

Drought Effects: Rare and Invasive Species

Leslie D. Hartman

Joshua O. Harper

Texas Parks & Wildlife Department

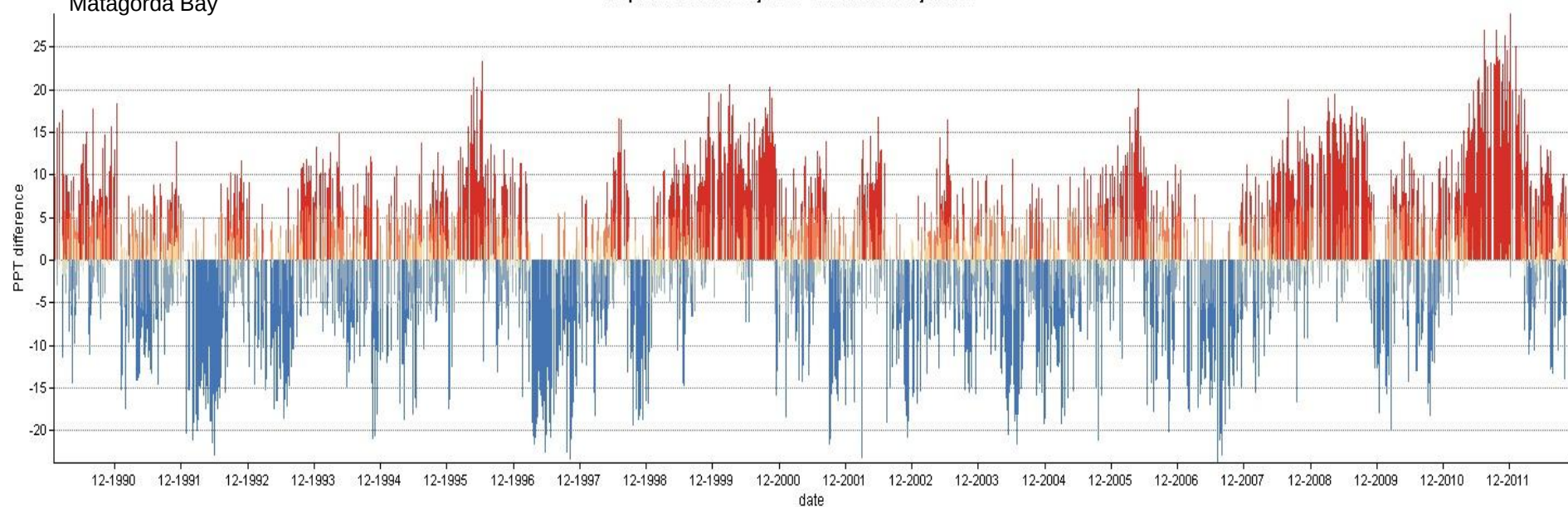


Organization

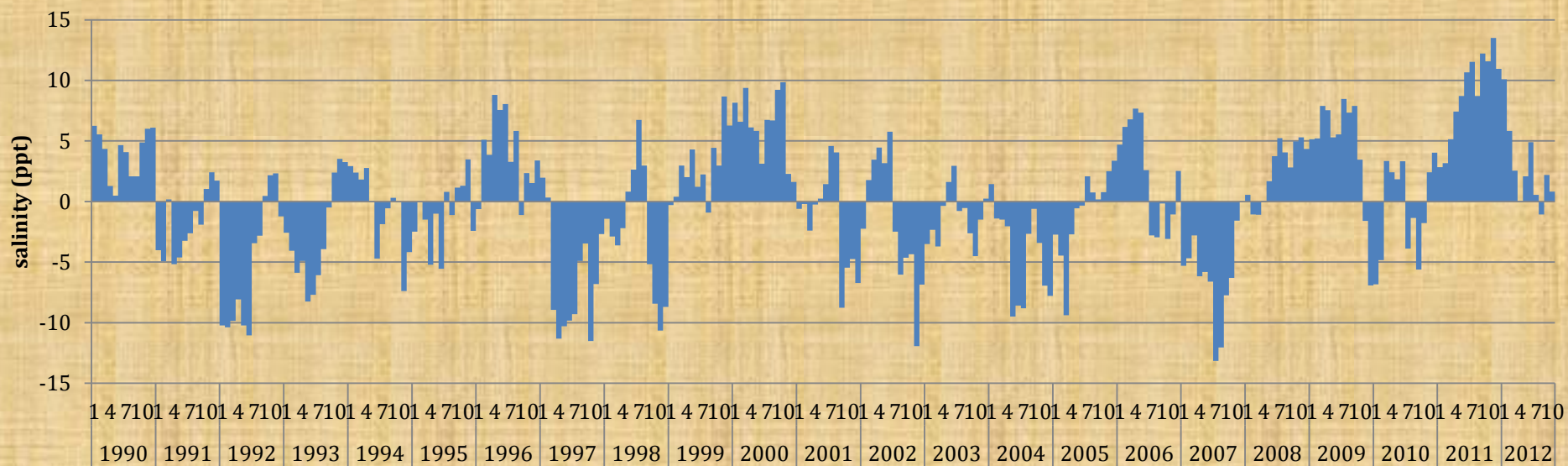
- Salinity overview
- Data Collection Efforts
 - TPWD Fishery-independent Samples
 - TPWD Rig Monitoring
 - Commercial Shrimper Collections
 - Constituency Reports
 - Texas Rapid Assessment Team-Galveston (TexRAT)
 - Tres Palacios Wetland Plant Composition Grant
- Implications

Matagorda Bay

Departure of Salinity from Station Monthly Mean



Salinity difference from mean



TPWD FISHERY-INDEPENDENT SAMPLES

Gillnet Data (1980 – 2012)

- *Phyllorhiza punctata*
(Australian spotted jellyfish)
- September 2011
- Galveston Bay
- n=1



<http://australianmuseum.net.au/image/Rhizostome-Jellyfish-Phyllorhiza-punctata>

Seine Data (1980 – 2012)

- *Ctenopharyngodon idella* (Grass carp)
 - Aug 2010
 - Lower Laguna Madre
- *Cardiosoma guanhumi* (Blue land crab)
 - July 2010
 - Cedar Lakes
- *Oreochromis aureus* (Blue tilapia)
 - (5) 1993, (1) 2007, (3) 2008, (6) 2010, (1) 2011
 - Upper & Lower Laguna Madre

TPWD RIG MONITORING

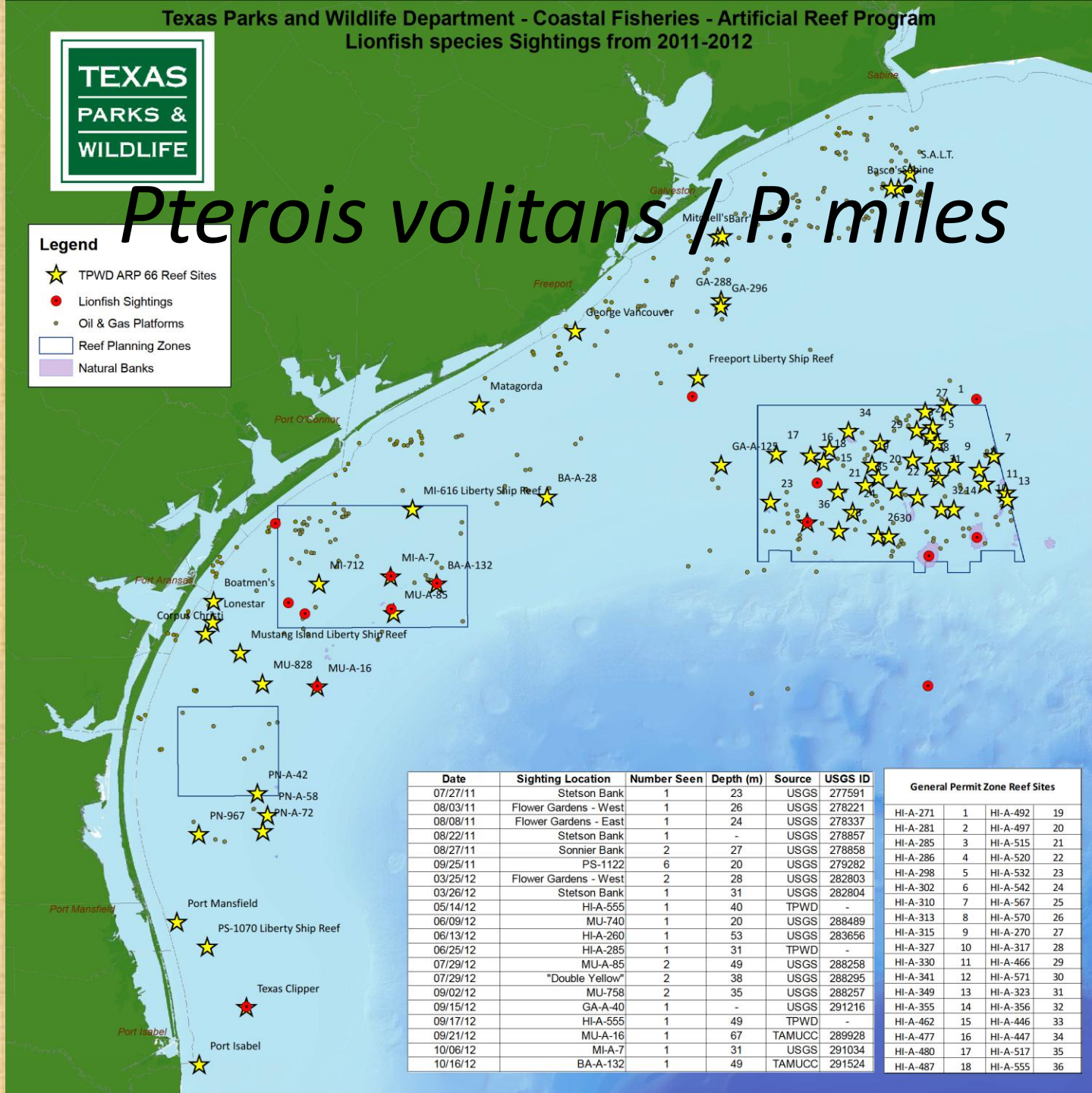
Texas Parks and Wildlife Department - Coastal Fisheries - Artificial Reef Program
Lionfish species Sightings from 2011-2012

TEXAS
PARKS &
WILDLIFE

Legend

- ★ TPWD ARP 66 Reef Sites
- Lionfish Sightings
- Oil & Gas Platforms
- Reef Planning Zones
- Natural Banks

