Florida IJF Activities in 2021

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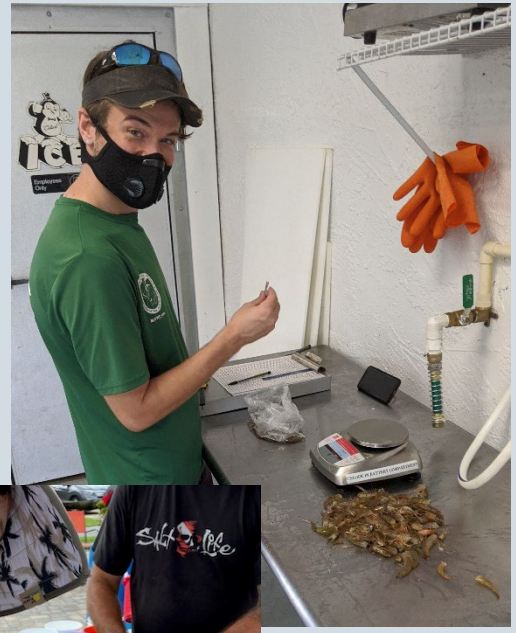
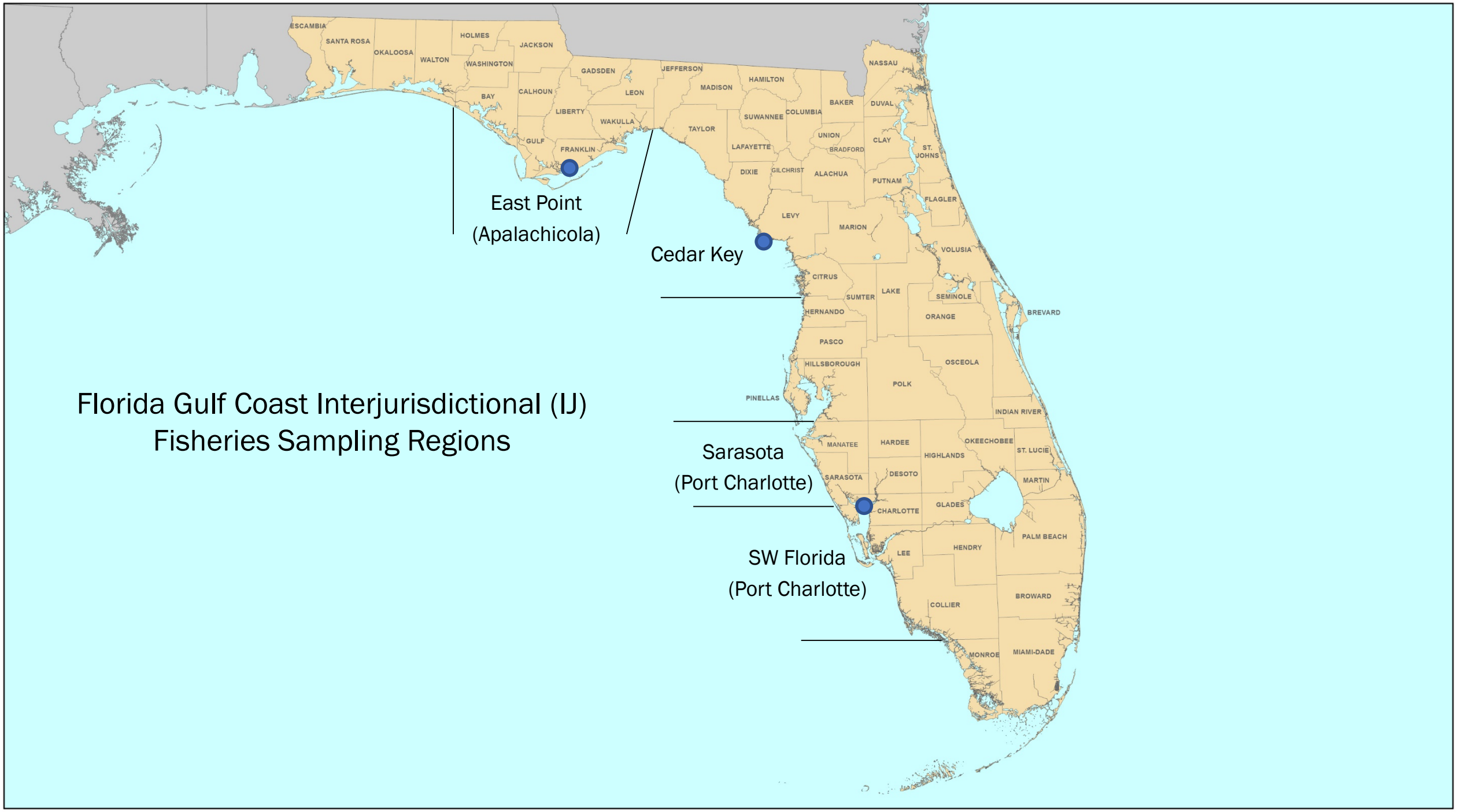
Two Tasks in 2021

