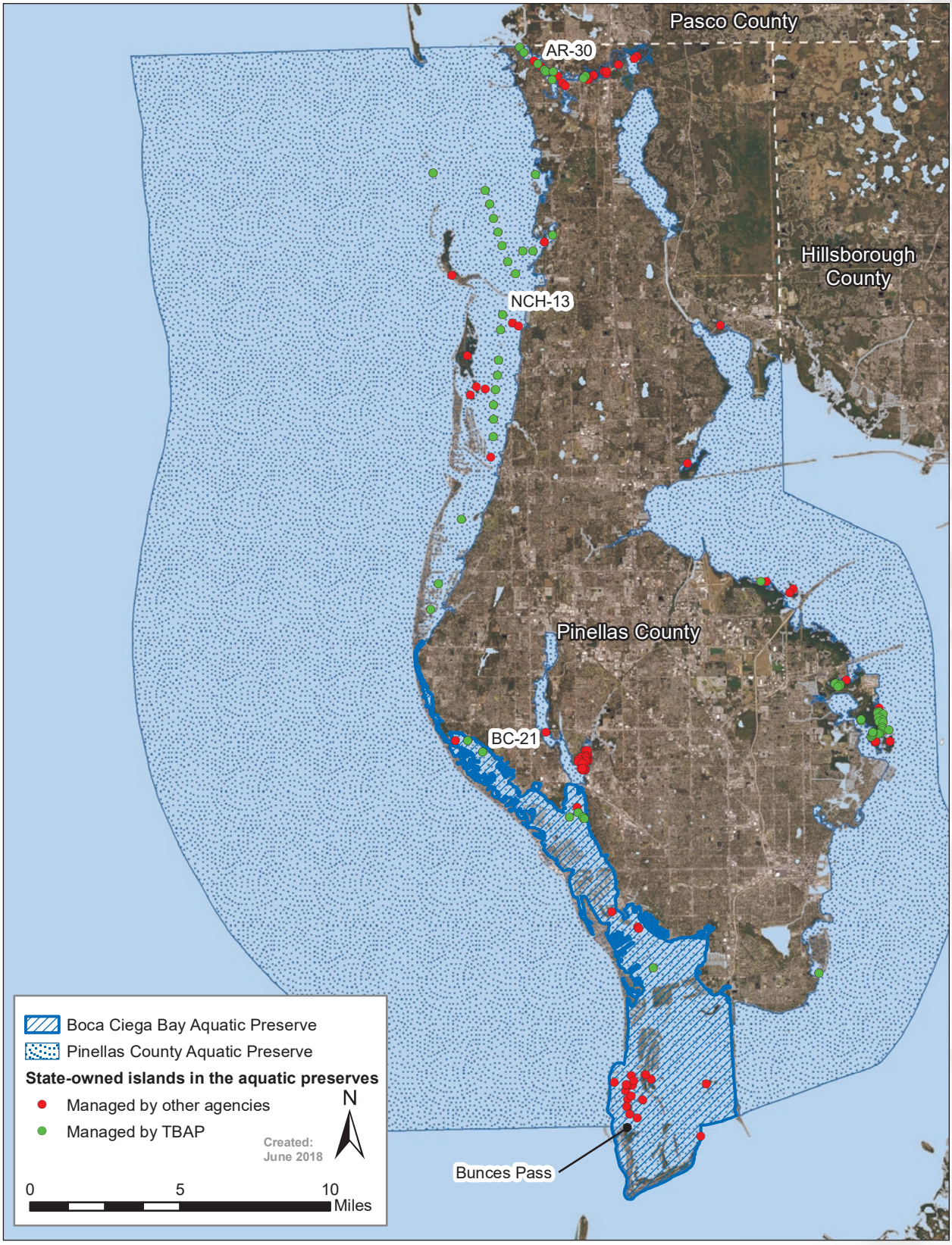
By the late 1990s, it became apparent that a more cohesive strategy was needed for management of smaller islands in the preserve. Grants were secured to hire temporary staff to identify the state-owned islands in the aquatic preserve and assess the habitat value, human usage and wildlife usage of each. The results of this assessment were compiled into an island management plan (DEP, 2002). Public input was solicited for this plan through a public meeting, and it was printed and made available to interested stakeholders.

Since the development of that plan, TBAP has continued to solicit input on island use from boaters, conservation groups and other stakeholders through occasional public presentations, interacting with stakeholders at boat shows and other events and posting contact information on island educational signage.

Balancing wildlife use and public use of the aquatic preserve's limited island acreage requires a good deal of attention to usage patterns and to the natural history of resident wildlife. The habitat value of islands in the preserve is increased by their presence in an urban landscape. While often manmade, the

shallow, subtidal vegetated slopes surrounding the islands host a variety of species like horse conchs (*Pleuroploca gigantea)*, whelks (*Busycon spp.*), moon snails *(Polinices duplicatus*), and horseshoe crabs that come into the shallow waters in the spring to lay eggs. Because a number of the dredged material islands have subtidal rocks, some have hardbottom species and/or oyster reefs.

Island uplands also are valuable wildlife habitat. Native plants harbor a resident insect community. These insects, as well as a variety of native seeds and berries produced by island vegetation provide abundant



Map 14 | State-owned islands within Pinellas County and Boca Ciega Bay aquatic preserves.



Volunteers make a big difference in restoring native habitats on islands.

food for migratory neotropical songbirds. Osprey (*Pandion haliaetus*) and other local predatory birds have been observed stopping by the islands to devour a fresh catch from nearby waters. In the spring, a variety of wading birds depend on the islands for nesting and raising their young. While a few islands support high concentrations of nesting colonial waterbirds, it is common to find nests of birds like yellow-crowned night herons (*Nyctanassa violacea*) in the trees and mating pairs of American oystercatchers (*Haematopus palliatus*) on the islands' sand spits.

One of the most urgent concerns for maintaining this biodiversity and improving the ecological condition of the islands is invasive species control. Most of the islands with upland elevations have had at least some encroachment on native plant communities by invasive exotic species. Some of the dredged material islands likely never had a dominant community of native plant species, as invasives, like Brazilian pepper and Australian pine often are the opportunistic recruits to disturbed areas. In recent years, carrotwood, which has been used in landscaping some local yards, has gained a foothold on some of the islands. TBAP staff have observed that natural islands with native plant assemblages can be relatively easy to maintain. Islands with dominated by invasive nonnative species to this point can require several years of intensive treatment to remove nonnative seed sources, deplete the soil seed bank and establish native seed sources. As a result, TBAP has taken a gradual approach of only beginning the revegetation of another island when the ones TBAP has been working on reach a maintenance condition.

This gradual approach, in addition to being necessary because of limited program capacity, also fits public use and wildlife use needs. For the most part, boaters have been supportive of replacing invasive plants with native species if TBAP does not remove all trees from an island at once. Likewise, Audubon and other conservation groups have pointed out that nonnative plants are better than no habitat. By taking a gradual approach to the revegetation process that only a long-term program can sustain, impacts to public enjoyment of the islands and to their critical function as habitat are minimized.

In order to replace nonnative plants with native species in this gradual manner, TBAP relies on partnerships with a number of volunteer groups. Local colleges and civic groups have supplied the

manpower necessary to clear entire areas of invasive plants, as well as smaller groups to maintain the cleared areas free of invasives. One example of a key partnership has been with Ohio State University's Buck-I-Serv and MANRRS (Multicultural Students in Agriculture, Natural Resources, and Related Sciences) programs. Over the past decade, these two Ohio State University programs have sent more than two dozen volunteer groups, often with as many as 10 volunteers per group, to assist TBAP with invasive plant removal, planting native plants, and other activities. The cost of hiring contractors for such scattered work over such a long time would have been prohibitive. TBAP tries to provide maximum benefit to the students through a strong service-learning component to the visits.

With increasing numbers of boaters and limited island destinations, human use of the islands likely will continue to increase. Even if strict regulations of island activities were enacted, enforcement would be impractical. Most people who use the islands want to treat them well, so our best approach Is one that focuses on education and awareness. Signage not only informs people of sensitive resources and how to minimize impacting them, but it also provides contact information, so visitors to the islands can give feedback and notify us of issues as they arise.

While recreational facilities are not a priority of our conservation program, TBAP occasionally provides limited amenities in key areas of public use. TBAP hopes that visitors to the islands will be good stewards of island flora and fauna, and some amenities have been a positive way to promote that stewardship. For instance, over the years, TBAP has placed a few recycled plastic picnic tables in high-use areas of some islands, and those tables have seen a good deal of use. TBAP intends to continue to supply some tables on a few of the islands with the hope that those who use them will consider them to be a sign of goodwill toward mutual management of the islands by TBAP and the island visitors.

When TBAP initially began management activities on the islands, some had trash barrels that, apparently, had been placed on the islands by visitors. Without a regular service to pick up this trash, the receptacles just encourage people to leave trash. Eventually the receptacles overflow, and trash that otherwise might have been removed by those who brought it ended up in the environment. This practice led TBAP to adopt a policy of not having trash receptacles on the islands and to install "pack it in, pack it out" signs in high-use areas. TBAP staff also gives free collection bags to boaters to encourage them to remove their debris, and possibly, to remove debris left by others.

FCO recognizes the desire to place memorials on FCO-managed lands or water to commemorate individuals. FCO also recognizes that memorials placed on public lands may detract from the aesthetic value of the area, be offensive to some users, impede management of these lands, create maintenance responsibilities, and/or affect the area's wildlife or their habitat. As a preferred option, FCO encourages memorial contributions to the local Citizen Support Organization (CSO) or placing a native tree in an appropriate location in memory of individuals. Those who donate in memory of individuals will receive a letter acknowledging the contribution from the site manager. For those individuals that prefer to erect a physical memorial on FCO-managed lands, FCO will consider the placement of such memorials on a case by case basis. Individuals should contact the aquatic preserve manager with their request. The aquatic preserve manager will determine if the proposed memorial conforms with the approved management plan or offer memorial alternatives. FCO has authorization to remove memorials pursuant to Chapter 258.35-258.47, Florida Statutes.

In addition to controlling invasive species and debris, islands within PCAP and BCBAP serve as some of the only rookery habitat in what is otherwise a crowded, urban environment. Only a few islands support waterbird nesting colonies, and these rookery islands support a rich variety of species in the midst of an urban landscape. Unfortunately, curiosity often brings boaters very close to the shoreline, and disturbances to the nesting birds can be rather frequent. In sunny weather, the absence of parents from a nest with eggs for even a short time can jeopardize the viability of the eggs. Thus, TBAP is looking for ways to increase protection for nesting birds and their young during these critical spring months. In some cases, rookery areas in Florida have been designated as Critical Wildlife Areas, but the designation process is lengthy, and although most rookery islands serve as such for a number of years, there is no guarantee that a nesting colony will not move to a different island for the next nesting season. There is adequate published research to guide the establishment of seasonal buffers around rookery islands. Rodgers and Smith (1997) studied 16 species of foraging and loafing waterbirds to determine flushing distances due to human disturbances. They recommended a buffer zone of 328 feet (100 meters) to minimize impacts for most species, including the great egret (*Ardea alba*) and little blue heron (*Egretta caerulea*). Rodgers and Schwikert (2002) suggested different sized buffers based on the species of bird to reduce disturbance from personal watercraft and outboard-powered boats. Recommended buffer

zones range from 282 feet (86 meters) for the least tern (*Sternula antillarum*) to 600 feet (183 meters) for the brown pelican (*Pelecanus occidentalis*), Information from these studies along with local consultation of FWC staff can guide implementation of appropriate buffer zones to allow birds to forage and nest without disturbance. FCO may consider posting rookery islands with buoys and/or signs set off the shore of the island at a distance based on scientific information and approved by FWC. TBAP follows the management guidelines put forth by FWC in its Imperiled Species List and Species Action Plans.

Around 2015, a new natural island emerged from a shoaling area in the mouth of Bunces Pass (PCAP). This island began recruiting dune vegetation, as well as ground-nesting birds and boaters. TBAP staff began working on protocols to track changes in elevation and areal extent of the island with the goals of establishing an ongoing program to monitor this island's evolution and of establishing protocols that would make it easier to get such a monitoring program started in the event another new island forms in the future. Additionally, TBAP provided GPS and other logistical support for a plant ecologist to periodically monitor vegetation recruitment and changes on the island. Since the formation of the island, elevation and vegetation monitoring methods have been modified, based on experience, and the result has been a fairly robust set of methods and protocols.

Goal 1: Continue native revegetation of islands.

Objective 1: Maintain existing native plant assemblages on islands and reduce nonnative coverage.

Integrated Strategies

- For invasive plant control done in-house (including with volunteers), prioritize removing invasives directly adjacent to native plant communities.
- Acquire funds to clear a 1.5 acre stand of Brazilian pepper and Australian pines on BC-21 using contractors.
- Acquire funds to clear a 2.8 acre stand of Brazilian pepper and Australian pines on BC-22 using contractors.
- Once nonnatives are removed, place cleared area on regular retreatment schedule.

Performance Measures

- Eighteen acres of previously cleared areas are kept free of invasive recruits.
- Remove all invasive plants directly adjacent to native plant communities on fifteen actively managed islands. Some large scattered Australian pines may remain to avoid damaging native plants.
- The stand of Brazilian pepper and Australian pines on BC-21 is cleared, and kept free from invasives.
- The stand of Brazilian pepper and Australian pines on BC-22 is cleared, and kept free from invasives.

Partners

- Florida Native Plant Society
- Environmental organizations (Sierra Club, Surfrider Foundation, etc.)
- College groups
- Civic groups

Objective 2: Continue to revegetate island areas presently occupied by invasive plant species.

Integrated Strategies

- Maintain areas in lower elevations (high marsh and below) free of exotics to allow the typically rapid, natural recruitment of natives.
- Plant native plants in higher elevations with volunteers or contractors.

Performance Measures

- High marsh and other low elevation areas on islands are maintained free of invasives to allow natives to recruit.
- 8.4 acres at higher elevations are replanted with native species.

Partners

- Florida Native Plant Society
- College groups
- Civic groups

Goal 2: Continue education and outreach efforts for islands.

Objective 1: Provide information about islands, their ecological importance and individual stewardship measures to the general public.

Integrated Strategies

- Provide information about islands at events, like Marine Quest, boat shows, etc.
- Provide information (e.g., existing boaters' guides) about islands through social media (e.g., TBAP Facebook page).

Performance Measures

- Staff attends at least three outreach events per year.
- Staff posts at least ten social media posts related to island habitats per year.

Partners

- FWC outreach staff
- FCO and Rookery Bay National Estuarine Research Reserve outreach staff

Objective 2: Provide information on islands and their ecological importance at points of access and use.

Integrated Strategies

- Provide informational signage at boat ramps and other access points, including TBAP contact information and links to additional information such as TBAP's Facebook page.
- Provide informational signage on islands in high-usage areas, including TBAP contact information and links to additional information such as TBAP's Facebook page.

Performance Measures

- Signs with appropriate information are placed at three access points each year.
- Signs with appropriate information are placed on two islands each year.

Partner

- Local governments and other managers of boat access facilities

Goal 3: Improve public access on selected high-use islands.

Objective 1: Provide limited amenities in selected high-use areas.

Integrated Strategies

- Recycled plastic picnic tables are placed on appropriate islands.
- Stewardship signage is placed on islands with amenities.

Performance Measures

- Tables and signage are installed at a minimum of key use areas on five selected islands.
- Previously installed signs and tables are maintained.

Partners

- Boating groups
- Civic organizations
- College volunteer groups

Objective 2: Improve and maintain interpretive trail on island NCH-13.

Integrated Strategies

- Regularly maintain island interpretive trail on island NCH-13.
- Replace old and missing interpretive signs with new, site-specific ones.

Performance Measures

- New signs for major common native plants are designed, printed and installed.
- Signs for the NCH-13 island interpretive trail are maintained on an annual basis.
- The NCH-13 island interpretive trail is maintained on an annual basis.

Partners

- Boating groups
- Civic organizations
- College volunteer groups

Goal 4: Seek ways to better protect rookery islands.

Objective 1: Bird rookery islands are more effectively posted.

Integrated Strategies

- Use social media to raise awareness of rookery islands.
- Work with FWC and appropriate agencies to post buffer areas around rookery islands during nesting season.

Performance Measures

- Staff posts at least four social media posts related to bird rookeries per year.
- Buoys with signage are posted at bird rookery islands, pending approval by FWC.

Partners

- FWC
- Audubon Society
- Boating organizations
- U.S. Coast Guard

Goal 5: Monitor changes to newly formed island.

Objective 1: Periodically visit island to map changes in elevation and biota.

Integrated Strategies

- Continue to map elevation and perimeter changes of islands on regular basis.
- Reference TBAP-installed benchmarks to mainland benchmark datum.
- Support monitoring of plants by plant ecologists.
- Support monitoring of birds and other wildlife by volunteers and professionals.

Performance Measures

- At least two elevation maps per year are added to TBAP's geodatabase.
- Plant and wildlife databases are updated annually.

Partners

- St. Petersburg College
- University of Tampa
- Audubon Society

Issue III: Shoreline Alterations

Zones where one habitat grades into another, known as ecotones, are one of the most important components of an ecological landscape. Organisms often use more than one habitat during the course of the day or at different times in their life history, and their ability to cross these transitional zones can be critical to their survival. Shorelines are important ecotones in any coastal system. Many organisms, like wading birds, need the shallow, productive waters to forage for food. Others, like mollusks and some arthropods need the shallow waters to enhance their chance of finding a mate, and many deposit eggs in shallow areas where waves can aerate them.

Intact shoreline vegetation not only provides food and protection for a host of estuarine species, but it also can reduce loss of life and property during catastrophic events (Kathiresan & Rajendran, 2005). It is interesting that, in areas like Pinellas County, so many waterfront property owners do not recognize the important role that vegetation plays, while areas of the world with much lower literacy rates have a higher degree of awareness of this role as a result of more frequent experiences with catastrophes (Guangxi Mangrove Research Center, 2008). At the same time that sea level rise and severe weather drives short-term alterations to our natural shorelines, these alterations may negatively affect coastal resiliency over the long term.

To protect and improve the habitat and protective qualities of Pinellas County shorelines requires several approaches. First, as alluded to above, reducing the ongoing alteration of shorelines is largely an awareness issue, and TBAP has several means of reaching the general public in order to address it. For instance, TBAP provides information on shorelines as part of exhibits and distributes educational materials at local events. TBAP also reaches many local people through regular postings on its Facebook page, although those who follow the page tend to be more aware of shoreline alteration issues than the average person. Finally, another form of direct outreach is to give presentations to waterfront residents through their homeowner associations. This is in line with our intention of reaching more homeowner associations directly for other issues like storm drain awareness.

Second, although the majority of waterfront residents want to be good stewards of their shorelines once informed, regulations exist to check those who, otherwise, might alter shorelines in ways that are not in the public interest. While TBAP does not have regulatory authority, the program often is consulted on natural resource issues during the permitting process. In addition, no land clearing or ground disturbance, above or below the mean high water line, can be undertaken until the Division of Historical Resources has provided a review and recommendations for the proposed activity. It is not unusual for a variety of alternatives to exist for projects with shoreline impacts, and TBAP staff can draw from their experience to suggest alternatives that avoid or minimize potential impacts.



Spectacular natural resources are located in close proximity to urban development.

The regulatory process also offers opportunities to restore altered shorelines through mitigation and public interest projects. As was mentioned in the previous issue section, permit applicants often must mitigate for impacts to habitat, and they may be required to create more habitat than was impacted, depending on the mitigation ratio. In addition, applicants may need to add an additional environmentally beneficial component to their project if it is not sufficiently in the public interest on its own, as prescribed in 18-20 Florida Administrative Code. TBAP staff often play an important advisory role in both of these processes, and shoreline restoration can be an appropriate suggestion for projects. Toward this end, TBAP offers periodic training for regulatory staff, and shoreline restoration project ideas and case studies could be added to this training to raise awareness of these opportunities among permitting staff.

Third, TBAP also pursues other opportunities for encouraging shoreline restoration outside the regulatory process. For instance, county and city governments often seek advice from TBAP on areas where they would like to bring altered shorelines back to a more natural state. The reasons for such restoration vary, ranging from the aesthetics of natural shorelines to attracting fish to desired locations, such as municipal fishing piers. TBAP has pointed out these benefits and has suggested approaches to replace unsightly hard structures with natural slopes and vegetation. TBAP staff stays current with new restoration approaches and technologies as they become available, acting as a local resource for site-specific restoration recommendations.

Goal 1: Minimize new alterations to natural shorelines.

Objective 1: Increase awareness of the ecological and protective importance of natural shorelines.

Integrated Strategies

- Provide information, including regulatory information, at outreach events.

- Give presentations to civic groups and homeowner associations.
- Post information on social media.

Performance Measures
- Information on shoreline importance included in event display where appropriate.
- Conduct at least two presentations to local groups per year.
- Conduct at least ten posts about shoreline habitats/protection on TBAP's Facebook page per year.

Objective 2: Provide regulatory input when appropriate.

Integrated Strategies
- Provide shoreline information to regulatory employees.
- Provide input on shoreline alteration avoidance and minimization during the regulatory process.

Performance Measures
- Conduct at least one training per year for regulatory staff about shoreline issues.
- Shoreline protection is incorporated into regulatory comments when warranted.

Partners
- DEP's Southwest Regulatory District Office
- DEP's Office of Beaches and Coastal Systems
- SWFWMD's regulatory office

Goal 2: Seek opportunities to restore altered shorelines to a more natural state.

Objective 1: Facilitate natural shoreline restoration through the regulatory process.

Integrated Strategies
- Maintain a database of potential shoreline restoration opportunities.
- Recommend shoreline restoration, when appropriate, as mitigation
- Recommend shoreline restoration, when appropriate, as public interest
- Document shoreline erosion in sensitive areas such as rookery islands.

Performance Measures
- Shoreline restoration opportunities database is maintained.
- Shoreline restoration recommended in the regulatory process when appropriate.

Partners
- DEP's Southwest Regulatory District Office
- SWFWMD's regulatory office

Objective 2: Make technical advice and information available to interested parties.

Integrated Strategy
- Provide suggested approaches and how-to information to homeowner associations and waterfront associations that show interest.

Performance Measure
- An up-to-date database of technical information and case studies is created and maintained.

Partners
- Local governments
- Waterfront homeowner associations
- Pinellas County

4.3 / The Education and Outreach Management Program

The Education and Outreach Management Program components are essential management tools used to increase public awareness and promote informed stewardship by local communities. Education programs include on and off-site education and training activities. These activities include: field studies for students and teachers; the development and distribution of media; the distribution of information at local events; the recruitment and management of volunteers; and training workshops for local citizens and decision-makers. The design and implementation of education programs incorporates the strategic targeting of select audiences. These audiences include all ages and walks of life; however, each represents key stakeholders and decision-makers. These efforts by the Education and Outreach Program allow the aquatic preserves to build and maintain relationships and convey knowledge to the community; invaluable components to successful management.

4.3.1 / Background of Education and Outreach at Pinellas County and Boca Ciega Bay Aquatic Preserve

Because of the population density of Pinellas County, any increase in awareness of individuals' contributions to degradation or improvement of coastal waters can have considerable impacts through even minor behavioral changes. Because of this, and because of advances in mechanisms for public engagement through public event displays and social media, education and outreach has been an important area of emphasis for TBAP and will likely be even more so in the future.

TBAP does not operate an office or outreach facility within Pinellas County, and, like our resource management strategy, our education and outreach strategy relies on partnerships with other facilities and on-site information. From the earliest days of on-site management at BCBAP and PCAP, aquatic preserve managers maintained a presence at public events to raise awareness and disseminate information. These displays included storyboard-type displays, as well as relevant literature. The Aquatic Preserves Coloring Book has long been a popular way of reaching the public through the education of children about the importance of PCAP and BCBAP and other aquatic preserves. In 1990, the TBAP made their first foray into mass media communication to raise program awareness with the production of a televised public service announcement featuring the Bellamy Brothers as celebrity spokesmen. For many years, the program sought to do a number of presentations to school classes throughout the year, and TBAP staff still do occasional school programs like the "Great American Teach-In." In the late 1990s, a decision was made to direct outreach efforts into social media, television, and radio because individual classroom presentations reach relatively few people in such a densely populated area for the considerable effort involved.

An invitation to host an episode of the University of South Florida's Marine Science Program's Project Oceanography television series in the fall of 2000, raised awareness within the TBAP program that mass communication technology was becoming a vehicle for education and outreach that spread conservation awareness much farther than previously hoped. The Project Oceanography series was broadcast over satellite television to classrooms across Pinellas County, the greater Tampa Bay area, Florida and beyond. Because classrooms could subscribe and receive classroom preparatory materials corresponding with each episode, the reach of this program even to classrooms overseas was demonstrated. The TBAP-hosted episode on polluted runoff included hands-on demonstrations involving student volunteers from a live middle school audience. As a result of this wide-reaching outreach success, TBAP redoubled its efforts to reach larger audiences with its limited outreach capacity. A video documentary called Wild Tampa Bay, produced by Hillsborough County TV in 2000 also reached a wide audience around Tampa Bay. The Tampa Tribune took the unusual, for a documentary, step of providing a positive critical review of the program that further highlighted TBAP's conservation efforts (Belcher, 2000). Over the years, a number of television news features and newspaper articles provided additional public exposure for the TBAP program.

In 2010 while meeting in Austin with the Communications Director of Texas Parks and Wildlife, the TBAP manager was given a tour of the agency's Facebook page. At that point, using social media for outreach became a goal of TBAP, but remaining legal concerns delayed the achievement of this goal. In June of 2013, TBAP debuted its Facebook page. Since that debut, Facebook has allowed TBAP to post near real-time information on resources and program activities, and the feedback has been overwhelmingly positive and informative.

Experiential learning is one of the most effective ways to engender public buy-in. TBAP has sought various ways to engage people in hands-on volunteer activities that involve service learning experiences. In BCBAP and PCAP, the greatest need for volunteer work, as well as the area that can involve the most volunteers is island restoration. During the cool months, many local citizens and students, as well as out-of-town visitors, have a pleasant experience of helping to remove invasive plants, planting native plants, removing debris, maintaining an interpretive trail and signs and other resource management activities. During their work, these volunteers are becoming directly engaged with the issues, and they often come away indicating that the experience has enhanced their appreciation for what TBAP does and the reasons for it. In a partnership that has lasted over a decade, Ohio State University has sent multiple groups each year to work with TBAP for week-long service learning trips. Other out-of-state groups have come from the University of North Carolina at Chapel Hill and Louisiana State University. Reflective debriefings built into these programs provide valuable insight for TBAP staff about the insights and knowledge the student volunteers take away from the experience.

4.3.2 / *Current Status of Education and Outreach at Pinellas County and Boca Ciega Bay Aquatic Preserve*

The education and outreach efforts of TBAP to date have gotten consistently positive feedback, but they have focused more on groups who have sought the information and/or have already had some degree of awareness on the topics presented. The focus for TBAP going forward is to reach farther into the community to reach people who may not fully appreciate their role, as residents and visitors, in the Tampa Bay ecosystem. Over the years, a few examples have shown the special value of this outreach across demographic lines. An early example was the collaboration of the present TBAP manager with Christopher Still, a Florida artist, who created large murals of Tampa Bay and other Florida underwater scenes for a fine arts audience (Rondeaux, 2003). Each of these murals incorporated numerous back stories about the elements of the paintings, and each was created to draw the observer in to learn more about details that often were historical or environmental in nature. Two of the murals, one depicting a coral reef and one depicting a spring, are permanently installed in the Florida House of Representatives in Tallahassee, and brochures elaborating on the details and messages of the murals are available to visitors. Two more recent murals are on permanent display in the lobby of a large hotel on Clearwater Beach. One depicts shells and other items on a beach, and the complimentary mural depicts an underwater scene with the living organisms represented by the shells, etc. in the first. The hotel plays a documentary video in their guest television channel that explains the murals and spends considerable time on the environmental take-home messages. Similar projects likely will be done in the future, and, although they are done outside TBAP staff time, they reach thousands of people who might not attend an Earth Day celebration or similar event.

Another example of the need and opportunity to reach deeper into the community comes from past experiences where TBAP staff have responded to issues which, for particular neighborhoods, were crises at the time. Typically, staff are asked to visit a waterfront community that is experiencing large amounts of macroalgae, dead fish or other organisms washing up onto the shore. The perceived health risk or undesirable aesthetic leads to a heightened interest among homeowners in that community. They often express surprise that factors like fertilizer runoff may be contributing to such events, but they readily understand the mechanism explained to them. This has led us to realize that we need to go to the neighborhood associations, rather than just waiting for them to come to TBAP. TBAP is looking into community-based initiatives, like marking storm drains, through which we can more directly engage those neighborhoods.

The third new approach for TBAP is using new technology to bring Tampa Bay to those who may not go to Tampa Bay. The visibility in the bay varies a lot, but occasionally it is good enough that we can get underwater video that makes people say something like, “that’s Tampa Bay!?” TBAP hopes to take that experience further by generating 360-degree virtual reality video, so anyone can feel like they are in the bay and can look around under the surface. Even for many who boat on the bay, this can be an eye-opener, as even some career marina operators have expressed amazement at some of the footage TBAP has shown at Clean Marina workshops. When someone sees footage of wildflowers in bloom, their reaction, more often than not, is that of course we should protect them. A similar reaction is expected if they were to see seagrass in bloom, corals, brilliant sponges, etc., and TBAP hopes to give them that experience.

These new directions are exciting, but TBAP also intends to continue and enhance time-tested media and methods. TBAP is designing more informational signage for public places and enhancing them using links to additional online content through QR codes and other means. TBAP will also continue to maintain a presence at events with good target audiences, but TBAP is better targeting the content of displays and other materials for each event, and TBAP is using new displays, like big-screen high-definition video clips, to draw attention and interest. TBAP will continue to develop relevant hands-on experiences, as TBAP did recently by designing reusable grocery bags to be decorated by children at some events to raise awareness about everyone’s role in reducing marine debris. TBAP will continue to find innovative ways to use our limited program resources to address the great need for education and outreach.

4.3.3 / *Education and Outreach Issue*

Issue IV: Marine Debris

It would be difficult to find an area of Tampa Bay that is not affected by the presence of marine debris. Relative to the bidirectional tidal oscillations of bay waters, directional (residual) flow driven by runoff and ground water input is small. The resulting long residence time for water in the bay gives floating debris a good chance of being driven by wind to a shoreline within the bay. Likewise, on the west coast of Pinellas County the barrier islands that delineate St Joseph Sound, Clearwater Harbor and Boca Ciega Bay help keep much debris within these basins. While this helps intercept debris that, otherwise, would



Some marine debris is very Floridian in nature.

end up in the Gulf of Mexico, where it likely would not be retrieved, debris becomes concentrated in the waters and shorelines around Pinellas County.

Marine debris is an eyesore and poses a real threat to wildlife that might become entangled in it or might ingest indigestible materials like plastics. Monofilament fishing line is commonly seen wrapped around birds and turtles, among other animals, causing injury and in the worst cases, death. A Monofilament Recovery & Recycling Program was initiated by FWC to reduce the impact of this particular type of marine debris in Florida (FWC, n.d.). The Monofilament Recovery & Recycling Program has created a network of recycling bins around the state to encourage proper disposal of the line, as well as hosts numerous coastal cleanups to remove line from the natural environment. There are more than 25 sites in PCAP and BCBAP with monofilament line bins, however animals are continuously found entangled all throughout the aquatic preserves. Because marine debris is very common in PCAP and BCBAP, and often originates on land, it is one of the most pervasive issues in the aquatic preserves.

Marine debris comes in all shapes and sizes. It ranges from the unsecured plastic bag that blows out of a vehicle or washes down a storm drain to derelict boats that, by not having been moored securely, come loose from their moorings and run aground and/or sink. The Ocean Conservancy, during their 2016 International Coastal Cleanup, identified cigarette butts, bottle caps, food and beverage wrappers, straws and plastic bags as some of the most common debris found along Florida's coastline (Ocean Conservancy, 2017). Urban areas are the source of much of the debris that ends up along less-developed shorelines. In Pinellas County, this issue can be addressed, in part, by measures to prevent debris from entering waterways from the land. For debris that gets into the aquatic preserve, the area offers considerable resources for removing it. TBAP can do a lot to reduce and remove marine debris through raising awareness, encouraging best management practices and coordinating debris removal efforts.

Goal 1: Reduce marine debris at the source.

The preferred approach is to prevent debris from entering aquatic habitats in the first place. It is not uncommon to see plastics and other items carried by winds or stormwater runoff. Many people do not realize how directly storm drains and ditches often conduct runoff and debris to natural habitats. Increasing this awareness is expected to result in better management of waste before it becomes

debris. To complement this awareness, physical infrastructure, like covered trash receptacles can make it easier for people to do the right thing. Retrofits of stormwater systems to intercept floatable debris can help prevent debris that does enter these systems from becoming environmental liabilities in natural habitats. An example of this is the SWFWMD project to remove floatables entering Clam Bayou in BCBAP.

Objective 1: Reduce marine debris through physical means.

Integrated Strategies

- Work with local resource managers to ensure that trash receptacles at access points are covered and emptied regularly to prevent discarded debris from entering the aquatic preserve.
- Encourage storm water system retrofits that include mechanisms (e.g., baffle boxes) to intercept floatable debris.
- Promote sound fish waste management through a combination of fish-cleaning restrictions, public education and proper disposal of fish waste.

Performance Measures

- Visit at least ten access sites per year to identify whether trash receptacles are covered. All 46 sites will be visited within five years.
- Managers at all visited access sites are contacted, when necessary, about covering trash receptacles and providing additional capacity for peak usage periods when needed.

Partners

- Local parks departments
- SWFWMD Surface Water Improvement and Management (SWIM) program

Objective 2: Reduce marine debris through increased awareness.

Integrated Strategies

- Provide awareness messages at access point kiosks and other informational locations to raise awareness about marine debris and its effects on the aquatic preserve.
- Provide awareness messages on marine debris at outreach events.
- Encourage local communities to mark storm drains.
- Encourage studies that identify types and possible sources of marine debris within the aquatic preserves.

Performance Measures

- Identify number of access points needing signage.
- Information on marine debris is available at all identified points of access/use of PCAP and BCBAP.
- Staff attends three outreach events per year to provide information on marine debris.
- The number of marked community storm drains increases by 50 percent.

Partners

- Keep Pinellas Beautiful
- Homeowner associations
- Tampa Bay Estuary Program

Goal 2: Remove debris that has entered the aquatic preserves.

Objective 1: Coordinate and encourage debris removal activities.

Integrated Strategies

- Facilitate shoreline cleanups of marine debris, focusing on islands, debris hotspots and relatively remote areas.
- Encourage boaters to remove floating debris.
- Encourage and support derelict vessel removal operations.