Pterois volitans / *P. miles*



Date	Sighting Location	Number Seen	Depth (m)	Source	USGS ID
07/27/11	Stetson Bank	1	23	USGS	277591
08/03/11	Flower Gardens - West	1	26	USGS	278221
08/08/11	Flower Gardens - East	1	24	USGS	278337
08/22/11	Stetson Bank	1	-	USGS	278857
08/27/11	Sonnier Bank	2	27	USGS	278858
09/25/11	PS-1122	6	20	USGS	279282
03/25/12	Flower Gardens - West	2	28	USGS	282803
03/26/12	Stetson Bank	1	31	USGS	282804
05/14/12	HI-A-555	1	40	TPWD	-
06/09/12	MU-740	1	20	USGS	288489
06/13/12	HI-A-260	1	53	USGS	283656
06/25/12	HI-A-285	1	31	TPWD	-
07/29/12	MU-A-85	2	49	USGS	288258
07/29/12	"Double Yellow"	2	38	USGS	288295
09/02/12	MU-758	2	35	USGS	288257
09/15/12	GA-A-40	1	-	USGS	291216
09/17/12	HI-A-555	1	49	TPWD	-
09/21/12	MU-A-16	1	67	TAMUCC	289928
10/06/12	MI-A-7	1	31	USGS	291034
10/16/12	BA-A-132	1	49	TAMUCC	291524

General Permit Zone Reef Sites

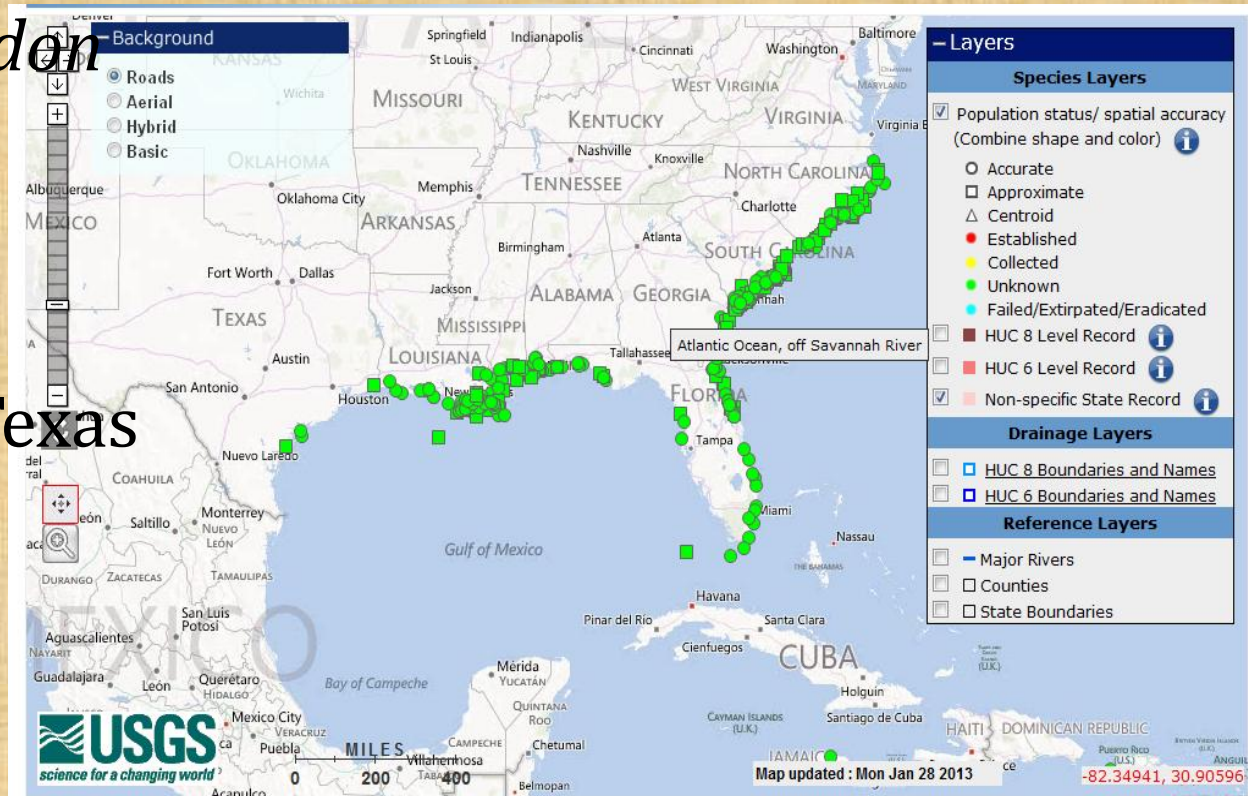
General Permit Zone Reef Sites			
HI-A-271	1	HI-A-492	19
HI-A-281	2	HI-A-497	20
HI-A-285	3	HI-A-515	21
HI-A-286	4	HI-A-520	22
HI-A-298	5	HI-A-532	23
HI-A-302	6	HI-A-542	24
HI-A-310	7	HI-A-567	25
HI-A-313	8	HI-A-570	26
HI-A-315	9	HI-A-270	27
HI-A-327	10	HI-A-317	28
HI-A-330	11	HI-A-466	29
HI-A-341	12	HI-A-571	30
HI-A-349	13	HI-A-323	31
HI-A-355	14	HI-A-356	32
HI-A-462	15	HI-A-446	33
HI-A-477	16	HI-A-447	34
HI-A-480	17	HI-A-517	35
HI-A-487	18	HI-A-555	36

Penaeus monodon

COMMERCIAL SHRIMPER COLLECTIONS

Commercial Shrimper Collections

- *Penaeus monodon* (Asian Tiger Prawn)
- 2011 first confirmed in Texas waters
- Gulf of Mexico
- $n=6^*$
- * underestimate



Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

URL: <http://nas.er.usgs.gov>

Page Contact Information: Pam Fuller - NAS Program

Page Last Modified: 01/28/2013 13:36:16

CONSTITUENCY REPORTS

Constituency Reports

- *Pygocentrus nattereri* (Red Bellied Piranha)
- 2 incidents
- Tom Bass, n=1, 2011
- Buffalo Bayou, n=3, November 2011



- *Pseudoplatystoma fasciatum* (Leopard Catfish)
- Lake Wyndemere, the Woodlands
- November 2011
- n=1

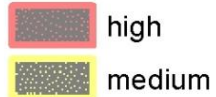


June 19-24, 2011

TEXRAT-GALVESTON

TexRAT Samples

Exotic Risk



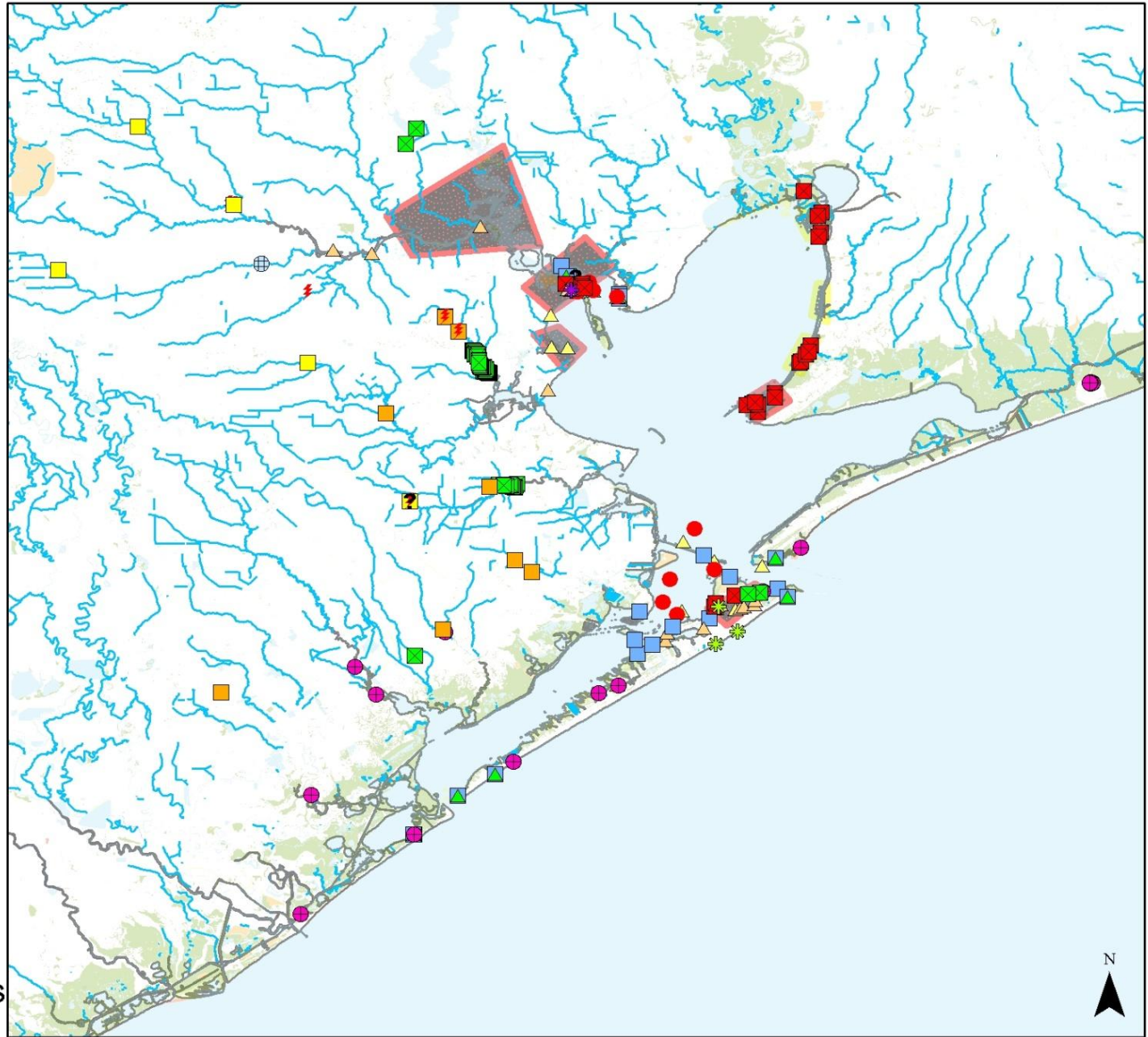
AllSamples

- <all other values>

Gear_Type

- 20' trawl
- 0.25 m sq quadrat
- 1 m sq quadrat
- 10' straight seine
- 15' seine
- 20' trawl
- 60' bag seine
- binoculars
- ▲ bpl
- ▲ dip net
- ⚡ electroshocker
- ⊕ gill net
- ✳ handpick
- ? none
- ▲ phytoplankton net
- ✳ scraper
- ▲ zooplankton net

0 5 10 15 20
Miles



Pomacea insularis (island applesnail)