- Task 1: increase biological sampling for IJF species in the commercial Trip Interview Program (TIP)

- Task 2: pilot test a survey method to monitor the recreational scallop fishery



Task 1 – Commercial TIP sampling



Florida Gulf Coast Interjurisdictional (IJ) Fisheries Sampling Regions

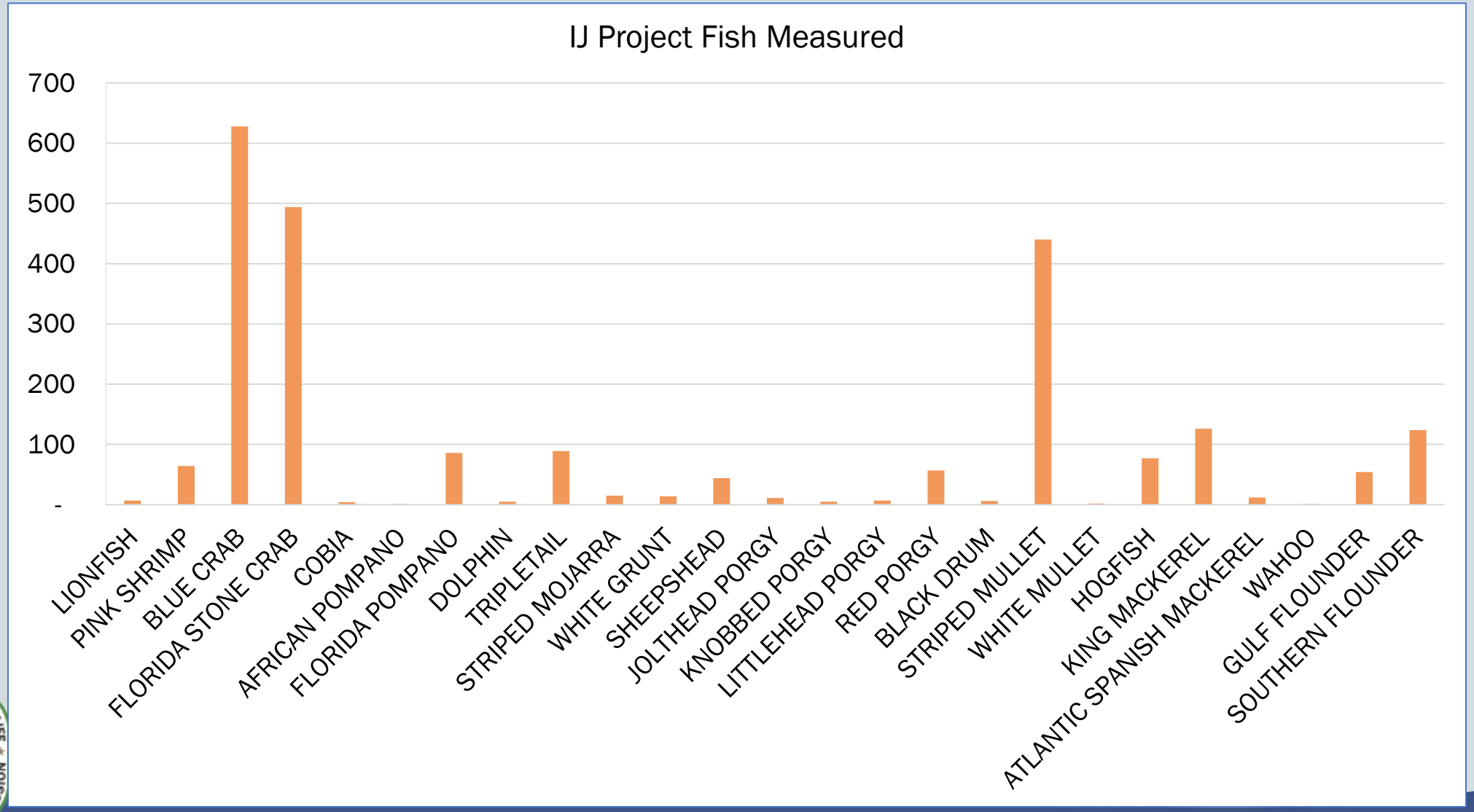
Number of Interviews and Samples Taken from Interjurisdictional (IJ) Fisheries along Florida's Gulf Coast through August 2021

Region*	Totals		
	Interviews	Fish Measured	Hard Parts
Pensacola	17	472	-
Apalachicola	37	691	235
Cedar Key	55	1,629	264
St. Pete	-	-	-
Charlotte Harbor	10	53	15
Southwest Florida	1	6	-
Marathon	60	1,772	2
Total	180	4,623	516