Performance Measures

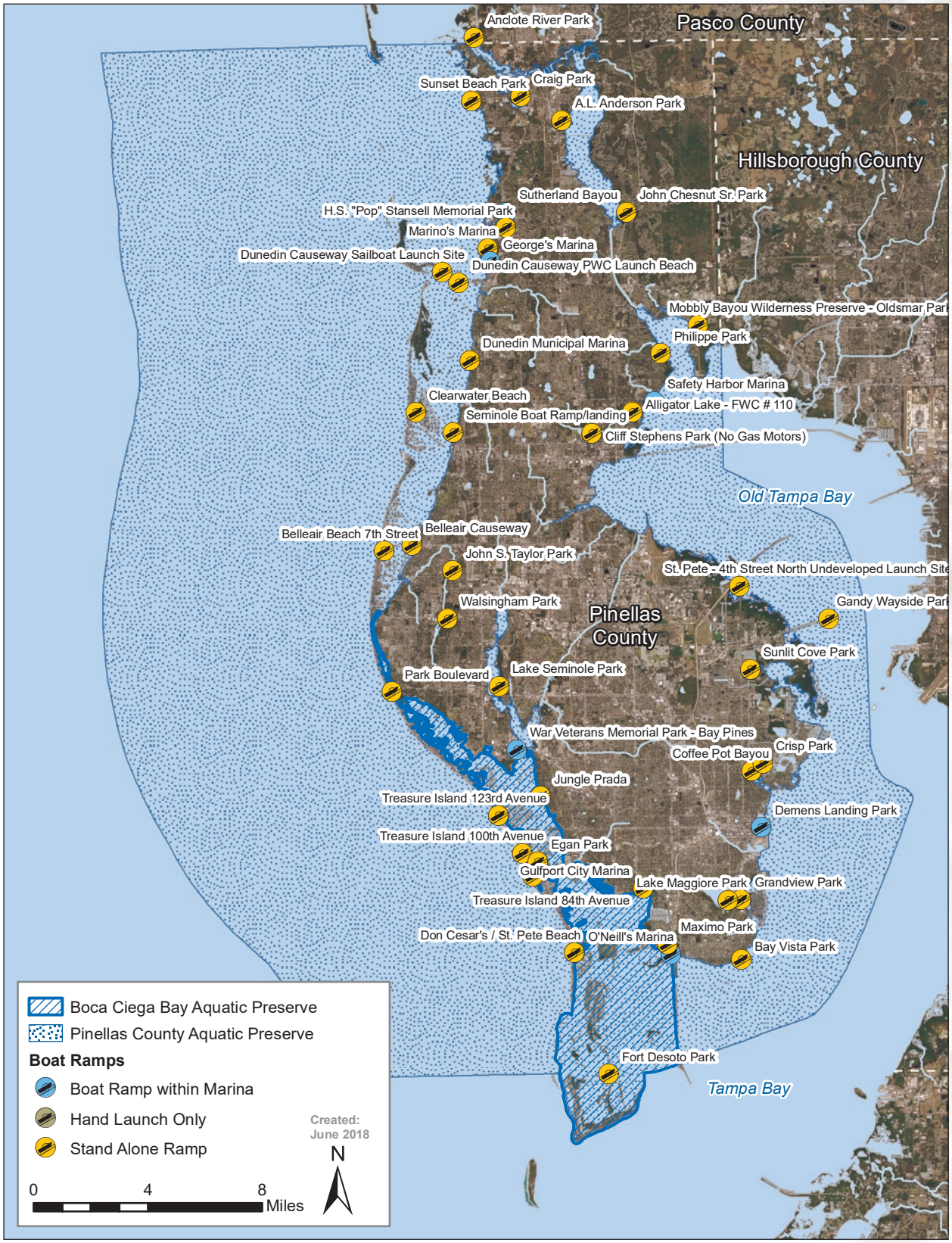
- A debris removal component is included in our activities at islands and other project sites.
- Track number of islands cleaned.

Partners

- Keep Pinellas Beautiful
- Boating and kayaking groups
- Local college student organizations
- Civic groups

4.4 / The Public Use Management Program

The Public Use Management Program addresses the delivery and management of public use opportunities at PCAP and BCBAP. The components of this program focus on providing the public recreational opportunities within the site's boundaries which are compatible with resource



Map 15 / Public access sites of Pinellas County and Boca Ciega Bay aquatic preserves.

management objectives. The goal for public access management in FCO managed areas is to promote and manage public use of our preserves and reserves that supports the research, education, and stewardship mission of FCO.

While access by the general public has always been a priority, the conservation of FCO's sites is the primary management concern for FCO. It is essential for staff to analyze existing public uses and define management strategies that balance these activities where compatible in a manner that protects natural, cultural and aesthetic resources. This requires gathering existing information on use, needs, and opportunities, as well as a thorough consideration of the existing and potential impacts to critical upland, wetland and submerged habitats. This includes the coordination of visitor program planning with social science research. One of FCO's critical management challenges during the next 10 years is balancing anticipated increases in public use with the need to ensure preservation of site resources. This section explains the history and current status of our Public Use efforts.

4.4.1 / ***Background of Public Use at Pinellas County and Boca Ciega Bay Aquatic Preserve***

The underlying rationale for TBAP's role in public access to, and use of, aquatic preserves' resources is the idea that use of the aquatic preserves' resources and conservation of those resources are not necessarily at odds. In fact, sustainable usage can create much-needed public understanding, engagement and as a result, political will to address a number of conservation needs.

Access Site	Managing Entity	Salt-water Ramp Lanes	Salt-water Jetty	Salt-water Beach	Salt-water Pier	Saltwater Catwalk/ Boardwalk	Marine Slips	Canoe/ Kayak Trail	Bank Fishing Areas	Fresh-water Jetty	Fresh-water Ramp	Freshwater Boardwalk	Fresh-water Pier	Paddling Launch	Pet Friendly
Gulfport Municipal Marina	City of Gulfport	X					X								
Edgewater Park & Marina	City of Dunedin	X			X		X								
Madeira Beach Municipal Marina	City of Madiera Beach	X					X								
Dunedin Municipal Marina	City of Dunedin	X			X		X								
Ft. De Soto Park	Pinellas County	X		X	X	X		X						X	X
Sunlit Cove	City of St. Petersburg	X													
Crisp Park	City of St. Petersburg	X	X												
Demens Landing	City of St. Petersburg	X													
Grandview Park	City of St. Petersburg	X		X											
Bay Vista Park	City of St. Petersburg	X		X		X									
Maximo Park	City of St. Petersburg	X		X					X						
Veterans Memorial Park	Pinellas County	X		X		X			X						
Seminole Municipal Boat Ramps	City of Clearwater	X	X			X									
Indian Rocks Beach Boat Ramp	City of Indian Rocks Beach	X				X									
Keegan Clair Park	City of Indian Rocks Beach	X													
Jungle Prada de Narvaez Park	City of St. Petersburg	X		X	X										
Anclote River Park	Pasco County	X		X					X						
Cliff Stephens Park	City of Clearwater							X	X		X				X
Alligator Lake	City of Safety Harbor							X	X		X				
John Chesnut Sr. Park	Pinellas County							X	X		X	X	X		X
A. L. Anderson Park	Pinellas County								X		X	X			X
Lake Maggiore	City of St. Petersburg										X				
Anclote Harbors Marina					X		X								

Table 3 / Public access sites and types in Pinellas County and Boca Ciega Bay aquatic preserves.

Access Site	Managing Entity	Salt-water Ramp Lanes	Salt-water Jetty	Salt-water Beach	Salt-water Pier	Saltwater Catwalk/ Boardwalk	Marine Slips	Canoe/ Kayak Trail	Bank Fishing Areas	Fresh-water Jetty	Fresh-water Ramp	Freshwater Boardwalk	Fresh-water Pier	Paddling Launch	Pet Friendly
Caladesi Island State Park	Florida State Parks			X			X	X	X						
Clearwater Municipal Marina	City of Clearwater				X		X								
Fred H. Howard Park	Pinellas County			X					X					X	
Sand Key Park	Pinellas County			X		X								X	X
Millenium Park	Pinellas County					X			X					X	X
Flora Wylie Park	City of St. Petersburg									X					
North Shore Park	City of St. Petersburg			X											X
Vinoy Park	City of St. Petersburg		X												
Spa Beach Park	City of St. Petersburg			X											
Poynter Park	City of St. Petersburg		X												
Lassing Park	City of St. Petersburg			X											
Coquina Key Park	City of St. Petersburg			X											X
Pinellas Point Park	City of St. Petersburg			X											
Coopers Point Nature Park	City of Clearwater							X	X						
Coopers Bayou Park	City of Clearwater								X						
Kapok Park	City of Clearwater								X			X			
R E Olds Park & Fishing Pier	City of Oldsmar			X	X										X
North Anclote River Nature Park	City of Tarpon Springs				X	X		X							
Sunset Beach	City of Treasure Island			X											
Honeymoon Island State Park	Florida State Parks		X	X		X		X	X						
Gulf Boulevard Beach Access	Pinellas County			X											
Pass-A-Grille Beach	City of St. Petersburg		X	X					X						
Sawgrass Lake	Pinellas County											X			

As a program focused primarily on conservation, TBAP plays a much less active role in facilities for public access and recreation than parks and other programs for which recreation is the primary focus. However, without the role of the vast acreages of habitat protected in BCBAP and PCAP in generating clean water, fisheries resources and other basics of a quality coastal zone, even recreation areas like shoreline parks would offer much poorer visitor experiences. Additionally, the resources managed by the program often offer unique nature-based opportunities, and TBAP bears some responsibility in ensuring sustainable access for those interested.

The TBAP program directly manages very little public use infrastructure in BCBAP and PCAP For remote areas with routine public use, including certain islands where picnicking and camping are common, a few amenities like picnic tables are added to focus usage on specific areas. Most of TBAP's visitor accommodation infrastructure is in the form of informational kiosks and standalone signs intended to help visitors appreciate their experience, while helping them to be good stewards of the resources they are enjoying. Depending on whether the signage is at a boat ramp, an island or other venue, site-specific messages like what to do if you hook a bird or the importance of native vegetation are selected for that venue.

TBAP often works closely with local governments and organizations to suggest kayak launch sites, design kiosk signage or assist with other access point features that benefit the goals of TBAP, as well as the entity managing the access point. Often site-specific signage design in-house and printed locally is much less costly than the off-the-shelf signage available from professional outdoor sign vendors. TBAP has a history of creating win-win partnerships, and quite a few of those are collaborative efforts toward accommodating public use.

*4.4.2 / **Current Status of Public Use at Pinellas County and Boca Ciega Bay Aquatic Preserves***

TBAP's conservation mission and limited program capacity likely will never allow it to play a large role in developing public access facilities, but the conservation benefits of knowledgeable, engaged visitors will continue to drive the program to be innovative in providing information that will enhance enjoyment and stewardship among visitors to the aquatic preserves. The trend toward more site-specific information will continue, as the staff gains more knowledge, software and other resources to produce professional-quality media in-house. Technology also will allow TBAP to offer more guidance in the use of resources with less physical alteration, as in the development of virtual paddling trails where physical trail signs, which can require frequent, expensive maintenance are replaced with downloadable virtual trail waypoints for GPS-enabled devices.

Programs like TBAP are constantly looking for usage trends on the horizon. Some are inherently sustainable, but others do damage to the resources which TBAP must damage and discourage. Attention to demographic trends in visitation can allow the program to anticipate changing informational needs and to be prepared for them. A good example of this shifts in the origins of visitors coming to Pinellas County for nature-based experiences. In the past, most foreign visitors have been from Europe, and alternate versions of park brochures might have been printed in French, German and other languages that reflect that visitor demographic. More recently, states like California, and, increasingly, Florida are seeing more visitors from southeast Asia. Initially, these visitors have gone to more internationally known destinations like Miami and Orlando, but awareness of Tampa Bay's clean beaches and other qualities is increasing. Personal communication of the TBAP manager with Visit St. Pete/Clearwater officials has indicated that it might be useful to begin creating versions of local nature guide materials, like park brochures, in languages like simplified Chinese. State and local park officials, who would be key partners, have also responded positively to TBAP's initiative. In addition to information that would help visitors appreciate the natural resources they are enjoying. the materials could include culturally-specific information on environmental stewardship. While not extensive, TBAP's contributions to accommodating public use are innovative and forward-thinking.

Other, less traditional uses of the aquatic preserves are always appearing. For a while, ultralight aircraft were observed flushing birds from islands and shoals, but that issue appears to have diminished considerably. Horseback riding concessions in various parts of the aquatic preserves have been observed to damage marshes and seagrasses. As each possible issue arises, TBAP should document any adverse impacts and seek ways to avoid or minimize the impacts.

No additional issues have been explicitly associated with public use at PCAP and BCBAP, but sustainable public use is a component of management strategies associated with other issues.



Regulatory staff work directly with TBAP staff on field assessments for permit applications and other projects.

Part Three

Additional Plans

Chapter Five

Administrative Plan

Tampa Bay Aquatic Preserves (TBAP) is the Florida Coastal Office program responsible for the management of four aquatic preserves in the Tampa Bay area: Cockroach Bay Aquatic Preserve, Terra Ceia Aquatic Preserve, Boca Ciega Bay Aquatic Preserve, and Pinellas County Aquatic Preserve, covering nearly 400,000 acres in three counties. Although legislative budget cuts resulted in the temporary closure of TBAP in July 2011, the office reopened in December 2012, albeit with reduced staffing and funding. TBAP presently has a staff of one full-time select exempt position, one full-time Other Personal Services (OPS – limited benefits) Environmental Specialist-(ES) II position and one part-time OPS position to manage the four aquatic preserves.

Pinellas County Aquatic Preserve and Boca Ciega Bay Aquatic Preserve often require a different approach from the Cockroach Bay Aquatic Preserve and the nearby Terra Ceia Aquatic Preserve, as the latter two are much less urbanized than the former two.

Management goals for the aquatic preserves must be balanced with the program's other responsibilities and accomplished with new issues emerging frequently. To that end, an effective and efficient planning cycle has evolved. In addition to site plans like this one, TBAP maintains a program-wide strategic plan with a planning horizon of five to ten years. This timeframe accommodates the anticipation of vehicle

replacements, facilities needs and changing staffing needs. Revisited early each calendar year, the strategic plan lists “big picture” goals for the direction of the program. By reviewing whether the goals of the strategic plan are still valid, the staff sets the stage for developing individual staff action plans for the next fiscal year. Each staff action plan includes a summary of workload duties, descriptions of projects for the upcoming fiscal year, training and equipment needs and project timelines. The aquatic preserve manager reviews the individual plans and timelines to detect likely equipment and staffing gaps or bottlenecks for the upcoming fiscal year. This annual planning cycle is timed to generate realistic budgetary needs before the annual budget request is submitted through the Florida Coastal Office.

To implement planned activities, limited staff resources are supplemented by active intern and volunteer programs. A computer-based volunteer coordination system is used to track interested volunteers and their volunteer hours. Colleges, grade schools, nonprofit organizations, corporate groups and other agencies have been valuable sources of volunteers.

At present, staffing is a primary limitation on the TBAP program’s capacity to achieve its goals. An increase in staffing numbers is needed, but additional upgrades to existing positions also are needed to increase staff retention. Improving staff retention is important, because it requires significant time and effort of the existing staff to familiarize new staff with the program’s geographically dispersed project sites and responsibilities.

Present staff positions include the site manager (ES III), an ES II (OPS) and an ES I (OPS). In addition, to science-based resource management, these positions also perform administrative, maintenance and outreach duties for which larger programs typically have dedicated staff positions.

The following staffing actions are recommended in this plan for existing positions…

- Convert the ES II position from OPS to Career Service to meet the need for continuity in this position. This position is key to program continuity, and is expected to operate independently in the field.
- Convert the ES I position from OPS to Career Service to meet the need for continuity in this position. This position provides field support, and, as a result, needs to retain the staff occupant once filled.
- Upgrade the site manager position to an Environmental Manager position. The wide-ranging responsibilities and level of expertise required of this position are more in line with manager positions across the agency.

The following additional positions are recommended in this plan

- A Career Service education/outreach position: Education, outreach and community engagement are key aspects of the program.
- A part-time OPS maintenance position: Present staff must choose between using their time for maintenance or taking equipment to repair shops for expensive, and time-consuming, repairs.
- A part-time (at least) OPS administrative assistant position. The program, has had a full-time administrative assistant at times in the past, and that position was very useful in purchasing, coordinating volunteers and providing support for management plan development, mapping, etc.
- A field support position for logistical support, including, but not limited to operating and maintaining GPS/GNSS equipment, water quality and other abiotic measuring equipment and habitat mapping towed video. This position also would support the reestablishment and operation of datasonde water quality monitoring in the Terra Ceia Aquatic Preserve (also managed by TBAP).

These recommendations would allow the program to do a better job of addressing present goals, but additional staff would be needed to expand the program’s effectiveness.



Student volunteers prepare to plant native vegetation on an island.

Chapter Six

Facilities Plan

Boca Ciega Bay Aquatic Preserve (BCBAP) and Pinellas County Aquatic Preserve (PCAP) are part of the Tampa Bay Aquatic Preserves (TBAP) program, which manages four aquatic preserves in three counties. The TBAP office is not located in Pinellas County, but it is just across the Skyway Bridge in northern Manatee County. That location places it in a fairly central place that is convenient to all four aquatic preserves, and it is only a short drive from any of them. The longest distance traveled for resource management field work is from the TBAP office to the northernmost part of PCAP on the Anclote River. That trip, depending on traffic, takes somewhere around 1.5 hours. The sites in PCAP and BCBAP closest to the TBAP office can be accessed in less than a half hour.

Buildings – Prior to the 2004 transfer of state buffer preserves and related properties to the Department of Environmental Protection's (DEP's) Division of Recreation and Parks, the TBAP office managed the historic 1909 Haley House at Terra Ceia as its program-wide headquarters and operational base. After the transfer, the facility was managed by the DEP Division of Recreation and Parks, but TBAP retained office space and workshop/storage space at the site. During the 2011 closure of the TBAP office, the program's equipment was transferred to other offices and the workspace and storage reverted to the Division of Recreation and Parks. Since its reopening in December 2012, TBAP has returned to the Haley House site, and reoccupied some of its previous office, workshop and storage space. Now, five years later, space limitations from the reduced facilities have begun to limit the program's return to full operational strength. In addition to offices and a conference room, TBAP has a small portable building to house field gear and gas-powered equipment (e.g., chainsaws). TBAP will need to acquire more operational space to regain needed functionality. TBAP staff has begun this process by renovating two rooms in the Haley House facility to serve as a breakroom with ice and water for fieldwork, and a field support room for pressing plant samples and other sample processing tasks. Additional secure

workshop space is needed as well, and staff is exploring possible solutions like another portable building or a cargo container.

Vehicles and Vessels – Most of the major vehicles and vessels necessary for the effective operation of the TBAP have been regained since the TBAP program's reopening in December 2012, and some have been replaced with new ones. As part of the program's strategic planning cycle, the suitability and condition of all vehicles and vessels in the program are reevaluated annually. Vessels and vehicles and the functional niches they fill include the following:

- 2017 Ford F-250 4wd heavy duty pickup truck for towing. Vehicle has 8012 miles as of June 2018.
- 2001 Ford F-350 - heavy duty pickup truck for towing. Vehicle has 83,868 miles as of June 2018.
- 21' 2015 shallow-draft Carolina Skiff– used for transporting equipment into shallow areas. The motor had 124 hours as of June 2018.
- 21' 1990 Mako Cuddy Cabin – V hull boat used for transporting more equipment and people and for negotiating choppy water in open bay and offshore areas. The motor had 216 hours as of June 2018.
- 8' inflatable Zodiac – used to support the Mako in shallow areas.
- Two single-seat kayaks, two two-seat kayaks and a two-seat canoe
- A 6" Brush Bandit wood chipper for use in mulching invasive trees on islands
- A 3" Bearcat wood chipper for small mulching work on islands.

At present, the existing vehicles and boats are adequate to meet program goals. The Mako has had some mechanical issues, and staff is looking for opportunities to replace it with a larger (approximately 25') vee hull boat with twin engines in the future in order to have better access and safety when operating in open bay and offshore conditions.

The program has identified the following strategic goals for replacing and enhancing present equipment:

- Upgrade the existing Mako with a larger, twin-engine V hull boat
- Add a small barge to carry our chipper.

TBAP maintains, and annually updates, a hurricane plan with detailed plans for securing and/or removing equipment and facilities in the event of a severe weather threat.

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Appendix A

Legal Documents

A.1 / ***Aquatic Preserve Resolution***

WHEREAS, the State of Florida, by virtue of its sovereignty, is the owner of the beds of all navigable waters, salt and fresh, lying within its territory, with certain minor exceptions, and is also the owner of certain other lands derived from various sources; and

WHEREAS, title to these sovereignty and certain other lands has been vested by the Florida Legislature in the State of Florida Board of Trustees of the Internal Improvement Trust Fund, to be held, protected and managed for the long range benefit of the people of Florida; and

WHEREAS, the State of Florida Board of Trustees of the Internal Improvement Trust Fund, as a part of its overall management program for Florida's state-owned lands, does desire to insure the perpetual protection, preservation and public enjoyment of certain specific areas of exceptional quality and value by setting aside forever these certain areas as aquatic preserves or sanctuaries; and

WHEREAS, the ad hoc Florida Inter-Agency Advisory Committee on Submerged Land Management has selected through careful study and deliberation a number of specific areas of state—owned land having exceptional biological, aesthetic and scientific value, and has recommended to the State of Florida Board of Trustees of the Internal Improvement Trust Fund that these selected areas be officially recognized and established as the initial elements of a statewide system of aquatic preserves for Florida;

NOW, THEREFORE, BE IT RESOLVED by the State of Florida Board of Trustees of the Internal Improvement Trust Fund:

THAT it does hereby establish a statewide system of aquatic preserves as a means of protecting and preserving in perpetuity certain specially selected areas of state-owned land: and

THAT specifically described, individual areas of state-owned land may from time to time be established as aquatic preserves and included in the statewide system of aquatic preserves by separate resolution of the State of Florida Board of Trustees of the Internal Improvement Trust Fund; and

THAT the statewide system of aquatic preserves and all individual aquatic preserves established thereunder shall be administered and managed, either by the said State of Florida Board of Trustees of the Internal Improvement Trust Fund or its designee as may be specifically provided for in the establishing resolution for each individual aquatic preserve, in accordance with the following management policies and criteria:

(1) An aquatic preserve is intended to set aside an exceptional area of state-owned land and its associated waters for preservation essentially in their natural or existing condition by reasonable regulation of all human activity which might have an effect on the area.

(2) An aquatic preserve shall include only lands or water bottoms owned by the State of Florida, and such private lands or water bottoms as may be specifically authorized for inclusion by appropriate instrument from the owner. Any included lands or water bottoms to which a private ownership claim might subsequently be proved shall upon adjudication of private ownership be automatically excluded from the preserve, although such exclusion shall not preclude the State from attempting to negotiate an arrangement with the owner by which such lands or water bottoms might be again included within the preserve.

(3) No alteration of physical conditions within an aquatic preserve shall be permitted except: (a) minimum dredging and spoiling for authorized public navigation projects, or (b) other approved activity designed to enhance the quality or utility of the preserve itself. It is inherent in the concept of the aquatic preserve that, other than as contemplated above, there be: no dredging and filling to create land, no drilling of oil wells or excavation for shell or minerals, and no erection of structures on stilts or otherwise unless associated with authorized activity, within the confines of a preserve - to the extent these activities can be lawfully prevented.

(4) Specifically, there shall be no bulkhead lines set within an aquatic preserve. When the boundary of a preserve is intended to be the line of mean high water along a particular shoreline, any bulkhead line subsequently set for that shoreline will also be at the line of mean high water.

(5) All human activity within an aquatic preserve shall be subject to reasonable rules and regulations promulgated and enforced by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and/or any other specifically designated managing agency Such rules and regulations shall not interfere unduly with lawful and traditional public uses of the area, such as fishing (both sport and commercial), hunting, boating, swimming and the like.

(6) Neither the establishment nor the management of an aquatic preserve shall infringe upon the lawful and traditional riparian rights of private property owners adjacent to a preserve. In furtherance of these

rights, reasonable improvement for ingress and egress, mosquito control, shore protection and similar purposes may be permitted by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and other jurisdictional agencies, after review and formal concurrence by any specifically designated managing agency for the preserve in question.

(7) Other uses of an aquatic preserve, or human activity within a preserve, although not originally contemplated, may be permitted by the State of Florida Board of Trustees of the Internal improvement Trust Fund and other jurisdictional agencies, but only after a formal finding of compatibility made by the said Trustees on the advice of any specifically designated managing agency for the preserve in question.

IN TESTIMONY WHEREOF, the Trustees for and on behalf of the State of Florida Board of Trustees of the Internal Improvement Trust Fund have hereunto subscribed their names and have caused the official seal of said State of Florida Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this the 24th day of November A. D. 1969.

CLAUDE R. KIRK, JR, Governor

TOM ADAMS, Secretary of State

EARL FAIRCLOTH, Attorney General

FRED O. DICKINSON, JR., Comptroller

BROWARD WILLIAMS, Treasurer

FLOYD T. CHRISTIAN, Commissioner of Education

DOYLE CONNER, Commissioner of Agriculture

As and Constituting the State of Florida Board of Trustees of the Internal Improvement Trust Fund

A.2 / ***Florida Statutes***

All the statutes can be found according to number at www.leg.state.fl.us/Statutes

Florida Statutes, Chapter 253: State Lands

Florida Statutes, Chapter 258: State Parks and Preserves
Part II (Aquatic Preserves)

Florida Statutes, Chapter 267 (Historical Resources)

Florida Statutes, Chapter 370: Saltwater Fisheries

Florida Statutes, Chapter 372: Wildlife

Florida Statutes, Chapter 403: Environmental Control
(Statute authorizing the Florida Department of Environmental Protection (DEP) to create Outstanding Florida Waters is at 403.061(27))

Florida Statutes, Chapter 597: Aquaculture

A.3 / ***Florida Administrative Codes***

All rules can be found according to number at www.flrules.org/Default.asp

Florida Administrative Code, Chapter 18-20: Florida Aquatic Preserves
https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-20

Florida Administrative Code, Chapter 18-21: Sovereignty Submerged Lands Management
https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21

Florida Administrative Code, Chapter 62-302: Surface Water Quality Standards
(Rule designating Outstanding Florida Waters is at 62-302.700)
https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-302

Florida Department of
Environmental Protection

Memorandum

April 29, 2005

TO: District Bureau Chiefs

FROM: Mike Bullock, Director
Florida Park Service

SUBJECT: Memorandum of Agreement

The enclosed Memorandum of Agreement secures the commitment of the Divisions of Recreation and Parks and Coastal and Aquatic Managed Areas to collaborate resources. This partnership will unify our similar missions to better protect Florida's natural resources while offering quality recreational opportunities.

Please review the document, which includes future steps for implementing the agreement, and share it with your staff. Employee cooperation will enhance the ability of both Divisions to improve resource management and protection.

Thank you for your support of this team effort. Its success will benefit both programs.

MB/jg
Enclosure

Department of
Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

MEMORANDUM AGREEMENT BETWEEN DIVISION OF RECREATION & PARKS AND COASTAL & AQUATIC MANAGED AREAS

DRP and CAMA are programs with comparable missions: to protect and manage Florida's diverse natural resources and provide outdoor recreation. Ecosystems do not recognize divisional lines and organizational structure must not impede our mission to protect Florida's resources. Because of our similar missions and close proximity in the field, DRP and CAMA will collaborate on upland and submerged land management issues, as well as share manpower, facilities, vehicles, boats and other resources. DEP employees will work in teams and share resources, regardless from which Division or Office an employee or resource originates. If Parks or Aquatic Preserve staff needs assistance with resource management, events or programs, it is encouraged and expected that staff from each Office or Division will assist as time allows.

To promote an even greater spirit of cooperation among our two sister divisions, we are directing the DRP District Bureau Chiefs and the CAMA Environmental Administrators to foster inter-division employee cooperation. In the future, we will:

* Hold two joint CAMA/FPS district staff meetings onsite where appropriate per year. FPS District Bureau Chiefs and CAMA Environmental Administrators shall attend these meetings. The respective directors must be notified of the meeting schedule. Additional meetings should be scheduled as needed.

* On an annual basis, work together to identify and develop joint priority project plans that share efforts to protect and manage neighboring resources. Possibly a good time to perform this work would be at one of the meetings discussed in the previous paragraph.

* Hold meetings where properties have changed hands so that the FPS can learn about CAMA experience with their properties and vice-versa. We encourage the exchange of information regarding managed lands wherever there is the opportunity.

* Encourage joint participation in site management plans of both the FPS and CAMA.

* Actively explore ways to share office space, equipment, tools and staff, where appropriate, to achieve a specific project or goals. (Examples might be: heavy equipment, staff for burning, staff for an event, administrative staff costs, etc…)

* Seek to help the other division whenever possible, while not interfering with present work responsibilities.

Please share this memorandum with your staff. DRP and CAMA's joint commitment to work together in the spirit of true cooperation to manage Florida's natural resources and provide quality outdoor recreation will enhance our accomplishments, benefiting both programs. The success of this partnership will be monitored on an ongoing basis.

Mike Bullock 4-27-05

Mike Bullock (Date)
Director
Florida Park Service

Katherine Andrews 4-27-05

Katherine Andrews (Date)
Director
Coastal and Aquatic Managed Areas

Witness 4/27/05

Witness (Date)

Appendix B

Resource Data

*B.1 / **Glossary of Terms***

References to these definitions can be found at the end of this list and in Appendix B.2 (References).

allochthonous – exogenous; originating outside and transported into a given system or area (Lincoln et al., 2003).

anaerobic - growing or occurring in the absence of molecular oxygen (Lincoln et al., 2003).

aquaculture - the cultivation of aquatic organisms (Lincoln et al., 2003).

aquifer – a body of porous rock or soil through which water passes and in which water gathers (Collin, 2004).

biodiversity – the range of species, subspecies or communities in a specific habitat such as a rainforest or a meadow (Collin, 2004).

biotic community – a community of organisms in a specific area (Collin, 2004).

codify - to arrange laws and rules systematically (Neufeldt & Sparks, 1990).

diversity - a measure of the number of species and their relative abundance in a community (Lincoln et al., 2003).

drainage basin (catchment) - the area from which a surface watercourse or a groundwater system derives its water; watershed (Allaby, 2005).

easement - a right that one may have in another's land (Neufeldt & Sparks, 1990).

ecosystem - a community of organisms and their physical environment interacting as an ecological unit (Lincoln et al., 2003).

emergent - an aquatic plant having most of the vegetative parts above water; a tree which reaches above the level of the surrounding canopy (Lincoln et al., 2003).

endangered species - an animal or plant species in danger of extinction throughout all or a significant portion of its range (U.S. Fish and Wildlife Service [USFWS], 2015)

endolithic – growing within a rock or other hard inorganic substratum (Lincoln et al., 2003)

epifauna – the total animal life inhabiting a sediment surface or water surface (Lincoln et al., 2003).

estuary – a part of a river where it meets the sea and is partly composed of salt water (Collin, 2004).

extinction - the disappearance of a species from a given habitat (Lincoln et al., 2003).

fauna - the animal life of a given region, habitat or geological stratum. (Lincoln et al., 2003).

flora - the plant life of a given region, habitat or geological stratum (Lincoln et al., 2003).

frac-out - the unintentional return of drilling fluids to the surface during horizontal directional drilling (Dickers, 2016).

geographic information system (GIS) - computer system supporting the collection, storage, manipulation and query of spatially referred data, typically including an interface for displaying geographical maps (Lincoln et al., 2003).

habitat – the type of environment in which a specific organism lives (Collin, 2004).

hydric - pertaining to water; wet (Lincoln et al., 2003).

infauna - the total animal life within a sediment (Lincoln et al., 2003).

intertidal zone - the shore zone between the highest and lowest tides; littoral (Lincoln et al., 2003).

listed species - a species, subspecies, or distinct population segment that has been added to the Federal list of endangered and threatened wildlife and plants (USFWS, 2015).

mandate - an order or command; the will of constituents expressed to their representative, legislature, etc. (Neufeldt & Sparks, 1990).

mesic - pertaining to conditions of moderate moisture or water supply; used of organisms occupying moist habitats. (Lincoln et al., 2003)

midden - a refuse heap; used especially in archaeology (Lincoln et al., 2003).

monitoring – a process of regular checking on the progress of something (Collin, 2004).

pollution – the presence of unusually high concentrations of harmful substances in the environment, as a result of human activity or a natural process (Collin, 2004).

population - all individuals of one or more species within a prescribed area. A group of organisms of one species, occupying a defined area and usually isolated to some degree from other similar groups (Lincoln et al., 2003).

runoff - part of precipitation that is not held in the soil but drains freely away (Lincoln et al., 2003).

salinity - a measure of the total concentration of dissolved salts in seawater (Lincoln et al., 2003).

sessile - non-motile; permanently attached at the base (Lincoln et al., 2003).

species - a group of organisms, minerals or other entities formally recognized as distinct from other groups; the basic unit of biological classification (Lincoln et al., 2003).

species of concern - an informal term referring to a species that might be in need of conservation action. This may range from a need for periodic monitoring of populations and threats to the species and its habitat, to the necessity for listing as threatened or endangered. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing. A similar term is "species at risk," which is a general term for listed species as well as unlisted ones that are declining in population. Canada uses the term in its new "Species at Risk Act." "Imperiled species" is another general term for listed as well as unlisted species that are declining (USFWS, 2015).

stakeholder - any person or organization who has an interest in the actions discussed or is affected by the resulting outcomes of a project or action (USFWS, 2015).

stillstand – a period of geologic time characterized by unchanging sea levels (Allaby, 2005).

subtidal - environment which lies below the mean low water level (Allaby, 2005).

supratidal - the zone on the shore above mean high tide level (Lincoln et al., 2003).

threatened species - an animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range (USFWS, 2015).

turbid - cloudy; opaque with suspended matter (Lincoln et al., 2003).

upland - land elevated above other land (Neufeldt & Sparks, 1990).

vegetation - plant life or cover in an area; also used as a general term for plant life (Lincoln et al., 2003).

water column - the vertical column of water in a sea or lake extending from the surface to the bottom (Lincoln et al., 2003).

watershed - an elevated boundary area separating tributaries draining in to different river systems; drainage basin (Lincoln et al., 2003).

wetland - an area of low lying land, submerged or inundated periodically by fresh or saline water (Lincoln et al., 2003).

wildlife - any undomesticated organisms; wild animals (Allaby, 2005).