- ✚ Absent
- Present



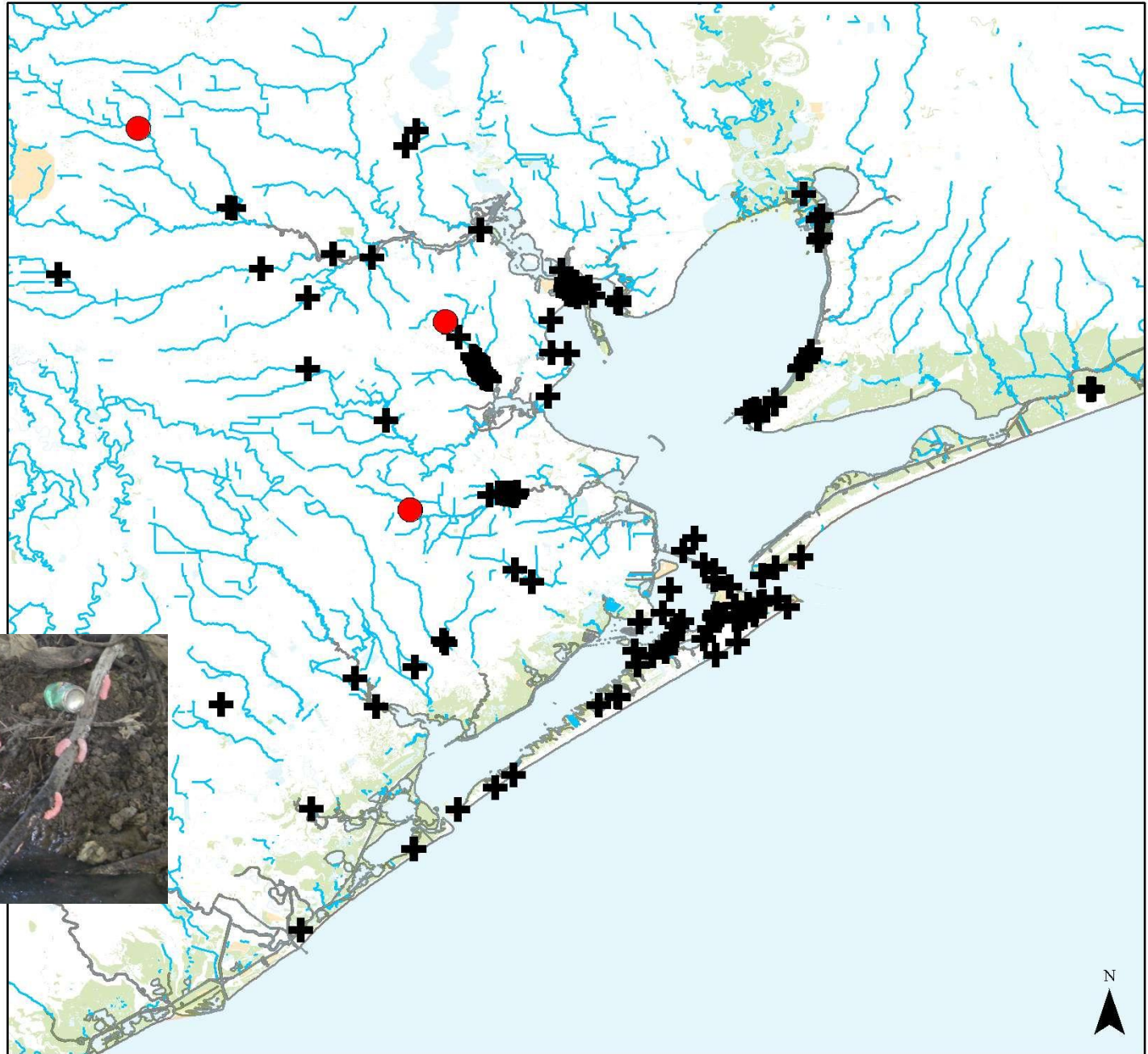
M Cannister



Native To: South America

0 5 10 15

Miles



Corbicula fluminea (Asiatic clam)

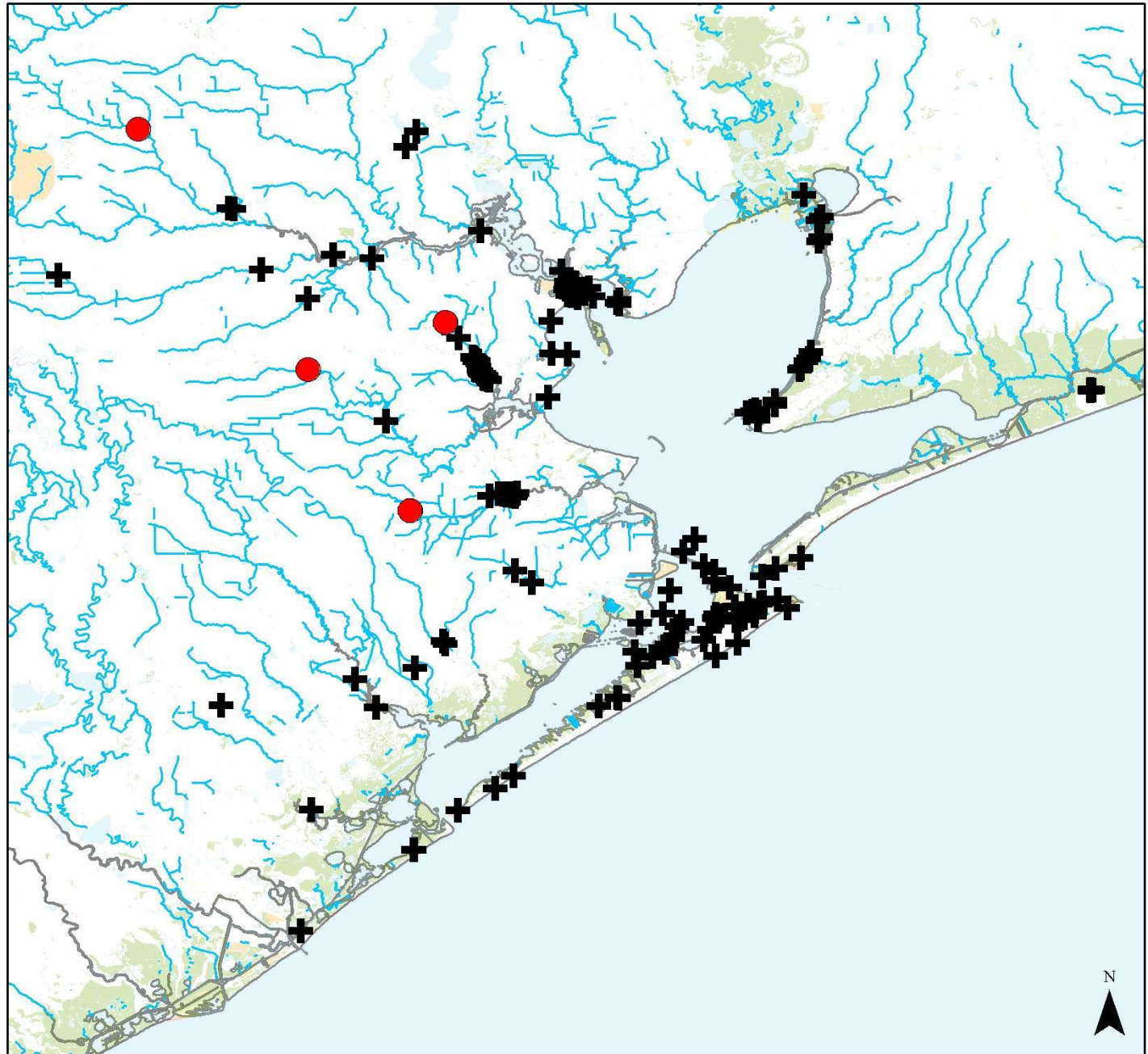
Corbicula

- ✚ Absent
- Present



Native To: Southern and eastern Asia and Africa

0 5 10 15
Miles



Cichlids

- Oreochromis
- ▲ Family Cichlidae
- ✚ Absent



Brenda Bowling

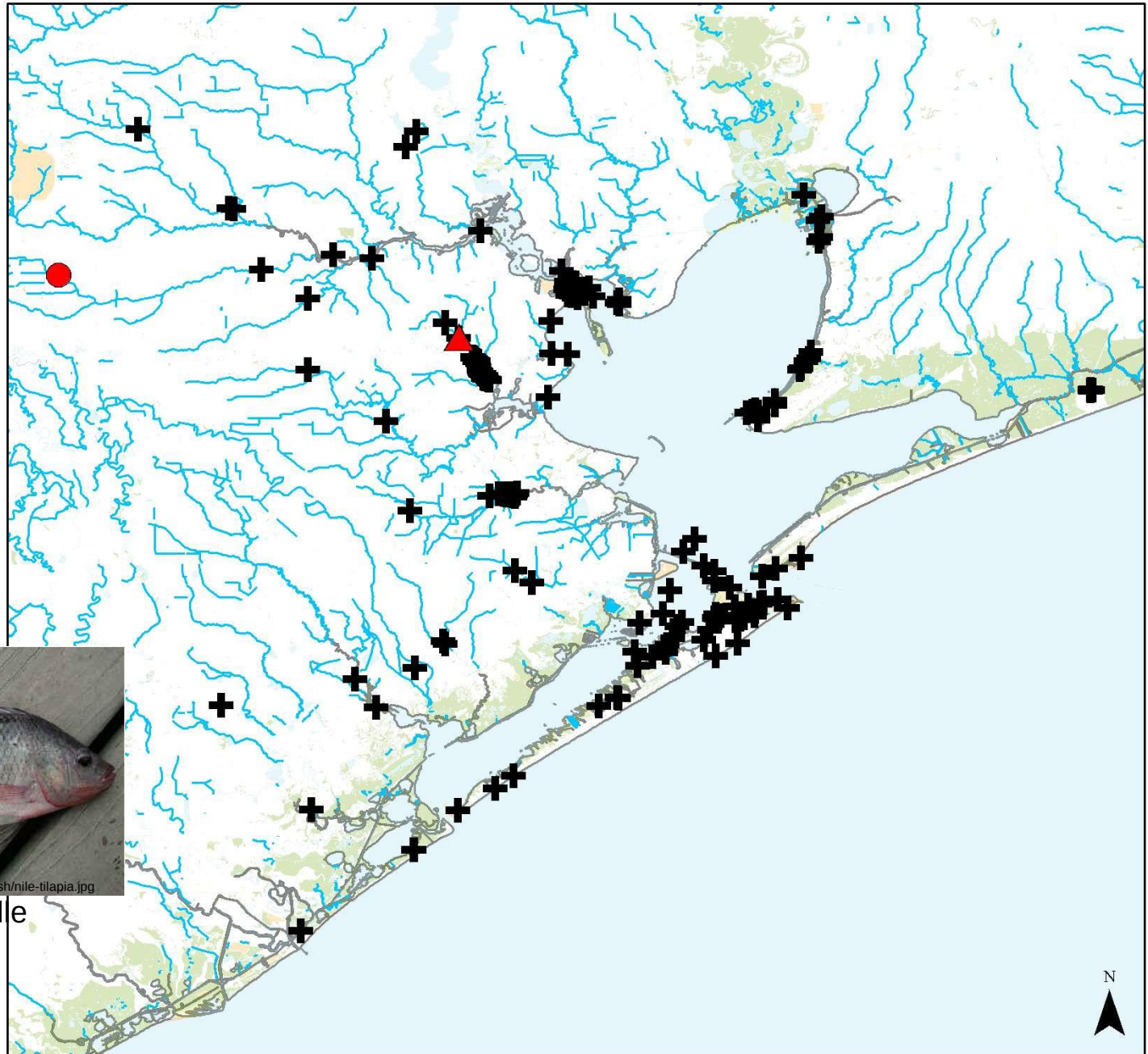
Range Extension



<http://www.thejump.net/id/morefish/nile-tilapia.jpg>

Native To: Africa and Middle
East

0 5 10 15
Miles



Ctenopharyngodon idella (grass carp)