B.2 / ***References***

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Kindom Protista		
Phylum Phaeophyta		
Class Phaeophyceae		
Order Dictyotales		
Family Dictyotaceae		
brown alga	*Dictyota dichotoma*	
brown alga	*Padina sp.*	
Order Fucales		
Family Sargassaceae		
brown alga	*Sargassum filipendula*	
brown alga	*Sargassum polyceratium*	
brown alga	*Sargassum vulgare*	
Phylum Chlorophyta		
Class Ulvophyceae		
Order Bryopsidales		
Family Caulerpaceae		
green alga	*Caulerpa mexicana*	
green alga	*Caulerpa paspaloides*	
green alga	*Caulerpa prolifera*	
green alga	*Caulerpa racemosa*	
green alga	*Caulerpa sertularioides*	
Family Codiaceae		
green alga	*Codium carolinianum*	
green alga	*Codium decorticatum*	
green alga	*Codium taylorii*	
Family Halimedaceae		
green alga	*Halimeda incrassata*	
Family Udoteaceae		
green alga	*Penicillus sp.*	
Order Cladophorales		
Family Cladophoraceae		
green alga	*Cladophora*	
Family Boodleaceae		
green alga	*Cladophoropsis*	
Order Ulvales		
Family Ulvaceae		
green alga	*Enteromorpha flexuosa*	
green alga	*Enteromorpha intestinalis*	
green alga	*Enteromorpha lingulata*	
green alga	*Ulva fasciata*	
green alga	*Ulva lactuca*	
green alga	*Ulva rigida*	

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Phylum Rhodophyta		
Class Florideophyceae		
Order Ceramiales		
Family Ceramiaceae		
red alga	*Centroceras clavulatum*	
red alga	*Ceramium brevizonatum*	
red alga	*Spyridia filamentosa*	
Family Dasyaceae		
red alga	*Heterosiphonia crispella*	
Family Rhodomelacedae		
red alga	*Acanthophora spicifera*	
Order Gigartinales		
Family Gracilariaceae		
red alga	*Gracilaria blodgettii*	
red alga	*Gracilaria cervicornis*	
red alga	*Gracilaria tikvahiae*	
Family Hypneaceae		
red alga	*Hypnea musciformis*	
Family Solieriaceae		
red alga	*Eucheuma isiforme*	
red alga	*Solieria filiformis*	
Order Halymeniales		
Family Halymeniaceae		
red alga	*Halymenia pseudofloresia*	
Kingdom Plantae		
Class Magnoliopsida		
Order Alismatales		
Family Alismataceae		
arrowhead	*Sagittaria spp.*	
Family Araceae		
duckweed	*Lemna spp.*	
goldenclub	*Orontium aquaticum*	
Florida mudmidget	*Wolffiella gladiata*	
Family Cymodoceaceae		
shoal grass	*Halodule wrightii*	
manatee grass	*Syringodium filiforme*	
Family Hydrocharitaceae		
turtle grass	*Thalassia testudinum*	
Order Apiales		
Family Apiaceae		
marsh pennywort	*Hydrocotyle umbellata*	
Order Aquifoliales		
Family Aquifoliaceae		

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inkberry	*Ilex glabra*	
Order Arecales		
Family Arecaceae		
date palm	*Phoenix spp.*	
cabbage palm	*Sabal palmetto*	
saw palmetto	*Serenoa repens*	
Washington palm	*Washingtonia robusta*	
Order Asparagales		
Family Amaryllidaceae		
string lily	*Crinum americanum*	
Family Asparagaceae		
Spanish bayonet	*Yucca aloifolia*	
Order Asterales		
Family Asteraceae		
common ragweed	*Ambrosia artemisiifolia*	
saltbush	*Baccharis halimifolia*	
Spanish needles	*Bidens alba*	
begger-ticks	*Bidens mitis*	
sea oxeye	*Borrichia frutescens*	
tickseed	*Coreopsis leavenworth II*	
tassel flower	*Emilia sonchifolia*	
camphorweed	*Heterotheca subaxillaris*	
marsh elder	*Iva frutescens*	
beach elder	*Iva imbricata*	
seaside goldenrod	*Solidago sempervirens*	
spiny-leaved sow thistle	*Sonchus asper*	
Order Boraginales		
Family Boraginaceae		
scorpion tail	*Heliotropium angiospermum*	
seaside fleliotrope	*Heliotropium curassavicum*	
Order Brassicales		
Family Bataceae		
saltwort	*Batis maritima*	
Family Capparaceae		
Jamaican caper	*Capparis cynophallophora*	
Family Caricaceae		
papaya	*Carica papaya*	
Order Caryophyllales		
Family Aizoaceae		
seapurslane	*Sesuvium portulacastrum*	
Family Amaranthaceae		
samphire	*Blutaparon vermiculare*	
Family Cactaceae		
prickly-pear cactus	*Opuntia stricta*	

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Family Chenopodiaceae		
lamb's-quarters	*Chenopodium album*	
annual glasswort	*Sarcocornia bigelovii*	
perrenial glasswort	*Sarcocornia perennis*	
sea blite	*Suaeda linearis*	
Family Phytolaccaceae		
poke berry	*Phytolacca americana*	
rouge plant	*Rivina humilis*	
Family Plumbaginaceae		
sea lavender	*Limonium carolinianum*	
Family Polygonaceae		
sea grape	*Coccoloba uvifera*	
smartweed	*Polygonum spp.*	
Family Portulacaceae		
common purslane	*Portulaca oleracea*	
pink purslane	*Portulaca pilosa*	
Order Commelinales		
Family Pontederiaceae		
pickerelweed	*Pontederia cordata*	
Order Cornales		
Family Cornaceae		
blackgum	*Nyssa sylvatica*	
swamp tupelo	*Nyssa sylvatica var. biflora*	
Family Loasaceae		
poor man's patches	*Mentzelia floridana*	
Family Nyssaceae		
water tupelo	*Nyssa aquatica*	
ogeechee tupelo	*Nyssa ogeche*	
Order Cucurbitales		
Family Cucurbitaceae		
wild balsam apple	*Momordica charantia*	
Order Cycadales		
Family Cycadaceae		
coontie	*Zamia pumila*	
Order Fabales		
Family Fabaceae		
nickerbean	*Caesalpinia bonduc*	
seaside bean	*Canavalia rosea*	
rattle box	*Crotalaria spp.*	
coinvine	*Dalbergia ecastaphyllum*	
Florida tick trefoil	*Desmodium floridanum*	
hairy indigo	*Indigofera hirsuta*	
bequilla	*Sesbania emerus*	
necklace pod	*Sophora tomentosa*	

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clover	*Trifolium spp.*	
cowpea	*Vigna luteola*	
Family Polygalaceae		
shallow wort	*Cynanchum spp.*	
showy milkwort	*Polygala grandifiora*	
Family Surianaceae		
bay cedar	*Suriana maritima*	
Order Fagales		
Family Fagacea		
sand live oak	*Quercus geminata*	
laurel oak	*Quercus hemisphaerica*	
swamp laurel oak	*Quercus laurifolia*	
overcup oak	*Quercus lyrata*	
live oak	*Quercus virginiana*	
oak	*Quercus spp.*	
Family Myricaceae		
wax myrtle	*Morella cerifera*	
Order Gentianales		
Family Loganiaceae		
rust weed	*Polypremum procumbens*	
Family Rubiaceae		
common buttonbush	*Cephalanthus occidentalis*	
snowberry	*Chiococca alba*	
wild coffee	*Psychotria nervosa*	
white indigoberry	*Randia aculeata*	
Order Lamiales		
Family Acanthaceae		
Britton's wild petunia	*Ruellia brittoniana*	
Family Avicenniaceae		
black mangrove	*Avicennia germinans*	
Family Oleaceae		
Eastern swamp privet	*Forestiera acuminata*	
Florida privet	*Forestiera segregata*	
Family Verbenaceae		
beauty berry	*Callicarpa americana*	
lantana	*Lantana involucrata*	
blue porterweed	*Stachytarpheta jamaicensis*	
Order Laurales		
Family Lauraceae		
red bay	*Persea borbonia*	
Order Liliales		
Family Smilacaceae		
earleaf greenbrier	*Smilax auriculata*	
Order Magnoliales		

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Family Magnoliaceae		
southern magnolia	*Magnolia grandiflora*	
Order Malpighiales		
Family Chrysobalanaceae		
cocoplum	*Chrysobalanus icaco*	
spurge	*Chamaesyce spp. #X*	
Family Euphorbiaceae		
dixie sandmat	*Chamaesyce bombensis*	
spurge	*Chamaesyce spp. #X*	
spurge	*Chamaesyce spp. #2*	
spurge	*Chamaesyce spp. #3*	
spurge	*Chamaesyce spp. #4*	
spurge	*Chamaesyce spp. #5*	
spurge	*Chamaesyce spp. #6*	
finger rot	*Cnidoscolus stimulosus*	
croton	*Croton glandulosus*	
painted leaf	*Poinsettia cyathophora*	
Family Passifloraceae		
passion vine	*Passiflora lutea*	
corky-stemmed passion-flower	*Passiflora suberosa*	
Family Rhizophoraceae		
red mangrove	*Rhizophora mangle*	
Family Salicaceae		
coastal plain willow	*Salix caroliniana*	
Order Myrtales		
Family Combretaceae		
buttonwood	*Conocarpus erectus*	
silver buttonwood	*Conocarpus erectus var sericeus*	
white mangrove	*Laguncularia racemosa*	
Family Myrtaceae		
white stopper	*Eugenia axillaris*	
Spanish stopper	*Eugenia foetida*	
Family Onagraceae		
bee blossom	*Guara angustifolia*	
seaside evening primrose	*Oenothera humifusa*	
Order Nymphaeales		
Family Nymphaeaceae		
yellow waterlily	*Nymphaea mexicana*	
Order Pinales		
Family Cupressaceae		
southern red cedar	*Juniperus silicicola*	
red cedar	*Juniperus virginiana*	
pond cypress	*Taxodium ascendens*	
bald cypress	*Taxodium distichum*	

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Family Pinaceae		
South Florida slash pine	*Pinus elliottii var densa*	
loblolly pine	*Pinus taeda*	
Order Poales		
Family Cyperaceae		
saw grass	*Cladium jamaicense*	
Baldwin's flatsedge	*Cyperus croceus*	
swamp flatsedge	*Cyperus distinctus*	
sedge	*Carex spp.*	
sedge	*Cyperus ligularis*	
sedge	*Cyperus spp. #2*	
sedge	*Cyperus spp. #X*	
Gulf Coast spikerush	*Eleocharis cellulosa*	
yellow spikerush	*Eleocharis flavescens*	
hurricane grass	*Fimbristylis cymosa*	
marsh fimbry	*Fimbristylis spadicea*	
fimbry	*Fimbristylis spp.*	
Family Juncaceae		
needle rush	*Juncus roemerianus*	
rush	*Juncus spp.*	
Family Poaceae		
bushy bluestem	*Andropogan glomeratus*	
broomsedge	*Andropogon virginicus*	
coastal sandspur	*Cenchrus incertus*	
sandspur	*Cenchrus spp. #2*	
sandspur	*Cenchrus spp. #X*	
finger grass	*Chloris spp.*	
crow's foot grass	*Dactyloctenium aegyptium*	
tropical crabgrass	*Diqitaria spp.*	
saltgrass	*Distichlis spicata*	
lovegrass	*Eragrostis spp.*	
pinewoods fingergrass	*Eustachys petraea*	
hairawn muhly	*Muhlenbergia capillaris*	
seashore paspalum	*Paspalum vaginatum*	
rose natalgrass	*Rhychelytrum repens*	
yellow bristlegrass	*Setaria parviflora*	
salt marsh cordgrass	*Spartina alterniflora*	
sand cordgrass	*Spartina bakeri*	
saltmeadow cordgrass	*Spartina patens*	
Gulf cordgrass	*Spartina spartinae*	
coral/Virginia dropseed	*Sporobolus domingensis*	
seashore dropseed	*Sporobolus virginicus*	
St. Auqustine grass	*Stenotaphrum secundatum*	
purple sandgrass	*Triplasis purpurea*	

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seaoats	*Uniola paniculata*	
Family Typhaceae		
cattail	*Typha spp.*	
Order Primulales		
Family Myrsinaceae		
myrsine	*Rapanea punctata*	
Order Rosales		
Family Moraceae		
strangler fig	*Ficus aurea*	
Cuban laurel	*Ficus microcarpa*	
Family Ulmaceae		
sugarberry	*Celtis laevigata*	
Family Urticaceae		
false nettle	*Boehmeria cylindrica*	
Order Sapindales		
Family Aceraceae		
Florida maple	*Acer saccharum ssp. floridanum*	
red maple	*Acer rubrum*	
Family Anacardiaceae		
Eastern poison ivy	*Toxicodendron radicans*	
Family Burseraceae		
gumbo-limbo	*Bursera simaruba*	
Family Rutaceae		
wild lime	*Zanthoxylum fagara*	
Order Saxifragales		
Family Hamamelidaceae		
sweetgum	*Liquidambar styraciflua*	
Order Solanales		
Family Convolvulaceae		
beach morning-glory	*Ipomoea macrantha*	
railroad vine	*Ipomoea pes-caprae*	
Family Solanaceae		
Christmasberry	*Lycium carolinianum*	
ground cherry	*Physalis angustifolia*	
common nightshade	*Solanum americanum*	
Order Theales		
Family Clusiaceae		
Atlantic St. John's wort	*Hypericum reductum*	
Order Vitales		
Family Vitaceae		
Virqinia creeper	*Parthenocissus quinquefolia*	
muscadine grape	*Vitis rotundifolia*	
Class Polypodiopsida		
Order Osmundales		

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Family Osmundaceae		
royal fern	*Osmunda regalis*	
Kingdom Animalia		
Phylum Porifera		
Class Demospongiae		
Order Agelasida		
Family Agelasidae		
demosponge	*Agelus sp.*	
Order Dictyoceratida		
Family Spongiidae		
sheepswool sponge	*Hippiospongia lachne*	
Family Irciniidae		
ball sponge	*Ircinia sp.*	
Order Hadromerida		
Family Clionaidae		
brown variable sponge	*Anthosigmella varians*	
red boring sponge	*Cliona celata*	
sponge	*Cliona sp.*	
sponge	*Cliona sp. A of EPC*	
Florida loggerhead sponge	*Spheciospongia vesparium*	
Order Haplosclerida		
Family Chalinidae		
erect rope sponge	*Amphimedon compressa*	
Family Niphatidae		
brown bowl sponge	*Cribrochalina vasculum*	
Family Petrosiidae		
giant barrel sponge	*Xestosponzia muta*	
Family Phloeodictyidae		
dark volcano sponge	*Calyx podatypa*	
Order Tethyida		
Family Timeidae		
sponge	*Timea cf. mixta*	
Order Tetractinellida		
Family Tetillidae		
sponge	*Cinachyrella cf. apion (Uliczka, 1929)*	
sponge	*Tetilla cf. laminaris*	
sponge	*Tetilla sp.*	
Order Verongida		
Family Aplysinidae		
yellow tube sponge	*Aplysina fistularis*	
branching candle sponge	*Verongia longissima*	
Family Pseudoceratinidae		
branching tube sponge	*Pseudoceratina crassa*	

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Phylum Cnidaria		
Class Anthozoa		
Order Actiniaria		
Family Actiniidae		
sea anemone	*Anthopleura sp.*	
sea anemone	*Aulactinia cf. capitata*	
sea anemone	*Bunodosoma sp.*	
Family Edwardsiidae		
sea anemone	*Edwardsia cf. elegans*	
Family Haloclavidae		
sea anemone	*Haloclava cf. producta*	
Order Alcyonacea		
Family Briareidae		
sea fingers	*Briareum asbestinum*	
Family Ellisellidae		
octocoral	*Ellisella sp.*	
Family Gorgoniidae		
soft coral	*Leptogorgia sp.*	
colorful sea whip	*Leptogorgia virgulata*	
octocoral	*Lophogorgia sp.*	
Family Plexauridae		
octocoral	*Bebryce sp.*	
shelf-knob sea rod	*Eunicea succinea*	
warty sea rod	*Eunicea calvculata*	
octocoral	*Hypnogorgia sp.*	
delicate spiny sea rod	*Muricea laxa*	
orange spiny sea rod	*Muricea elongata*	
octocoral	*Placogorgia sp.*	
sea rod	*Plexaura sp.*	
giant slit-pore sea rod	*Plexaurella nutans*	
octocoral	*Pseudoplexaura sp.*	
octocoral	*Thesea sp.*	
Order Antipatharia		
Family Antipathidae		
black coral	*Antipathes sp.*	
Order Gorgonacea		
Family Gorgoniidae		
sea plume	*Pseudopterogorgia sp.*	
yellow sea whip	*Pterogorgia citrina*	
octocoral	*Pseudopterogorgia sp.*	
octocoral	*Pterogorgia sp.*	
Order Pennatulacea		
Family Renillidae		
sea pansy	*Renilla sp.*	

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Order Scleractinia		
Family Astrocoeniidae		
blushing star coral	*Stephanocoenia mitchelinii*	
Family Caryophylliidae		
hidden cup coral	*Phyllangia americana*	
Family Faviidae		
tube coral	*Cladocora arbuscula*	
boulder star coral	*Montastrea annularis*	
knobby star coral	*Solenastrea hyades*	
Family Mussidae		
cactus coral	*Isophyllia sinuosa*	
rose coral	*Manicina aereolata*	
mushroom coral	*Scolymia lacera*	
Family Oculinidae		
ivory bush coral	*Oculina diffusa*	
robust ivory tree coral	*Oculina robusta*	
Family Rhizangiidae		
northern cup coral	*Astrangia poculata*	
Family Siderastreidae		
lesser starlet coral	*Siderastrea radians*	
starlet coral	*Siderastrea sp.*	
Order Spirularia		
Family Cerianthidae		
North American tube anemone	*Ceriantheopsis cf. americanus*	
Order Zoantharia		
Family Sphenopidae		
giant zoanthid	*Palythoa grandis*	
Class Hydrozoa		
Order Anthoathecata		
Family Corynidae		
hydrozoan	*Corynidae sp.*	
Family Hydractiniidae		
hydrozoan	*Podocoryna cf. americana*	
Family Milleporidae		
branching fire coral	*Millepora alcicornis*	
Family Oceaniidae		
hydrozoan	*Turritopsis cf. fascicularis*	
Family Pennariidae		
hydrozoan	*Pennaria sp. A of Joyce, 1961*	
Order Leptothecata		
Family Campanulariidae		
hydrozoan	*Campanulariidae Sp. B of EPC*	
hydrozoan	*Clytia cf. noliformis*	
hydrozoan	*Clytia cf. sp. B of Joyce, 1961*	

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hydrozoan	*Clytia sp.*	
doubletoothed hydrozoan	*Obelia cf. bidentata*	
Family Lovenellidae		
hydrozoan	*Lovenella gracilis*	
Family Plumulariidae		
hydrozoan	*Plumularia cf. margaretta*	
Framily Sertulariidae		
hydrozoan	*Sertularia distans*	
Family Thyroscyphidae		
hydrozoan	*Thyroscyphus ramosus*	
Phylum Platyhelminthes (flatworms)		
Class Turbellaria		
Order Polycladida		
Family Gnesiocerotidae		
flat worm	*Gnesioceros floridana*	
Family Leptoplanidae		
flat worm	*Euplana gracilis*	
Family Prosthiostomidae		
flat worm	*Prosthiostomum cf. lobatum*	
Family Stylochidae		
flat worm	*Stylochopsis ellipticus*	
oyster leech	*Stylochus sp.*	
Phylum Annelida (segmented worms)		
Class Hirudinea		
Order Arhynchobdellida		
Family Erpobdellidae		
leech	*Erpobdella punctata*	
Class Oligochaeta		
Order Haplotaxida		
Family Enchytraeidae		
oligochaete worm	*Grania cf. monochaeta*	
oligochaete worm	*Grania monospermatheca*	
oligochaete worm	*Grania nr. americana*	
oligochaete worm	*Grania sp.*	
oligochaete worm	*Grania sp. A of EPC*	
Family Tubificidae		
oligochaete worm	*Bathydrilus adriaticus*	
oligochaete worm	*Bathydrilus notabilis*	
oligochaete worm	*Bathydrilus sp.*	
oligochaete worm	*Heterodrilus bulbiporus*	
oligochaete worm	*Heterodrilus occidentalis*	
oligochaete worm	*Heterodrilus paucifascis*	
oligochaete worm	*Heterodrilus pentcheffi*	
oligochaete worm	*Heterodrilus sp.*	

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oligochaete worm	*Inanidrilus bulbosus*	
oligochaete worm	*Inanidrilus leukodermatus*	
oligochaete worm	*Inanidrilus sp.*	
oligochaete worm	*Limnodriloides baculatus*	
oligochaete worm	*Limnodriloides barnardi*	
oligochaete worm	*Limnodriloides hastatus*	
oligochaete worm	*Limnodriloides monothecus complex*	
oligochaete worm	*Limnodriloides rubicundus*	
oligochaete worm	*Limnodriloides sp.*	
oligochaete worm	*Limnodriloides uniampullatus*	
oligochaete worm	*Limnodriloides vespertinus*	
oligochaete worm	*Limnodriloidinae*	
oligochaete worm	*Limnodrilus hoffmeisteri*	
oligochaete worm	*Limnodrilus sp.*	
oligochaete worm	*Milliganius sabulosus*	
oligochaete worm	*Naidinae*	
oligochaete worm	*Olavius cf. latus*	
oligochaete worm	*Olavius imperfectus*	
oligochaete worm	*Olavius sp.*	
oligochaete worm	*Parakaketio longiprostatus*	
oligochaete worm	*Pectinodrilus molestus*	
oligochaete worm	*Smithsonidrilus marinus complex*	
oligochaete worm	*Smithsonidrilus sp.*	
oligochaete worm	*Smithsonidrilus sp. A of EPC*	
oligochaete worm	*Tectidrilus bori*	
oligochaete worm	*Tectidrilus squalidus*	
oligochaete worm	*Thalassodrilides gurwitschi*	
oligochaete worm	*Thalassodrilides ineri*	
oligochaete worm	*Tubificoides brownae*	
oligochaete worm	*Tubificoides motei*	
oligochaete worm	*Tubificoides sp.*	
oligochaete worm	*Tubificoides wasselli*	
Class Polychaeta		
Order Aciculata		
Family Amphinomidae		
polychaete worm	*Linopherus cf. paucibranchiata*	
polychaete worm	*Paramphinome sp. B of Gathof, 1984*	
Order Canalipalpata		
Family Ampharetidae		
polychaete worm	*Hobsonia florida*	
polychaete worm	*Isolda pulchella*	
polychaete worm	*Melinna cristata*	
polychaete worm	*Melinna maculata*	
Family Chaetopteridae		

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polychaete worm	*Chaetopterus variopedatus*	
polychaete worm	*Mesochaetopterus capensis*	
polychaete worm	*Spiochaetopterus costarum*	
Family Ctenodrilidae		
polychaete worm	*Ctenodrilus serratus*	
Family Magelonidae		
polychaete worm	*Magelona cf. rosea*	
polychaete worm	*Magelona pettiboneae*	
polychaete worm	*Magelona sp.*	
polychaete worm	*Magelona sp. B of Uebelacker & Jones, 1984*	
polychaete worm	*Magelona sp. H of Uebelacker & Jones, 1984*	
polychaete worm	*Magelona sp. I of Uebelacker & Jones, 1984*	
Family Poecilochaetidae		
polychaete worm	*Poecilochaetus johnsoni*	
Family Serpulidae		
polychaete worm	*Hydroides dianthus*	
polychaete worm	*Hydroides protulicola*	
polychaete worm	*Hydroides sp.*	
polychaete worm	*Janua (Dexiospira) cf. corrugata*	
polychaete worm	*Janua sp.*	
polychaete worm	*Janua steueri*	
polychaete worm	*Pileolaria rosepigmentata*	
polychaete worm	*Pileolaria sp. A of EPC*	
polychaete worm	*Pomatoceros americanus*	
polychaete worm	*Serpula sp.*	
polychaete worm	*SERPULIDAE sp. A of EPC*	
polychaete worm	*SERPULIDAE sp. C of EPC*	
polychaete worm	*SERPULIDAE sp. D of EPC*	
polychaete worm	*Spirorbinae*	
Order Capitellida		
Family Arenicolidae		
polychaete worm	*Arenicola cristata*	
polychaete worm	*Branchiomaldane cf. vincenti*	
Family Capitellidae		
polychaete worm	*Capitella aciculata*	
polychaete worm	*Capitella capitata complex*	
polychaete worm	*Capitella jonesi*	
polychaete worm	*Dasybranchus caducus lumbricoides*	
polychaete worm	*Heteromastus filiformis*	
polychaete worm	*Mediomastus ambiseta*	
polychaete worm	*Notomastus cf. latericeus*	
polychaete worm	*Notomastus hemipodus*	
polychaete worm	*Notomastus lobatus*	
polychaete worm	*Scyphoproctus platyproctus*	

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Family Maldanidae		
polychaete worm	*Boguea enigmatica*	
polychaete worm	*Clymenella mucosa*	
polychaete worm	*Clymenella torquata*	
polychaete worm	*Euclymene cf. sp. A of Wolf, 1984*	
polychaete worm	*Maldane sp. A of EPC*	
polychaete worm	*MALDANIDAE sp. A of EPC*	
polychaete worm	*Sabaco elongata*	
Order Cirratulida		
Family Paraonidae		
polychaete worm	*Aricidea (Acmira) taylori*	
polychaete worm	*Aricidea (Allia) bryani*	
polychaete worm	*Aricidea cerrutii*	
polychaete worm	*Aricidea fragilis*	
polychaete worm	*Aricidea philbinae*	
polychaete worm	*Aricidea sp.*	
polychaete worm	*Aricidea sp. A of EPC*	
polychaete worm	*Aricidea suecica*	
polychaete worm	*Cirrophorus sp.*	
polychaete worm	*Cirrophorus sp. A of EPC*	
polychaete worm	*Paradoneis cf. lyra*	
polychaete worm	*Paradoneis perkinsi*	
polychaete worm	*Paraonis fulgens*	
Order Errantia		
Family Phyllodocidae		
polychaete worm	*Eumida cf. sanguinea*	
polychaete worm	*Hypereteone heteropoda*	
polychaete worm	*Hypereteone lactea*	
polychaete worm	*Nereiphylla castanea*	
polychaete worm	*Nereiphylla fragilis*	
polychaete worm	*Nereiphylla sp.*	
polychaete worm	*Nereiphylla sp. A of Gathof, 1984*	
polychaete worm	*Paranaitis gardineri*	
polychaete worm	*Phyllodoce arenae*	
polychaete worm	*Phyllodoce sp.*	
Order Eunicida		
Family Dorvilleidae		
polychaete worm	*Meiodorvillea sp.*	
polychaete worm	*Ophryotrocha sp.*	
polychaete worm	*Ophryotrocha sp. A of EPC*	
polychaete worm	*Pettiboneia duofurca*	
polychaete worm	*Pettiboneia sp.*	
polychaete worm	*Protodorvillea kefersteini*	
polychaete worm	*Schistomeringos cf. rudolphi*	

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polychaete worm	*Schistomeringos pectinata*	
Family Eunicidae		
polychaete worm	*Eunice wui*	
polychaete worm	*Lysidice hebes*	
polychaete worm	*Lysidice ninetta*	
polychaete worm	*Marphysa cf. sanguinea*	
polychaete worm	*Marphysa nr. belli*	
polychaete worm	*Marphysa sp.*	
Family Lumbrineridae		
polychaete worm	*Lumbrineris januarii*	
polychaete worm	*Lumbrineris latreilli*	
polychaete worm	*Lumbrineris nonatoi*	
polychaete worm	*Lumbrineris/Scoletoma sp.*	
polychaete worm	*Scoletoma ernesti*	
polychaete worm	*Scoletoma tenuis*	
polychaete worm	*Scoletoma verrilli*	
Family Oenonidae		
polychaete worm	*Arabella iricolor*	
polychaete worm	*Arabella multidentata*	
polychaete worm	*Arabella mutans*	
polychaete worm	*Drilonereis longa*	
polychaete worm	*Drilonereis magna*	
polychaete worm	*Drilonereis sp. E of Uebelacker, 1984*	
Family Onuphidae		
polychaete worm	*Diopatra cuprea*	
polychaete worm	*Diopatra sp.*	
polychaete worm	*Kinbergonuphis simoni*	
polychaete worm	*Kinbergonuphis sp.*	
polychaete worm	*Kinbergonuphis sp. C of Gathof, 1984*	
polychaete worm	*Mooreonuphis cf. nebulosa*	
polychaete worm	*Mooreonuphis pallidula*	
polychaete worm	*Mooreonuphis sp.*	
polychaete worm	*Onuphis eremita oculata*	
polychaete worm	*Onuphis sp. A of Gathof,1984*	
polychaete worm	*Ramphobrachium sp. A of EPC*	
Order Opheliida		
Family Opheliidae		
polychaete worm	*Armandia agilis*	
polychaete worm	*Armandia maculata*	
polychaete worm	*Armandia sp.*	
polychaete worm	*Ophelina cf. acuminata*	
polychaete worm	*Ophelina cylindricaudata*	
polychaete worm	*Travisia hobsonae*	
Order Orbiniida		

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Family Orbiniidae		
polychaete worm	*Leitoscoloplos foliosus*	
polychaete worm	*Leitoscoloplos fragilis*	
polychaete worm	*Leitoscoloplos robustus*	
polychaete worm	*Leitoscoloplos sp.*	
polychaete worm	*Naineris sp.*	
polychaete worm	*Orbinia riseri*	
polychaete worm	*Questa caudicirra*	
polychaete worm	*Questa riseri*	
polychaete worm	*Questa sp.*	
polychaete worm	*Scoloplos (Scoloplos) cf. acmeceps*	
polychaete worm	*Scoloplos (Scoloplos) rubra*	
polychaete worm	*Scoloplos sp.*	
Order Phyllodocida		
Family Chrysopetalidae		
polychaete worm	*Bhawania heteroseta*	
Family Eulepethidae		
polychaete worm	*Grubeulepis mexicana*	
Family Glyceridae		
polychaete worm	*Glycera americana*	
polychaete worm	*Glycera dibranchiata*	
polychaete worm	*Glycera gilbertae*	
polychaete worm	*Glycera nr. sp. A of Gilbert, 1984*	
polychaete worm	*Glycera sp.*	
polychaete worm	*Hemipodia simplex*	
Family Goniadidae		
polychaete worm	*Glycinde solitaria*	
polychaete worm	*Goniada littorea*	
polychaete worm	*Goniadides carolinae*	
Family Hesionidae		
polychaete worm	*Hesione sp.*	
polychaete worm	*Microphthalmus cf. sczelkowii*	
polychaete worm	*Microphthalmus sp.*	
polychaete worm	*Neogyptis crypta*	
polychaete worm	*Neogyptis plurisetis*	
polychaete worm	*Oxydromus obscurus*	
polychaete worm	*Oxydromus sp.*	
polychaete worm	*Oxydromus sp. A of Uebelacker*	
polychaete worm	*Parahesione luteola*	
polychaete worm	*Podarkeopsis levifuscina*	
Family Nephtyidae		
polychaete worm	*Aglaophamus verrilli*	
polychaete worm	*Nephtys squamosa*	
Family Nereididae		

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polychaete worm	*Alitta succinea*	
polychaete worm	*Ceratonereis (Composetia) irritabilis*	
polychaete worm	*Ceratonereis (Composetia?) sp. A of EPC*	
polychaete worm	*Ceratonereis cf. longicirrata*	
polychaete worm	*Ceratonereis sp.*	
polychaete worm	*Laeonereis culveri*	
polychaete worm	*Laeonereis sp. A of EPC*	
polychaete worm	*Neanthes acuminata*	
polychaete worm	*Nereis (Neanthes) micromma*	
polychaete worm	*Nereis falsa*	
polychaete worm	*Nereis lamellosa*	
polychaete worm	*Nereis pelagica*	
polychaete worm	*Nereis riisei*	
polychaete worm	*Nereis sp.*	
polychaete worm	*Platynereis dumerilii*	
polychaete worm	*Stenoninereis martini*	
polychaete worm	*Websterinereis tridentata*	
Family Pholoidae		
polychaete worm	*Taylorpholoe hirsuta*	
Family Pilargidae		
polychaete worm	*Ancistrosyllis carolinensis*	
polychaete worm	*Ancistrosyllis hartmanae*	
polychaete worm	*Ancistrosyllis jonesi*	
polychaete worm	*Ancistrosyllis sp. C of Wolf, 1984*	
polychaete worm	*Cabira incerta*	
polychaete worm	*Litocorsa antennata*	
polychaete worm	*Pilargis berkeleyae*	
polychaete worm	*Pilargis wolfi*	
polychaete worm	*Sigambra bassi*	
polychaete worm	*Sigambra sp.*	
polychaete worm	*Sigambra tentaculata*	
polychaete worm	*Synelmis ewingi*	
Family Polynoidae		
polychaete worm	*Harmothoe sp.*	
polychaete worm	*Lepidametria commensalis*	
polychaete worm	*Lepidonotus variabilis*	
polychaete worm	*Malmgreniella maccraryae*	
polychaete worm	*Malmgreniella taylori*	
Family Sigalionidae		
polychaete worm	*Sigalion cf. lewisii*	
polychaete worm	*Sigalion sp.*	
polychaete worm	*Sigalion sp. A of Wolf, 1984*	
polychaete worm	*Sigalion sp. B of Wolf, 1984 as "Thalanessa sp. A of Wolf, 1984"*	
polychaete worm	*SIGALIONIDAE Genus A of Wolf,1984*	

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polychaete worm	*Sthenelais sp.*	
polychaete worm	*Sthenelais sp. A of Wolf, 1984*	
polychaete worm	*Sthenelanella sp. A of Wolf, 1984*	
Family Syllidae		
polychaete worm	*Branchiosyllis exilis*	
polychaete worm	*Branchiosyllis oculata*	
polychaete worm	*Brania nitidula*	
polychaete worm	*Brania rugulosa*	
polychaete worm	*Brania sp.*	
polychaete worm	*Brania wellfleetensis*	
polychaete worm	*Brania/Salvatoria sp.*	
polychaete worm	*Dentatisyllis carolinae*	
polychaete worm	*Exogone (Exogone) cf. breviantennata*	
polychaete worm	*Exogone (Exogone) lourei*	
polychaete worm	*Exogone arenosa*	
polychaete worm	*Exogone dispar*	
polychaete worm	*Exogone sp.*	
polychaete worm	*Haplosyllis spongicola*	
polychaete worm	*Myrianida sp.*	
polychaete worm	*Odontosyllis enopla*	
polychaete worm	*Parapionosyllis floridana*	
polychaete worm	*Parapionosyllis longicirrata*	
polychaete worm	*Parapionosyllis sp.*	
polychaete worm	*Parapionosyllis uebelackerae*	
polychaete worm	*Pionosyllis sp.*	
polychaete worm	*Plakosyllis brevipes*	
polychaete worm	*Proceraea cf. cornuta*	
polychaete worm	*Salvatoria clavata*	
polychaete worm	*Salvatoria vieitezi*	
polychaete worm	*Sphaerosyllis aciculata*	
polychaete worm	*Sphaerosyllis cf. riseri*	
polychaete worm	*Sphaerosyllis glandulata*	
polychaete worm	*Sphaerosyllis labyrinthophila*	
polychaete worm	*Sphaerosyllis perkinsi*	
polychaete worm	*Sphaerosyllis piriferopsis*	
polychaete worm	*Sphaerosyllis sp.*	
polychaete worm	*Sphaerosyllis taylori*	
polychaete worm	*Streptosyllis websteri*	
polychaete worm	*Syllidae Genus A of EPC*	
polychaete worm	*Syllides bansei*	
polychaete worm	*Syllides floridanus*	
polychaete worm	*Syllides fulvus*	
polychaete worm	*Syllides sp.*	
polychaete worm	*Syllinae*	

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polychaete worm	*Syllis alosae*	
polychaete worm	*Syllis cf. beneliahuae*	
polychaete worm	*Syllis cf. broomensis as in San Martin, 1992*	
polychaete worm	*Syllis corallicola*	
polychaete worm	*Syllis cornuta*	
polychaete worm	*Syllis gracilis*	
polychaete worm	*Syllis prolifera*	
polychaete worm	*Syllis sp.*	
polychaete worm	*Syllis sp. A of EPC*	
polychaete worm	*Trypanosyllis (Trypanosyllis) cf. coeliaca*	
polychaete worm	*Trypanosyllis parvidentata*	
polychaete worm	*Trypanosyllis sp.*	
Order Sabellida		
Family Fabriciidae		
polychaete worm	*Augeneriella hummelincki*	
polychaete worm	*Fabricinuda trilobata*	
Family Oweniidae		
polychaete worm	*Galathowenia oculata*	
polychaete worm	*Myriochele sp. A of Milligan, 1984*	
polychaete worm	*Owenia fusiformis*	
Family Sabellariidae		
polychaete worm	*Sabellaria floridensis*	
polychaete worm	*Sabellaria sp.*	
polychaete worm	*Sabellaria sp. A of Uebelacker, 1984*	
Family Sabellidae		
feather duster worm	*Bispira melanostigma*	
feather duster worm	*Branchiomma sp.*	
feather duster worm	*Chone sp.*	
feather duster worm	*Chone sp. A of EPC*	
feather duster worm	*Chone sp. A of Uebelacker, 1984*	
feather duster worm	*Euchone sp.*	
feather duster worm	*Megalomma pigmentum*	
feather duster worm	*Megalomma sp.*	
feather duster worm	*Oriopsis anneae*	
feather duster worm	*Oriopsis sp.*	
feather duster worm	*Paradialychone cf. americana*	
feather duster worm	*Parasabella microphthalma*	
feather duster worm	*Parasabella sp.*	
feather duster worm	*Pseudopotamilla fitzhughi*	
feather duster worm	*Pseudopotamilla sp.*	
feather duster worm	*Sabella sp.*	
Order Spionida		
Family Polygordiidae		
polychaete worm	*Polygordius sp.*	