Ctenophary

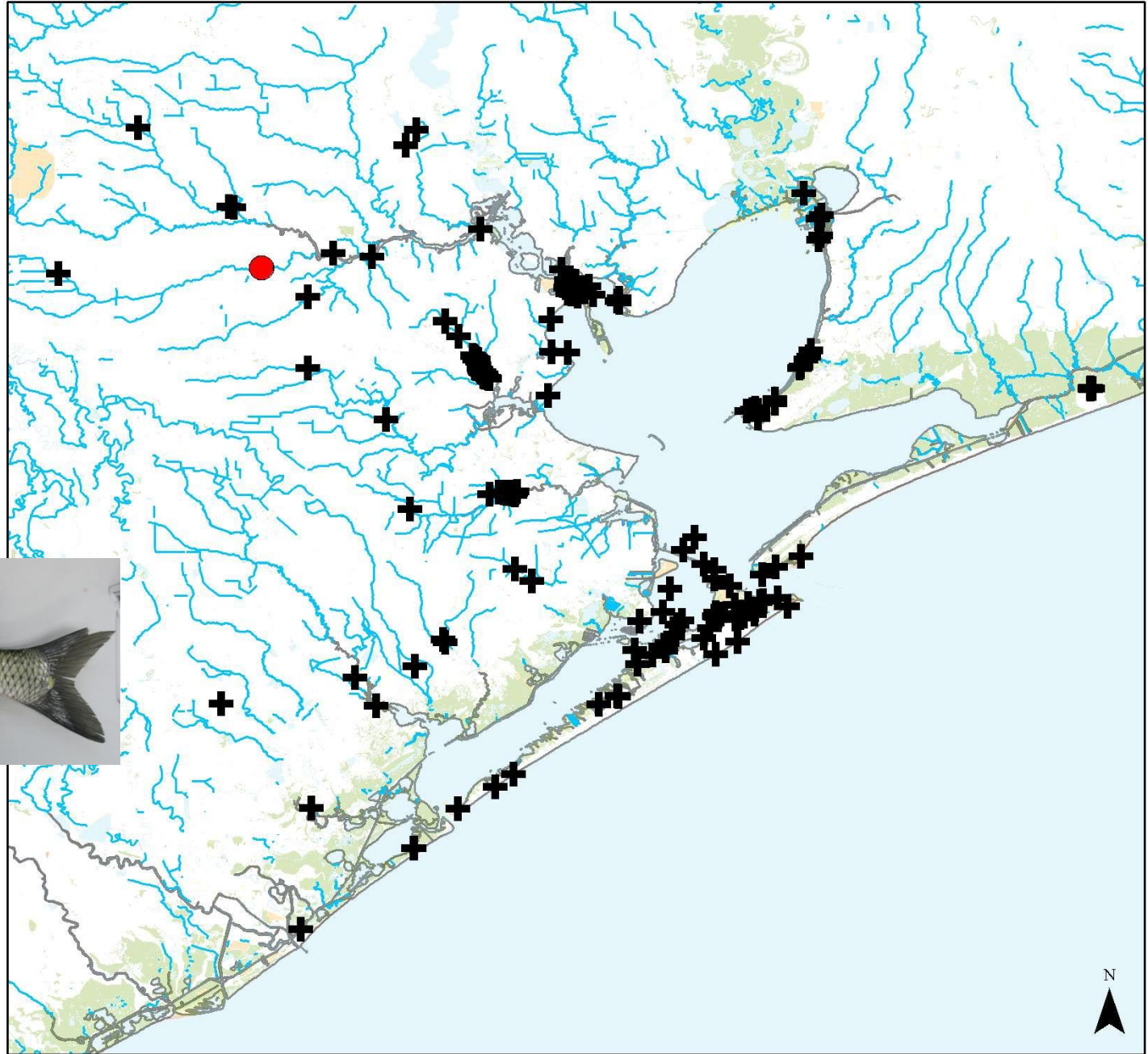
- ✚ Absent
- Present



Brenda Bowling

Native To: Eastern Asia

0 5 10 15
Miles

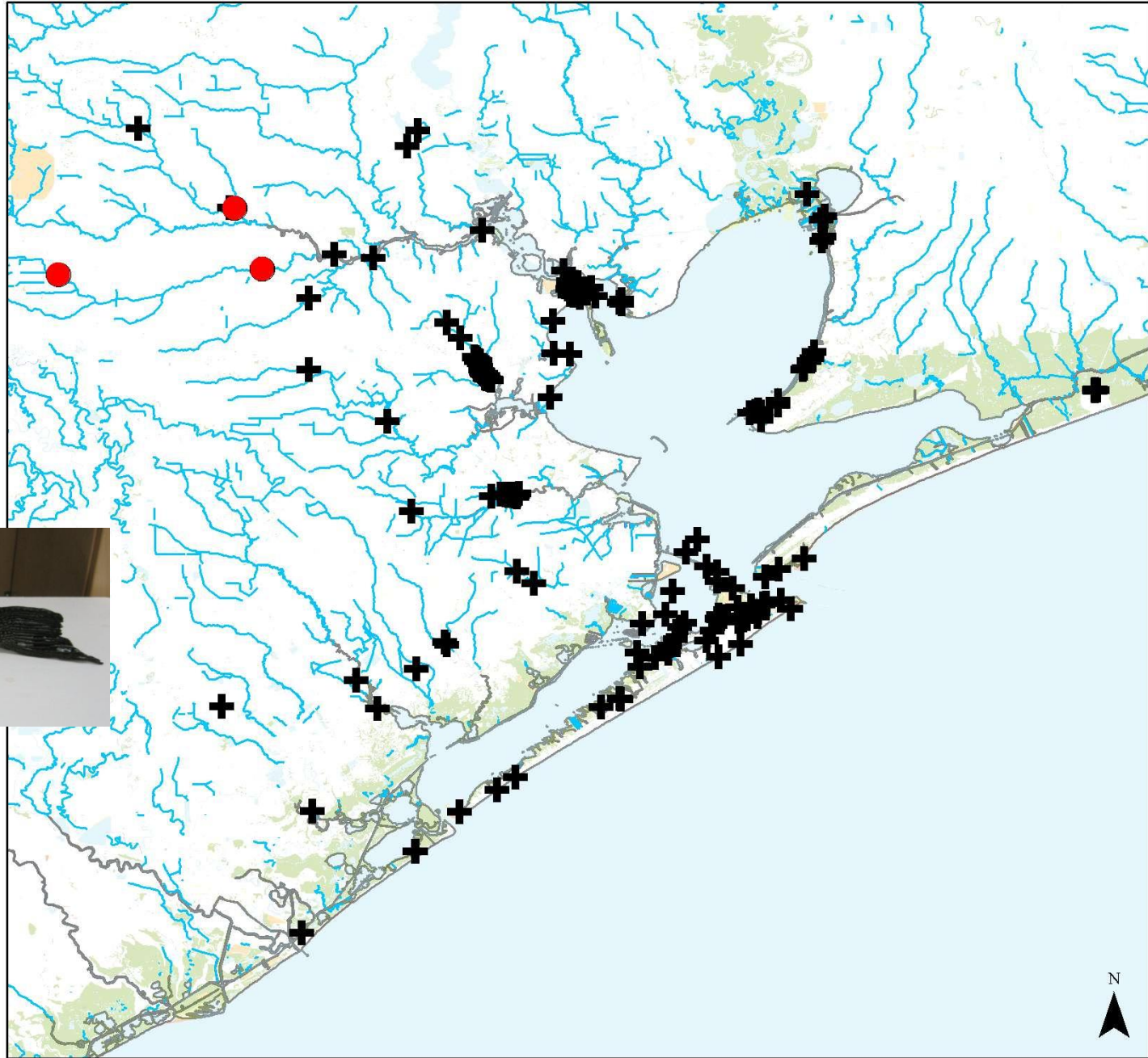


Pterygoplichthys spp. (armored catfish)

Exotic Fauna

Pterygopli

- Present
- ✚ Absent



Brenda Bowling

Native To: Eastern Asia

0 5 10 15
Miles



Alternanthera philoxeroides (alligator weed)