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Family Spionidae		
polychaete worm	*Aonides mayaguezensis*	
polychaete worm	*Boccardiella sp.*	
polychaete worm	*Carazziella hobsonae*	
polychaete worm	*Dipolydora barbilla*	
polychaete worm	*Dipolydora socialis*	
polychaete worm	*Dispio uncinata*	
polychaete worm	*Laonice cirrata*	
polychaete worm	*Microspio sp.*	
polychaete worm	*Paraprionospio pinnata*	
polychaete worm	*Polydora cf. heterochaeta*	
polychaete worm	*Polydora colonia*	
polychaete worm	*Polydora cornuta*	
polychaete worm	*Polydora sp.*	
polychaete worm	*Polydora websteri*	
polychaete worm	*Prionospio cf. steenstrupi*	
polychaete worm	*Prionospio cristata*	
polychaete worm	*Prionospio heterobranchia*	
polychaete worm	*Prionospio multibranchiata*	
polychaete worm	*Prionospio perkinsi*	
polychaete worm	*Prionospio pygmaea*	
polychaete worm	*Prionospio pygmaea*	
polychaete worm	*Prionospio sp.*	
polychaete worm	*Pseudopolydora sp.*	
polychaete worm	*Pseudopolydora sp. A of EPC*	
polychaete worm	*Pseudopolydora sp. B of EPC*	
polychaete worm	*Scolelepis (Scolelepis) squamata*	
polychaete worm	*Scolelepis (Scolelepis) texana*	
polychaete worm	*Scolelepis sp.*	
polychaete worm	*Spio pettiboneae*	
polychaete worm	*Spiophanes bombyx complex*	
polychaete worm	*Streblospio spp.*	
Order Terebellida		
Family Cirratulidae		
polychaete worm	*Aphelochaeta sp.*	
polychaete worm	*Caulleriella cf. alata*	
polychaete worm	*Caulleriella sp.*	
polychaete worm	*Caulleriella sp. A of Wolf, 1984*	
polychaete worm	*Caulleriella sp. B of Wolf, 1984*	
polychaete worm	*Caulleriella sp. D of EPC*	
polychaete worm	*Caulleriella sp. F of EPC*	
polychaete worm	*Chaetozone sp.*	
polychaete worm	*Chaetozone sp. A of Wolf, 1984*	
polychaete worm	*Chaetozone sp. B of Wolf, 1984*	

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polychaete worm	*Chaetozone sp. C of Wolf, 1984*	
polychaete worm	*Chaetozone sp. D of Wolf, 1984*	
polychaete worm	*Chaetozone zetlandica*	
polychaete worm	*Cirratulus grandis*	
polychaete worm	*Cirriformia sp. A of Wolf, 1984*	
polychaete worm	*Cirriformia sp. B of Wolf, 1984*	
polychaete worm	*Cirriformia sp. C of Wolf, 1984*	
polychaete worm	*Cirriformia sp. D of EPC*	
polychaete worm	*Kirkegaardia cf. dorsobranchialis*	
polychaete worm	*Tharyx acutus*	
Family Flabelligeridae		
polychaete worm	*Piromis roberti*	
Family Pectinariidae		
ice cream cone worm	*Amphictene sp. A of Wolf, 1984*	
ice cream cone worm	*Pectinaria gouldii*	
Family Terebellidae		
polychaete worm	*Eupolymnia sp.*	
polychaete worm	*Lanassa sp.*	
polychaete worm	*Loimia medusa*	
polychaete worm	*Loimia viridis*	
polychaete worm	*Lysilla cf. alba*	
polychaete worm	*Lysilla sp.*	
polychaete worm	*Pista cf. cristata*	
polychaete worm	*Pista fasciata*	
polychaete worm	*Pista palmata*	
polychaete worm	*Pista quadrilobata*	
polychaete worm	*POLYCIRRINAE*	
polychaete worm	*Polycirrus cf. haematodes*	
polychaete worm	*Polycirrus dubius*	
polychaete worm	*Polycirrus plumosus*	
polychaete worm	*Polycirrus sp.*	
polychaete worm	*Polycirrus sp. B of Kritzler, 1984*	
polychaete worm	*Polycirrus sp. C of EPC*	
polychaete worm	*Streblosoma hartmanae*	
polychaete worm	*Streblosoma sp.*	
polychaete worm	*Terebella nr. verrilli*	
Family Trichobranchidae		
polychaete worm	*Terebellides stroemii*	
Phylum Sipuncula		
Class Phascolosomatidea		
Order Aspidosiphoniformes		
Family Aspidosiphonidae		
peanut worm	*Aspidosiphon cf. muelleri*	
Order Phascolosomatiformes		

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Family Phascolosomatidae		
peanut worm	*Phascolosoma sp.*	
Class Sipunculidea		
Order Golfingiiformes		
Family Phascolionidae		
peanut worm	*Phascolion cf. caupo*	
peanut worm	*Phascolion cryptum*	
peanut worm	*Phascolion sp.*	
Family Themistidae		
peanut worm	*Themiste alutacea*	
Order Sipunculiformes		
Family Sipunculidae		
peanut worm	*Sipunculidae sp. A of EPC*	
Phylum Mollusca		
Class Bivalvia		
Order Anomalodesmata		
Family Lyonsiidae		
glassy lysonia	*Lyonsia floridana*	
Family Pandoridae		
clam	*Pandora trilineata*	
Family Periplomatidae		
unequal spoonclam	*Periploma margaritaceum*	
Family Thraciidae		
hemphill thracid	*Asthenothaerus hemphilli*	
clam	*Bushia cf. elegans*	
clam	*Thracia cf. papyracea*	
Order Arcoida		
Family Arcidae		
transverse ark clam	*Anadara transversa*	
Family Glycymerididae		
comb bittersweet	*Tucetona pectinata*	
Family Noetiidae		
clam	*Arcopsis adamsi*	
Order Carditoida		
Family Carditidae		
brood-ribbeb cardita	*Carditamera floridana*	
three-toother cardita	*Pleuromeris tridentata*	
flat cardita	*Pteromeris perplana*	
Family Crassatellidae		
lunate crassinella	*Crassinella lunulata*	
Order Myoida		
Family Corbulidae		
clam	*Caryocorbula caribaea*	
clam	*Caryocorbula cf. contracta*	

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Family Gastrochaenidae		
clam	*Lamychaena hians*	
Family Myidae		
Antillean sphenia	*Sphenia fragilis*	
Family Pholadidae		
angel wing clam	*Cyrtopleura costata*	
Order Mytiloida		
Family Mytilidae		
Atlantic paper mussel	*Amygdalum papyrium*	
scorched mussel	*Brachidontes exustus*	
cross-sculpture crenella	*Crenella decussata*	
crenella	*Crenella sp.*	
mussel	*Lioberus castaneus*	
mahogany date mussel	*Lithophaga bisulcata*	
tulip mussel	*Modiolus americanus*	
northern horsemussel	*Modiolus modiolus*	
horsemussel	*Modiolus squamosus*	
lateral mussel	*Musculus lateralis*	
Order Nuculanoida		
Family Nuculanidae		
pointed nut clam	*Nuculana acuta*	
Order Nuculoida		
Family Nuculidae		
Atlantic nut clam	*Nucula proxima*	
Order Ostreoidea		
Family Ostreidae		
Eastern oyster	*Crassostrea virginica*	
crested oyster	*Ostrea equestris*	
Family Plicatulidae		
Atlantic kitten's paw	*Plicatula gibbosa*	
Order Pectinida		
Family Anomiidae		
common jingle shell	*Anomia simplex*	
Family Pectinidae		
bay scallop	*Argopecten irradians*	
Order Pterioida		
Family Isognomonidae		
Lister's tree oyster	*Isognomon radiatus*	
Family Pinnidae		
half-naked pen	*Atrina seminuda*	
Order Solemyoida		
Family Solemyidae		
West Indian awning clam	*Solemya occidentalis*	
Order Solenida		

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Family Pharidae		
jackknife clam	*Ensis minor*	
Order Veneroida		
Family Cardiidae		
guppy strawberry cockle	*Ctenocardia guppyi*	
cockle	*Laevicardium sp.*	
Florida prickly cockle	*Trachycardium egmontianum*	
cockle	*Trachycardium sp.*	
Family Corbiculidae		
clam	*Corbicula fluminea*	
Carolina marsh clam	*Polymesoda caroliniana*	
Family Dreissenidae		
dark false mussel	*Mytilopsis leucophaeata*	
Family Lasaeidae		
kelly clam	*Aligena cf. texasiana*	
kelly clam	*Erycina floridana*	
kelly clam	*Kellia cf. suborbicularis*	
kelly clam	*Mysella planulata*	
kelly clam	*Orobitella cf. limpida*	
kelly clam	*Orobitella floridana*	
Family Lucinidae		
buttercup lucine	*Anodontia cf. alba*	
dwarf tiger lucine	*Ctena orbiculata*	
spinose lucine	*Lucinisca muricata*	
woven lucine	*Lucinisca nassula*	
costate lucine	*Parvilucina costata*	
many-lined lucine	*Parvilucina crenella*	
miniature lucine	*Radiolucina amianta*	
Florida lucine	*Stewartia floridana*	
Family Mactridae		
duck clam	*Anatina anatina*	
duck clam	*Mactrotoma fragilis*	
duck clam	*Mulinia lateralis*	
duck clam	*Raeta plicatella*	
Family Petricolidae		
false angel wing	*Petricolaria pholadiformis*	
Family Semelidae		
common Atlantic abra	*Abra aequalis*	
clam	*Cumingia vanhyningi*	
concentric ervilia	*Ervilia concentrica*	
clam	*Semele bellastriata*	
clam	*Semele cf. purpurascens*	
clam	*Semele proficua*	
clam	*Semelina nuculoides*	

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Family Solecurtidae		
clam	*Tagelus divisus*	
stout razor clam	*Tagelus plebeius*	
Family Tellinidae		
tellin	*Angulus cf. sybariticus*	
tellin	*Angulus cf. tampaensis*	
tellin	*Angulus cf. versicolor*	
tellin	*Angulus nr. exerythrus*	
tellin	*Angulus nr. tampaensis*	
tellin	*Angulus tenellus*	
tellin	*Angulus texanus*	
tellin	*Eurytellina alternata*	
rose-petal tellin	*Eurytellina lineata*	
tellin	*Eurytellina nr. nitens*	
short macoma	*Macoma brevifrons*	
waxy macoma	*Macoma cerina*	
cheating macoma	*Macoma cf. phenax*	
constricted macoma	*Macoma constricta*	
narrowed macoma	*Macoma tenta*	
tellin	*Merisca cf. aequistriata*	
tellin	*Merisca nr. aequistriata*	
sibling tellin	*Scissula consobrina*	
white crest tellin	*Tellidora cristata*	
Family Ungulinidae		
clam	*Phlyctiderma semiaspera*	
Family Veneridae		
pointed venus	*Anomalocardia cuneimeris*	
venus clam	*Callista eucymata*	
venus clam	*Chione elevata*	
venus clam	*Cyclinella tenuis*	
disk dosinia	*Dosinia discus*	
waxy gould clam	*Gouldia cerina*	
sunray venus	*Macrocallista nimbosa*	
southern quahog	*Mercenaria campechiensis*	
brown gem clam	*Parastarte triquetra*	
lightning pitar	*Pitar cf. fulminatus*	
chalky pitar	*Pitar simpsoni*	
corded pitar	*Pitarenus cordatus*	
venus clam	*Timoclea grus*	
venus clam	*Transennella conradina*	
venus clam	*Transennella nr. cubaniana*	
venus clam	*Transennella stimpsoni*	
Class Gastropoda		
Order Anaspidea		

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Family Aplysiidae		
ragged sea hare	*Bursatella cf. leachii*	
Order Caenogastropoda		
Family Cerithiidae		
grass cerith	*Bittiolum varium*	
sea snail	*Cerithium atratum*	
sea snail	*Cerithium muscarum*	
Family Cerithiopsidae		
sea snail	*Cerithiopsis fusiformis*	
sea snail	*Cerithiopsis sp.*	
sea snail	*Seila adamsii*	
Family Epitoniidae		
wentletrap	*Epitonium angulatum*	
wentletrap	*Epitonium humphreysii*	
wentletrap	*Epitonium matthewsae*	
wentletrap	*Epitonium rupicolum*	
wentletrap	*Epitonium sp.*	
wentletrap	*Epitonium tollini*	
Family Eulimidae		
sea snail	*Eulima bifasciata*	
sea snail	*Melanella nr. eulimoides*	
sea snail	*Melanella nr. intermedia*	
sea snail	*Melanella sp.*	
sea snail	*Melanella sp. B of EPC*	
sea snail	*Melanella sp. C of EPC*	
sea snail	*Melanella sp. D of EPC*	
sea snail	*Microeulima hemphilli*	
sea snail	*Niso aeglees*	
sea snail	*Oceanida inglei*	
sea snail	*Polygireulima sp.*	
sea snail	*Polygireulima sp. A of EPC*	
sea snail	*Polygireulima sp. C of EPC*	
sea snail	*Vitreolina cf. arcuata*	
sea snail	*Vitreolina cf. bermudezi*	
Family Modulidae		
modulid	*Modulus modulus*	
Family Scaliolidae		
sea snail	*Finella adamsi*	
Family Terebridae		
eastern auger	*Terebra dislocata*	
fine-ribbed auger	*Terebra protexta*	
Family Triphoridae		
sea snail	*Marshallora nigrocincta*	
Order Cephalaspidea		

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Family Aglajidae		
sea slug	*Chelidonura sp.*	
Family Bullidae		
Atlantic bubble snail	*Bulla striata*	
Family Cylichnidae		
bubble snail	*Acteocina canaliculata*	
bubble snail	*Cylichnella bidentata*	
bubble snail	*Tornatina inconspicua*	
Family Haminoeidae		
bubble snail	*Haminoea antillarum*	
bubble snail	*Haminoea elegans*	
bubble snail	*Haminoea sp.*	
bubble snail	*Haminoea succinea*	
bubble snail	*Melampus coffea*	
Order Littorinimorpha		
Family Aclididae		
sea snail	*Graphis underwoodae*	
Family Caecidae		
sea snail	*Caecum (Elepantulum) sp.*	
sea snail	*Caecum cf. bipartitum*	
sea snail	*Caecum cooperi*	
sea snail	*Caecum floridanum*	
sea snail	*Caecum imbricatum*	
sea snail	*Caecum multicostatum*	
sea snail	*Caecum nr. carolinianum*	
sea snail	*Caecum nr. insularum*	
sea snail	*Caecum pulchellum*	
sea snail	*Caecum sp.*	
sea snail	*Caecum strigosum*	
sea snail	*Caecum textile*	
sea snail	*Meioceras nitidum*	
Family Calyptraeidae		
slipper snail	*Calyptraea centralis*	
slipper snail	*Crepidula depressa*	
common slipper snail	*Crepidula fornicata*	
slipper snail	*Crepidula maculosa*	
slipper snail	*Crepidula nr. ustulatulina*	
slipper snail	*Crepidula sp.*	
slipper snail	*Crepidula ustulatulina*	
Family Hydrobiidae		
mud snail	*Littoridinops monroensis*	
mud snail	*Littoridinops palustris*	
mud snail	*Littoridinops sp.*	
mud snail	*Pyrgophorus platyrachis*	

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Family Naticidae		
shark eye	*Neverita duplicata*	
moon snail	*Polinices duplicatus*	
white baby ear	*Sinum perspectivum*	
moon snail	*Tectonatica pusilla*	
Family Rissoidae		
Catesby's risso	*Schwartziella catesbyana*	
sea snail	*Zebina browniana*	
Family Strombidae		
Florida fighting conch	*Strombus alatus*	
Family Tornidae		
sea snail	*Cochliolepis cf. parasitica*	
sea snail	*Cyclostremiscus nr. beauii*	
sea snail	*Cyclostremiscus pentagonus*	
sea snail	*Cyclostremiscus suppressus*	
sea snail	*Macromphalina floridanus*	
sea snail	*Solariorbis cf. blakei*	
sea snail	*Solariorbis infracarinata*	
sea snail	*Teinostoma biscaynense*	
Florida vitrinella	*Vitrinella floridana*	
sea snail	*Vitrinella helicoidea*	
Order Neogastropoda		
Family Bellolividae		
olive snail	*Jaspidella blanesi*	
Family Buccinidae		
lightning whelk	*Busycon contrarium*	
sea snail	*Busycon sinistrum*	
crown conch	*Busycotypus spiratus*	
sea snail	*Gemophos tinctus*	
sea snail	*Hesperisternia multangulus*	
Family Clathurellidae		
glassy dwarf turrid	*Nannodiella cf. oxia*	
Family Columbellidae		
dove snail	*Aesopus stearnsii*	
dove snail	*Astyris lunata*	
dove snail	*Costoanachis floridana*	
dove snail	*Costoanachis lafresnayi*	
dove snail	*Costoanachis semiplicata*	
dove snail	*Costoanachis sp.*	
dove snail	*Costoanachis sparsa*	
dove snail	*Parvanachis obesa*	
dove snail	*Suturoglypta iontha*	
Family Conidae		
cone snail	*Conasprella stearnsii (Conrad, 1869)*	

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cone snail	*Kurtziella atrostyla*	
cone snail	*Kurtziella limonitella*	
cone snail	*Kurtziella sp.*	
cone snail	*Pyrgocythara plicosa*	
cone snail	*Rubellatoma diomedea*	
cone snail	*Stellatoma stellata*	
Family Cystiscidae		
sea snail	*Gibberula lavalleeana*	
sea snail	*Granulina hadria*	
Family Drilliidae		
sea snail	*Cerodrillia thea*	
Family Fasciolariidae		
horse conch	*Pleuroploca gigantea*	
Family Marginellidae		
margin snail	*Dentimargo aureocinctus*	
margin snail	*Dentimargo eburneolus*	
margin snail	*Prunum apicinum*	
margin snail	*Prunum bellulum*	
margin snail	*Prunum succinea*	
Family Melongenidae		
Florida crown conch	*Melongena corona*	
Family Muricidae		
rock snail	*Eupleura sulcidentata*	
rock snail	*Urosalpinx tampaensis*	
Family Nassariidae		
common Eastern nassa	*Nassarius vibex*	
Family Olividae		
lettered olive	*Oliva sayana*	
olive snail	*Olivella dealbata*	
olive snail	*Olivella floralia*	
olive snail	*Olivella mutica*	
olive snail	*Olivella nivea*	
olive snail	*Olivella perplexa*	
olive snail	*Olivella pusilla*	
olive snail	*Olivella sp.*	
olive snail	*Olivella sp. E of EPC*	
Family Turridae		
turrid	*Pilsbryspira leucocyma*	
oyster turrid	*Pyrgospira ostrearum*	
Order Nudibranchia		
Family Aeolidiidae		
sea slug	*Spurilla cf. neapolitana*	
Family Eubranchidae		
nudibranch	*Eubranchus cf. coniclus*	

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Family Onchidoriddidae		
sea slug	*Corambe obscura*	
Family Polyceridae		
sea slug	*Polycera hummi*	
Family Trinchesiidae		
sea slug	*Tenellia fuscata*	
Order Pylopulmonata		
Family Pyramidellidae		
three-toothed odostome	*Boonea cf. bisultralis*	
impressed odostome	*Boonea impressa*	
sea snail	*Boonea seminuda*	
needle odostome	*Eulimastoma engonium*	
pyram	*Eulimastoma weberi*	
sea snail	*Eulimella nr. smithii*	
sea snail	*Evalea virginica*	
pyram	*Fargoa cf. gibbosa*	
incised tubonille	*Houbricka cf. incisa*	
crenulated pyram	*Longchaeus suturalis*	
odostome	*Odostomia acutidens*	
ovoid odostome	*Odostomia laevigata*	
odostome	*Odostomia sp. C of EPC*	
odostome	*Odostomia sp. D of EPC*	
odostome	*Odostomia sp. E of EPC*	
odostome	*Odostomia spp.*	
odostome	*ODOSTOMIINAE sp. A of EPC*	
odostome	*ODOSTOMIINAE sp. B of EPC*	
pyram	*Petitilla crosseana*	
pyram	*PYRAMIDELLIDAE sp. A of EPC*	
pyram	*PYRAMIDELLIDAE sp. B of EPC*	
sayella	*Sayella fusca*	
sayella	*Sayella hemphilli*	
sayella	*Sayella sp.*	
turbonille	*Turbonilla (Bartschella) sp.*	
turbonille	*Turbonilla (Chemnitzia) sp.*	
turbonille	*Turbonilla (Pyrgiscus) sp. B of EPC*	
turbonille	*Turbonilla (Pyrigiscus) sp.*	
turbonille	*Turbonilla (Pyrigiscus) sp. C of EPC*	
turbonille	*Turbonilla (Pyrigiscus) sp. D of EPC*	
turbonille	*Turbonilla (Strioturbonilla) sp.*	
turbonille	*Turbonilla cf. arnoldoi*	
turbonille	*Turbonilla cf. conradi*	
Dall's turbonille	*Turbonilla cf. dalli*	
turbonille	*Turbonilla cf. puncta*	
turbonille	*Turbonilla cf. riisei*	

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Hemphill's turbonille	*Turbonilla hemphilli*	
interrupted turbonille	*Turbonilla interrupta*	
turbonille	*Turbonilla toyatani*	
Order Sacoglossa		
Family Cylindrobullidae		
sea snail	*Cylindrobulla beauii*	
Order Trochida		
Family Skeneidae		
sea snail	*Didianema pauli*	
Order (Unassigned)		
Family Acteonidae		
pitted baby-bubble	*Japonactaeon punctostriatus*	
Family Murchisonellidae		
sea snail	*Murchisonella spectrum*	
Class Polyplacophora		
Order Chitonida		
Family Chitonidae		
West Indian fuzzy chiton	*Acanthopleura granulata*	
Family Ischnochitonidae		
chiton	*Chaetopleura apiculata*	
chiton	*Ischnochiton niveus*	
chiton	*Ischnochiton papillosus*	
chiton	*Ischnochiton sp.*	
Order Neoloricata		
Family Acanthochitonidae		
chiton	*Acanthochitona pygmaea*	
Class Scaphopoda		
Order Dentaliida		
Family Dentaliidae		
scaphopod	*Antalis cf. antillarum*	
scaphopod	*Antalis nr. cerata*	
scaphopod	*Antalis pilsbryi*	
scaphopod	*Dentalium laqueatum*	
scaphopod	*Dentalium sp.*	
scaphopod	*Graptacme calamus*	
scaphopod	*Graptacme eborea*	
Phylum Nemertea		
Class Anopla		
Order Heteronemertea		
Family Lineidae		
milky ribbon worm	*Cerebratulus lacteus*	
ribbon worm	*Fragilonemertes rosea*	
ribbon worm	*Tarrhomyos cf. luridus*	
Order Palaeonemertea		

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Family Carinomidae		
ribbon worm	*Carinoma cf. tremaphoros*	
Family Tubulanidae		
ribbon worm	*Tubulanus pellucidus*	
ribbon worm	*Tubulanus sp. A of EPC*	
ribbon worm	*Tubulanus sp. B of EPC*	
Class Enopla		
Order Hoplonemertea		
Family Amphiporidae		
ribbon worm	*Amphiporus cf. caecus*	
ribbon worm	*Amphiporus sp. A of EPC*	
ribbon worm	*Paranemertes cf. biocellatus*	
Order Monostilifera		
Family Tetrastemmatidae		
ribbon worm	*Prostoma sp.*	
ribbon worm	*Tetrastemma candidum*	
Phylum Phoronida		
Family Phoronidae		
horseshoe worm	*Phoronis sp.*	
Phylum Bryozoa		
Class Gymnolaemata		
Order Cheilostomatida		
Family Akatoporidae		
moss animal	*Akatopora leucocypha*	
Family Beaniidae		
moss animal	*Beania klugei*	
Family Bugulidae		
moss animal	*Bugula neritina*	
Family Cupuladriidae		
moss animal	*Discoporella depressa*	
moss animal	*Discoporella sp.*	
Family Electridae		
moss animal	*Conopeum cf. tenuissimum*	
moss animal	*Electra bellula*	
Family Lepraliellidae		
moss animal	*Celleporaria cf. mordax*	
moss animal	*Celleporaria sp. A of EPC*	
Family Membraniporidae		
moss animal	*Biflustra arborescens*	
moss animal	*Biflustra cf. denticulata*	
moss animal	*Membranipora sp.*	
Family Schizoporellidae		
moss animal	*Schizoporella cf. floridana*	
moss animal	*Schizoporella pungens*	

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Family Smittinidae		
moss animal	*Parasmittina cf. nitida Morphotype B*	
Family Thalamoporellidae		
moss animal	*Thalamoporella floridana*	
Order Ctenostomatida		
Family Aeverrilliidae		
moss animal	*Aeverrillia armata*	
Family Nolellidae		
moss animal	*Nolella cf. stipata*	
Phylum Brachiopoda		
Class Lingulata		
Order Lingulida		
Family Lingulidae		
brachiopod	*Glottidia pyramidata*	
Phylum Arthropoda		
Class Insecta		
Order Diptera		
Family Chaoboridae		
glassworm	*Chaoborus punctipennis*	
Family Chironomidae		
chironomid	*Asheum beckae*	
chironomid	*Chironomus sp.*	
chironomid	*Cryptochironomus sp.*	
chironomid	*Cryptotendipes sp.*	
chironomid	*Dicrotendipes lobus*	
chironomid	*Dicrotendipes modestus*	
chironomid	*Dicrotendipes neomodestus*	
chironomid	*Dicrotendipes simpsoni*	
chironomid	*Glyptotendipes sp.*	
chironomid	*Goeldichironomus sp.*	
chironomid	*Labrundinia sp.*	
chironomid	*Polypedilum halterale grp.*	
chironomid	*Polypedilum illinoense grp.*	
chironomid	*Polypedilum scalaenum group*	
chironomid	*Polypedilum sp.*	
chironomid	*Procladius (Holotanypus) sp.*	
chironomid	*Tanypus clavatus*	
chironomid	*Tanytarsus limneticus*	
Order Ephemeroptera		
Family Caenidae		
mayfly	*Caenis diminuta*	
Class Malacostraca		
Order Amphipoda		
Family Ampeliscidae		

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amphipod	*Ampelisca abdita*	
amphipod	*Ampelisca agassizi*	
amphipod	*Ampelisca holmesi*	
amphipod	*Ampelisca schellenbergi*	
amphipod	*Ampelisca sp. A of LeCroy, 2002*	
amphipod	*Ampelisca sp. C of LeCroy, 2002*	
amphipod	*Ampelisca sp. D of EPC*	
amphipod	*Ampelisca sp. G of EPC*	
amphipod	*Ampelisca spp.*	
amphipod	*Ampelisca vadorum*	
Family Amphilochidae		
amphipod	*Apolochus cf. casahoya*	
amphipod	*Apolochus sp. A of LeCroy, 2002*	
amphipod	*Hourstonius laguna*	
Family Ampithoidae		
amphipod	*Ampithoe cf. longimana*	
amphipod	*Ampithoe cf. ramondi*	
amphipod	*Ampithoe sp.*	
amphipod	*Cymadusa compta*	
Family Aoridae		
amphipod	*Bemlos cf. longicornis*	
amphipod	*Bemlos setosus*	
amphipod	*Bemlos sp.*	
amphipod	*Bemlos spinicarpus*	
amphipod	*Globosolembos smithi*	
amphipod	*Grandidierella bonnieroides*	
amphipod	*Lembos cf. hypacanthus*	
amphipod	*Lembos unifasciatus*	
amphipod	*Paramicrodeutopus myersi*	
amphipod	*Plesiolembos rectangulatus*	
Family Argissidae		
amphipod	*Argissa hamatipes*	
Family Bateidae		
amphipod	*Batea catharinensis*	
amphipod	*Batea cuspidata*	
Family Corophiidae		
amphipod	*Americorophium ellisi*	
amphipod	*Apocorophium louisianum*	
amphipod	*Laticorophium cf. baconi*	
amphipod	*Monocorophium acherusicum*	
amphipod	*Monocorophium sp.*	
amphipod	*Monocorophium sp. A of LeCroy, 2004*	
amphipod	*Monocorophium tuberculatum*	
Family Dexaminidae		

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amphipod	*Polycheria sp. A of LeCroy, 2004*	
Family Gammaridae		
amphipod	*Gammarus mucronatus*	
Family Hadziidae		
amphipod	*Protohadzia cf. schoenerae*	
Family Haustoriidae		
amphipod	*Acanthohaustorius uncinus*	
Family Isaeidae		
amphipod	*Photis cf. longicaudata*	
amphipod	*Photis melanica*	
amphipod	*Photis pugnator*	
amphipod	*Photis sp. C of LeCroy, 2000*	
amphipod	*Photis sp. E of LeCroy, 2000*	
amphipod	*Photis sp. F of LeCroy, 2000*	
Family Ischyroceridae		
amphipod	*Cerapus cudjoe*	
amphipod	*Cerapus sp. A of EPC*	
amphipod	*Cerapus sp. B of LeCroy, 2007*	
amphipod	*Cerapus sp. C of LeCroy, 2007*	
amphipod	*Cerapus spp.*	
amphipod	*Ericthonius brasiliensis*	
amphipod	*Ericthonius sp. A of EPC*	
Family Leucothoidae		
amphipod	*Leucothoe cf. spinicarpa complex*	
Family Liljeborgiidae		
amphipod	*Listriella barnardi*	
Family Lysianassidae		
amphipod	*Hippomedon sp. B of LeCroy, 2007*	
amphipod	*LYSIANASSIDAE Genus C of EPC*	
amphipod	*Lysianopsis alba*	
amphipod	*Shoemakerella cubensis*	
Family Megaluropidae		
amphipod	*Gibberosus cf. myersi*	
Family Melitidae		
amphipod	*Ceradocus shoemakeri*	
amphipod	*Dulichiella appendiculata*	
amphipod	*Dulichiella sp. A of LeCroy, 2000*	
amphipod	*Dumosus cf. atari*	
amphipod	*Elasmopus cf. pectenicrus*	
amphipod	*Elasmopus cf. rapax*	
amphipod	*Elasmopus levis*	
amphipod	*Elasmopus pocillimanus*	
amphipod	*Elasmopus sp. A of EPC*	
amphipod	*Maera diffidentia*	

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amphipod	*Melita elongata*	
amphipod	*Melita longisetosa*	
Family Phoxocephalidae		
amphipod	*Eobrolgus spinosus*	
amphipod	*Metharpinia floridana*	
amphipod	*Rhepoxynius cf. epistomus*	
amphipod	*Rhepoxynius sp.*	
amphipod	*Rhepoxynius sp. A of EPC*	
Family Neomegamphopidae		
amphipod	*Neomegamphopus cf. hiatus*	
Family Oedicerotidae		
amphipod	*Hartmanodes nyei*	
Family Microprotopidae		
amphipod	*Microprotopus raneyi*	
amphipod	*Microprotopus shoemakeri*	
Family Platyischnopidae		
amphipod	*Eudevenopus honduranus*	
Family Podoceridae		
amphipod	*Podocerus brasiliensis*	
Family Pontogeneiidae		
amphipod	*Pontogeneia cf. bartschi*	
amphipod	*Pontogeneiidae*	
amphipod	*Tethygeneia cf. longleyi*	
Family Stenothoidae		
amphipod	*Parametopella sp. A of EPC*	
amphipod	*Parametopella texensis*	
amphipod	*Stenothoe cf. georgiana*	
amphipod	*Stenothoe minuta*	
amphipod	*Stenothoe sp.*	
amphipod	*Stenothoe sp. A of EPC*	
Family Synopiidae		
amphipod	*Metatiron triocellatus*	
amphipod	*Metatiron tropakis*	
Family Unciolidae		
amphipod	*Pedicorophium cf. laminosum*	
amphipod	*Rudilemboides naglei*	
Order Cumacea		
Family Bodotriidae		
cumacean	*Cyclaspis cf. platymerus*	
cumacean	*Cyclaspis pustulata*	
cumacean	*Cyclaspis sp. B of Heard et al, 2007*	
cumacean	*Cyclaspis sp. C of Heard et al, 2007*	
cumacean	*Cyclaspis spp.*	
cumacean	*Cyclaspis varians*	

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Family Diastylidae		
cumacean	*Oxyurostylis lecroyae*	
cumacean	*Oxyurostylis smithi*	
cumacean	*Oxyurostylis sp. C of Rakocinski et al, 1991*	
cumacean	*Oxyurostylis spp.*	
Family Nannastacidae		
cumacean	*Almyracuma bacescui*	
cumacean	*Campylaspis sp.*	
cumacean	*Cumella cf. garrityi*	
cumacean	*Cumella sp.*	
Order Decapoda		
Family Albuneidae		
mole crab	*Lepidopa websteri*	
Family Alpheidae		
snapping shrimp	*Alpheus armillatus*	
snapping shrimp	*Alpheus cf. angulosus*	
bigclaw snapping shimp	*Alpheus heterochaelis*	
green snapping shrimp	*Alpheus normanni*	
snapping shrimp	*Alpheus sp.*	
pistol shrimp	*Automate dolichognatha*	
pistol shrimp	*Automate evermanni*	
pistol shrimp	*Automate rectifrons*	
pistol shrimp	*Automate sp.*	
Family Callianassidae		
ghost shrimp	*Lepidophthalmus louisianensis*	
ghost shrimp	*Lepidophthalmus sp.*	
ghost shrimp	*Sergio sp.*	
Family Cambaridae		
albino cave crayfish	*Procambarus sp.*	
Family Caprellidae		
Japanese skeleton shrimp	*Caprella penantis*	
skeleton shrimp	*Deutella incerta*	
skeleton shrimp	*Deutella sp.*	
skeleton shrimp	*Paracaprella pusilla*	
skeleton shrimp	*Paracaprella sp.*	
skeleton shrimp	*Paracaprella tenuis*	
Family Diogenidae		
hermit crab	*Areopaguristes hummi*	
Family Dromiidae		
sponge crab	*Hypoconcha arcuata*	
Family Hepatidae		
flecked box crab	*Hepatus pudibundus*	
Family Hippolytidae		
cleaner shrimp	*Hippolyte pleuracanthus*	

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cleaner shrimp	*Hippolyte sp.*	
zostera shrimp	*Hippolyte zostericola*	
slender sargassum shrimp	*Latreutes fucorum*	
cleaner shrimp	*Latreutes parvulus*	
bryozoan shrimp	*Thor floridanus*	
cleaner shrimp	*Thor sp.*	
arrow shrimp	*Tozeuma carolinense*	
Family Leuconidae		
hooded shrimp	*Leucon americanus*	
hooded shrimp	*Leucon cf. sp. A of Heard et al, 2007*	
Family Leucosiidae		
sculptured clutch crab	*Ebalia cariosa*	
purse crab	*Ebalia stimpsoni*	
purse crab	*Iliacantha liodactylus*	
longfinger purse crab	*Iliacantha subglobosa*	
mottled purse crab	*Persephona mediterranea*	
Family Luciferidae		
shrimp	*Lucifer faxoni*	
Family Menippidae		
Florida stone crab	*Menippe mercenaria*	
Family Mysidae		
mysid shrimp	*Americamysis almyra*	
mysid shrimp	*Americamysis stucki*	
mysid shrimp	*Brasilomysis sp.*	
mysid shrimp	*Chlamydopleon dissimile*	
mysid shrimp	*Gastrosaccinae*	
mysid shrimp	*Mysidopsis spp.*	
mysid shrimp	*Taphromysis bowmani*	
Family Nannosquillidae		
mantis shrimp	*Nannosquilla cf. taylori*	
Family Ogyrididae		
decapod	*Ogyrides alphaerostris*	
Family Paguridae		
wormreef hermit	*Pagurus carolinensis*	
hermit crab	*Pagurus gymnodactylus*	
longwrist hermit	*Pagurus longicarpus*	
hermit crab	*Pagurus maclaughlinae*	
hermit crab	*Pagurus sp.*	
hermit crab	*Pagurus stimpsoni*	
Family Palaemonidae		
shrimp	*Kemponia americana*	
brackish grass shrimp	*Palaemonetes intermedius*	
daggerblade grass shrimp	*Palaemonetes pugio*	
shrimp	*Periclimenes longicaudatus*	