+

Absent

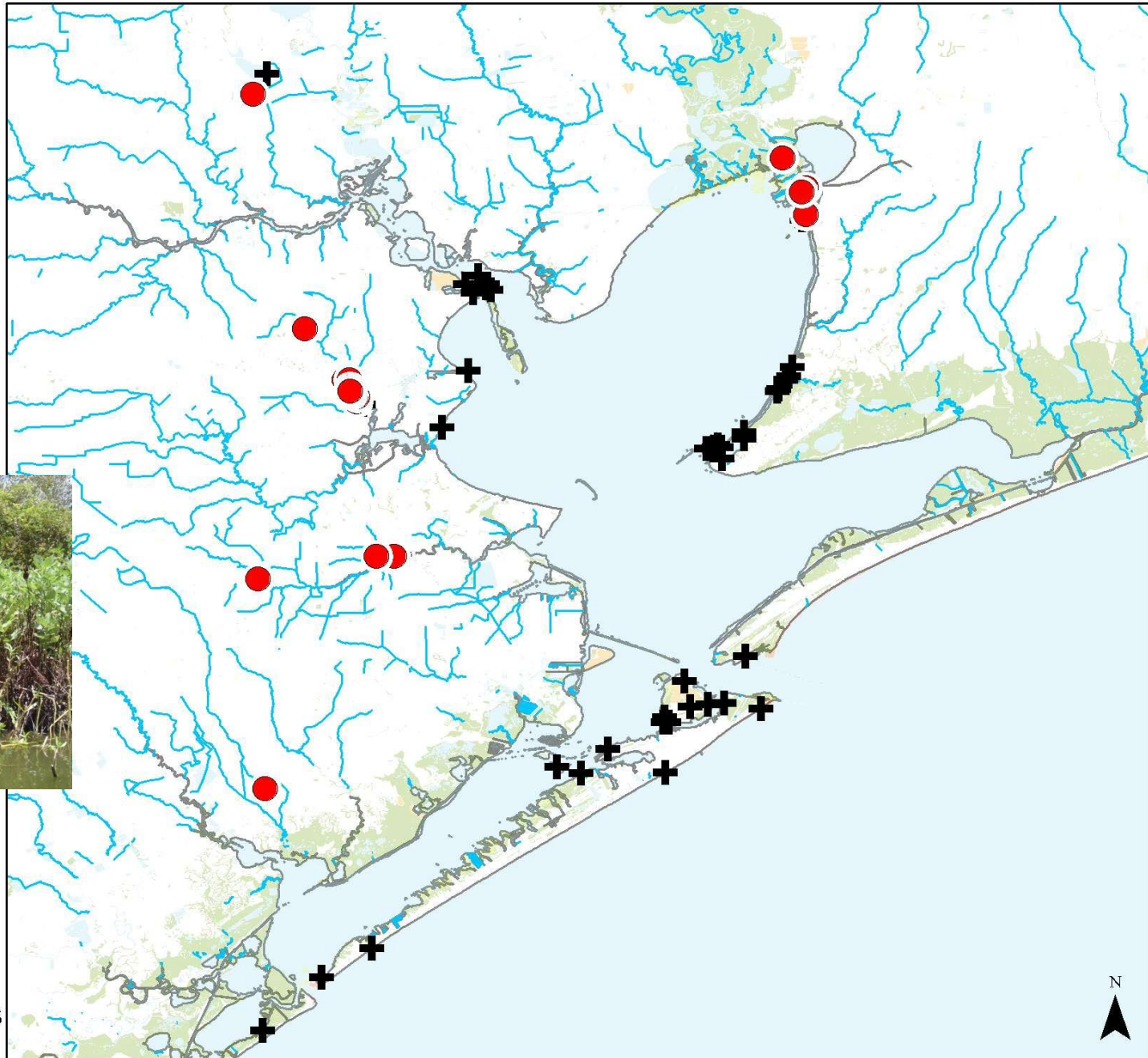
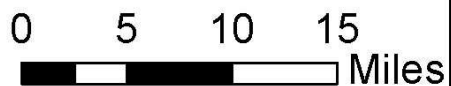


Present



Nicki Starks

Native To: South America



N

Arundo donax (giant reed)

Arundo donax

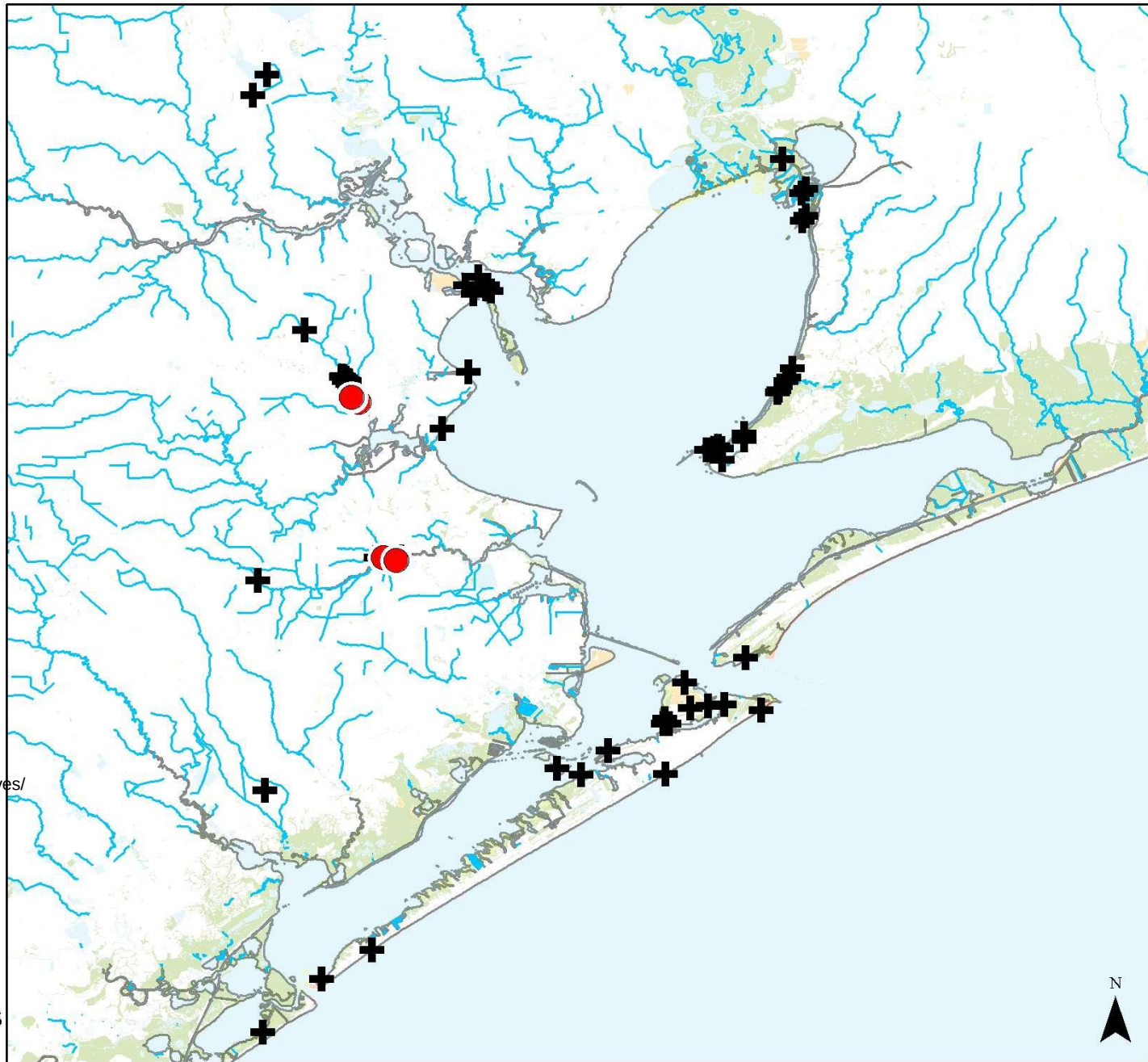
- + Absent
- Present



<http://images.harc.edu/Sites/GalvBayInvasives/Species/ArundoDonax.jpg.thumb.jpg>

Native To: eastern Asia

0 5 10 15
Miles



Colocasia esculenta (wild taro)

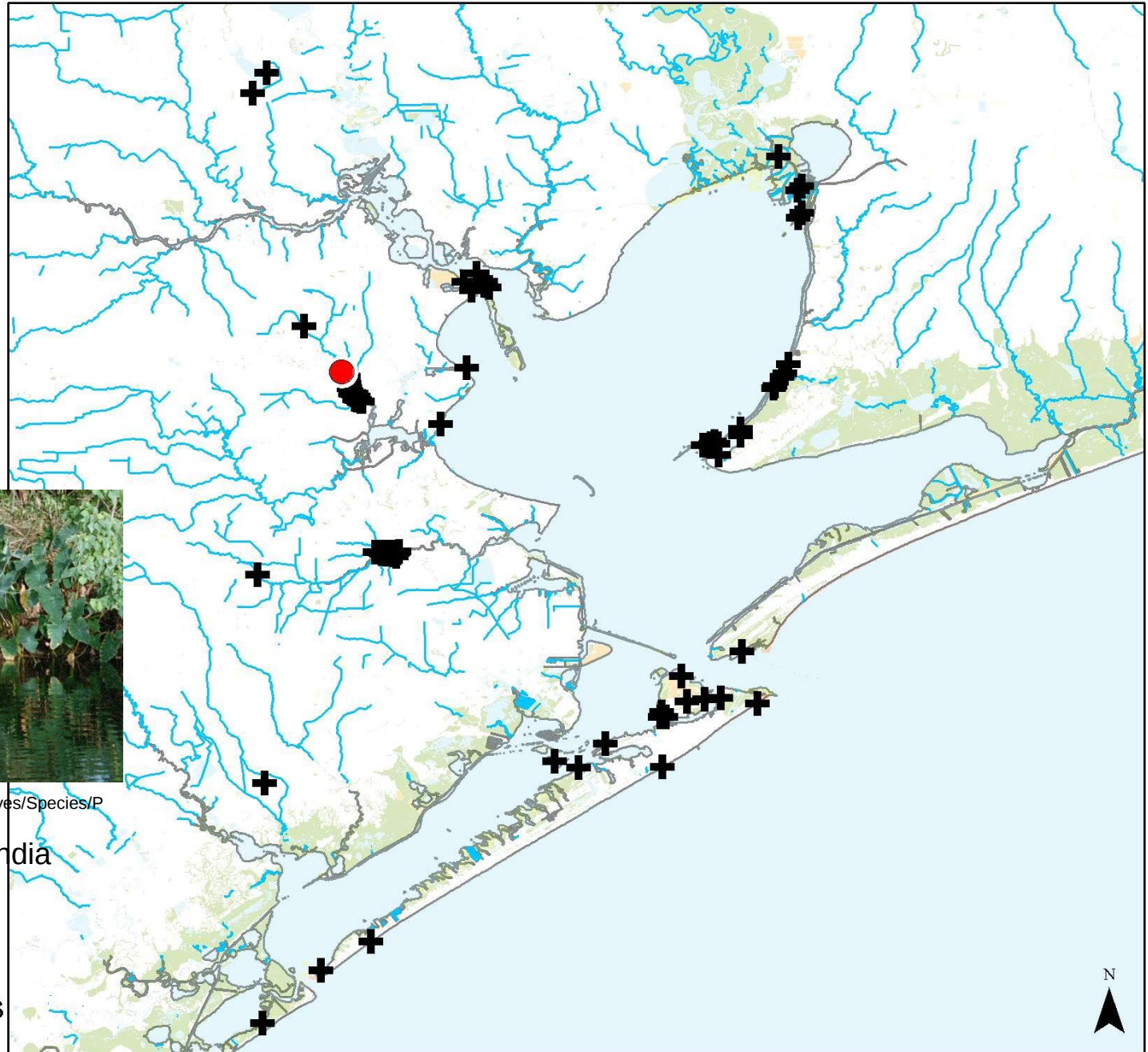
Colocasia esculenta

- ✚ Absent
- Present



http://images.harc.edu/Sites/GalvBayInvasives/Species/Photos/COES_EIHUHCL.jpg

Native To: South Asia & India



Eichhornia crassipes (common water hyacinth)