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shrimp	*Periclimenes/Kemponia sp.*	
Family Panopeidae		
mud crab	*Dyspanopeus sayi*	
mud crab	*Dyspanopeus sp.*	
Texas mud crab	*Dyspanopeus texanus*	
mud crab	*Eurypanopeus sp.*	
smooth mud crab	*Hexapanopeus angustifrons*	
narrowback mud crab	*Panopeus americanus*	
furrowed mud crab	*Panopeus occidentalis*	
mud crab	*Panopeus sp.*	
white-tipped mud crab	*Rhithropanopeus harrisii*	
Family Parthenopidae		
smooth elbow crab	*Heterocrypta granulata*	
Family Pasiphaeidae		
shrimp	*Leptochela bermudensis*	
combclaw shrimp	*Leptochela serratorbita*	
Family Penaeidae		
pink shrimp	*Farfantepenaeus duorarum*	
penaeid shrimp	*Farfantepenaeus sp.*	
roughneck shrimp	*Rimapenaeus constrictus*	
penaeid shrimp	*Rimapenaeus sp.*	
Family Pinnotheridae		
sand-dollar pea crab	*Dissodactylus mellitae*	
Family Pinnotheridae		
crab	*Pinnixa cf. floridana*	
crab	*Pinnixa cf. pearsei*	
tube pea crab	*Pinnixa chaetopterana*	
crab	*Pinnixa cylindrica*	
crab	*Pinnixa retinens*	
crab	*Pinnixa sp. A of LeCroy, unpublished key,Perdido,FL*	
crab	*Pinnixa sp. D of LeCroy, unpublished key,Perdido,FL*	
crab	*Pinnixa sp. E of LeCroy, unpublished key,Perdido,FL*	
crab	*Pinnixa spp.*	
crab	*Pinnotheres sp.*	
squatter pea crab	*Tumidotheres maculatus*	
Family Pisidae		
longnose spider crab	*Libinia dubia*	
crab	*Libinia sp.*	
cryptic teardrop crab	*Pelia mutica*	
Family Porcellanidae		
olivepit porcelain crab	*Euceramus praelongus*	

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porcelain crab	*Megalobrachium soriatum*	
porcelain crab	*Pachycheles sp.*	
porcelain crab	*Polyonyx gibbesi*	
Family Portunidae		
shelligs	*Callinectes ornatus*	
blue crab	*Callinectes sapidus*	
lesser blue crab	*Callinectes similis*	
Family Processidae		
seagrass shrimp	*Ambidexter symmetricus*	
shrimp	*Nikoides schmitti*	
shrimp	*Processa bermudensis*	
shrimp	*Processa hemphilli*	
shrimp	*Processa sp.*	
Family Sicyoniidae		
brown rock shrimp	*Sicyonia brevirostris*	
rock shrimp	*Sicyonia laevigata*	
rock shrimp	*Sicyonia parri*	
kinglet rock shrimp	*Sicyonia typica*	
Family Tychidae		
massive urn crab	*Pitho aculeata*	
oval urn crab	*Pitho anisodon*	
eggshell urn crab	*Pitho laevigata*	
broadback urn crab	*Pitho lherminieri*	
Family Upogebiidae		
mud shrimp	*Upogebia affinis*	
mud shrimp	*Upogebia sp.*	
Order Isopoda		
Family Anthuridae		
isopod	*Amakusanthura cf. signata*	
isopod	*Amakusanthura magnifica*	
isopod	*Amakusanthura sp.*	
isopod	*Cyathura polita*	
Family Bopyridae		
isopod	*Pseudioninae*	
Family Hologнathidae		
isopod	*Cleantioides planicauda*	
Family Hyssuridae		
isopod	*Kupellonura formosa*	
isopod	*Neohyssura irpex*	
isopod	*Xenanthura brevitelson*	
Family Idoteidae		
isopod	*Edotia lyonsi*	
isopod	*Edotia triloba*	
isopod	*Erichsonella attenuata*	

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isopod	*Erichsonella filiformis*	
Family Sphaeromatidae		
isopod	*Cassidinidea ovalis*	
isopod	*Exosphaeroma diminutum*	
isopod	*Harrieta faxoni*	
isopod	*Paracerceis caudata*	
isopod	*Paradella dianae*	
isopod	*Paradella sp.*	
isopod	*Sphaeroma quadridentatum*	
Family Cirolanidae		
isopod	*Eurydice personata*	
Family Serolidae		
isopod	*Heteroserolis mgrayi*	
Order Tanaidacea		
Family Apseudidae		
tanaid	*Apseudes sp. A of EPC*	
Family Kalliapseudidae		
tanaid	*Mesokalliapseudes macsweenyi*	
Family Leptocheliidae		
tanaid	*Leptochelia cf. longimana*	
tanaid	*Leptochelia forresti*	
tanaid	*Leptochelia rapax*	
Family Parapseudidae		
tanaid	*Halmyrapseudes bahamensis*	
tanaid	*Pakistanapseudes cf. sp. A of EPC*	
Class Maxillopoda		
Order Sessilia		
Family Balanidae		
ivory barnacle	*Amphibalanus eburneus*	
bay barnacle	*Amphibalanus improvisus*	
barnacle	*Amphibalanus sp.*	
barnacle	*Amphibalanus venustus*	
Class Merostomata		
Order Xiphosura		
Family Limulidae		
horseshoe crab	*Limulus polyphemus*	
Class Pycnogonida		
Order Pantopoda		
Family Callipallenidae		
sea spider	*Callipallene phantoma*	
Family Phoxichilidiidae		
sea spider	*Anoplodactylus sp.*	
Phylum Echinodermata		
Class Asteroidea		

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Order Phanerozonia		
Family Astropectinidae		
royal starfish	*Astropecten articulatus*	
Family Luidiidae		
slender armed starfish	*Luidia clathrata*	
Class Echinoidea		
Order Arbacioida		
Family Arbacia		
purple sea urchin	*Arbacia punctulata*	
Order Camarodonta		
Family Toxopneustidae		
pink sea urchin	*Lytechinus variegatus*	
Order Clypeasteroida		
Family Mellitidae		
sand dollar	*Mellita tenuis*	
Class Holothuroidea		
Order Apodida		
Family Synaptidae		
sea cucumber	*Epitomapta cf. roseola*	
sea cucumber	*Leptosynapta sp.*	
sea cucumber	*SYNAPTIDAE sp. A of EPC*	
sea cucumber	*SYNAPTIDAE sp. C of EPC*	
sea cucumber	*Synaptula hydriformis*	
Order Dendrochirotida		
Family Cucumariidae		
sea cucumber	*Ocnus cf. pygmaeus*	
sea cucumber	*Thyonella gemmata*	
Family Phyllophoridae		
sea cucumber	*Pentamera cf. pulcherrima*	
Family Sclerodactylidae		
sea cucumber	*Sclerodactyla briareus*	
Class Ophiuroidea		
Order Ophiurida		
Family Amphiuridae		
brittle star	*Amphiodia atra*	
brittle star	*Amphioplus sepultus*	
brittle star	*Amphioplus abditus*	
brittle star	*Amphioplus thrombodes*	
brittle star	*Amphipholis gracillima*	
brittle star	*Amphipholis sp.*	
brittle star	*Amphipholis squamata*	
brittle star	*Ophiophragmus filograneus*	
brittle star	*Ophiophragmus sp.*	
brittle star	*Ophiophragmus wurdemani*	

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Family Ophiactidae		
brittle star	*Hemipholis elongata*	
Family Ophiodermatidae		
brittle star	*Ophioderma brevispina*	
Family Ophiolepididae		
brittle star	*Ophiolepis cf. elegans*	
brittle star	*Ophiolepis sp.*	
Phylum Hemichordata		
Class Enteropneusta		
Family Harrimaniidae		
acorn worm	*Stereobalanus canadensis*	
Phylum Chordata		
Class Leptocardii		
Order Amphioxiformes		
Family Branchiostomatidae		
Florida lancelet	*Branchiostoma floridae*	
Class Ascidiacea		
Order Enterogona		
Family Didemnidae		
white speck tunicate	*Didemnum cf. conchyliatum*	
tunicate	*Didemnum sp.*	
tunicate	*Diplosoma cf. listerianum*	
tunicate	*Lissoclinum cf. fragile*	
Family Perophoridae		
sea squirt	*Perophora cf. viridis*	
Family Polycitoridae		
tunicate	*Eudistoma sp.*	
Order Stolidobranchia		
Family Molgulidae		
tunicate	*Molgula occidentalis*	
Class Actinopterygii (ray-finned fishes)		
Order Acipenseriformes		
Family Acipenseridae		
Atlantic sturgeon	*Acipenser oxyrinchus*	FE
Order Albuliformes		
Family Albulidae		
bonefish	*Albula vulpes*	
Order Anguilliformes		
Family Anguillidae		
American eel	*Anguilla rostrata*	
Family Ophichthidae		
spotted spoon-nose eel	*Echiophis intertinctus*	
speckled worm eel	*Myrophis punctatus*	
shrimp eel	*Ophichthus gomesii*	

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Order Atheriniformes		
Family Atherinopsidae		
brook silverside	*Labidesthes sicculus*	
rough silverside	*Membras martinica*	
menidia silverside	*Menidia spp.*	
Order Aulopiformes		
Family Synodontidae		
inshore lizardfish	*Synodus foetens*	
Order Batrachoidiformes		
Family Batrachoididae		
Gulf toadfish	*Opsanus beta*	
Gulf toadfish (red morph)	*Opsanus beta (red morph)*	
Order Beloniformes		
Family Belonidae		
Atlantic needlefish	*Strongylura marina*	
redfin needlefish	*Strongylura notata*	
timucu	*Strongylura timucu*	
houndfish	*Tylosurus crocodilus*	
Family Hemiramphidae		
ballyhoo	*Hemiramphus brasiliensis*	
false silver halfbeak	*Hyporhamphus meeki*	
halfbeak	*Hyporhamphus unifasciatus*	
Order Clupeiformes		
Family Clupeidae		
Gulf menhaden	*Brevoortia patronus*	
yellowfin menhaden	*Brevoortia smithi*	
gizzard shad	*Dorosoma cepedianum*	
threadfin shad	*Dorosoma petenense*	
scaled sardine	*Harengula jaguana*	
Atlantic thread herring	*Opisthonema oglinum*	
Spanish sardine	*Sardinella aurita*	
Family Engraulidae		
Cuban anchovy	*Anchoa cubana*	
striped anchovy	*Anchoa hepsetus*	
dusky anchovy	*Anchoa lyolepis*	
bay anchovy	*Anchoa mitchilli*	
Order Cypriniformes		
Family Cyprinidae		
golden shiner	*Notemigonus crysoleucas*	
ironcolor shiner	*Notropis chalybaeus*	
Order Cyprinodontiformes		
Family Cyprinodontidae		
sheepshead minnow	*Cyprinodon variegatus*	
goldspotted killifish	*Floridichthys carpio*	

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Family Fundulidae		
diamond killifish	*Adinia xenica*	
banded topminnow	*Fundulus cingulatus*	
marsh killifish	*Fundulus confluentus*	
Gulf killifish	*Fundulus grandis*	
Seminole killifish	*Fundulus seminolis*	
longnose killifish	*Fundulus similis*	
pygmy killifish	*Leptolucania ommata*	
rainwater killifish	*Lucania parva*	
Family Poeciliidae		
Western mosquito fish	*Gambusia affinis*	
Eastern mosquito fish	*Gambusia holbrooki*	
least killifish	*Heterandria formosa*	
sailfin molly	*Poecilia latipinna*	
Order Elopiformes		
Family Elopidae		
ladyfish	*Elops saurus*	
malacho	*Elops smithi*	
Family Megalopidae		
tarpon	*Megalops atlanticus*	
Order Esociformes		
Family Esocidae		
redfin pickerel	*Esox americanus americanus*	
Order Gadiformes		
Family Phycidae		
Southern hake	*Urophycis floridana*	
Order Gobiesociformes		
Family Gobiesocidae		
skilletfish	*Gobiesox strumosus*	
Order Lepisosteiformes		
Family Lepisosteidae		
longnose gar	*Lepisosteus osseus*	
Florida gar	*Lepisosteus platyrhincus*	
Order Lophiiformes		
Family Ogcocephalidae		
polka-dot batfish	*Ogcocephalus cubifrons*	
Order Mugiliformes		
Family Mugilidae		
striped mullet	*Mugil cephalus*	
white mullet	*Mugil curema*	
fantail mullet	*Mugil trichodon*	
Order Ophidiiformes		
Family Ophidiidae		
blotched cusk-eel	*Ophidion grayi*	

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bank cusk-eel	*Ophidion holbrookii*	
crested cusk-eel	*Ophidion josephi*	
Order Perciformes		
Family Blenniidae		
Florida blenny	*Chasmodes saburrae*	
zebratail blenny	*Hypleurochilus caudovittatus*	
feather blenny	*Hypsoblennius hentz*	
Family Carangidae		
yellow jack	*Caranx bartholomaei*	
blue runner	*Caranx crysos*	
crevalle jack	*Caranx hippos*	
horse-eye jack	*Caranx latus*	
Atlantic bumper	*Chloroscombrus chrysurus*	
round scad	*Decapterus punctatus*	
bluntnose jack	*Hemicaranx amblyrhynchus*	
leatherjacket	*Oligoplites saurus*	
lookdown	*Selene vomer*	
Florida pompano	*Trachinotus carolinus*	
permit	*Trachinotus falcatus*	
Family Centrarchidae		
bluegill	*Lepomis macrochirus*	
redear sunfish	*Lepomis microlophus*	
largemouth bass	*Micropterus salmoides*	
Family Centropomidae		
common snook	*Centropomus undecimalis*	
Family Chaetodontidae		
spotfin butterflyfish	*Chaetodon ocellatus*	
Family Cichlidae		
tilapia	*Oreochromis/Sarotherodon spp.*	
blackchin tilapia	*Sarotherodon melanotheron*	
Family Dactyloscopidae		
speckled stargazer	*Dactyloscopus moorei*	
Family Echeneidae		
sharksucker	*Echeneis naucrates*	
whitefin sharksucker	*Echeneis neucratoides*	
Family Ephippidae		
Atlantic spadefish	*Chaetodipterus faber*	
Family Gerreidae		
Irish pompano	*Diapterus auratus*	
spotfin mojarra	*Eucinostomus argenteus*	
silver jenny	*Eucinostomus gula*	
tidewater mojarra	*Eucinostomus harengulus*	
striped mojarra	*Eugerres plumieri*	
mojarra	*Gerreidae spp.*	

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Family Gobiidae		
frillfin goby	*Bathygobius soporator*	
darter goby	*Ctenogobius boleosoma*	
emerald goby	*Ctenogobius smaragdus*	
tiger goby	*Elacatinus macrodon*	
highfin goby	*Gobionellus oceanicus*	
naked goby	*Gobiosoma bosc*	
twoscale goby	*Gobiosoma longipala*	
code goby	*Gobiosoma robustum*	
crested goby	*Lophogobius cyprinoides*	
clown goby	*Microgobius gulosus*	
green goby	*Microgobius thalassinus*	
Family Haemulidae		
tomtate	*Haemulon aurolineatum*	
white grunt	*Haemulon plumierii*	
pigfish	*Orthopristis chrysoptera*	
Family Kyphosidae		
Bermuda chub	*Kyphosus sectatrix*	
Family Labridae		
slippery dick	*Halichoeres bivittatus*	
parrotfish	*Labridae spp.*	
hogfish	*Lachnolaimus maximus*	
Family Labrisomidae		
banded blenny	*Paraclinus fasciatus*	
marbled blenny	*Paraclinus marmoratus*	
Family Lobotidae		
tripletail	*Lobotes surinamensis*	
Family Lutjanidae		
mutton snapper	*Lutjanus analis*	
schoolmaster	*Lutjanus apodus*	
gray snapper	*Lutjanus griseus*	
lane snapper	*Lutjanus synagris*	
yellowtail snapper	*Ocyurus chrysurus*	
Family Mullidae		
red goatfish	*Mullus auratus*	
Family Pomatomidae		
bluefish	*Pomatomus saltatrix*	
Family Rachycentridae		
cobia	*Rachycentron canadum*	
Family Scaridae		
emerald parrotfish	*Nicholsina usta*	
Family Sciaenidae		
silver perch	*Bairdiella chrysoura*	
sand seatrout	*Cynoscion arenarius*	

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spotted seatrout	*Cynoscion nebulosus*	
spot	*Leiostomus xanthurus*	
Southern kingfish	*Menticirrhus americanus*	
Gulf kingfish	*Menticirrhus littoralis*	
Northern kingfish	*Menticirrhus saxatilis*	
Atlantic croaker	*Micropogonias undulatus*	
black drum	*Pogonias cromis*	
red drum	*Sciaenops ocellatus*	
Family Serranidae		
black Sea bass	*Centropristis striata*	
sand perch	*Diplectrum formosum*	
goliath grouper	*Epinephelus itajara*	
red grouper	*Epinephelus morio*	
gag	*Mycteroperca microlepis*	
pygmy sea bass	*Serraniculus pumilio*	
belted sandfish	*Serranus subligarius*	
Family Sparidae		
sheepshead	*Archosargus probatocephalus*	
grass porgy	*Calamus arctifrons*	
sheepshead porgy	*Calamus penna*	
spottail pinfish	*Diplodus holbrookii*	
pinfish	*Lagodon rhomboides*	
Family Uranoscopidae		
southern stargazer	*Astroscopus y-graecum*	
Order Pleuronectiformes		
Family Achiridae		
lined sole	*Achirus lineatus*	
gafftopsail catfish	*Bagre marinus*	
hogchoker	*Trinectes maculatus*	
Family Cynoglossidae		
blackcheek tonguefish	*Symphurus plagiusa*	
Family Paralichthyidae		
ocellated flounder	*Ancylopsetta quadrocellata*	
spotted whiff	*Citharichthys macrops*	
spotfin flounder	*Cyclopsetta fimbriata*	
fringed flounder	*Etropus crossotus*	
shelf flounder	*Etropus cyclosquamus*	
Gulf flounder	*Paralichthys albigutta*	
southern flounder	*Paralichthys lethostigma*	
Order Rhinopristiformes		
Family Rhinobatidae		
Atlantic guitarfish	*Rhinobatos lentiginosus*	
Order Scombriformes		
Family Scombridae		

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little tunny	*Euthynnus alletteratus*	
Spanish mackerel	*Scomberomorus maculatus*	
Family Sphyraenidae		
great barracuda	*Sphyraena barracuda*	
sennet	*Sphyraena borealis*	
guaguanche	*Sphyraena guachancho*	
Family Stromateidae		
Gulf butterfish	*Peprilus burti*	
harvestfish	*Peprilus paru*	
Order Scorpaeniformes		
Family Scorpaenidae		
barbfish	*Scorpaena brasiliensis*	
Family Triglidae		
leopard searobin	*Prionotus scitulus*	
bighead searobin	*Prionotus tribulus*	
Order Siluriformes		
Family Ariidae		
hardhead catfish	*Ariopsis felis*	
Family Ictaluridae		
channel catfish	*Ictalurus punctatus*	
Order Syngnathiformes		
Family Fistulariidae		
bluespotted cornetfish	*Fistularia tabacaria*	
Family Syngnathidae		
fringed pipefish	*Anarchopterus criniger*	
lined seahorse	*Hippocampus erectus*	
dwarf seahorse	*Hippocampus zosterae*	
dusky pipefish	*Syngnathus floridae*	
chain pipefish	*Syngnathus louisianae*	
Gulf pipefish	*Syngnathus scovelli*	
Order Tetraodontiformes		
Family Diodontidae		
striped burrfish	*Chilomycterus schoepfii*	
balloonfish	*Diodon holocanthus*	
Family Monacanthidae		
orange filefish	*Aluterus schoepfii*	
scrawled filefish	*Aluterus scriptus*	
fringed filefish	*Monacanthus ciliatus*	
planehead filefish	*Stephanolepis hispidus*	
pygmy filefish	*Stephanolepis setifer*	
Family Ostraciidae		
scrawled cowfish	*Acanthostracion quadricornis*	
trunkfish	*Lactophrys trigonus*	
long-horned cowfish	*Lactoria cornuta*	

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boxfish	*Ostraciidae spp.*	
Family Tetraodontidae		
Southern puffer	*Sphoeroides nephelus*	
bandtail puffer	*Sphoeroides spengleri*	
Class Chondrichthyes (sharks, skates, & rays)		
Order Carcharhiniformes		
Family Carcharhinidae		
blacknose shark	*Carcharhinus acronotus*	
bull shark	*Carcharhinus leucas*	
blacktip shark	*Carcharhinus limbatus*	
lemon shark	*Negaprion brevirostris*	
Atlantic sharpnose shark	*Rhizoprionodon terraenovae*	
Family Sphyrnidae		
scalloped hammerhead	*Sphyrna lewini*	
bonnethead	*Sphyrna tiburo*	
Order Myliobatiformes		
Family Dasyatidae		
Southern stingray	*Dasyatis americana*	
Atlantic stingray	*Dasyatis sabina*	
bluntnose stingray	*Dasyatis say*	
Family Gymnuridae		
smooth butterfly ray	*Gymnura micrura*	
Family Myliobatidae		
spotted eagle ray	*Aetobatus narinari*	
cownose ray	*Rhinoptera bonasus*	
Order Rajiformes		
Family Rajidae		
clearnose skate	*Raja eglanteria*	
Order Torpediniformes		
Family Narcinidae		
lesser electric ray	*Narcine bancroftii*	
Class Amphibia (amphibians)		
Order Anura		
Family Ranidae		
river frog	*Rana heckscheri*	
Class Reptilia (reptiles)		
Order Crocodilia		
Family Alligatoridae		
American alligator	*Alligator mississippiensis*	FT (S/A)
Family Crocodylidae		
American crocodile	*Crocodylus acutus*	FT
Order Squamata		
Family Colubridae		
mangrove snake	*Nerodia clarkii*	FT

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Florida banded water snake	*Nerodia fasciata pictiventris*	
Family Viperidae		
Eastern diamondback rattlesnake	*Crotalus adamanteus*	
pigmy rattlesnake	*Sistrurus miliarius*	
Order Testudines		
Family Cheloniidae		
loggerhead sea turtle	*Caretta caretta*	FT
green sea turtle	*Chelonia mydas*	FT
hawksbill sea turtle	*Eretmochelys imbricata*	FE
Kemp's ridley sea turtle	*Lepidochelys kempii*	FE
Family Chelydridae		
common snapping turtle	*Chelydra serpentina*	
Family Emydidae		
diamondback terrapin	*Malaclemys terrapin*	
river cooter	*Pseudemys concinna*	
Florida cooter	*Pseudemys floridana*	
peninsula cooter	*Pseudemys peninsularis*	
red-eared turtle	*Trachemys scripta elegans*	
Family Kinosternidae		
common musk turtle	*Sternotherus odoratus*	
Class Aves (birds)		
Order Accipitriformes		
Family Accipitridae		
Cooper's hawk	*Accipiter cooperii*	
sharp-shinned hawk	*Accipiter striatus*	
short-tailed hawk	*Buteo brachyurus*	
red-tailed hawk	*Buteo jamaicensis*	
red-shouldered hawk	*Buteo lineatus*	
broad-winged hawk	*Buteo platypterus*	
Swainson's hawk	*Buteo swainsoni*	
Northern harrier	*Circus hudsonius*	
swallow-tailed kite	*Elanoides forficatus*	
bald eagle	*Haliaeetus leucocephalus*	
Mississippi kite	*Ictinia mississippiensis*	
Order Anseriformes		
Family Anatidae		
wood duck	*Aix sponsa*	
Northern pintail	*Anas acuta*	
green-winged teal	*Anas carolinensis*	
blue-winged teal	*Anas discors*	
mottled duck	*Anas fulvigula*	
mallard	*Anas platyrhynchos*	
lesser scaup	*Aythya affinis*	
redhead	*Aythya americana*	

Common Name	Scientific Name	Status
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ring-necked duck	*Aythya collaris*	
greater scaup	*Aythya marila*	
canvasback	*Aythya valisineria*	
bufflehead	*Bucephala albeola*	
muscovy duck	*Cairina moschata*	
long-tailed duck	*Clangula hyemalis*	
black-bellied whistling-duck	*Dendrocygna autumnalis*	
hooded merganser	*Lophodytes cucullatus*	
American wigeon	*Mareca americana*	
gadwall	*Mareca strepera*	
white-winged scoter	*Melanitta deglandi*	
surf scoter	*Melanitta perspicillata*	
red-breasted merganser	*Mergus serrator*	
ruddy duck	*Oxyura jamaicensis*	
Northern shoveler	*Spatula clypeata*	
Order Caprimulgiformes		
Family Apodidae		
chimney swift	*Chaetura pelagica*	
Family Caprimulgidae		
Chuck-will's-widow	*Antrostomus carolinensis*	
whip-poor-will	*Antrostomus vociferus*	
common nighthawk	*Chordeiles minor*	
Family Trochilidae		
ruby-throated hummingbird	*Archilochus colubris*	
rufous hummingbird	*Selasphorus rufus*	
Order Cathartiformes		
Family Cathartidae		
turkey vulture	*Cathartes aura*	
black vulture	*Coragyps atratus*	
Order Charadriiformes		
Family Charadriidae		
piping plover	*Charadrius melodus*	FT
snowy plover	*Charadrius nivosus*	ST
semipalmated plover	*Charadrius semipalmatus*	
killdeer	*Charadrius vociferus*	
Wilson's plover	*Charadrius wilsonia*	
American golden-plover	*Pluvialis dominica*	
black-bellied plover	*Pluvialis squatarola*	
Family Haematopodidae		
American oystercatcher	*Haematopus palliatus*	ST
Family Laridae		
black tern	*Chlidonias niger*	
gull-billed tern	*Gelochelidon nilotica*	
Caspian tern	*Hydroprogne caspia*	

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herring gull	*Larus argentatus*	
ring-billed gull	*Larus delawarensis*	
lesser black-backed gull	*Larus fuscus*	
glaucous gull	*Larus hyperboreus*	
great black-backed gull	*Larus marinus*	
Bonaparte's gull	*Larus philadelphia*	
laughing gull	*Leucophaeus atricilla*	
black skimmer	*Rynchops niger*	
roseate tern	*Sterna dougallii*	
Forster's tern	*Sterna forsteri*	
common tern	*Sterna hirundo*	
least tern	*Sternula antillarum*	ST
royal tern	*Thalasseus maximus*	
sandwich tern	*Thalasseus sandvicensis*	
Family Recurvirostridae		
black-necked stilt	*Himantopus mexicanus*	
American avocet	*Recurvirostra americana*	
Family Scolopacidae		
spotted sandpiper	*Actitis macularius*	
ruddy turnstone	*Arenaria interpres*	
sanderling	*Calidris alba*	
dunlin	*Calidris alpina*	
red knot	*Calidris canutus*	
rufa red knot	*Calidris canutus rufa*	FT
white-rumped sandpiper	*Calidris fuscicollis*	
stilt sandpiper	*Calidris himantopus*	
Western sandpiper	*Calidris mauri*	
pectoral sandpiper	*Calidris melanotos*	
least sandpiper	*Calidris minutilla*	
semipalmated sandpiper	*Calidris pusilla*	
common snipe	*Gallinago gallinago*	
short-billed dowitcher	*Limnodromus griseus*	
long-billed dowitcher	*Limnodromus scolopaceus*	
marbled godwit	*Limosa fedoa*	
Hudsonian godwit	*Limosa haemastica*	
long-billed curlew	*Numenius americanus*	
whimbrel	*Numenius phaeopus*	
lesser yellowlegs	*Tringa flavipes*	
greater yellowlegs	*Tringa melanoleuca*	
willet	*Tringa semipalmata*	
solitary sandpiper	*Tringa solitaria*	
Family Stercorariidae		
parasitic jaeger	*Stercorarius parasiticus*	
pomarine jaeger	*Stercorarius pomarinus*	

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Order Ciconiiformes		
Family Ardeidae		
snowy egret	*Egretta thula*	
Family Ciconiidae		
wood stork	*Mycteria americana*	FT
Family Threskiornithidae		
white ibis	*Eudocimus albus*	
Order Columbiformes		
Family Columbidae		
common ground-dove	*Columbina passerina*	
white-winged dove	*Zenaida asiatica*	
Order Coraciiformes		
Family Alcedinidae		
belted kingfisher	*Megaceryle alcyon*	
Order Cuculiformes		
Family Cuculidae		
yellow-billed cuckoo	*Coccyzus americanus*	
mangrove cuckoo	*Coccyzus minor*	
Order Falconiformes		
Family Accipitridae		
osprey	*Pandion haliaetus*	
Family Falconidae		
merlin	*Falco columbarius*	
peregrine falcon	*Falco peregrinus*	
American kestrel	*Falco sparverius*	ST
Order Galliformes		
Family Odontophoridae		
Northern bobwhite	*Colinus virginianus*	
Family Phasianidae		
wild turkey	*Meleagris gallopavo*	
Order Gaviiformes		
Family Gaviidae		
common loon	*Gavia immer*	
Order Gruiformes		
Family Aramidae		
limpkin	*Aramus guarauna*	
Family Gruidae		
sandhill crane	*Antigone canadensis*	ST
Family Rallidae		
American coot	*Fulica americana*	
common moorhen	*Gallinula chloropus*	
black rail	*Laterallus jamaicensis*	
sora	*Porzana carolina*	
clapper rail	*Rallus crepitans*	

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king rail	*Rallus elegans*	
Virginia rail	*Rallus limicola*	
Order Passeriformes		
Family Bombycillidae		
cedar waxwing	*Bombycilla cedrorum*	
Family Cardinalidae		
Northern cardinal	*Cardinalis cardinalis*	
blue grosbeak	*Passerina caerulea*	
painted bunting	*Passerina ciris*	
indigo bunting	*Passerina cyanea*	
rose-breasted grosbeak	*Pheucticus ludovicianus*	
scarlet tanager	*Piranga olivacea*	
summer tanager	*Piranga rubra*	
dickcissel	*Spiza americana*	
Family Corvidae		
fish crow	*Corvus ossifragus*	
blue jay	*Cyanocitta cristata*	
Family Fringillidae		
evening grosbeak	*Coccothraustes vespertinus*	
pine siskin	*Spinus pinus*	
American goldfinch	*Spinus tristis*	
Family Hirundinidae		
barn swallow	*Hirundo rustica*	
cliff swallow	*Petrochelidon pyrrhonota*	
purple martin	*Progne subis*	
bank swallow	*Riparia riparia*	
N. rough-winged swallow	*Stelgidopteryx serripennis*	
tree swallow	*Tachycineta bicolor*	
Family Icteridae		
red-winged blackbird	*Agelaius phoeniceus*	
bobolink	*Dolichonyx oryzivorus*	
rusty blackbird	*Euphagus carolinus*	
Brewer's blackbird	*Euphagus cyanocephalus*	
Baltimore oriole	*Icterus galbula*	
orchard oriole	*Icterus spurius*	
brown-headed cowbird	*Molothrus ater*	
boat-tailed grackle	*Quiscalus major*	
common grackle	*Quiscalus quiscula*	
Eastern meadowlark	*Sturnella magna*	
Family Laniidae		
loggerhead shrike	*Lanius ludovicianus*	
Family Motacillidae		
American pipit	*Anthus rubescens*	
Family Mimidae		

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gray catbird	*Dumetella carolinensis*	
Northern mockingbird	*Mimus polyglottos*	
brown thrasher	*Toxostoma rufum*	
Family Paridae		
tufted titmouse	*Baeolophus bicolor*	
Carolina chickadee	*Poecile carolinensis*	
Family Parulidae		
Canada warbler	*Cardellina canadensis*	
Wilson's warbler	*Cardellina pusilla*	
Kentucky warbler	*Geothlypis formosa*	
common yellowthroat	*Geothlypis trichas*	
worm-eating warbler	*Helmitheros vermivorum*	
Swainson's warbler	*Limnothlypis swainsonii*	
black-and-white warbler	*Mniotilta varia*	
orange-crowned warbler	*Oreothlypis celata*	
Tennessee warbler	*Oreothlypis peregrina*	
Nashville warbler	*Oreothlypis ruficapilla*	
Louisiana waterthrush	*Parkesia motacilla*	
Northern waterthrush	*Parkesia noveboracensis*	
prothonotary warbler	*Protonotaria citrea*	
ovenbird	*Seiurus aurocapilla*	
Northern parula	*Setophaga americana*	
black-throated blue warbler	*Setophaga caerulescens*	
bay-breasted warbler	*Setophaga castanea*	
Cerulean warbler	*Setophaga cerulea*	
hooded warbler	*Setophaga citrina*	
yellow-rumped warbler	*Setophaga coronata*	
prairie warbler	*Setophaga discolor*	
yellow-throated warbler	*Setophaga dominica*	
Blackburnian warbler	*Setophaga fusca*	
magnolia warbler	*Setophaga magnolia*	
black-throated gray warbler	*Setophaga nigrescens*	
palm warbler	*Setophaga palmarum*	
chestnut-sided warbler	*Setophaga pensylvanica*	
yellow warbler	*Setophaga petechia*	
pine warbler	*Setophaga pinus*	
American redstart	*Setophaga ruticilla*	
blackpoll warbler	*Setophaga striata*	
Cape May warbler	*Setophaga tigrina*	
black-throated green warbler	*Setophaga virens*	
golden-winged warbler	*Vermivora chrysoptera*	
blue-winged warbler	*Vermivora cyanoptera*	
Family Passerellidae		
saltmarsh sharp-tailed sparrow	*Ammodramus caudacutus*	

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seaside sparrow	*Ammodramus maritimus*	ST
Nelson's sharp-tailed sparrow	*Ammodramus nelsoni*	
swamp sparrow	*Melospiza georgiana*	
Lincoln's sparrow	*Melospiza lincolnii*	
song sparrow	*Melospiza melodia*	
house sparrow	*Passer domesticus*	
savannah sparrow	*Passerculus sandwichensis*	
Bachman's sparrow	*Peucaea aestivalis*	
Eastern towhee	*Pipilo erythrophthalmus*	
vesper sparrow	*Pooecetes gramineus*	
chipping sparrow	*Spizella passerina*	
field sparrow	*Spizella pusilla*	
white-throated sparrow	*Zonotrichia albicollis*	
white-crowned sparrow	*Zonotrichia leucophrys*	
Family Polioptilidae		
blue-gray gnatcatcher	*Polioptila caerulea*	
Family Regulidae		
ruby-crowned kinglet	*Regulus calendula*	
Family Troglodytidae		
marsh wren	*Cistothorus palustris*	ST
sedge wren	*Cistothorus stellaris*	
Carolina wren	*Thryothorus ludovicianus*	
house wren	*Troglodytes aedon*	
Family Turdidae		
veery	*Catharus fuscescens*	
hermit thrush	*Catharus guttatus*	
gray-cheeked thrush	*Catharus minimus*	
Swainson's thrush	*Catharus ustulatus*	
wood thrush	*Hylocichla mustelina*	
Eastern bluebird	*Sialia sialis*	
American robin	*Turdus migratorius*	
Family Tyrannidae		
Eastern wood-pewee	*Contopus virens*	
yellow-bellied flycatcher	*Empidonax flaviventris*	
least flycatcher	*Empidonax minimus*	
Acadian flycatcher	*Empidonax virescens*	
great crested flycatcher	*Myiarchus crinitus*	
Eastern phoebe	*Sayornis phoebe*	
gray kingbird	*Tyrannus dominicensis*	
scissor-tailed flycatcher	*Tyrannus forficatus*	
Eastern kingbird	*Tyrannus tyrannus*	
Family Vireonidae		
black-whiskered vireo	*Vireo altiloquus*	
white-eyed vireo	*Vireo griseus*	

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red-eyed vireo	*Vireo olivaceus*	
blue-headed vireo	*Vireo solitarius*	
Order Pelecaniformes		
Family Ardeidae		
great egret	*Ardea alba*	
great blue heron	*Ardea herodias*	
“great white” heron	*Ardea herodias occidentalis*	
American bittern	*Botaurus lentiginosus*	
green heron	*Butorides virescens*	
little blue heron	*Egretta caerulea*	ST
reddish egret	*Egretta rufescens*	ST
tricolored heron	*Egretta tricolor*	ST
least bittern	*Ixobrychus exilis*	
yellow-crowned night-heron	*Nyctanassa violacea*	
black-crowned night-heron	*Nycticorax nycticorax*	
Family Pelecanidae		
American white pelican	*Pelecanus erythrorhynchos*	
brown pelican	*Pelecanus occidentalis*	
Family Threskiornithidae		
roseate spoonbill	*Platalea ajaja*	ST
Order Piciformes		
Family Picidae		
Northern flicker	*Colaptes auratus*	
downy woodpecker	*Dryobates pubescens*	
pileated woodpecker	*Dryocopus pileatus*	
red-bellied woodpecker	*Melanerpes carolinus*	
yellow-bellied sapsucker	*Sphyrapicus varius*	
Order Podicipediformes		
Family Podicipedidae		
horned grebe	*Podiceps auritus*	
pied-billed grebe	*Podilymbus podiceps*	
Order Strigiformes		
Family Strigidae		
burrowing owl	*Athene cunicularia*	ST
great horned owl	*Bubo virginianus*	
Eastern screech-owl	*Megascops asio*	
barred owl	*Strix varia*	
Family Tytonidae		
barn owl	*Tyto alba*	
Order Suliformes		
Family Anhingidae		
anhinga	*Anhinga anhinga*	
Family Fregatidae		
magnificent frigatebird	*Fregata magnificens*	

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Family Phalacrocoracidae		
double-crested cormorant	*Phalacrocorax auritus*	
Family Sulidae		
Northern gannet	*Morus bassanus*	
Class Mammalia (mammals)		
Order Artiodactyla		
Family Delphinidae		
bottlenose dolphin	*Tursiops truncatus*	
Order Carnivora		
Family Procyonidae		
raccoon	*Procyon lotor*	
Order Sirenia		
Family Trichechidae		
West Indian manatee	*Trichechus manatus*	FT

*B.3.2 / **Listed Species***

Common Name	Scientific Name	Status
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Fishes		
Atlantic sturgeon	*Acipenser oxyrinchus*	FE
Reptiles		
American alligator	*Alligator mississippiensis*	FT (S/A)
loggerhead sea turtle	*Caretta caretta*	FT
green sea turtle	*Chelonia mydas*	FT
American crocodile	*Crocodylus acutus*	FT
hawksbill sea turtle	*Eretmochelys imbricata*	FE
Kemp's ridley sea turtle	*Lepidochelys kempii*	FE
mangrove snake	*Nerodia clarkii*	FT
Birds		
seaside sparrow	*Ammodramus maritimus*	ST
sandhill crane	*Antigone canadensis*	ST
burrowing owl	*Athene cunicularia*	ST
rufa red knot	*Calidris canutus rufa*	FT
piping plover	*Charadrius melodus*	FT
snowy plover	*Charadrius nivosus*	ST
marsh wren	*Cistothorus palustris*	ST
little blue heron	*Egretta caerulea*	ST
reddish egret	*Egretta rufescens*	ST
tricolored heron	*Egretta tricolor*	ST
American kestrel	*Falco sparverius*	ST
American oystercatcher	*Haematopus palliatus*	ST
wood stork	*Mycteria americana*	FT

Common Name	Scientific Name	Status
Legend: FT= Federally- and State- Designated Threatened FE= Federally- and State-Designated Endangered ST= State-Designated Threatened SE= State-Designated Endangered (S/A)= listed due to similarity of appearance SSC= Species of Special Concern CE=Commercially Exploited		
roseate spoonbill	*Platalea ajaja*	ST
black skimmer	*Rynchops niger*	ST
roseate tern	*Sterna dougallii*	FT
least tern	*Sternula antillarum*	ST
Mammals		
West Indian manatee	*Trichechus manatus*	FT

*B.3.3 / **Invasive Non-native and/or Problem Species***

Common Name	Species Name	Plants (FLEPPC* Category) Others (Invasive Status)
Plants		
alligator weed	*Alternanthera philoxeroides*	II
Australian pine	*Casuarina equisetifolia*	I
wild taro	*Colocasia esculenta*	I
carrotwood	*Cupaniopsis anacardioides*	I
water hyacinth	*Eichhornia crassipes*	I
Uruguayan water-primrose	*Ludwigia hexapetala*	I
Peruvian water-primrose	*Ludwigia peruviana*	I
Guinea grass	*Panicum maximum*	II
Brazilian pepper	*Schinus terebinthifolia*	I
Caesar's weed	*Urena lobata*	I
Flatworms		
oyster leech	*Stylochus cf. frontalis*	non-native
Annelids		
polychaete worm	*Boccardiella cf. hamata*	non-native
polychaete worm	*Mediomastus californiensis*	non-native
Mollusks		
red-rim melania	*Melanoides tuberculatus*	non-native
Asian green mussel	*Perna viridis*	non-native
island apple snail	*Pomacea insularum*	non-native
Arthropods		
striped acorn barnacle	*Amphibalanus cf. amphitrite*	non-native
acorn barnacle	*Amphibalanus reticulatus*	non-native
acorn barnacle	*Balanus trigonus*	non-native
green porcelain crab	*Petrolisthes armatus*	non-native
isopod	*Sphaeroma terebrans*	non-native
Bryozoans		
moss animal	*Sundanella sibogae*	non-native
moss animal	*Conopeum cf. seurati*	non-native
Sea squirts		
rough sea squirt	*Styela plicata*	non-native
Fishes		
pike killifish	*Belonesox belizanus*	non-native
Mayan cichlid	*Cichlasoma urophthalmus*	non-native

Common Name	Species Name	Plants (FLEPPC* Category) Others (Invasive Status)
blue tilapia	*Oreochromis aureus*	non-native
red lionfish	*Pterois volitans*	non-native
Birds		
black-hooded parakeet	*Aratinga nenday*	non-native
cattle egret	*Bubulcus ibis*	non-native
rock pigeon	*Columba livia*	non-native
budgerigar	*Melopsittacus undulatus*	non-native
monk parakeet	*Myiopsitta monachus*	non-native
Eurasian collared-dove	*Streptopelia decaocto*	non-native
European starling	*Sturnus vulgaris*	non-native

*B.4 / **Arthropod Control Plan***

Spatial data (e.g. shapefiles) for the boundaries of the aquatic preserve have been made accessible to the appropriate mosquito control district. The aquatic preserve is deemed highly productive and environmentally sensitive. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation. Mosquito control plans are typically proposed by local mosquito control agencies when they desire to treat on public lands.

B.5 / Archaeological and Historical Sites Associated with Pinellas County and Boca Ciega Bay aquatic preserves

The list below was derived from shapefiles obtained from the Florida Department of State, Division of Historical Resources on April 10, 2018, and includes sites within 164 feet (50 meters) of Pinellas County and Boca Ciega Bay aquatic preserves. In addition, there are more than 700 historic structures within 164 feet of the aquatic preserves.

Site ID	Site Name	Description	Location
HI06758	GANDY BRIDGE	Bridge, built 1925.	Within PCAP.
HI11663	SR 93 over Old Tampa Bay	Bridge, built circa 1959.	Within PCAP.
MA01793	Old Sunshine Skyway Bridge	Bridge, built 1954.	Within PCAP.
PI00001	WEEDEN ISLAND	Building remains; Campsite (prehistoric)	Within PCAP.
PI00002	SAFETY HARBOR	Prehistoric burial mound(s); Platform mound (prehistoric)	Within PCAP.
PI00004	JOHN'S PASS MOUND	Prehistoric burial mound(s)	Within PCAP and BCBAP.
PI00009	HOG ISLAND MOUND	Prehistoric burial mound(s)	Within PCAP.
PI00011	LONG KEY MOUND	Prehistoric burial mound(s)	Within PCAP.
PI00016	MULLET KEY	Prehistoric shell midden	Within PCAP and BCBAP.
PI00017	DUNEDIN MOUND	Platform mound (prehistoric)	Within 164 ft (50 m) of PCAP.
PI00022	BIG BAYOU	Destroyed prehistoric shell midden	Within PCAP.
PI00031	MAXIMO PARK	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI00032	BEAR CREEK 1	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI00033	BEAR CREEK 2	Destroyed prehistoric shell midden	Within PCAP and BCBAP.
PI00034	BEAR CREEK 3	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI00036	BOOTH POINT	Prehistoric shell midden	Within PCAP.
PI00038	ACROSS FROM MADEIRA	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.

Site ID	Site Name	Description	Location
PI00041	BAYSHORE HOMES	Prehistoric burial mound(s); Platform mound (prehistoric)	Within 164 ft (50 m) of PCAP.
PI00042	SPONGE HARBOR	Artifact scatter-low density (< 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI00043	BURNT MILL	Prehistoric mound(s)	Within 164 ft (50 m) of PCAP.
PI00044	MURPHY'S MOUNDS	Habitation (prehistoric)	Within PCAP.
PI00046	INDIAN ISLAND	Lithic scatter/quarry (prehistoric: no ceramics)	Within 164 ft (50 m) of PCAP.
PI00048	FORT DESOTO BATTERIES	Historic fort	Within PCAP and BCBAP.
PI00051	CABBAGE KEY MOUND	Destroyed prehistoric burial mound(s)	Within PCAP and BCBAP.
PI00053	DAN'S ISLAND	Prehistoric shell midden	Within PCAP.
PI00056	ROSS ISLAND	Prehistoric burial mound(s); Platform mound (prehistoric)	Within PCAP.
PI00057	CABBAGE PATCH POINT	Prehistoric midden(s)	Within PCAP.
PI00058	ABERCROMBIE PARK	Habitation (prehistoric)	Within PCAP and BCBAP.
PI00059	NN	Prehistoric mound(s)	Within 164 ft (50 m) of PCAP.
PI00060	NN	Prehistoric mound(s)	Within 164 ft (50 m) of PCAP.
PI00061	TENTH STREET (PINELLAS POINT MIDDEN)	Prehistoric shell midden	Within PCAP.
PI00064	BAY PINES	Prehistoric burial mound(s)	Within 164 ft (50 m) of PCAP.
PI00066	CRYSTAL BEACH	Campsite (prehistoric); Prehistoric shell midden	Within PCAP.
PI00067	COBB MOUND	Prehistoric mound(s)	Within 164 ft (50 m) of PCAP.
PI00069	SANDY POINT	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00075	OLDSMAR CITY PARK	Artifact scatter-low density (< 2 per sq meter)	Within PCAP.
PI00078	NN	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00082	MOCCASIN CREEK	Other	Within PCAP.
PI00085	NN	Lithic scatter/quarry (prehistoric: no ceramics)	Within 164 ft (50 m) of PCAP.
PI00086	LIONS CLUB RETREAT	Ceramic scatter	Within PCAP.
PI00087	NORTH LONS POINT	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00088	SOUTH DOLLY BAY SHORE	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00089	NORTHWEST DOLLY BAY SHORE	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00090	PASTURE FENCE POINT	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00091	PINEY POINT	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00096	BROOKER CREEK	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00097	NN	Prehistoric shell midden	Within PCAP.
PI00098	OLD FILL	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI00099	NEW FILL	Prehistoric shell midden	Within PCAP.
PI00109	BENNET	Prehistoric burial mound(s)	Within 164 ft (50 m) of PCAP.

Site ID	Site Name	Description	Location
PI00115	OAK BLUFFS	Specialized site for procurement of raw materials	Within 164 ft (50 m) of PCAP.
PI00121	FORT DESOTO PARK	Designed Historic Landscape	Within PCAP and BCBAP.
PI00122	GANDY BRIDGE	Bridge, built 1924.	Within PCAP.
PI00131	ODET PHILIPPI ESTATE	House	Within PCAP.
PI00134	SHERATON SHORES	Prehistoric mound(s)	Within PCAP and BCBAP.
PI00135	OLD SUNSHINE SKYWAY BRIDGE	Bridge, built 1954.	Within PCAP.
PI00136	SPANISH WELLS	Prehistoric burial mound(s)	Within 164 ft (50 m) of PCAP.
PI00164	FORT HARRISON	Historic fort	Within 164 ft (50 m) of PCAP.
PI00171	GARDEN ISLAND	Inundated land site	Within 164 ft (50 m) of PCAP.
PI00224	SHARK ISLAND	Prehistoric shell midden	Within PCAP.
PI00225	BLOSSOM WAY MIDDEN	Prehistoric shell midden	Within PCAP.
PI00226	MAXIMO PARK	Prehistoric shell midden	Within PCAP and BCBAP.
PI00228	COQUINA KEY	Prehistoric shell midden	Within PCAP.
PI00229	HART CREEK	Redeposited site (to this location)	Within PCAP and BCBAP.
PI00230	NN	Redeposited site (to this location)	Within PCAP and BCBAP.
PI00231	NN	Redeposited site (to this location)	Within PCAP and BCBAP.
PI00232	CATS POINT 1	Prehistoric shell midden	Within PCAP and BCBAP.
PI00233	CATS POINT 2	Redeposited site (to this location)	Within PCAP and BCBAP.
PI00234	BAY PINES VETERANS ADMIN HIST DISTRICT	Historical District	Within PCAP and BCBAP.
PI00730	MAXIMO HERNANDEZ HOMESTEAD		Within PCAP and BCBAP.
PI00746	ALBERT WHITTED MUNICIPAL AIRPORT	FMSF Building Complex	Within PCAP.
PI00747	OSPREY BREEDING	Artifact scatter-low density (< 2 per sq meter)	Within PCAP.
PI00840	TIERRA VERDE MIDDEN	Prehistoric midden(s)	Within PCAP and BCBAP.
PI00853	TARPON LAKE VILLAGE 8	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00855	BAYVIEW INDIAN MIDDEN	Habitation (prehistoric)	Within PCAP.
PI00856	SLOUTH	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI00862	KEPLER	Prehistoric shell midden	Within PCAP and BCBAP.
PI00864	POINT ALEXIS 1	Artifact scatter-low density (< 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI00865	POINT ALEXIS 3	Lithic scatter/quarry (prehistoric: no ceramics)	Within PCAP.
PI00866	POINT ALEXIS 4	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI00872	SOUTH COVE	Artifact scatter-low density (< 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI00881	TURTLECRAWL POINT	Prehistoric shell midden	Within PCAP and BCBAP.
PI00894B	NEW HAVEN 1	Artifact scatter-low density (< 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI00895	NEW HAVEN 2	Artifact scatter-low density (< 2 per sq meter)	Within PCAP.
PI00896	NEW HAVEN 3	Artifact scatter-low density (< 2 per sq meter)	Within PCAP.

Site ID	Site Name	Description	Location
PI00900	NEW HAVEN 7	Artifact scatter-low density (< 2 per sq meter)	Within PCAP.
PI01195	COLONEY POINT	Redeposited site (to this location)	Within PCAP.
PI01196	22ND STREET	Redeposited site (to this location)	Within PCAP.
PI01201	MAXIMO MOORINGS	Paleontological in addition to cultural evidence	Within PCAP and BCBAP.
PI01210	BAKER MIDDEN	Prehistoric shell midden	Within PCAP.
PI01211	LEWIS ISLAND	Prehistoric lithics only, but not quarry	Within PCAP.
PI01221	NN	Artifact scatter-low density (< 2 per sq meter)	Within PCAP and BCBAP.
PI01222	CLAM BAYOU	Redeposited site (to this location)	Within PCAP and BCBAP.
PI01233	RIVIERA BAY 2		Within 164 ft (50 m) of PCAP.
PI01236	SPOIL ISLAND	Redeposited site (to this location)	Within PCAP.
PI01238	BAY VISTA PARK	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI01240	JUNGLE SHORES	Prehistoric shell midden	Within PCAP and BCBAP.
PI01241	VILLA PARK ESTATES	Prehistoric shell midden	Within PCAP and BCBAP.
PI01243	RIVIERA BAY 3	Campsite (prehistoric)	Within PCAP.
PI01245	RIVIERA BAY 4	Land-terrestrial	Within PCAP.
PI01247	GOOGE ISLAND	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI01254	BOCA CIEGA BAY MIDDEN	Prehistoric shell midden	Within PCAP and BCBAP.
PI01257	MEYERS COVE MIDDEN	Habitation (prehistoric)	Within PCAP.
PI01261	HARBOR OAKS RESIDENTIAL DISTRICT	Historical District	Within 164 ft (50 m) of PCAP.
PI01264	CABBAGE KEY MIDDEN	Prehistoric shell midden	Within PCAP and BCBAP.
PI01265	MADELAINE KEY	Prehistoric shell midden	Within PCAP and BCBAP.
PI01681	SAIL HARBOR	Artifact scatter-low density (< 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI01683	WATERBERRY HILLS	Lithic scatter/quarry (prehistoric: no ceramics)	Within 164 ft (50 m) of PCAP.
PI01685	ST LUKES	Lithic scatter/quarry (prehistoric: no ceramics)	Within 164 ft (50 m) of PCAP.
PI01691	PINE KEY MIDDEN/MOUND(S)	Prehistoric burial(s)	Within PCAP and BCBAP.
PI01692	TIERRE VERDE MOUND	Prehistoric burial(s)	Within PCAP and BCBAP.
PI01696	PASS-A-GRILLE HISTORIC DISTRICT	Historical District	Within PCAP and BCBAP.
PI01712	TARPON SPRINGS HISTORIC DISTRICT	Historical District	Within PCAP.
PI01748	ANDERSON PARK SHELTER 3	Artifact scatter-dense (> 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI01754	WALL SPRINGS ISLAND	Specialized site for procurement of raw materials	Within 164 ft (50 m) of PCAP.
PI01757	HAMLIN		Within PCAP and BCBAP.
PI01758	MARIANI	Land-terrestrial	Within PCAP and BCBAP.
PI01888	GEORGE GANDY	Single artifact or isolated find	Within PCAP.
PI02250	TRENNER	Campsite (prehistoric)	Within PCAP.
PI02295	WAR VETERANS MEMORIAL PARK	Campsite (prehistoric)	Within PCAP and BCBAP.

Site ID	Site Name	Description	Location
PI02728	Bridge 154209	Bridge, built 1950.	Within PCAP.
PI02729	Bridge 154208	Bridge, built 1950.	Within PCAP.
PI03354	ES 2 (ENGINEERING SCIENCE 2)	Other	Within 164 ft (50 m) of PCAP.
PI05656	ANCLOTE CAUSEWAY	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI05657	MARK'S PRIVY	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI08025	OLD MEMORIAL CAUSEWAY BRIDGE PIER	Bridge, built 1926.	Within PCAP.
PI08026	STAMAS	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI08030	MORTON EMBREE	Land-terrestrial	Within PCAP.
PI08724	MOCASSIN BRANCH	Bridge, built 1926.	Within PCAP.
PI08728	BLIND PASS BRIDGE	Bridge, built 1927.	Within PCAP and BCBAP.
PI08732	FISH BASIN	Bridge, built 1923.	Within 164 ft (50 m) of PCAP.
PI08733	MINNOW CREEK	Bridge, built 1923.	Within 164 ft (50 m) of PCAP.
PI08737	TIERRA VISTA [MADONNA BOULEVARD]	Bridge, built 1957.	Within PCAP and BCBAP.
PI08738	TIERRA VISTA [13TH STREET]	Bridge, built 1957.	Within PCAP and BCBAP.
PI08742	MULLETT CREEK	Bridge, built 1927.	Within 164 ft (50 m) of PCAP.
PI08748	SNELL ISLE	Bridge, built 1928.	Within PCAP.
PI08751	ZUZKA	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI09614	SCHARRER HOMESTEAD	Building remains	Within PCAP.
PI09618	COOPER'S BAYOU - WEST (GV)		Within PCAP.
PI09620	LOVER'S OAK SHELL MOUND	Prehistoric midden(s)	Within 164 ft (50 m) of PCAP.
PI09630	GULFPORT I	Historic refuse / dump	Within 164 ft (50 m) of PCAP.
PI09631	SAIEVA	Building remains	Within 164 ft (50 m) of PCAP.
PI09633	MARY DISSTON	Historic shipwreck	Within PCAP and BCBAP.
PI09636	BAYVIEW GARDENS	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI09640	North Shore Historic District	Historical District	Within PCAP.
PI09647	SANTA BARBARA DRIVE	Linear Resource	Within 164 ft (50 m) of PCAP.
PI10296	DESERTERS HILL	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI10298	SPIDER BITE	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI10299	LEAPING MULLET	Campsite (prehistoric)	Within PCAP.
PI10566	LEONARDI	Campsite (prehistoric)	Within PCAP and BCBAP.
PI10574	TREASURE ISLAND CAUSEWAY	Bridge, built 1939.	Within PCAP and BCBAP.
PI10616	CLAM BAYOU MIDDEN #1	Specialized site for procurement of raw materials	Within PCAP and BCBAP.
PI10617	CLAM BAYOU MIDDEN #2	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI10619	BOCA BAY LITHIC SCATTER #2	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI10650	KUTTLER MOUND	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI11433	Belleair Beach Causeway	Historical District	Within PCAP.
PI11440	Danemann Point	Specialized site for procurement of raw materials	Within PCAP.
PI11441	Fish House Midden	Habitation (prehistoric)	Within 164 ft (50 m) of PCAP.
PI11454	Kennedy-Milazzo	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI11457	Lancaster	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI11471	NN	Linear Resource	Within 164 ft (50 m) of PCAP.
PI11472	NN	Land-terrestrial	Within 164 ft (50 m) of PCAP.

Site ID	Site Name	Description	Location
PI11473	NN	Building remains	Within 164 ft (50 m) of PCAP.
PI11475	NN	Artifact scatter-low density (< 2 per sq meter)	Within 164 ft (50 m) of PCAP.
PI11489	NN	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI11490	NN	Artifact scatter-low density (< 2 per sq meter)	Within PCAP.
PI11491	NN	Prehistoric shell mound(s)	Within PCAP.
PI11492	NN	Land-terrestrial; Tidal-estuarine	Within 164 ft (50 m) of PCAP.
PI11493	NN	Prehistoric shell midden	Within 164 ft (50 m) of PCAP.
PI11501	Linger Longer	Land-terrestrial	Within 164 ft (50 m) of PCAP.
PI11511	219 S Gulfview Boulevard	Historical District	Within PCAP.
PI11523	Smokey and the Bandits	Land-terrestrial	Within PCAP.
PI11536	Hutchinson Resource Group	FMSF Building Complex	Within PCAP.
PI11566	Lightning Welk	Campsite (prehistoric)	Within PCAP.
PI11569	Shoreline Midden Site	Prehistoric shell midden	Within PCAP.
PI11579	Dunedin Country Club Golf Course	Designed Historic Landscape	Within 164 ft (50 m) of PCAP.
PI11599	Keystone Road	Linear Resource	Within 164 ft (50 m) of PCAP.
PI11624	Shoreline Canoe	Log Boat - Historic or Prehistoric	Within PCAP.
PI11636	Cedar Point	Historic refuse / dump	Within PCAP.
PI11664	Sand Spit		Within PCAP.
PI11666	Clearwater Beach Island (Hog Island)		Within PCAP.
PI11907	Craig Park	Designed Historic Landscape	Within PCAP.
PI11917	Pinellas County Wall Springs Park ped.	Linear Resource	Within 164 ft (50 m) of PCAP.
PI11959	Coast Guard Air Station St. Petersburg	Historical District	Within 164 ft (50 m) of PCAP.
PI11967	Kreamer Bayou South	Habitation (prehistoric)	Within 164 ft (50 m) of PCAP.
PI11968	Frenchman's Creek	Campsite (prehistoric)	Within PCAP and BCBAP.
PI11974	USCG Sector St Petersburg South Moorings	Historical District	Within 164 ft (50 m) of PCAP.
PI11976	Beach Drive SE	Linear Resource	Within 164 ft (50 m) of PCAP.
PI11994	Structure E Pinellas Bayway	Bridge, built circa 1961.	Within PCAP and BCBAP.
PI12006	SR 93 over Old Tampa Bay	Bridge, built circa 1959.	Within PCAP.
PI12009	Ft. Desoto Youth Camp Midden	Prehistoric shell midden	Within PCAP and BCBAP.
PI12017	Beckett Bridge	Bridge, built 1924.	Within PCAP.
PI12056	150th Avenue Intracoastal Bridge	Bridge, built 1962.	Within PCAP and BCBAP.
PI12057	Corey Avenue Intracoastal Bridge	Bridge, built 1966.	Within PCAP and BCBAP.
PI12058	W. Bayshore Blvd./Curlew Creek Bridge	Bridge, built 1923.	Within PCAP.
PI12059	35th Avenue Intracoastal Bridge	Bridge, built 1962.	Within PCAP and BCBAP.
PI12060	Causeway Boulevard Intracoastal Bridge	Bridge, built circa 1963.	Within PCAP.
PI12061	Walsingham Road Intracoastal Bridge	Bridge, built 1958.	Within PCAP.
PI12067	45th Avenue South / Little Bayou Bridge	Bridge, built 1961.	Within PCAP.
PI12075	Old Safety Harbor Bay Bridge (SR 580)	Bridge, built 1923.	Within PCAP.
PI12096	128 Pinellas Bayway	FMSF Building Complex	Within PCAP and BCBAP.
PI12102	St. Petersburg Municipal Pier Hist Dist	Historical District	Within PCAP.

Site ID	Site Name	Description	Location
PI12163	Bayview Gardens Retirement Community	Historical District	Within PCAP.
PI12166	Tarpon Springs Greektown TCP	Historical District	Within PCAP.
PI12168	Foul Roost Shipwreck	Historic shipwreck	Within PCAP and BCBAP.
PI12705	FDOT Bridge # 154371	Bridge, built 1962+.	Within PCAP.
PI12806	Gulf Shore Park	Designed Historic Landscape	Within PCAP.
PI12831	Bayou Creek	Campsite (prehistoric)	Within 164 ft (50 m) of PCAP.
PI12832	Waterfront Park	Historic refuse / dump	Within 164 ft (50 m) of PCAP.
PI12987	Dunedin Causeway	Linear Resource	Within PCAP.

Appendix C

Public Involvement

*C.1 / **Advisory Committee***

The following appendices contain information about the advisory committee meeting which was held in order to obtain input from the Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan Advisory Committee regarding the draft management plan.

*C.1.1 / **List of members and their affiliations***

Name	Affiliation
Charlie Justice	Pinellas County Commission
Ed Sherwood	Tampa Bay Estuary Program
Steve Harper	Pinellas County Department of Parks & Conservation Resources
Will VanGelder	Southwest Florida Water Management District
Dan Larremore	DEP Florida Park Service
Ann Paul	Audubon Florida
Terry Fortner	Local landowner
Tess Ippolito	University of South Florida
Lisa Harper	Hillsborough Soil & Water Conservation District

BOARD OF TRUSTEES OF INTERNAL IMPROVEMENT TRUST FUND

The Florida Department of Environmental Protection, Florida Coastal Office announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, September 19, 2018, 9:00 a.m.

PLACE: Tampa Bay Regional Planning Council, 4000 Gateway Centre Blvd., #100, Pinellas Park, FL 33782

GENERAL SUBJECT MATTER TO BE CONSIDERED: The Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan will meet to discuss possible revisions to the draft Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan and comments received at the public meeting scheduled for September 18, 2018 and separately noticed. The draft plan is available for download at http://publicfiles.dep.state.fl.us/CAMA/plans/aquatic/Pinellas-County-Boca-Ciega-Bay-AP-Management-Plan.pdf.

A copy of the agenda may be obtained by contacting: Aquatic Preserve Manager, Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov or (239)530-1011.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov or (239)530-1011. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov.

EXECUTIVE OFFICE OF THE GOVERNOR

The Financial Emergency Board announces a public meeting to which all persons are invited.

DATE AND TIME: August 27, 2018, 2:30 p.m.

PLACE: City Commission Chambers, 215 N Perviz Avenue, Opa-locka, FL

GENERAL SUBJECT MATTER TO BE CONSIDERED: A meeting of the Financial Emergency Board for the City of Opa-locka to discuss the current state of the City's financial affairs and to consider action items related to the ongoing work of the Board.

A copy of the agenda may be obtained by contacting: Blair Mathers at (850)717-9264 or blair.mathers@eog.myflorida.com.

DEPARTMENT OF HEALTH

Division of Children's Medical Services

The Circuit 8 Child Abuse Death Review Committee announces a public meeting to which all persons are invited.

DATE AND TIME: Thursday, August 30, 2018, 9:00 a.m. – 11:00 a.m., ET

PLACE: Gainesville CPT, 1699 SW 16th Avenue, 3rd Floor Conference Room, Gainesville, FL 32608

GENERAL SUBJECT MATTER TO BE CONSIDERED: The Committee will address administrative issues, review cases, and discuss the CADR Action Plan. A portion of the meeting is required by paragraph 383.412(3)(a), F.S. to be closed to the public to allow the Committee to discuss information that is confidential and exempt from public meetings and public records. This portion of the meeting will be announced at the meeting.

A copy of the agenda may be obtained by contacting: Stephanie Cox, Email: Stephanie.cox@flhealth.gov.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 10 days before the workshop/meeting by contacting: Stephanie Cox, Email: Stephanie.cox@flhealth.gov. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

DEPARTMENT OF HEALTH

Division of Children's Medical Services

The Circuit 10 Child Abuse Death Review Committee announces a public meeting to which all persons are invited.

DATES AND TIMES: August 20, 2018, 1:00 p.m. – 3:30 p.m., Closed Meeting; 3:30 p.m. – 4:00 p.m. Open to the Public

PLACE: Polk County Medical Examiner's Office, 1891 Jim Keene Blvd., Winter Haven, FL

GENERAL SUBJECT MATTER TO BE CONSIDERED: The Committee will address administrative issues, review cases, and discuss the CADR Action Plan. A portion of the meeting is required by paragraph 383.412(3)(a), F.S. to be closed to the public to allow the Committee to discuss information that is confidential and exempt from public meetings and public records. This portion of the meeting will be announced at the meeting.

A copy of the agenda may be obtained by contacting: David Acevedo, email: David.Acevedo@flhealth.gov or DeeDree Zerfas, email: DeeDree.Zerfas@flhealth.gov.

Pursuant to the provisions of the Americans with Disabilities

FLORIDA DEPARTMENT OF
Environmental Protection

Tampa Bay Aquatic Preserves
130 Terra Ceia Road, P.O. Box 309
Terra Ceia, FL 34250

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

Pinellas County and Boca Ciega Bay Aquatic Preserves
Draft Management Plan
Advisory Committee Meeting Summary

Wednesday, Sept. 18, 2018, 9:00 a.m.

Tampa Bay Regional Planning Council
4000 Gateway Centre Blvd., #100
Pinellas Park, FL 33782

Advisory Attendees: Charlie Justice, Dan Larremore, Will VanGelder, Tess Ippolitto, Steve Harper, Ed Sherwood, Ann Paul

Staff: Randy Runnels, Sara Brehm, Liz Longstreet, Heather Stafford, Earl Pearson, Pamela Grainger

Earl welcomed everyone and introductions were done around the room. A brief recap from the public meeting was given and comments from each station were read.

The floor was open for discussion regarding the identified issue and any other issues. Where applicable, the discussions have been summarized and categorized below under the four issues (protection of submerged resources, island management, shoreline protection, and marine debris). When discussion overlapped categories, it was placed where it seemed to fit best.

Issue 1: Protection of Submerged Resources

Randy Runnels – How do we educate people who are renting boats and other watercraft? There is a small window of opportunity there.

Public comment - Need to work with organizations to install more living shorelines.

Randy Runnels – Some places where the oyster reefs are installed isn't where they would naturally be found.

Steve Harper – Goal 3 Objective 2 – Do you do review and coordination for some permitted activities?

Randy Runnels – if it's in a park, we send the application to them. We don't process permit applications. We give input to the permitting process.

Will VanGelder – Some of the objectives are taxing on the program with few staff.

Randy Runnels – We try to fit several activities into the region we are working in at any specific time to maximize our efforts.

Will VanGelder – It's great to have the measurements of success.

Randy Runnels – It's a good idea to have contingencies like if there's a hurricane that impacts our regular work.

Ed Sherwood – Why can't you include a goal for administrative activities?

Dan Larremore – Can we make a suggestion about FTEs to adequately address the management plan concerns?

All voted Yes

Dan Larremore – It's written in the plan to make two positions FTE.

Earl Pearson – There's a budget table for things that Randy would like to do, but they're not all funded.

Steve Harper – There should be better descriptions on erosion and accretion in the preserves. This needs more attention. Or more general statements about it.

Randy Runnels – Some of this depends on ownership.

Ann Paul – There needs to be increased enforcement of county designated slow speed zones. Maybe a cooperative effort with FWC and the county. There's an increase of prop scarring.

Steve Harper – Part of outreach is who to contact. Responsible boaters will reach out if they know who to call.

Randy Runnels – We can suggest that the office in Tallahassee print out information to pass out.

Ann Paul – Over the winter a lot of signs were down. The county is working on putting the signs back up.

Dan Larremore – We tried to have slow speed zones on the backside of Anclote Key. There was a lot of opposition, so it was taken out.

Ann Paul – Are there other shallow water areas that could use more signage?

Randy Runnels – We can look at marinas that are expanding and ask them to better mark shoals as public interest, but typically it doesn't make it through the regulatory process.

Dan Larremore – We can make formal recommendations.

Ann Paul – When we look at aerials, we know they're shallow. We need the boaters on the team. We need more signage for those that don't have local knowledge.

Randy Runnels – Do we suggest a 10-minute video for education before people can rent boats or a placard on the boat console?

Ann Paul – Maybe the state and county can work on this together.

Ed Sherwood – There should be an annual workshop for law enforcement on hotspot areas or a database with public access.

Randy Runnels – That's been in the works.

Steve Harper – Even if you do an interactive feature, that's educational.

Ann Paul – The boater's guide maps were produced by FWRI. They include 3 and 6 foot contour lines. Not sure how else to reach the public besides signs and more education.

Ed Sherwood – We've tried to have digital maps on rental boats with sensitive areas but it's been hard to integrate.

Randy Runnels – It's been a goal to look at boater's training to include environmental components.

Ann Paul – Along the Gandy Causeway, having all the cars pull up to the water and the oil and gas dripping is not good.

Randy Runnels – Might have to work with DOT since it's their right-of-way.

Ann Paul – People could park by the street and carry their supplies to the water. There are also problems with the Skyway and the horses on both sides. We should also put a $ value on how much it would cost for a boat that ran aground to be towed.

Randy Runnels – That might make people try to power off the shoal even more.

Dan Larremore – There was a comment about giving a $ value for prop scars.