Eichhornia crassipes

- Present
- ✚ Absent

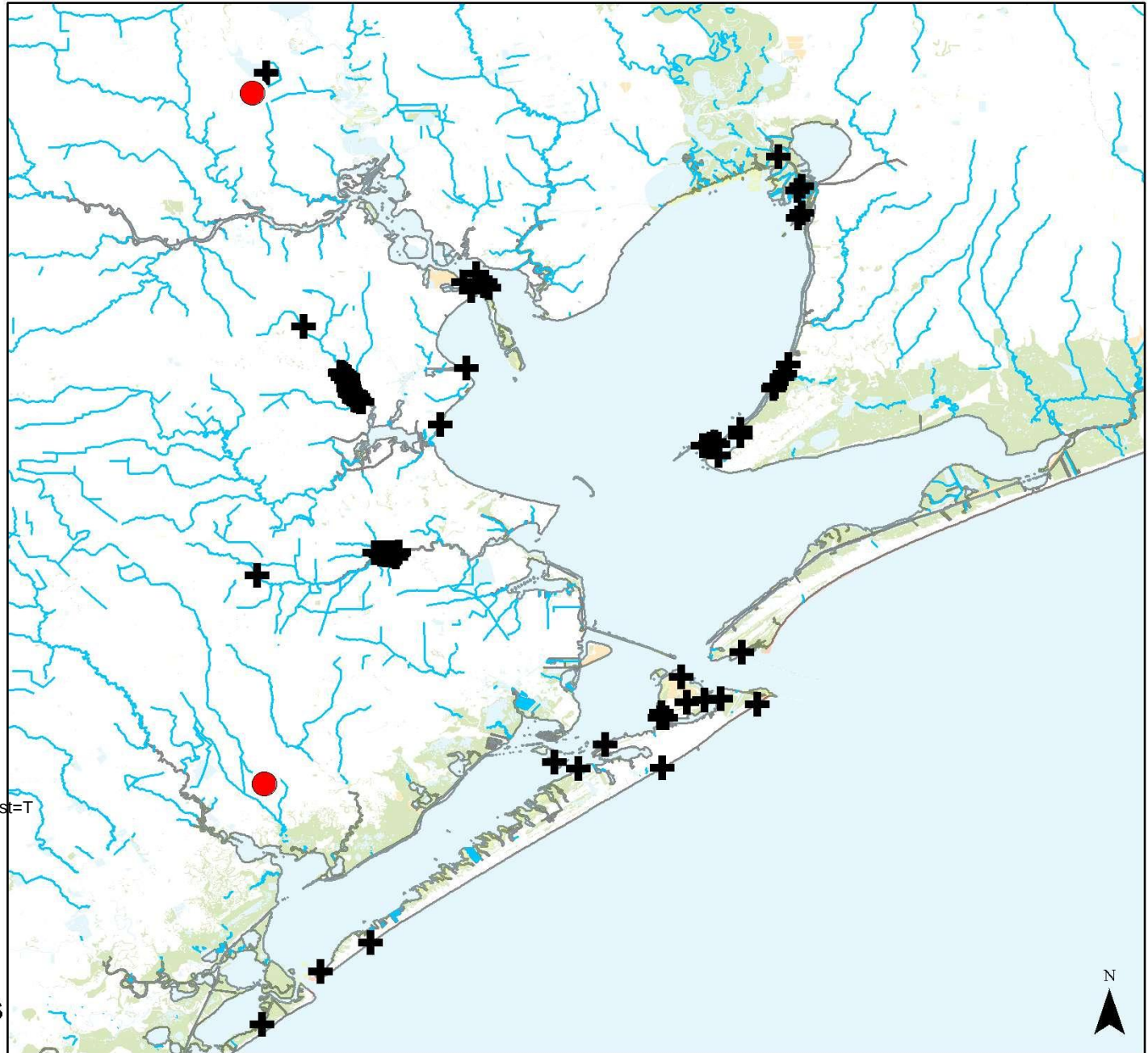


<http://www.galvbayinvasives.org/Guide/List?list=T>

PWD PES

Native To: South America

0 5 10 15
Miles



Hydrilla verticillata (water thyme)

Hydrilla verticillata

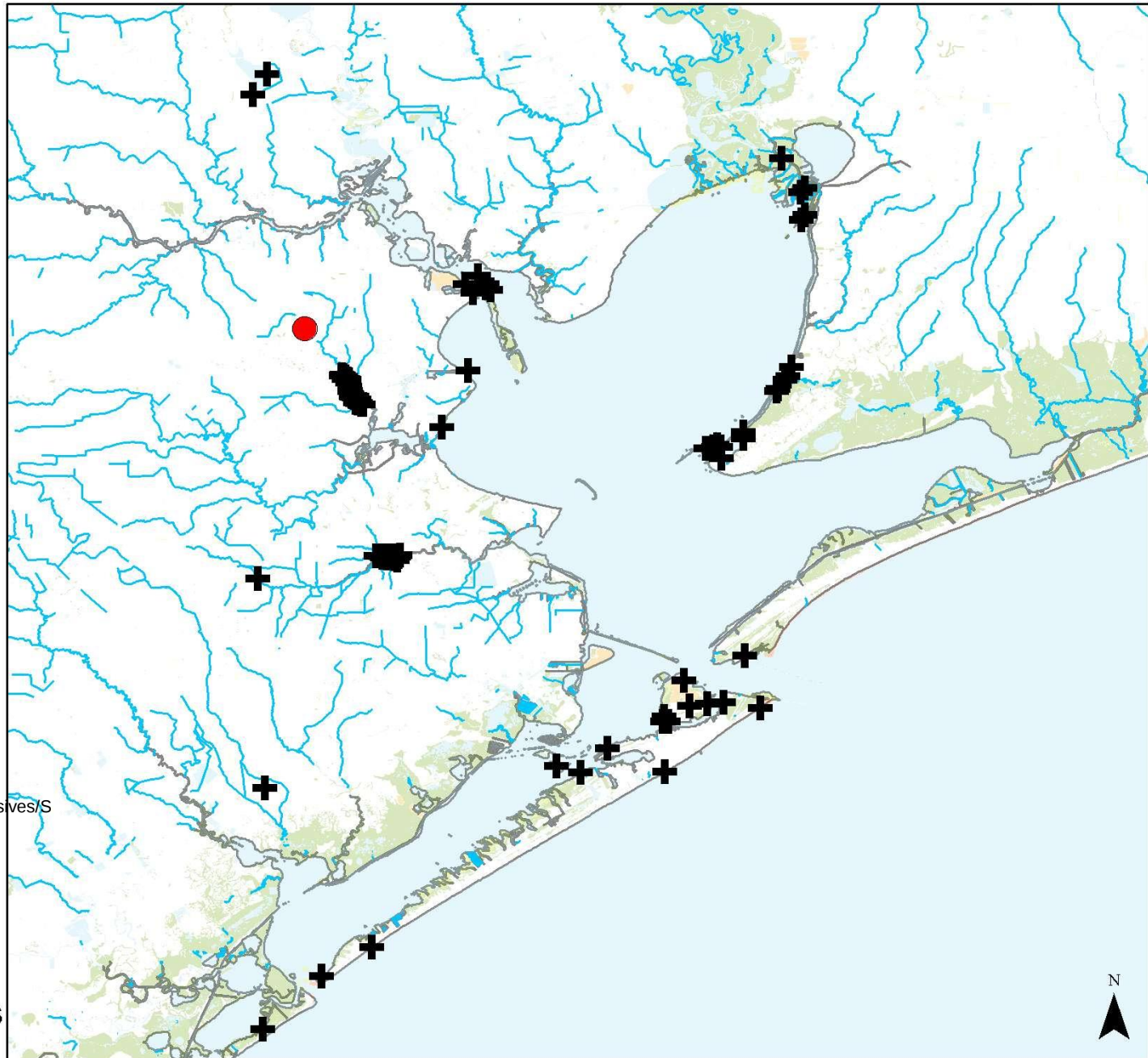
- ✚ Absent
- Present



<http://images.harc.edu/Sites/GalvBayInvasives/Species/HydrillaVerticillata.jpg.thumb.jpg>

Native To: Africa

0 5 10 15
Miles



Salvinia molesta (giant salvinia)

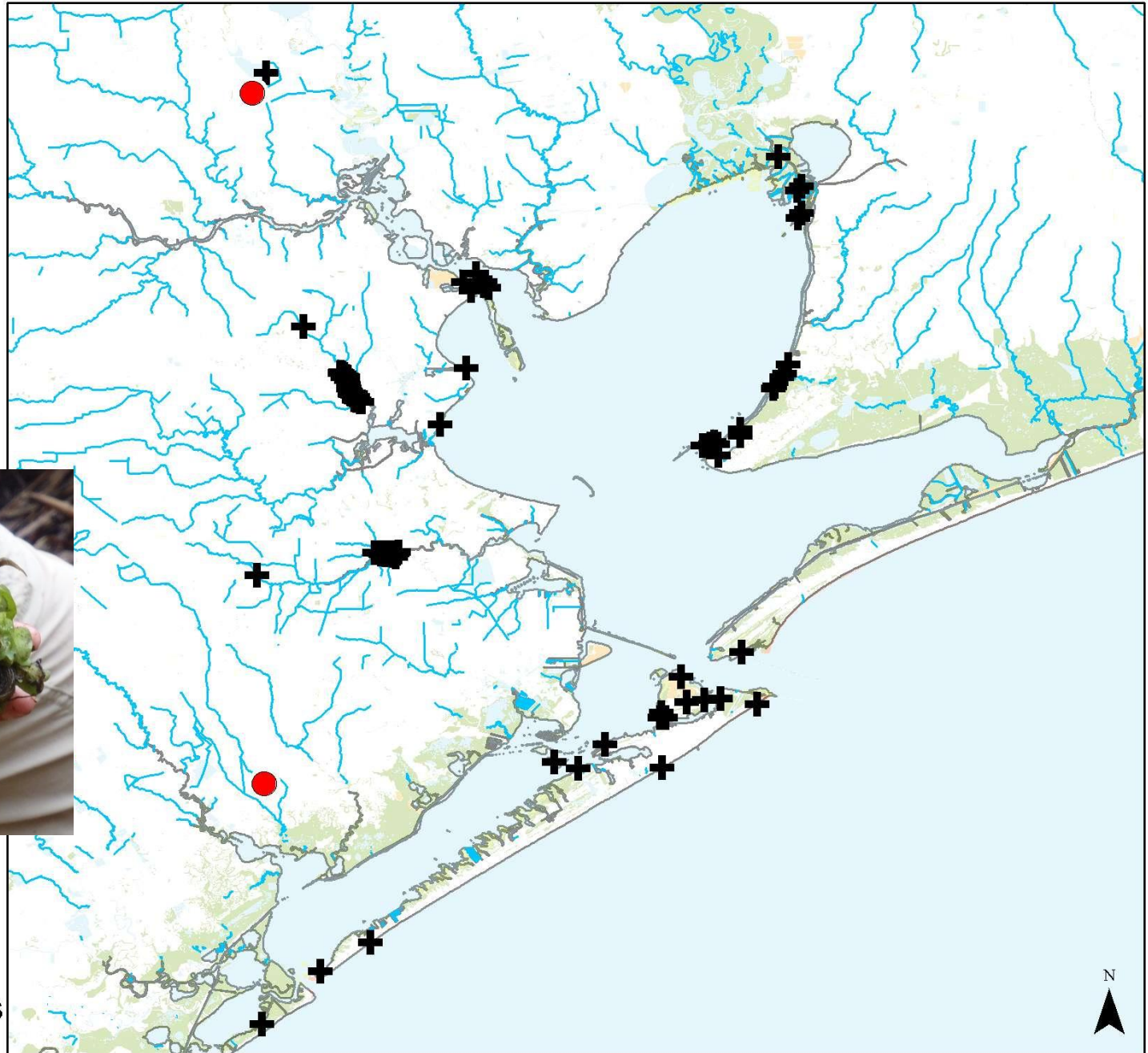
Salvinia molesta

- Present
- ✚ Absent



Nicki Starks

Native To: Brazil



Schinus terebinthifolius (Brazilian pepper tree)