Issue 2: Island Management

Randy Runnels – There was good discussion about more public awareness for our program. The model of our program doesn't toot our own horn. Everything that I'm invited to speak at, I take the opportunity. We do what we can without hindering our program. Someone suggested that we post on Facebook 1-2 times per day and that's just not realistic.

Charlie Justice – You should speak to someone who understands how the posts work. You don't reach all 1000 of your followers with each post. Posting a picture reaches x percent of followers and a video reaches y percent of the followers.

Tess Ippolito – Facebook has algorithms. You really need to pay into it to get the views. You might need to also share on Twitter. Focus on finding key educators in the Tampa Bay area to share the posts.

Randy Runnels – It's nice to be able to share with groups from Ohio that assist us so we can reach more people than just this area.

Public comment (prior meeting) – What about planting in low elevation areas?

Randy Runnels – We haven't had a need to do that. Nature has been efficient in filling that zone with natives once the exotics are gone.

(Prior meeting comment from Terry Fortner on using a coastal geologist for new island mapping)

Randy Runnels – USF is using a drone to get elevations. We can't do that during nesting season. We might look into that. It would be more accurate than the laser level and GPS.

Ed Sherwood – Do the shifting barrier islands pose issues with boundaries of the preserve?

Randy Runnels – It depends where they form.

Ann Paul – Are you doing studies on the spoil islands, the erosion?

Randy Runnels – There is a concern especially with the rookery islands. With current environmental regulations, new spoil islands won't be created. We need to protect what we have.

Tess Ippolito – We need more information on what not to do on the islands.

Randy Runnels – Putting trash cans on islands attracts trash. We put signs on islands for "pack in – pack out" and most were stolen.

Ann Paul – That's included in the Boaters' Guide.

Randy Runnels – We could share the guide on our Facebook page.

Ann Paul – Having these available online is helpful.

Randy Runnels – Have you thought about an app? There could be information on rookery islands and approaching sensitive areas. You could partner with a university.

Dan Larremore – Avenza is an app used by firefighters. You scan a QR code and input information.

Ann Paul – Goal 4 – It's great to be able to post rookery islands but what you're talking about here is improving the signage and hopefully creating a buffer.

Randy Runnels – We want to have something that creates a buffer. We hope to post seasonal buoys for informational purposes.

Ann Paul – Suggested a new goal – Consider management of erosion for important islands. Boat wake, sea level rise, etc. causes irreplaceable loss of sediment on these important islands. We may not be able to protect them 100 years from now, but we can for the next 50-60 years.

Randy Runnels – Who knows what the coastlines will look like 100 years from now.

Ann Paul – The bird islands don't change year to year. They're the same for decades. We need to protect these important islands.

Ed Sherwood – I think issue 3 is flexible enough to include this (the new goal).

Issue 3: Shoreline Alterations

Ed Sherwood – FWC has a resource that gives homeowners information on what to do for their shoreline properties based on energy levels in that location.

Randy Runnels – Living shorelines are not enough because that's too broad. We need more specific information to lead homeowners in the right direction and increase our resources to help people make the right decisions.

Ed Sherwood – It's easier to get a permit for a seawall than a living shoreline and that's problematic because homeowners will go with what's easier, even if educated about the impacts of seawalls and the alternatives.

Ann Paul – Can we coordinate with the rest of DEP to help restore areas affected by shoreline alterations?

Randy Runnels – Habitat restoration in Tampa Bay is big, but can be harmful. The projects need to be reviewed or given more guidance so they don't have a bad outcome.

Ed Sherwood – Shoreline alterations could lead to tiered management to not only include a seawall, but also reefballs and oyster reefs.

Randy Runnels – The Florida Coastal Office does not have authority over permits or projects, we can only "suggest". The regulatory people are DEP district staff, SWFWMD, Tampa Port Authority, etc. Too many entities to list out.

Ed Sherwood – There should be a performance measure for how many consultations are made.

Ann Paul – Loss of oyster reefs over time has an impact on water clarity so when people put in applications for new docks that affect seagrass, encourage them to provide habitat for oysters instead.

Sara Brehm – There are docks designed to help seagrass grow with gaps for lighting.

Randy Runnels – Outreach events aren't enough to reach communities about effects of what they are doing (docks, fertilizers, etc.). An app for storm drains is a good example of how to reach the general public. We need more community engagement that is revisited frequently.

Will VanGelder – Suggested baffle boxes. SWFWMD could cost share for them and the county will work with people to install more boxes and other alternatives to storm drains because it decreases overall impact even though more expensive.

Randy Runnels – Money from public interest goes towards good things but maybe we can direct some of that money to new projects like the storm water drains and Lake Tarpon.

Ann Paul - A lot of these plaques are missing in areas that have a high turnover of residents. We need to educate the new people.

Issue 4: Marine Debris

Randy Runnels – The reusable grocery bags work well at outreach events. We can't approach grocery stores to stop using plastic bags. They have to approach us.

Dan Larremore – (In reference to public comment on fiberglass boats) Meetings like this allow people to voice their opinions with people that can make a difference. The comments don't always pertain to the management plan specifically.

Dan Larremore – Do you have a strategy to visit all the access sites in a certain time frame?

Randy Runnels – It's a goal in the plan so we will have to create a strategy. A lot of this is making managing entities aware of ways to improve their property.

Heather Stafford – One of the performance measures is to contact the management entity and inform them that the trash isn't covered.

Steve Harper - *Commended Randy on being a great resource for the Aquatic Preserves*

Ed Sherwood – You should create a map with information about marine debris for more specifics on trash collected.

Earl Pearson – There was also a comment on what the most common trash is that is picked up and making that information available to the public.

Randy Runnels – There are some islands that accumulate more trash than others.

Ed Sherwood – Pointing out the debris hotspots that need cleanups would be helpful.

Ann Paul – Miguel Bay nesting island is a poster child for bad impacts to birds.

Will VanGelder – Could post on trash cans the number of birds saved from using the trash can.

Ann Paul – We are trying to encourage people to not feed pelicans because the bony fish carcasses can kill them.

Randy Runnels – Maybe garden clubs could use the fish waste from fish cleaning stations for fertilizers.

Ed Sherwood – Could you get funds through the Aquatic Preserve Society to remove more derelict vessels?

Randy Runnels – We can do 1-foot contour mapping to direct barges in for the vessel removal. It's best to plan before a disaster hits. Have protocols in place.

Ed Sherwood – Have some language in the plan if a State of Emergency is declared, some of that funding could be used for vessel removal.

Water Quality and Other Issues

Ann Paul – Is living on a boat allowed in aquatic preserves?

Heather Stafford – There isn't a time limit. They're allowed. We need an effort from law enforcement to check the boats for waste disposal. If there is damage to resources, DEP compliance can take action.

Randy Runnels – There has been a better effort to add free pumpouts. New unofficial mooring fields are popping up because people can't get insurance to stay in marinas.

Ed Sherwood – Can we add something about red tide and how that's assessed at the state level?

Randy Runnels – We don't do our own water quality monitoring. I'm not sure our small program can do a better job with mapping of the red tide. Just letting people know their best management practices can help.

Ann Paul – We should let people know the best management practices on picking up pet waste.

Heather Stafford – Could be added as an impact to the aquatic preserves.

Randy Runnels – We'd like to reopen datasondes in another preserve.

Ed Sherwood – USGS might be interested in cofounding these projects.

Randy Runnels – We need to make sure we're not in too many directions. We're trying to get back to strategic planning where we can do the best we can with the limited resources we have.

Ann Paul – I agree, you need more staffing.

Committee recommendation to increase staffing and retain existing staff

Charlie Justice – Many people don't get out on the water and don't understand what is being protected.

Terry Fortner – How do we reach lawn companies or boaters?

Randy Runnels – How do we educate people that for example catch a fish understand that the mangroves we protect allowed that fish to be caught?

Will VanGelder – Encouraged outreach at events.

Randy Runnels – We try not to overwhelm people at events with materials but to give them engaging things that get their attention.

Ann Paul – The Hunter property. (Gave background on property). Audubon has suggested that part of the property be set aside for conservation, but no response.

Randy Runnels – Should do a title search on the property.

Heather Stafford – When did the accretion start?

Terry Fortner – 1985 forward.

This concluded the discussion on the management plan. Then Earl explained the next steps in the management plan process: revisions will be made to the plan before it goes to the Acquisition and Restoration Council for a public meeting in Tallahassee. The plan will go to the Governor and Cabinet for final approval. Comments can still be submitted on or before Oct. 2. The advisory committee members were thanked for their time and input.

The meeting was adjourned.

C.2 / *Formal Public Meeting*

The following appendices contain information about the Formal Public Meeting(s) which was held in order to obtain input from the public about the Pinellas County and Boca Ciega Bay Aquatic Preserves Draft Management Plan.

C.2.1 / *Florida Administrative Register Posting*

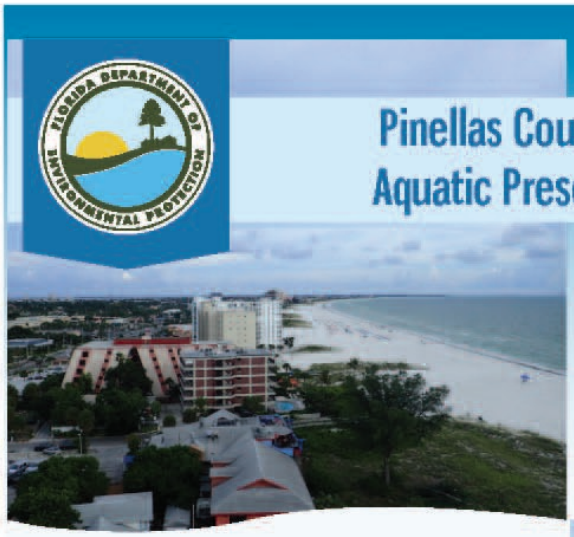
DEPARTMENT OF HEALTH
Board of Psychology
RULE NO.: RULE TITLE:
64B19-11.005 Supervised Experience Requirements
NOTICE IS HEREBY GIVEN that on June 25, 2018, the Board of Psychology, received a petition for variance or waiver filed by Richard M. Scott, from paragraph 64B19-11.005(1)(b), F.A.C., regarding the supervised experience to meet that part of the supervised requirement for licensure which is not part of the person's internship. Comments on this petition should be filed with the Board of Psychology, 4052 Bald Cypress Way, Bin #C05, Tallahassee, Florida 32399-3055, within 14 days of publication of this notice.
A copy of the Petition for Variance or Waiver may be obtained by contacting: Allen Hall, Executive Director, Board of Psychology, at the above address, or telephone: (850)245-4373 or by electronic mail – Allen.Hall@flhealth.gov.

Section VI
Notice of Meetings, Workshops and Public Hearings

DEPARTMENT OF EDUCATION
The Florida Rehabilitation Council announces a telephone conference call to which all persons are invited.
DATE AND TIME: August 23, 2018, 10:00 a.m. – 11:00 a.m., ET (or until complete)
PLACE: Conference Call Number: 1(888)670-3525 and Code: 7513637441
GENERAL SUBJECT MATTER TO BE CONSIDERED: Discussion of Developing a VR Participant Contact/Information Card or Reminder.
A copy of the agenda may be obtained by contacting: Roy Cosgrove at roy.cosgrove@vr.fldoe.org or (850)245-3317.
Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 3 days before the workshop/meeting by contacting: Roy Cosgrove at roy.cosgrove@vr.fldoe.org or (850)245-3317. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).
For more information, you may contact: Roy Cosgrove at roy.cosgrove@vr.fldoe.org or (850)245-3317.

DEPARTMENT OF EDUCATION
State Board of Education
The State Advisory Committee for the Education of Exceptional Students' Nominating Committee announces a telephone conference call to which all persons are invited.
DATE AND TIME: September 5, 2018, 10:00 a.m.
PLACE: 1(888)670-3525, passcode: 7909766562
GENERAL SUBJECT MATTER TO BE CONSIDERED: Nomination of one Co-chair and the Vice-Chair of the committee.
A copy of the agenda may be obtained by contacting: State Advisory Committee, Bureau of Exceptional Education and Student Services, Florida Department of Education, 325 West Gaines Street, Suite 614, Tallahassee, Florida 32399-0400.
Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 14 days before the workshop/meeting by contacting: April Katine, Bureau of Exceptional Education and Student Services, at (850)245-0475. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

BOARD OF TRUSTEES OF INTERNAL IMPROVEMENT TRUST FUND
The Florida Department of Environmental Protection, Florida Coastal Office announces a public meeting to which all persons are invited.
DATE AND TIME: Tuesday, September 18, 2018, 6:00 p.m.
PLACE: Tampa Bay Regional Planning Council, 4000 Gateway Centre Blvd., #100, Pinellas Park, FL 33782
GENERAL SUBJECT MATTER TO BE CONSIDERED: A draft Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan has been prepared by the Florida Coastal Office. The draft plan is available for viewing or download at http://publicfiles.dep.state.fl.us/CAMA/plans/aquatic/Pinellas-County-Boca-Ciega-Bay-AP-Management-Plan.pdf. The Florida Coastal Office seeks public comment on the draft. Members of the Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan Advisory Committee have also been invited to attend and listen to comments.
A copy of the agenda may be obtained by contacting: Aquatic Preserve Manager, Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov or (239)530-1011.
Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov or (239)530-1011. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).
For more information, you may contact: Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov.



Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan

Public Meeting

Tuesday, September 18, 2018
6:00 pm - 7:30 pm

Tampa Bay Regional Planning Council
4000 Gateway Centre Blvd., #100
Pinellas Park, FL 33782

The Department of Environmental Protection's Florida Coastal Office coordinates the protection of the state's natural, cultural and economic coastal resources. DEP manages more than 4 million acres of submerged lands and coastal uplands. With support from NOAA, the Florida Coastal Office manages the Florida Coastal Management Program, 41 aquatic preserves, three National Estuarine Research Reserves, the Florida Coral Reef Conservation Program and the Florida Resilient Coastlines Program

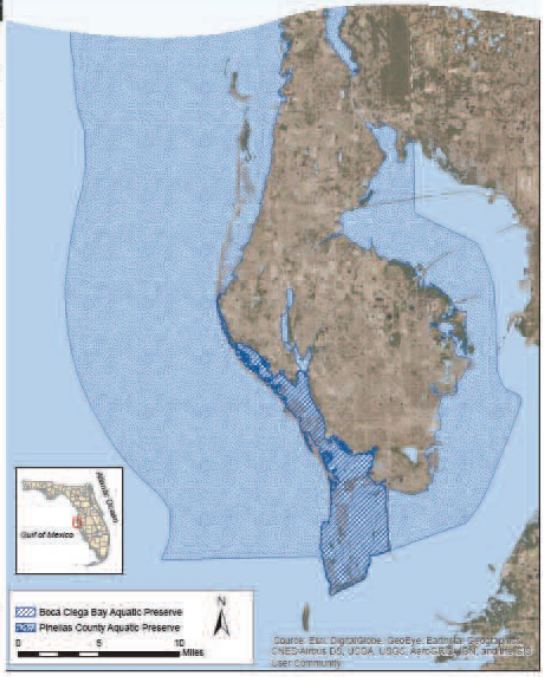
Meeting Objectives:

1. Review purpose and process for revising the Pinellas County and Boca Ciega Bay Aquatic Preserves management plan.
2. Present current draft plan with a focus on issues, goals, objectives and strategies.
3. Receive input on the draft management plan.

The information from the meeting will be compiled and used by FCO in the revision of the draft management plan.

Please contact Dr. Randy Runnels, (239)530-1011,

Randy.Runnels@FloridaDEP.gov or visit our website at https://floridadep.gov/fco/aquatic-preserve/locations/pinellas-county-aquatic-preserves for more information or to request a written copy of the plan. Written comments are welcome and can be submitted by mail or email FloridaCoasts@FloridaDEP.gov on or before October 2, 2018.



To view the draft plan, please visit: http://publicfiles.dep.state.fl.us/CAMA/

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting Dr. Randy Runnels at (239)530-1011 or Randy.Runnels@FloridaDEP.gov. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, (800) 955-8771 (TDD) or (800) 955-8770 (Voice).

This publication funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration (NOAA) Award No. NA17NOS4190059 NA08M. The views, statements, finding, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA, or any of its subagencies. August 2018.

LEGAL **LEGAL**

Notice of Meeting/Workshop Hearing

DEPARTMENT OF ENVIRONMENTAL PROTECTION
The Florida Department of Environmental Protection, Florida Coastal Office announces two public meetings to which all persons are invited.
DATE AND TIME: Tuesday, September 18, 2018, 6:00 p.m.
PLACE: Tampa Bay Regional Planning Council, 4000 Gateway Centre Blvd. #100, Pinellas Park, FL 33782
GENERAL SUBJECT MATTER TO BE CONSIDERED: A draft Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan has been prepared by the Florida Coastal Office. The draft plan is available for viewing or download at http://publicfiles.dep.state.fl.us/CAMA/plans/aquatic/Pinellas-County-Boca-Ciega-Bay-AP-Management-Plan.pdf. The Florida Coastal Office seeks public comment on the draft. Members of the Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan Advisory Committee have also been invited to attend and listen to comments.

DATE AND TIME: Wednesday, September 19, 2018, 9:00 a.m.
PLACE: Tampa Bay Regional Planning Council, 4000 Gateway Centre Blvd. #100, Pinellas Park, FL 33782
GENERAL SUBJECT MATTER TO BE CONSIDERED: The Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan Advisory Committee will meet to discuss possible revisions to the draft Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan and comments received at the public meeting scheduled for September 18, 2018 and noticed above.

A copy of the agenda may be obtained by contacting: Aquatic Preserve Manager, Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov or (239)530-1011.
Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in these meetings is asked to advise the agency at least 48 hours before the meeting by contacting: Dr. Randy Runnels at Randy.Runnels@FloridaDEP.gov or (239)530-1011. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).
(682236) 9/8/2018

FLORIDA DEPARTMENT OF
Environmental Protection

Tampa Bay Aquatic Preserves
130 Terra Ceia Road, P.O. Box 309
Terra Ceia, FL 34250

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

Pinellas County and Boca Ciega Bay Aquatic Preserves Draft Management Plan
Public Meeting Summary
Tuesday, Sept. 18, 2018, 6:00 p.m.
Tampa Bay Regional Planning Council
4000 Gateway Centre Blvd., #100
Pinellas Park, FL 33782

Attendees: Sandra Chiapetta, Rebecca O'Sullivan, Dan Larremore, Mark Sramek, Judy Geiger, Will VanGelder, Heather Young, Tess Ippolito, Terry Fortner

Staff: Randy Runnels, Sara Brehm, Liz Longstreet, Heather Stafford, Kevin Claridge, Karen Thurston-Chavez, Earl Pearson, Pamela Grainger

Earl welcomed everyone, gave a brief introduction about the purpose of the meeting, and introduced staff from the aquatic preserve and Tallahassee.

Randy gave a PowerPoint presentation about the Pinellas County and Boca Ciega Bay aquatic preserves, the management plan structure, and issues identified in the plan.

After the presentation, Earl explained the commenting process. The room was set up so that there were four stations – one for each of the four issues identified in the management plan. The attendees were split into two groups, and staff were stationed with each of the groups to provide background on the issues and record comments from the public.

Issue 1: Protection of Submerged Resources

- Goal 1
  - Objective 1.1 – Increase "**public**" awareness of the "**importance of**" seagrass …
  - 1.1.1 - … boatramps "**and marinas**"
  - Obj. 1.1 Performance Measure – clarify "six access points **with high vessel traffic**"
  - Obj 1.2, Strategy 1.2.1 – … areas, "**and evaluate for potential regulatory changes**"
  - 1.2.3 – Describe BMP's.
  - Add seagrass protection info in Boater Education course materials.
  - Increase enforcement of current rules (FWC needs maps).
  - Increase coordination within all Law Enforcement

    - Performance Measure – define the six access points
    - Even though seagrass is expanding, still have prop scarring. Add it into the mixed message so it's not lost.
    - Outreach message: tie it to money – i.e. a 15' prop scar costs how much to restore, and the loss of how much fisheries value?
    - Use Facebook.
    - Outreach: add link to other websites e.g. WMD (for reciprocal links).
    - Add turbidity.
    - Boaters need to have maps on board.
    - Use magnets or stickers for boaters (especially rentals) to educate the public on submerged resources.
    - Need to have an application for boaters with sensitive areas mapped on it.
- Goal 2 – Good idea to have Public Interest projects ready to go.
- Goal 3
    - 3.1.1 – Should include areas like propscar areas and restoration sites.
    - P.M. #2 – Delete "local". Include all academic partners.
- Goal 4
    - Looks good.
    - The public voice isn't heard in regulatory permitting.
    - Not preserving. Developing, bad water quality.
    - Concern with old water treatment plants.
- Goal 5
    - 5.1.1 – Add FPAN as a partner (expanding into Tampa Bay area).

Issue 2 – Island Management

- Increase media awareness
- Attend stakeholder meetings
- Chamber of Commerce meetings.
- City council meetings.
- Boater education on islands.
- Flyers given to boat dealerships/vendors.
- Utilize fisheries grants for cleanups.
- Clearly define metrics.
- Create a public viewer of island restoration progress (geodatabase).
- Concern of sale of submerged lands (Sandra Chipetta)
- Strategy 1.1.2 and 1.1.3 – "**trained**" contractors that know what they're doing.
- Strategy 1.2.1 – Supplement with native plantings in lower elevation areas after invasives have been cleared.
- Goal 5 – Contact Tonya Clayton, a geology expert to help monitor the new island (phone number redacted).
- Objective 2.1 and 2.2 – Include preventative measures in objective.

Issue 3 – Shoreline Alterations

- Objective 1.1 – Put outreach info in newspapers and community fliers.
    - Outreach to a developer convention.
- Homeowner engagement on living shorelines.
- Objective 1.2 – ID who regulatory people are in the plan.
- Objective 2.1 – Facilitate "**natural**" shoreline …
- Create a sample plan-graphic of shoreline options/suggestions (Objective 2)

Issue 4: Marine Debris

- Including reporting on which public access points have or do not have covered and regularly emptied trash receptacles would be a good performance measure.
- Trash needs
    - Extra trash cans are needed during holidays and busy weekends.
    - Contact local managers prior to those events.
    - Larger/more popular parks are probably already well-equipped to handle it. Focus on others.
- Add Strategy in 2.1 for specific marinas and targeted events.
- During inspections, check for bins being used or where they're needed.
- Use social media to raise awareness of marine debris.
- Encourage local communities to mark storm drains.
    - Homeowners could stencil and paint. Provide the stencils.
- How to let people be aware.
    - Use marinas and kiosks to increase public awareness
    - Map and publicize hot spots.
- Performance Measure #1
- Encouraging businesses to pick up prior to mowing.
- Clean up the site to prevent debris from washing in drains / storm drains.
- Focus on high-traffic areas, e.g. hospitals.
- Reach out to local groups for clean-ups, such as Boy Scout troops.
- Get rid of plastic bags.
    - Support local ordinances to ban plastic bags.
- Implement an adopt-an-island to increase stewardship.
- Ban Mylar balloons and/or the mass release of balloons.
- Educate through social media. Name the brand of the debris to tie into bag reference.
- Expand marine debris to include nutrient loads / fertilizers.
- Investigate state and local fertilizer ordinances.
- The disposal of fiberglass boats, especially once they become damaged, is a problem.
- "Keep America Beautiful" as a trash index. Mimic this on islands with "Keep this Island Beautiful" and listing the major types of trash found on islands.
- Messaging:
    - Don't take it to the island, take it to the landfill.
    - Don't live in a trash can.

Additional Written Comments

- Reduce new damage to seagrass beds by not permitting large marinas or marina expansion in new areas of the bay – limit new additional boat traffic to already well traveled areas that have existing marinas and boat ramps.
- Boca Ciega Bay would benefit from remediation projects such as oyster domes, living shorelines, oyster banks, oyster ropes. Tampa Bay Watch has an excellent program that includes all these projects to improve water quality and reduce nutrient loads. Contact Eric Plage.

After the comments were received, Earl explained the next steps in the management plan process: an advisory committee meeting, Acquisition and Restoration Council meeting (also a public meeting) in Tallahassee, and a Governor and Cabinet meeting. The public was reminded the comments could still be submitted on or before Oct. 2, 2018. They were thanked for attending.

The meeting was adjourned.

FLORIDA'S AQUATIC PRESERVES
WATERS THAT WORK. PLAY. AND LIVE

Pinellas County and Boca Ciega Bay Aquatic Preserves

Draft Management Plan Public Meeting

Comment/Question Card

Name: SANDRA CHIAPPETTA

Are you representing an organization or constituency? Yes _____ No ✓

If yes, who are you representing? _____

Comments: REDUCE NEW DAMAGE TO SEAGRASS BEDS BY NOT PERMITTING LARGE MARINES OR MARINA (Continue on back)

Thank you for attending the public meeting for the draft Pinellas County and Boca Ciega Bay Aquatic Preserves management plan. Your participation and comments are a valuable part of the management plan development. We welcome additional comments on or before **October 2, 2018**. They can be submitted by e-mail (FloridaCoasts@floridadep.gov) or standard mail (Earl Pearson, 3900 Commonwealth Blvd., MS 235, Tallahassee, FL 32399-3000). The current draft Pinellas County and Boca Ciega Bay Aquatic Preserves management plan and subsequent drafts can be found at www.aquaticpreserves.org. For more information, please contact Dr. Randy Runnels, the Aquatic Preserve Manager, at 239-530-1011or Randy.Runnels@FloridaDEP.gov

EXPANSIONS IN NEW AREAS OF THE BAY - LIMIT NEW ADDITIONAL BOAT TRAFFIC TO ALREADY WELL TRAVELED AREAS THAT HAVE EXISTING MARINAS + BOAT RAMPS.

FLORIDA'S AQUATIC PRESERVES
WATERS THAT WORK. PLAY. AND LIVE

Pinellas County and Boca Ciega Bay Aquatic Preserves

Draft Management Plan Public Meeting

Comment/Question Card

Name: SANDRA CHIAPPETTA

Are you representing an organization or constituency? Yes _____ No ✓

If yes, who are you representing? _____

Comments: BOCA CIEGA BAY WOULD BENEFIT FROM REMEDIATION PROJECTS SUCH AS OYSTER DOMES, LIVING (Continue on back)

Thank you for attending the public meeting for the draft Pinellas County and Boca Ciega Bay Aquatic Preserves management plan. Your participation and comments are a valuable part of the management plan development. We welcome additional comments on or before **October 2, 2018**. They can be submitted by e-mail (FloridaCoasts@floridadep.gov) or standard mail (Earl Pearson, 3900 Commonwealth Blvd., MS 235, Tallahassee, FL 32399-3000). The current draft Pinellas County and Boca Ciega Bay Aquatic Preserves management plan and subsequent drafts can be found at www.aquaticpreserves.org. For more information, please contact Dr. Randy Runnels, the Aquatic Preserve Manager, at 239-530-1011or Randy.Runnels@FloridaDEP.gov

SHORELINES, OYSTER BANKS, OYSTER ROPES
TAMPA BAY WATCH HAS AN EXCELLENT PROGRAM
THAT INCLUDES ALL THESE PROJECTS TO IMPROVE
WATER QUALITY AND REDUCE NUTRIENT LOAD.
CONTACT ERIC PLAGE

September 18, 2018

At one time, the water in the Boca Ciega Bay Aquatic Preserve and the Pinellas County Aquatic Preserve was clear. But many decades of under-controlled development, urban runoff and heavy boat traffic have reduced the water quality to poor.

Decades of failure to consider the overall total sum of the damage to water quality and to marine ecosystems from the many varied cumulative negative impacts from ALL sources combined and lack of enforcement of current codes and regulations has over time reduced the water quality and is also currently holding back recovery in many areas of the Preserves.

The water quality in the Preserves is the worst I've seen in 20 years. But poor water quality is not just a personal subjective assessment. Boca Ciega Bay has water quality well documented as locally poor with nutrients increasing. Large raw and semi treated sewage dumps into nearby watersheds added huge quantities of nutrients several years in a row on top of the decades of "legacy" nutrients already trapped in the bottom sediments of the Bays. After the last sewage dump, the water in the Preserves turned a sickly brown color and that was before the red tide came into the Bay.

Known sources of new additional nutrients are not being addressed as aggressively as necessary and water quality will continue to deteriorate until strong action is taken to reverse this trend. Upgrades to the aging sewer lines are being made but the accidental sewage dumps happening during this process must stop.

Based on a trend of increasing nutrients, the summer only ban on fertilizer is clearly not enough. Local communities need to be brought on board by considering the trial of a year round fertilizer ban and by writing codes to require rain sensors on all reclaimed water sprinkler systems to limit nutrient rich reclaimed water run off into storm drains and watersheds when the area being watered is already saturated.

Boca Ciega Bay would benefit from fewer large developments and more remediation projects that include building oyster banks, planting mangroves and installing oyster domes - all of which help filter nutrients out of the water column. Tampa Bay has had help with recovery projects but there are currently no similar projects that I know of in Boca Ciega Bay. All I have seen are more and more large developments being approved.

Currently large development projects are examined individually with little or no consideration of past, present and future total cumulative negative impacts from all development projects across the entire Preserve. This needs to change by adding a total impact assessment of all projects when reviewing permits.

Code does not allow proposed development projects on privately owned submerged lands adjacent to State owned submerged lands to degrade water quality in the surrounding waters of the Aquatic Preserves, yet permits are issued without enough time to allow for sound vetting, adequate pre-permit approval testing or adequate consideration of the impacts that a project's daily use will have on the surrounding water quality, on the marine life traveling through the Preserves or on the surrounding critically important ecosystems that ARE located in the Preserves.

Development projects with large multi-slip marinas are well documented sources of water pollutants and bring increased boat traffic that negatively impacts the surrounding marine ecosystems and the surrounding

water quality in the Preserves. Water quality will not improve as long as permits continue to be approved for these types of projects in already heavily trafficked areas.

Boca Ciega Bay still lags behind in sea grass restoration targets by almost 2000 acres mostly due to heavy boat traffic in the area. Not adding additional boat traffic from proposed large marinas or large marina expansions in new areas will keep any additional new boat traffic in already established well traveled channels. This will help minimize new damage in other areas of the Preserves not yet impacted by heavy boat traffic.

More enforcement of slow speed zones will protect wildlife and help reduce boat wake turbidity sediment clouds created by speeding boats in shallow silty areas of Boca Ciega Bay. Increased turbidity robs the sea grass beds of the light they need to survive. The problem is severe with slow speed compliance rates in some areas below 25% and minimal to no enforcement. Prop scarring and blowout of sea grass beds in heavily trafficked areas of Boca Ciega Bay are also major issues holding back recovery of this important marine resource.

Consider increased enforcement of current slow speed zones to reduce boat wake turbidity and consider new regulations to prevent jet skis and boats from passing over shallow sea grass beds to stop prop scarring and blowout of these important ecosystems. There are plenty of deeper channels everywhere so it is never necessary for them to do so but many boaters choose to cross over sea grass beds as a matter of convenience or see them as an open area to do donuts on their jet skis. Boater education alone has clearly not been enough when there are still boaters that choose to ignore boating regulations and choose to ignore ways suggested by the FWC to protect our marine resources while boating.

Allowing sea grass beds to recover to their previous acreage and beyond will improve water quality in Boca Ciega Bay and provide much needed critically important habitat for marine life in the Preserves.

Now another threat is impacting the Preserves - higher water temperatures combined with decades of excess legacy nutrients stirred up by hurricane Irma are fueling red tide blooms to historic deadly toxic levels. These blooms are killing marine life at an unprecedented rate over a wide area. The negative impacts to marine life, ecosystems, water quality, our tourism industry and our quality of life are devastating. Prolonged massive recurring deadly algae blooms are not natural and do not have to happen in a well managed preserve.

There are many well documented cases of managed collapsing ecosystems throughout Florida - the Indian River Lagoon, Lake Okeechobee, Florida Bay, the Florida Keys, almost the entire Southwest Coast of Florida and more. It may already be too late but if possible, we don't want our area to be next!

Going forward, there has to be a more aggressive approach to restoration in the Preserves and a better balance between access, development projects and the needs of our marine environment. Our failure to do so in the past has seriously compromised the health of the Boca Ciega Bay Aquatic Preserve and the Pinellas County Aquatic Preserve collectively known as the Preserves.

In the past, we have always counted on nature to heal itself from the damage inflicted by development after development, inflicted by massive hurricanes or even tropical storms, inflicted by pollution, misuse, abuse

and over use because to a certain extent it has. But we are at a crossroads and without a much more aggressive plan of protection for the Preserves, the years of cumulative damage will eventually reach a tipping point becoming more than nature has the capacity to heal.

Whatever changes you make or don't make to the Preserves Management Plan please don't let the Preserves reach that tipping point!

Goals, Objectives, and Strategies

D.1 / Current Goals, Objectives and Strategies Table

The following table provides a cost estimate for conducting the management activities identified in this plan. The data is organized by year and Management Program with subtotals for each program and year. The following represents the actual budgetary needs for managing the resources of the aquatic preserve. This budget was developed using data from the Florida Coastal Office (FCO) and other cooperating entities, and is based on actual costs for management activities, equipment purchases and maintenance, and for development of fixed capital facilities. This budget assumes optimal staffing levels to accomplish these strategies, and includes the costs associated with staffing such as salary or benefits. Budget categories identified correlate with the FCO Management Program Areas. The Funding Source column depicts the source of funds with "S" designated for state, "F" for federal, and "O" for other funding sources (e.g. non-profit groups, etc.). Dollar figures in red font indicate funding not available at this time.

Large, beneficial projects, outside the current capacity of TBAP's funding and staffing, are identified in Appendix D.4, in case opportunities become available to support those projects in the ten-year span of this management plan.