Schinus terebinthifolius

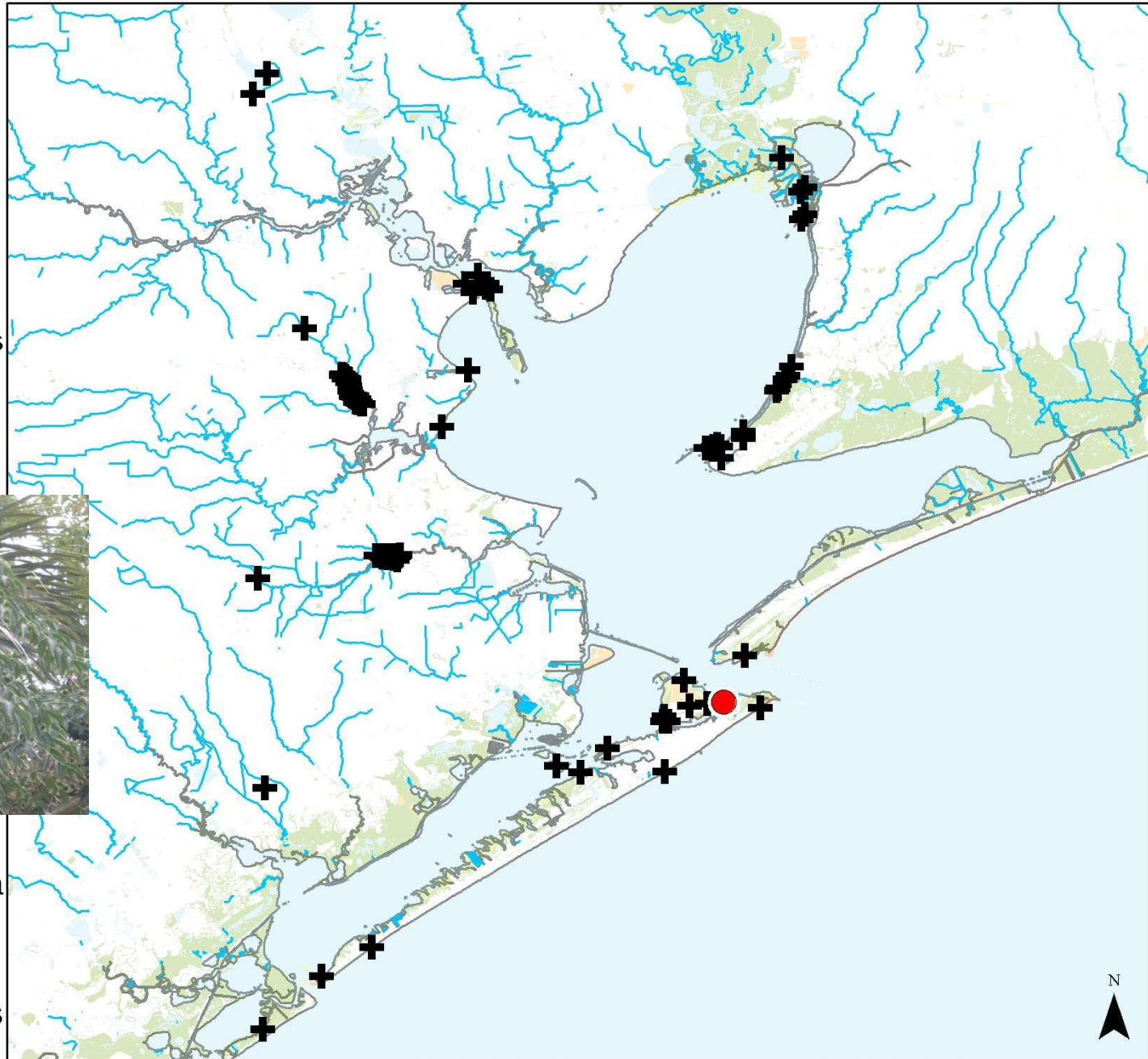
- ✚ Absent
- Present



Nicki Starks

Native To: South America

0 5 10 15
Miles



Tamarix spp. (salt cedars)

Tamarix chinensis

▲ Present

Tamarix ramosissima

■ Present

Tamarix gallica

● Present

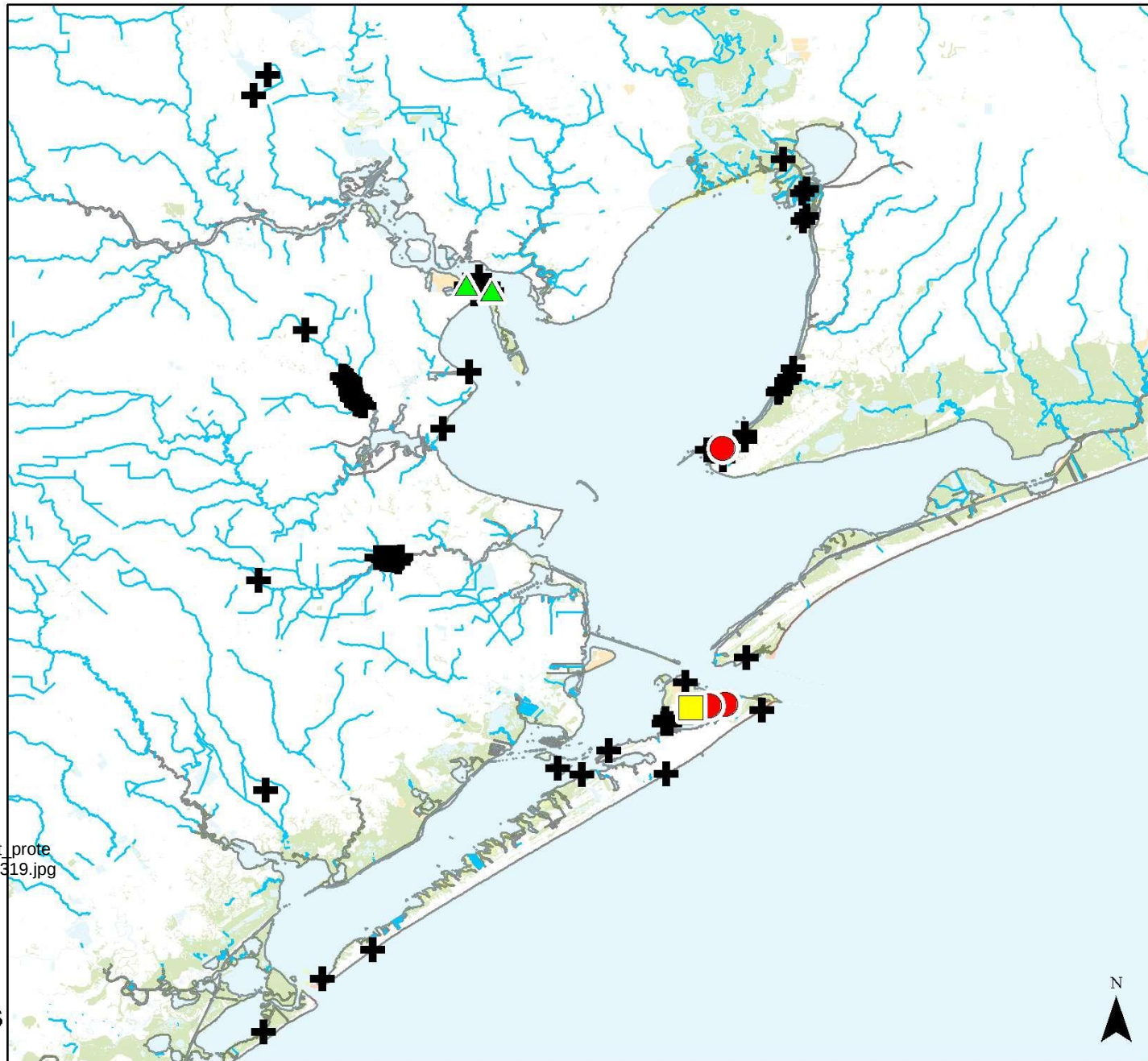
✚ Absent



http://www.ksda.gov/includes/images/plant_protection/Noxious%20Weeds/SaltCedarBloom319.jpg

Native To: Sicily & Morocco
southwestern Asia
Eurasia

0 5 10 15
Miles



Triadica spp. (Chinese tallow)

Triadica sebifera

▲ Present

Triadica sp

✚ Absent

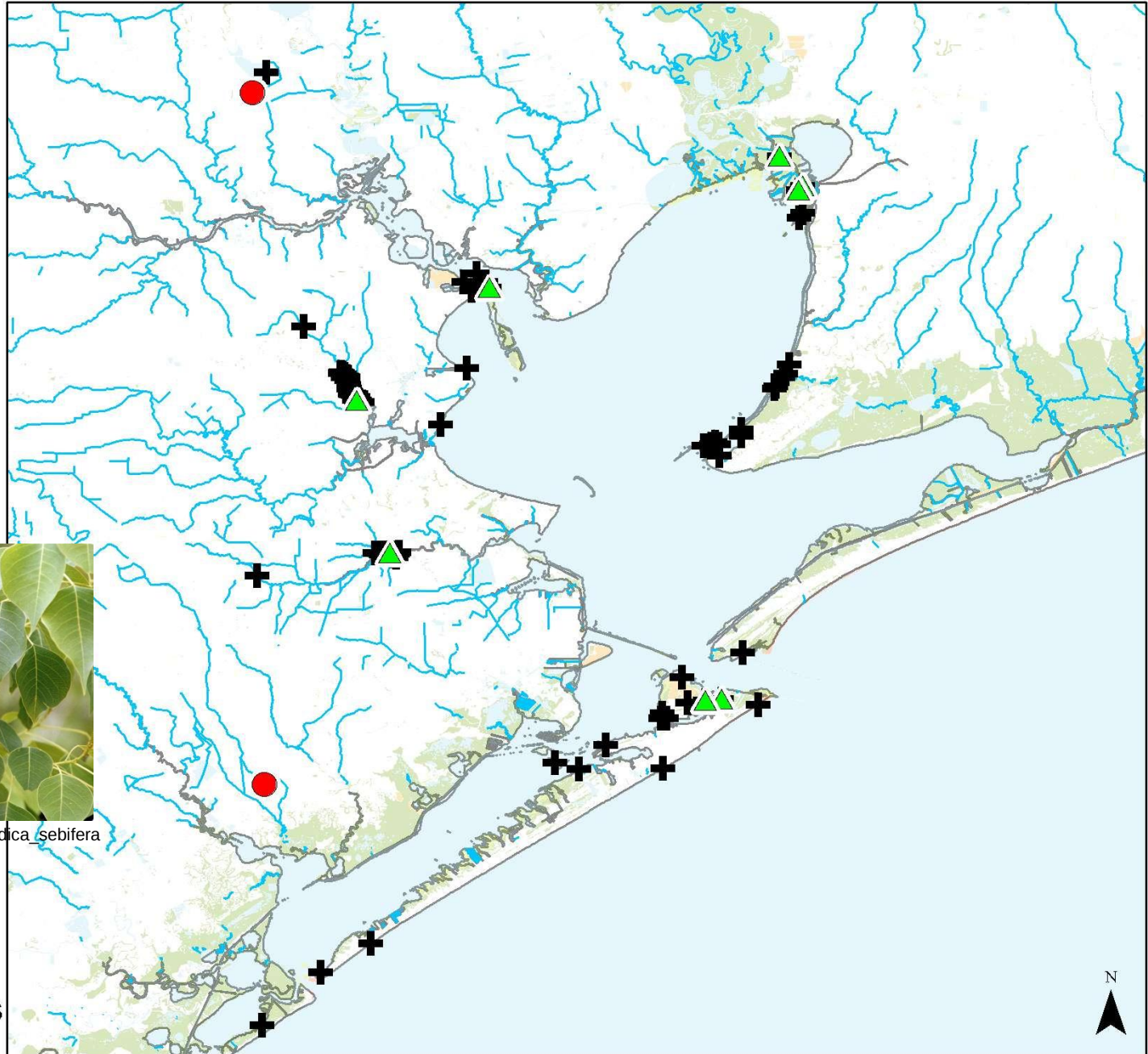
● Present



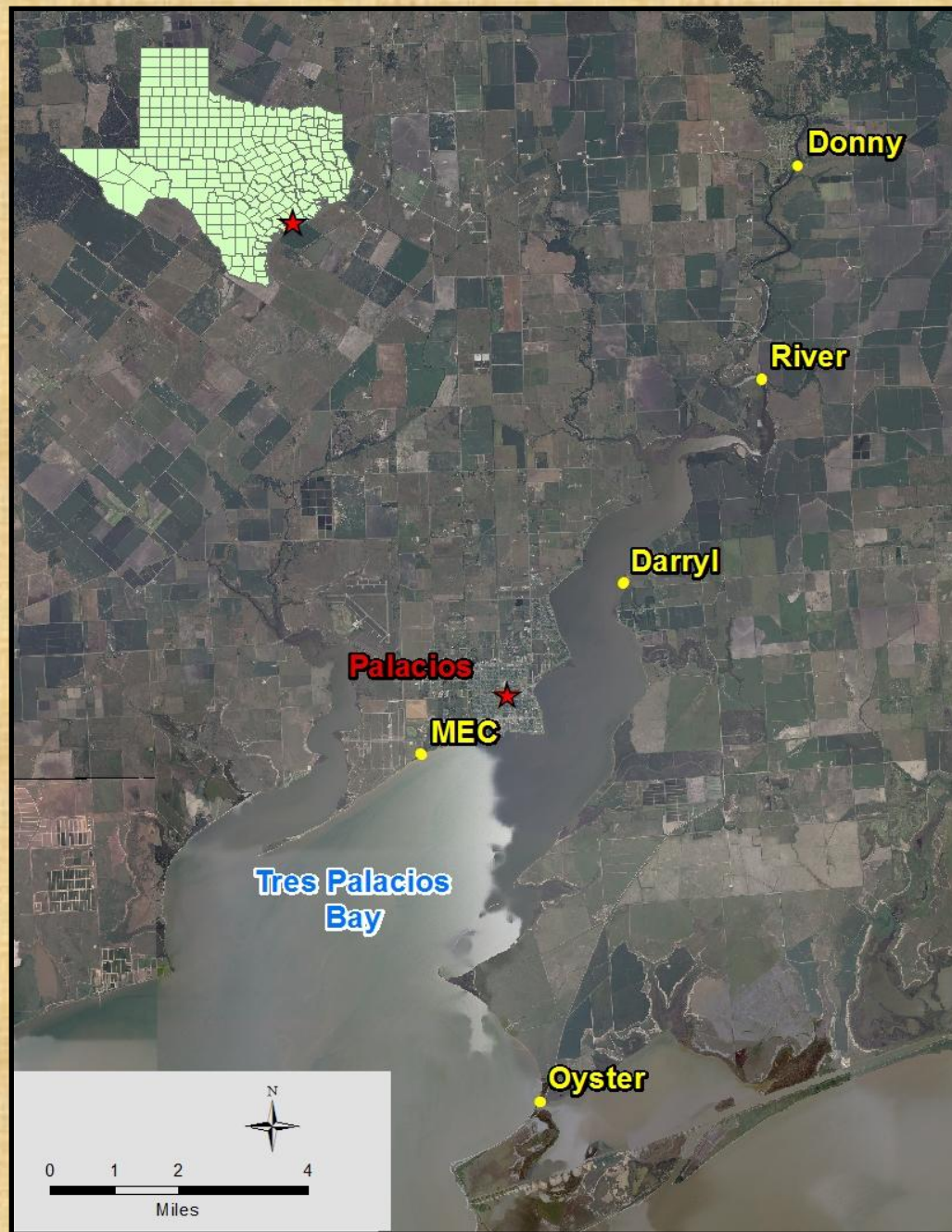
http://www.floridanature.org/photos/Triadica_sebifera_2b,_Tallahassee,_20040509.jpg

Native To: China

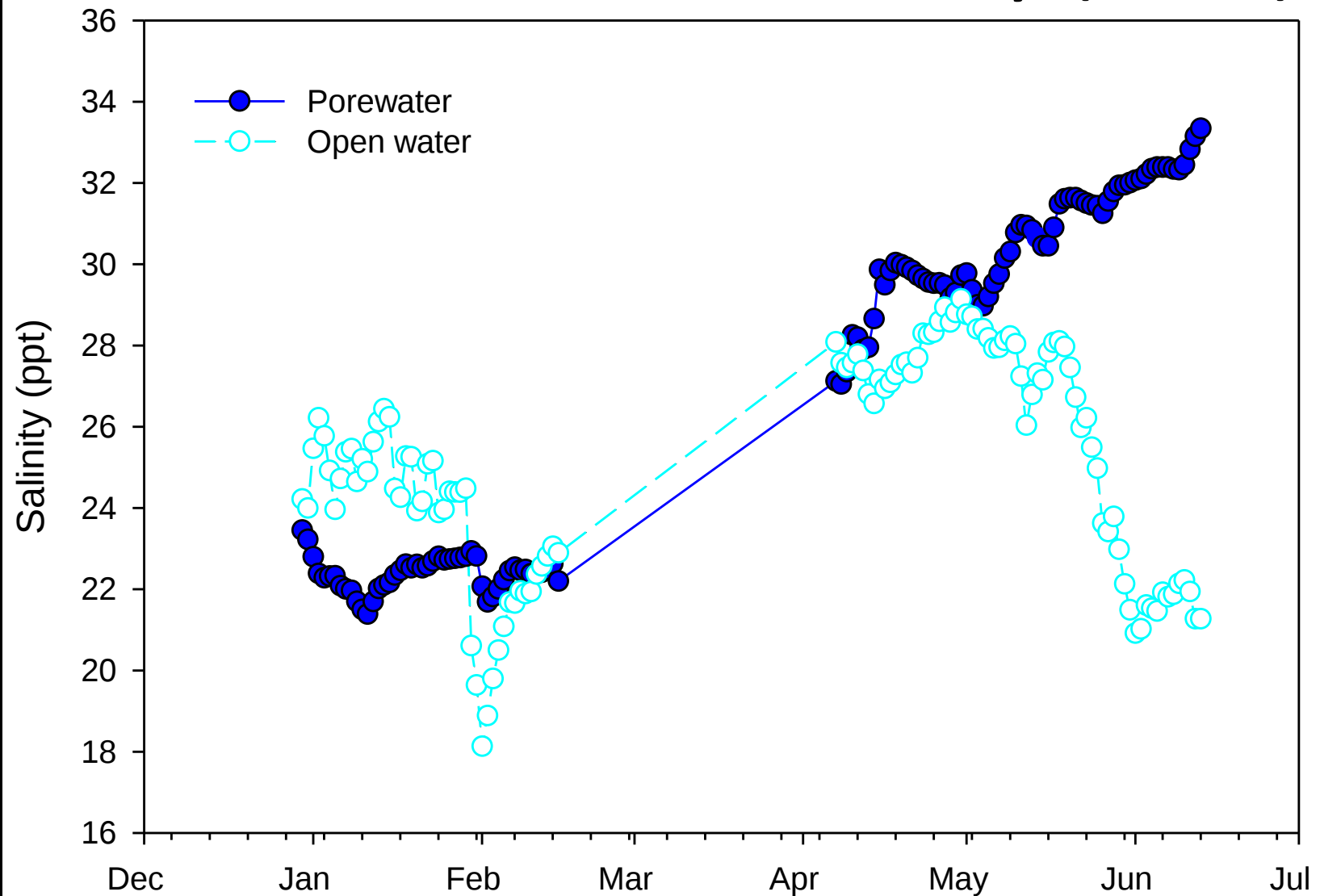
0 5 10 15
Miles



TRES PALACIOS WETLAND PLANT COMPOSITION



Lower Tres Palacios Bay (MEC)



Implications

- Routine fishery-independent monitoring may miss invasives
- Rare and invasive faunal species not clearly linked to droughts
- Drought affects on wetlands are pronounced
- Long-term primary production changes to upper trophic levels remain unknown



QUESTIONS?