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Issue 1: Protection of Submerged Resources															
Goal 1: Reduce mechanical damage to seagrass and other submerged resources by boats.															
Objective 1: Increase public awareness of the importance of seagrass and other submerged resources.															
Strategy 1: Seagrass and other submerged resource awareness/ protection information is included at access points like boat ramps and marinas.	Education/ Outreach	18-19	ongoing, as needed	$200	F,S,O	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Information on the importance and protection of seagrass is included in exhibits, social media and other education/outreach materials.	Education/ Outreach	18-19	ongoing, as needed	$100	F,S,O	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
Objective 2: Reduce damage to seagrass beds and other submerged resources.															
Strategy 1: Mark seagrass beds in high-traffic areas.	Resource Mgmt.	18-19	ongoing, as needed	$10,000		$10,000	$10,000	$10,000	$10,000	$10,000	10,000	$10,000	$10,000	$10,000	$10,000
Strategy 2: Educate visitors who rent boats and personal watercraft about submerged resources, and how to avoid damage to them.	Education/ Outreach	19-20	ongoing, as needed	$400	F,S,O		$400	$400	$400	$400	$400	$400	$400	$400	$400
Strategy 3: Identify other activities that may harm submerged resources, and encourage best management practices for those activities.	Public Use	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 4: Promote clean boating	Public Use	18-19	ongoing, as needed	$250	F,S	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Goal 2: Encourage and assist with restoration of damaged resources.															
Objective 1: Identify "hotspots" of damaged submerged resources to target for restoration.															
Strategy 1: Use GIS to track areas impacted by vessel groundings, prop scarring hotspots and restoration sites.	Education/ Outreach	18-19	ongoing, as needed	$300	F,S	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300
Strategy 2: Use aerial imagery to look for impacts, like scarring, along trafficsheds.	Ecosystem Science	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Objective 2: Recommend restorative measures for identified hotspots.															
Strategy 1: Create and maintain a database of possible mitigation projects that restore hotspots. Create and maintain a database of possible public interest projects that restore hotspots.	Ecosystem Science	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Goal 3: Encourage and assist with submerged resource inventories and research.															
Objective 1: Identify, encourage and assist third-party resource inventories in the aquatic preserves.															
Strategy 1: Compile and maintain a database of resource inventory projects in the aquatic preserves.	Ecosystem Science	19-20	ongoing, as needed	$200	F,S		$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Attend planning meetings for new resource inventory projects.	Ecosystem Science	18-19	ongoing, as needed	$300	F,S	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300
Strategy 3: Where needed, supply technical assistance for resource inventories.	Ecosystem Science	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Objective 2: Identify, encourage and assist third-party research in the aquatic preserves															
Strategy 1: Compile and maintain a database of research and monitoring projects in the aquatic preserves.	Ecosystem Science	19-20	ongoing, as needed	$200	F,S		$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Attend planning meetings for new research and monitoring projects.	Ecosystem Science	18-19	ongoing, as needed	$300	F,S	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300
Strategy 3: Where needed, supply technical assistance for research and monitoring projects.	Ecosystem Science	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Goal 4: Provide regulatory review of projects that may impact submerged resources.															
Objective 1: Provide training to regulatory staff for common permitting issues.															
Strategy 1: Provide regulatory classroom training on aquatic preserve boundaries.	Education/ Outreach	18-19	ongoing, as needed	$150	F,S	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
Strategy 2: Provide regulatory classroom training on appropriate statutes and rules.	Education/ Outreach	18-19	ongoing, as needed	$150	F,S	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
Strategy 3: Provide regulatory classroom training on assistance available from TBAP.	Education/ Outreach	18-19	ongoing, as needed	$150	F,S	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
Strategy 4: Provide regulatory field training on habitats.	Education/ Outreach	18-19	ongoing, as needed	$350	F,S	$350	$350	$350	$350	$350	$350	$350	$350	$350	$350
Objective 2: Provide comments or other feedback on avoidance, minimization and mitigation, as appropriate, in the permitting process.															
Strategy 1: Encourage regulatory staff to provide application information to TBAP staff in a timely manner.	Ecosystem Science	18-19	ongoing, as needed	$50	F,S	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
Strategy 2: Track actions taken to provide input.	Ecosystem Science	18-19	ongoing, as needed	$150	F,S	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
Objective 3: Potential public interest projects are readily available to regulatory staff to share with permit applicants.															
Strategy 1: Create and maintain a database of possible public interest projects. This database should include a tracking component and map interface.	Ecosystem Science	18-19	ongoing, as needed	$120	F,S	$300	$100	$100	$100	$100	$100	$100	$100	$100	$100
Goal 5: Support assessment and protection of submerged historical and cultural resources.															
Objective 1: Assess the knowledge and data gaps for historical and cultural sites in the aquatic preserve.															
Strategy 1: Discuss future possible information gathering with the Florida Department of State, Division of Historical Resources and academia.	Ecosystem Science	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Provide technical assistance (access, mapping, etc.) where needed.	Ecosystem Science	18-19	ongoing, as needed	$250	F,S	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250
Strategy 3: Provide up-to-date training for TBAP staff.	Ecosystem Science	18-19	ongoing, as needed	$80	F,S	$800	$-	$-	$-	$-	$-	$-	$-	$-	$-

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Issue 2: Island Management															
Goal 1: Continue native revegetation of islands.															
Objective 1: Maintain existing native plant assemblages on islands and reduce nonnative coverage.															
Strategy 1: For invasive plant control done in-house (including with volunteers), prioritize removing invasives directly adjacent to native plant communities.	Resource Mgmt.	18-19	ongoing, as needed	$2,500	F,S	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
Strategy 2: Acquire funds to clear a 1.5 acre stand of Brazilian pepper and Australian pines on BC21 using contractors.	Resource Mgmt.	21-22	1 year	$2,500	O	$-	$-	$-	$25,000	$-	$-	$-	$-	$-	$-
Strategy 3: Acquire funds to clear a 2.8 acre stand of Brazilian pepper and Australian pines on BC22 using contractors.	Resource Mgmt.	23-24	1 year	$2,500	O	$-	$-	$-	$-	$-	$25,000	$-	$-	$-	$-
Strategy 4: Once nonnatives are removed, place cleared area on regular retreatment schedule.	Resource Mgmt.	18-19	ongoing, as needed	$2,500	F,S	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
Objective 2: Continue to revegetate island areas presently occupied by invasive plant species.															
Strategy 1: Maintain areas in lower elevations (high marsh and below) free of exotics to allow the natural recruitment of natives.	Resource Mgmt.	18-19	ongoing, as needed	$2,000	F,S	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Strategy 2: Plant native plants in higher elevations with volunteers or contractors.	Resource Mgmt.	18-19	ongoing, as needed	$2,500		$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
Goal 2: Continue education and outreach efforts for islands.															
Objective 1: Provide information about islands and their ecological importance and individual stewardship measures to the general public.															
Strategy 1: Provide information about islands at events, like Marine Quest, boat shows, etc.	Education/ Outreach	18-19	ongoing, as needed	$500	F,S,O	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Strategy 2: Provide information (e.g., existing boaters' guides) about islands through social media (e.g., TBAP Facebook page).	Education/ Outreach	18-19	ongoing, as needed	$100	F,S	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
Objective 2: Provide information on islands and their ecological importance at points of access and use.															
Strategy 1: Provide informational signage at boat ramps and other access points, including TBAP contact information and links to additional information such as TBAP's Facebook page.	Education/ Outreach	18-19	ongoing, as needed	$500	F,S,O	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Strategy 2: Provide informational signage on islands in high-usage areas, including TBAP contact information and links to additional information such as TBAP's Facebook page.	Education/ Outreach	18-19	ongoing, as needed	$500	F,S,O	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Goal 3: Improve public access on selected high-use islands.															
Objective 1: Provide limited amenities in selected high-use areas.															
Strategy 1: Recycled plastic picnic tables are placed on appropriate islands.	Public Use	18-19	ongoing, as needed	$900	O	$3,000	$-	$-	$3,000	$-	$-	$-	$-	$3,000	$-
Strategy 2: Stewardship signage is placed on islands with amenities.	Education/ Outreach	18-19	ongoing, as needed	$400	F,S,O	$800	$-	$800	$-	$800	$-	$800	$-	$800	$-
Objective 2: Improve and maintain interpretive trail on island NCH-13 .															
Strategy 1: Regularly maintain island interpretive trail on island NCH-13.	Public Use	18-19	annually	$1,000		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
Strategy 2: Replace old and missing interpretive signs with new, site-specific ones.	Public Use	18-19	ongoing, as needed	$500	F,S,O	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Goal 4: Seek ways to better protect rookery islands.															
Objective 1: Bird rookery islands are more effectively posted.															
Strategy 1: Use social media to raise awareness of rookery islands.	Education/ Outreach	18-19	ongoing, as needed	$100	F,S	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
Strategy 2: Work with FWC and appropriate agencies to post buffer areas around rookery islands during nesting season.	Resource Mgmt.	18-19	annually	$2,620	F,S	$200	$10,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Goal 5: Monitor changes to newly formed island.															
Objective 1: Periodically visit island to map changes in elevation and biota.															
Strategy 1: Continue to map elevation and perimeter changes of islands on regular basis.	Resource Mgmt.	18-19	annually	$1,000	F,S	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
Strategy 2: Reference TBAP-installed benchmarks to mainland benchmark datum.	Resource Mgmt.	20-21	as needed	$80	F,S	$-	$-	$800	$-	$-	$-	$-	$-	$-	$-
Strategy 3: Support monitoring of plants by plant ecologists.	Resource Mgmt.	18-19	ongoing, as needed	$400	F,S	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400
Strategy 4: Support monitoring of birds and other wildlife by volunteers and professionals.	Resource Mgmt.	18-19	ongoing, as needed	$400	F,S	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Issue 3: Shoreline Alterations															
Goal 1: Minimize new alterations to natural shorelines.															
Objective 1: Increase awareness of the ecological and protective importance of natural shorelines.															
Strategy 1: Provide information, including regulatory information, at outreach events.	Education/ Outreach	18-19	ongoing, as needed	$400	F,S	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400
Strategy 2: Give presentations to civic groups and homeowner associations.	Education/ Outreach	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 3: Post information on social media.	Education/ Outreach	18-19	ongoing, as needed	$100	F,S	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
Strategy 4: Document shoreline erosion in sensitive areas such as rookery islands.	Education/ Outreach	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Objective 2: Provide regulatory input when appropriate.															
Strategy 1: Provide shoreline information to regulatory employees.	Resource Mgmt.	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Provide input on shoreline alteration avoidance and minimization during the regulatory process.	Resource Mgmt.	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Goal 2: Seek opportunities to restore altered shorelines to a more natural state.															
Objective 1: Facilitate natural shoreline restoration through the regulatory process.															
Strategy 1: Maintain a database of potential shoreline restoration opportunities.	Resource Mgmt.	19-20	ongoing, as needed	$100	F,S		$100	$100	$100	$100	$100	$100	$100	$100	$100
Strategy 2: Recommend shoreline restoration, when appropriate, as mitigation	Resource Mgmt.	18-19	ongoing, as needed	$50	F,S	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
Strategy 3: Recommend shoreline restoration, when appropriate, as public interest	Resource Mgmt.	18-19	ongoing, as needed	$50	F,S	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
Objective 2: Make technical advice and information available to interested parties.															
Strategy 1: Provide suggested approaches and how-to information to homeowner associations and waterfront associations that show interest.	Education/ Outreach	18-19	ongoing, as needed	$100	F,S	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Issue 4: Marine Debris															
Goal 1: Reduce marine debris at the source.															
Objective 1: Reduce marine debris through physical means.															
Strategy 1: Work with local resource managers to ensure that trash receptacles at access points are covered and emptied regularly to prevent discarded debris from entering the aquatic preserve.	Education/ Outreach	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Encourage stormwater system retrofits that include mechanisms to intercept floatable debris.	Education/ Outreach	18-19	ongoing, as needed	$50	F,S	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
Strategy 3: Promote sound fish waste management through a combination of fish-cleaning restrictions, public education and proper disposal of fish waste.	Education/ Outreach	18-19	ongoing, as needed	$100	F,S	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
Objective 2: Reduce marine debris through increased awareness.															
Strategy 1: Provide awareness messages at access point kiosks and other informational locations to raise awareness about marine debris and its effects on the aquatic preserve.	Education/ Outreach	18-19	ongoing, as needed	$200	F,S,O	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 2: Provide awareness messages on marine debris at outreach events.	Education/ Outreach	18-19	ongoing, as needed	$150	F,S,O	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
Strategy 3: Encourage local communities to mark storm drains.	Education/ Outreach	18-19	ongoing, as needed	$500	F,S	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Strategy 4: Encourage studies that identify types and possible sources of marine debris within the aquatic preserves.	Education/ Outreach	18/19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Goal 2: Remove debris that has entered the aquatic preserves.															
Objective 1: Coordinate and encourage debris removal activities.															
Strategy 1: Facilitate shoreline cleanups of marine debris, focusing on islands, debris hotspots and relatively remote areas.	Education/ Outreach	19-19	ongoing, as needed	$400	F,S	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400
Strategy 2: Encourage boaters to remove floating debris.	Education/ Outreach	18-19	ongoing, as needed	$200	F,S	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Strategy 3: Encourage and support derelict vessel removal operations.	Education/ Outreach	18-19	ongoing, as needed	$300	F,S	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300

*D.2 / **Budget Summary Table***

The following table provides a summary of cost estimates for conducting the management activities identified in this plan.

Fiscal Year	Ecosystem Science	Resource Management	Education & Outreach	Public Use	Annual Total
2018-2019	$3,650	$22,000	$6,700	$4,950	$37,300
2019-2020	$3,050	$31,900	$6,300	$1,950	$43,200
2020-2021	$3,050	$24,700	$7,100	$1,950	$36,800
2021-2022	$3,050	$48,900	$6,300	$4,950	$63,200
2022-2023	$3,050	$23,900	$7,100	$1,950	$36,000
2023-2024	$3,050	$48,900	$6,300	$1,950	$60,200
2024-2025	$3,050	$23,900	$7,100	$1,950	$36,000
2025-2026	$3,050	$23,900	$6,300	$1,950	$35,200
2026-2027	$3,050	$23,900	$7,100	$4,950	$39,000
2027-2028	$3,050	$23,900	$6,300	$1,950	$35,200
Ten Year Totals	**$31,100**	**$295,900**	**$66,600**	**$28,500**	**$422,100**

*D.3 / **Major Accomplishments Since the Approval of the Previous Plan***

Effective Partnerships: TBAP has established, and maintains, productive partnerships with many government programs, nongovernmental organizations and academic institutions. These partnerships provide valuable insights and data to help guide the program's approach to issues. Many of these partners also provide manpower for field work and other program needs. In recent years, groups of volunteers have come from as far away as Ohio State University and University of North Carolina.

Island Management: Over the past 20 years, TBAP has established management of state-owned islands and has made significant progress in replacing invasive plants on dredged material islands with native plants. In order to maintain habitat for wildlife and shade for boaters, this work must be accomplished gradually. The scattered distribution and inaccessibility of these islands would make this sort of work prohibitively expensive to contract over the long term. While some selected projects are contracted, much of the work has been done with coordinated volunteer efforts. In 2002, the program produced an island management plan based on staff assessments and public input.

Regulatory Review: In addition to training regulatory staff in matters related to permitting in aquatic preserves, TBAP has often provided site-specific information about specific proposed projects, including several large infrastructure projects like pipelines. TBAP also coordinates environmental projects sometimes required to meet public interest criteria in 18-20.004(2) Florida Administrative Code.

TBAP has worked to use the potential of current media technology to raise public awareness about the county's submerged natural, historical and cultural resources. The program operates several exhibits per year at events with appropriate target audiences. On-site informational signage and social media posts provide nearly real-time information for residents and visitors to the aquatic preserves. The program has established an interpretive trail on an island frequented by boaters to educate visitors about native plants and wildlife. A recent 360-degree virtual reality video will help people experience aspects of the aquatic preserves that, presently, may be unknown to them.

In addition to the four aquatic preserves, TBAP recently gained management authority for a 76-acre floodplain swamp adjacent to the Lake Tarpon portion of Pinellas County Aquatic Preserve. This parcel was given to the state decades ago, but was not being actively managed. TBAP is working with scientists and volunteer groups to address issues with this parcel to benefit the adjacent aquatic preserve.

Florida's expansive coastline and wealth of aquatic resources have defined it as a subtropical oasis, attracting millions of residents and visitors, and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality and hosting a diversity of wildlife and habitats (including economically and ecologically valuable nursery areas). The following five projects are proposed by the Florida Coastal Office as top priorities for Pinellas County and Boca Ciega Bay aquatic preserves in regards to creating and maintaining healthy ecosystems and economies. Following the five projects is a table listing those projects. In addition, the table also crosswalks the Pinellas County and Boca Ciega Bay aquatic preserves management plan's issues, goals, objectives, and strategies with the projects. For project details go to https://floridadep.gov/wra/deepwater-horizon.

TBAP Priority Restoration Projects

Pinellas County Conservation Land Habitat Restoration and Coastal Resiliency

Submitted by:
Pinellas County Office of Management & Budget

Partners:
N/A

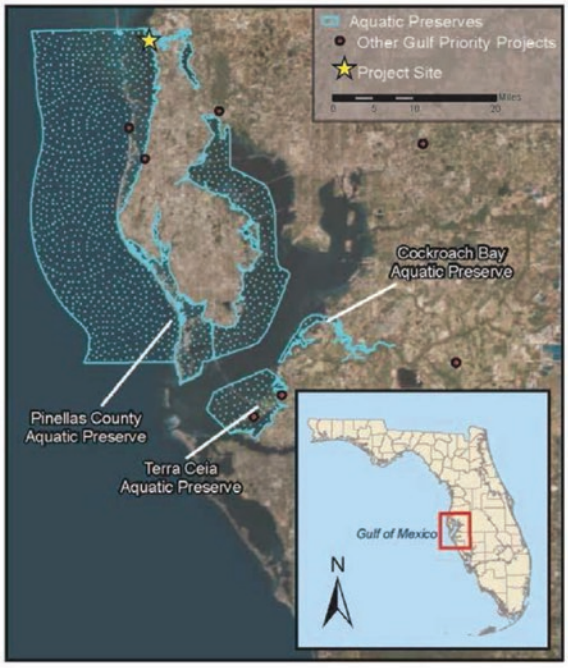
Proposed Funding:
$120,000

Location:
Pinellas County
28.1566° N, 82.7924° W

Project Timeline:
Unspecified

Project Objectives:
This project involves habitat restoration and development of coastal resiliency plans at the following 9 coastal Pinellas County Park and preserve sites: Ft. De Soto Park, Shell Key Preserve, War Veterans' Memorial Park, Weedon Island Preserve, Boca Ciega Millennium Park, Sand Key Park, Philippe Park, Wall Springs Park and Fred Howard Park. These conservation lands total 6,083 acres of which site specific parcels will undergo habitat restoration.

The habitat restoration component includes initial and re-treatment of invasive exotic species within the conservation lands listed. Means of treatment and control may include chemical, mechanical and biological control and removal of non-native plants on these properties. Invasive species treated will conform with Florida Exotic Pest Plant Council List of Category I & II species, however, other non-native plants in non- public use areas that are found on these conservation lands during habitat restoration activities will also be removed.



Project Outcomes:
This project will help compensate for the loss of funding in recent years for Pinellas County's environmental lands management efforts. In addition to allowing the development of plans for the mitigation of future impacts, it will assist with overcoming the present deficit in invasive species control.

TBAP Priority Restoration Projects

Clearwater Beach Shore Bird Habitat

Submitted by:
Audubon of Florida

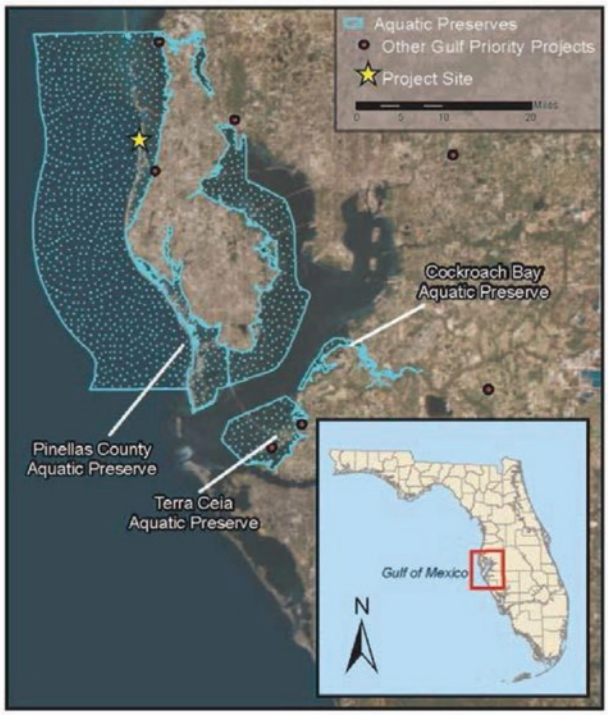
Partners:
N/A

Proposed Funding:
$385,000

Location:
Pinellas County
28.0154° N, 82.8268° W

Project Timeline:
TBD

Project Objectives:
Audubon Florida proposes to purchase a critically-important, undeveloped property on the Gulf Coast of heavily urbanized Pinellas County with full support of the current property owner, Carolyn Hunter Colby. Following purchase, Audubon will restore the successional beach vegetation to render it suitable for nesting American Oystercatchers, Snowy and Wilson's plovers, Least Terns, and Black Skimmers.



Project Outcomes:
We will prepare a habitat management plan for the property in partnership with the Florida Fish and Wildlife Conservation Commission, the adjacent property manager to the north of the project location - Florida Park Service/ Caladesi Island State Park, and leaders in the Clearwater Audubon Society, the local Audubon chapter. Audubon Florida and our local chapter will monitor and manage the property for the benefit of birds and other native wildlife.

TBAP Priority Restoration Projects

City of Oldsmar, Florida Stormwater Master Plan

Submitted by:
City of Oldsmar

Partners:
N/A

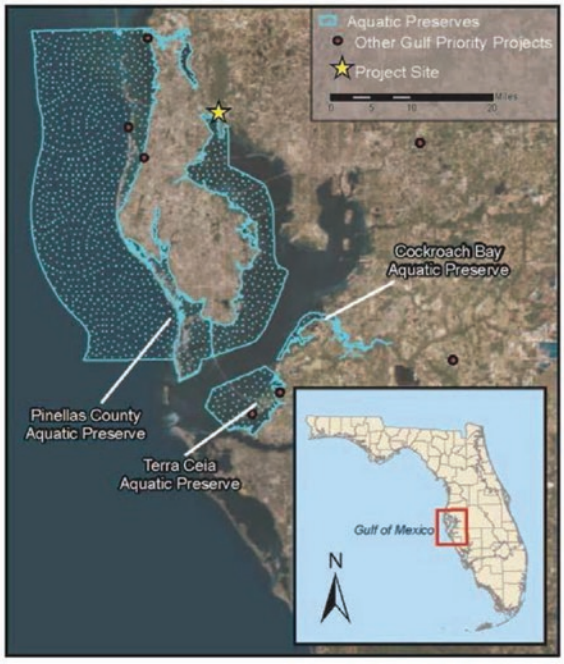
Proposed Funding:
$10,000,000

Location:
Pinellas County
28.0416° N, 82.6666° W

Project Timeline:
Unspecified

Project Objectives:
The Stormwater Master Plan is as assessment of the City of Oldsmar's stormwater infrastructure including stormwater treatment to reduce the impact on receiving waters (Tampa Bay). The work will include various steps starting with an evaluation of current conditions and ending with recommended projects to improve stormwater management and treatment. As part of the update, we propose completing the following tasks:

- Development of stormwater model to determine water quality/quantity loadings to surface waters that shall incorporate LiDAR and permitting data. (LiDAR shall be utilized to verify basin delineation)
- Survey of all major drainage systems within the City to incorporate into the model
- Establishment of stormwater monitoring stations to record stage and site specific monitoring of water chemistry for model verification and calibration
- Utilize land use data to incorporate into the stormwater model to estimate pollutant loadings



Project Outcomes:
We will prepare a habitat management plan for the property in partnership with the Florida Fish and Wildlife Conservation Commission, the adjacent property manager to the north of the project location - Florida Park Service/ Caladesi Island State Park, and leaders in the Clearwater Audubon Society, the local Audubon chapter. Audubon Florida and our local chapter will monitor and manage the property for the benefit of birds and other native wildlife.

TBAP Priority Restoration Projects

Sewer System Expansion, City of Clearwater

Submitted by:
City of Clearwater

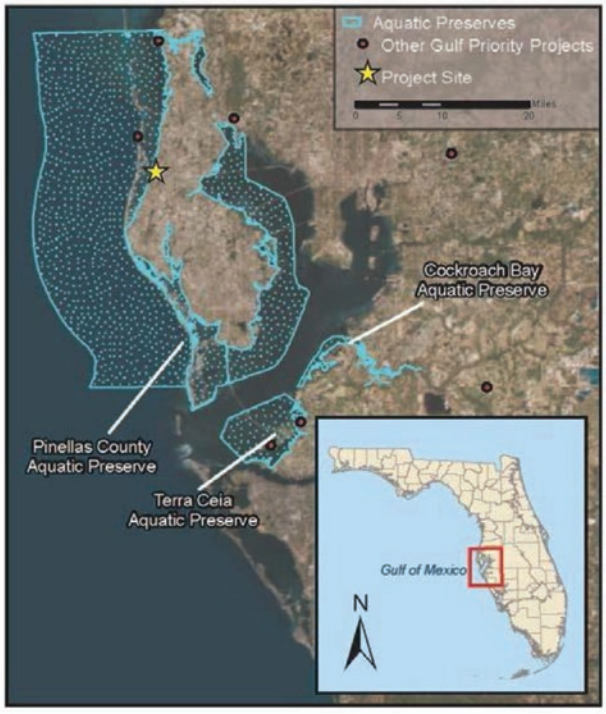
Partners:
N/A

Proposed Funding:
$10,000,000

Location:
Pinellas County
27.9662° N, 82.7987° W

Project Timeline:
Unspecified

Project Objectives:
The sewer system expansion project provides sanitary sewer access to over 3,900 properties. The properties would be provided access to sanitary sewer that are currently using septic tanks. In some cases, these septic tanks are old, leak, and have not had inspections registered with the county after their installation. By allowing these properties to connect to the sanitary sewer systems, water quality will improve because leaky septic tanks are not flowing into creeks, wetlands, and storm drains.



Project Outcomes:
This project will make considerable progress in reducing the leaching of nutrients and other pollutants into groundwater from existing septic system.

TBAP Priority Restoration Projects

Pinellas Island Habitat Restoration

Submitted by:
TBAP

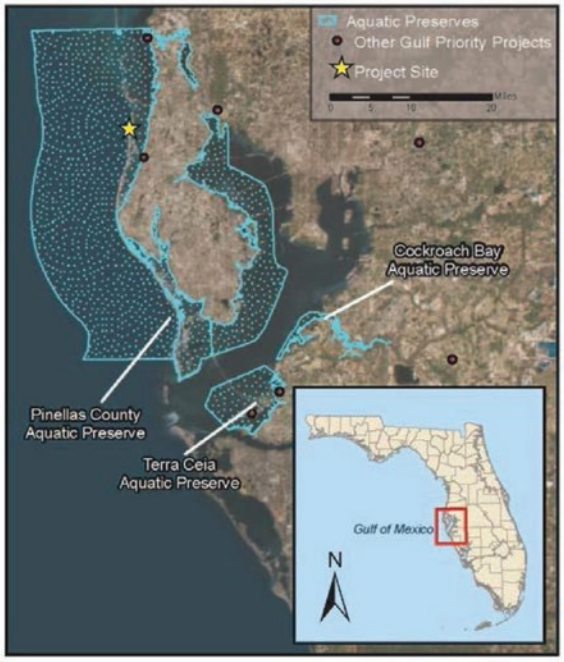
Partners:
USF, Eckerd College, St. Petersburg College, Ohio State University, University of NC, Louisiana State University, Florida Native Plant Society, and boating groups

Proposed Funding:
$400,000

Location:
Pinellas County
28.0154° N, 82.8268° W

Project Timeline:
TBD

Project Objectives:
The Tampa Bay Aquatic Preserves program has been very successful in forming partnerships with a variety of local and out-of-state universities and organizations that supply an increasing number of volunteers. Because of these partnerships, TBAP can restore and maintain native vegetation on islands in the Pinellas County and Boca Ciega Bay Aquatic Preserves that serve as valuable habitat to marine species, shore birds and migratory songbirds. By using volunteers on an ongoing basis, rather than one-time contracting of the work, TBAP is gradually replacing invasive plants with natives in a way that maintains habitat function and is acceptable to most boaters using the islands. GIS mapping allows effective coordination of initial and follow-up treatments over an urban landscape of dispersed project sites. Unfortunately, staff limitations have begun to limit the program's ability to accept and coordinate further expansion of this program.



Project Outcomes:
The amount requested is for two half-time positions to plan and track the restoration and to coordinate the activities of the volunteer groups for a period of three years. These two staff also will update GIS maps of the islands and their vegetation. The two positions, rather than one full-time one, are for safety in the field.

Project Name	Amount	Partners	Location in aquatic preserve mgmt. plan
Pinellas County Conservation Land Habitat Restoration and Coastal Resiliency	$120,000	N/A	Issue II, Goal I, Objective I
Clearwater Beach Shore Bird Habitat	$385,000	N/A	Issue II, Goal I, Objective I
City of Oldsmar, Florida Stormwater Master Plan	$10,000,000	N/A	
Sewer System Expansion, City of Clearwater	$10,000,000	N/A	
Pinellas Island Habitat Restoration	$400,000	USF, Eckerd College, St. Petersburg College, Ohio State University, University of NC, Louisiana State University, Florida Native Plant Society, and boating groups	Issue II, Goal I, Objective I

Other Requirements

E.1 / Acquisition and Restoration Council Management Plan Compliance Checklist

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
Section A: Acquisition Information Items			
1	The common name of the property.	18-2.018 & 18-2.021	Ex. Sum.
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	p. 1
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	p. 1, 6-8
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	Ex. Sum & p. 12
5	A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.	18-2.018 & 18-2.021	p. 11
6	An assessment as to whether the property, or any portion, should be declared surplus. Provide Information regarding assessment and analysis in the plan, and provide corresponding map.	18-2.021	N/A
7	Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. Please clearly indicate parcels on a map.	18-2.021	N/A
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	p. 42
9	A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034 and the statutory authority for such use or uses.	259.032(10)	p. 6
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	p. 39-42
Section B: Use Items			
11	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	p. 10-12
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	p. 9-10, 26, 31-33, 36-42, 56-64, 69-71
13	A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.	18-2.018	N/A
14	A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.	18-2.018	p. 6-8, 45-72
15	Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources.	18-2.021	p. 62, App. E.2
16	Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.	18-2.021	
17	A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	259.032(10)	p. 56-62, 69-71
18	A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent "balanced public utilization," specific agency statutory authority and any other legislative or executive directives that constrain the use of such property.	18-2.021	p. 6-8
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	App. E.3
20	An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.	18-2.018 & 18-2.021	

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
21	*For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations.	18-2.021 & 253.036	N/A
22	If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.	18-021	N/A
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	
*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.			
Section C: Public Involvement Items			
24	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	App. C
25	The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	259.032(10)	N/A
26	LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.	259.032(10)	App. C
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	App. C
28	During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.	253.034(5) & 259.032(10)	App. C
29	The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. Include manager's replies to the team's findings and recommendations.	259.036	N/A
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	N/A
31	If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations.	259.036	N/A

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
Section D: Natural Resources			
32	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. Use brief descriptions and include USDA maps when available.	18-2.021	p. 14-15
33	Insert FNAI based natural community maps when available.	ARC consensus	p. 19, 23
34	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna and geological conditions.	18-2.021	Ex Sum
35	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns and large sinkholes.	18-2.018 & 18-2.021	p. 18-35
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	p. 13, 18-20, 30-31
37	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas and phosphate, etc.	18-2.018 & 18-2.021	p. 13-15
38	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.	18-2.018 & 18-2.021	p. 18-36, App. B.3.1
39	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.	18-2.021	p. 18-36, App. B.3.2
40	The identification or resources on the property that are listed in the Natural Areas Inventory. Include letter from FNAI or consultant where appropriate.	18-2.021	p. 18-35
41	Specific description of how the managing agency plans to identify, locate, protect and preserve or otherwise use fragile, nonrenewable natural and cultural resources.	259.032(10)	p. 18-38, 46-68, App. E.2
42	Habitat Restoration and Improvement	259.032(10) & 253.034(5)	
42-A.	Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.	259.032(10) & 253.034(5)	p. 18-38, 46-68
42-B.	Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.	259.032(10) & 253.034(5)	App. D.1
42-C.	The associated measurable objectives to achieve the goals.	259.032(10) & 253.034(5)	App. D.1
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. Include fire management plans - they can be in plan body or an appendix.	259.032(10) & 253.034(5)	App. D.1
42-E.	A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities.	259.032(10) & 253.034(5)	App. D.1
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. See footnote.	253.034(5)	Ex Sum
44	Sustainable Forest Management, including implementation of prescribed fire management	18-2.021, 253.034(5) & 259.032(10)	
44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	18-2.021, 253.034(5) & 259.032(10)	N/A

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-C.	Measurable objectives (see requirement for #42-C).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-D.	Related activities (see requirement for #42-D).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-E.	Budgets (see requirement for #42-E).	18-2.021, 253.034(5) & 259.032(10)	N/A
45	Imperiled species, habitat maintenance, enhancement, restoration or population restoration	259.032(10) & 253.034(5)	
45-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p.18-35, 46-68
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
45-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	App. D.1
45-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
45-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. See footnote.	253.034(5)	App. B.3.3
47	Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.	BOT requirement via lease language	App. B.4
48	Exotic and invasive species maintenance and control	259.032(10) & 253.034(5)	
48-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 20-22, 36, 56-60, App. D.1
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 60, App. D.1
48-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 60, App. D.1
48-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 56-60, App. D.1
48-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section E: Water Resources			
49	A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.	18-2.018 & 18-2.021	p. 1-4
50	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C.	18-2.021	p. 1-4, 16-18
51	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes and other wetlands.	18-2.021	p. 25-27

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. See footnote.	253.034(5)	Ex. Sum
53	Hydrological Preservation and Restoration	259.032(10) & 253.034(5)	
53-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 62-64, App. D.1
53-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section F: Historical, Archaeological and Cultural Resources			
54	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.	18-2.018, 18-2.021 & per DHR's request	Ex. Sum, p. 36-38
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	Ex. Sum, p. 36-38
56	A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	18-2.021	p. 54, App. D.1
57	Cultural and Historical Resources	259.032(10) & 253.034(5)	
57-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 54, App. D.1
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 54, App. D.1
57-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 54, App. D.1
57-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 54, 62, App. D.1
57-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
**While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.			
Section G: Facilities (Infrastructure, Access, Recreation)			
58	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. See footnote.	253.034(5)	p. 56-62, 69-72
59	Capital Facilities and Infrastructure	259.032(10) & 253.034(5)	
59-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 56-62, App. D.1

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	**Requirement**	**Statute/Rule**	**Pg#/App**
59-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 56-62, App. D.1
59-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	p. 56-62, 69-72
61	Public Access and Recreational Opportunities	259.032(10) & 253.034(5)	
61-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	259.032(10) & 253.034(5)	App. D.1
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
61-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	App. D.1
61-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
61-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section H: Other/ Managing Agency Tools			
62	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	Ex. Sum
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	App. D.3
64	If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.	ARC consensus	p. 46-68
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	App. D.1
66	Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, law enforcement activities.	253.034(5)	App. D.1
67	Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.	259.032(10)	N/A
68	A statement of gross income generated, net income and expenses.	18-2.018	

*** = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

E.2 / ***Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Lands*** (revised March 2013)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, '*Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at: www.flheritage.com/preservation/compliance/guidelines.cfm

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination**.** In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward
Division of Historical Resources, Bureau of Historic Preservation, Compliance and Review Section
R. A. Gray Building, 500 South Bronough Street
Tallahassee, FL 32399-0250
Phone: (850) 245-6425, Toll Free: (800) 847-7278, Fax: (850) 245-6435

FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 235
Tallahassee, FL 32399

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

November 2018

Scott Swearingen, Section Manager
Pinellas County Planning Department
310 Court Street
First Floor
Clearwater, FL 33756

Dear Mr. Swearingen:

Attached is a copy of the draft Pinellas County and Boca Ciega Bay Aquatic Preserve Management Plan. (The plan can also be found at https://floridadep.gov/fco/fco/content/florida-coastal-office-site-management-plans.) The plan was developed with input from the public and the Pinellas County and Boca Ciega Bay Aquatic Preserve Management Plan Advisory Group. We anticipate the plan being reviewed by the Acquisition and Restoration Council at their February 2019 meeting in Tallahassee (https://floridadep.gov/lands/environmental-services/content/acquisition-and-restoration-council-arc). We respectfully request, within 30 days of receipt of this letter, your review of this aquatic preserve management plan for its compliance with the Pinellas County Comprehensive Plan. Please reply to the physical address at the top of the letter (or e-mail address) regarding whether the Pinellas County and Boca Ciega Bay Aquatic Preserve Management Plan is in compliance with the county's comprehensive plan. Thank you in advance for your time and effort in this matter.

If you have any questions, please don't hesitate to contact me at (850)245-2104 or Earl.Pearson@floridaDEP.gov.

Sincerely,

Earl Pearson
Planning Manager
Florida Coastal Office

E.4 / **Division of State Lands Management Plan Approval Letter**

(This information will be provided in the final draft of this management plan.)



Florida Department of Environmental Protection
Florida Coastal Office
3900 Commonwealth Blvd., MS #235
Tallahassee, FL 32399 • www.aquaticpreserves.org