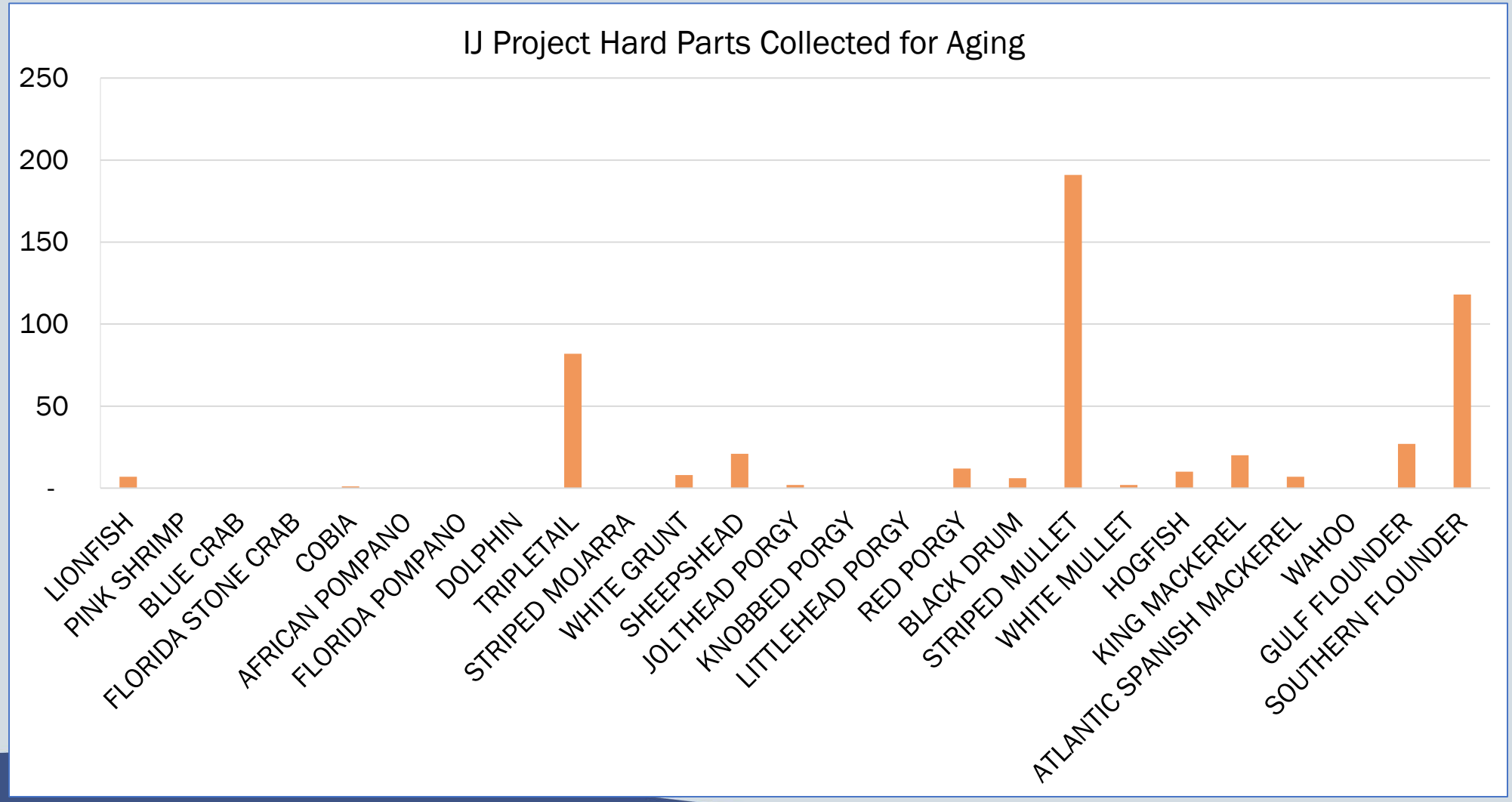
IJ Project Totals	103	2,379	514
% of Gulf IJ Totals	57.2%	51.5%	99.6%

* Regions in blue are specific to the IJF grant

Number of IJ Fish Measured by Species as collected by IJ Project Samplers along Florida's Gulf Coast through August 2021



Number of Hard Parts by IJ Species as collected by IJ Project Samplers along Florida's Gulf Coast through August 2021



Items of Note for Commercial Sampling in 2021

- Hiring delayed due to COVID-19
  - First field staff member hired in late March
- Frequent staff turnover in Cedar Key and Sarasota regions and late start in SW Florida for medical reasons
  - Lower number of interviews and samples than anticipated
- All positions now filled and conducting interviews

Task 2 – Recreational Bay Scallop Pilot Study

West Florida Bay Scallop Fishery

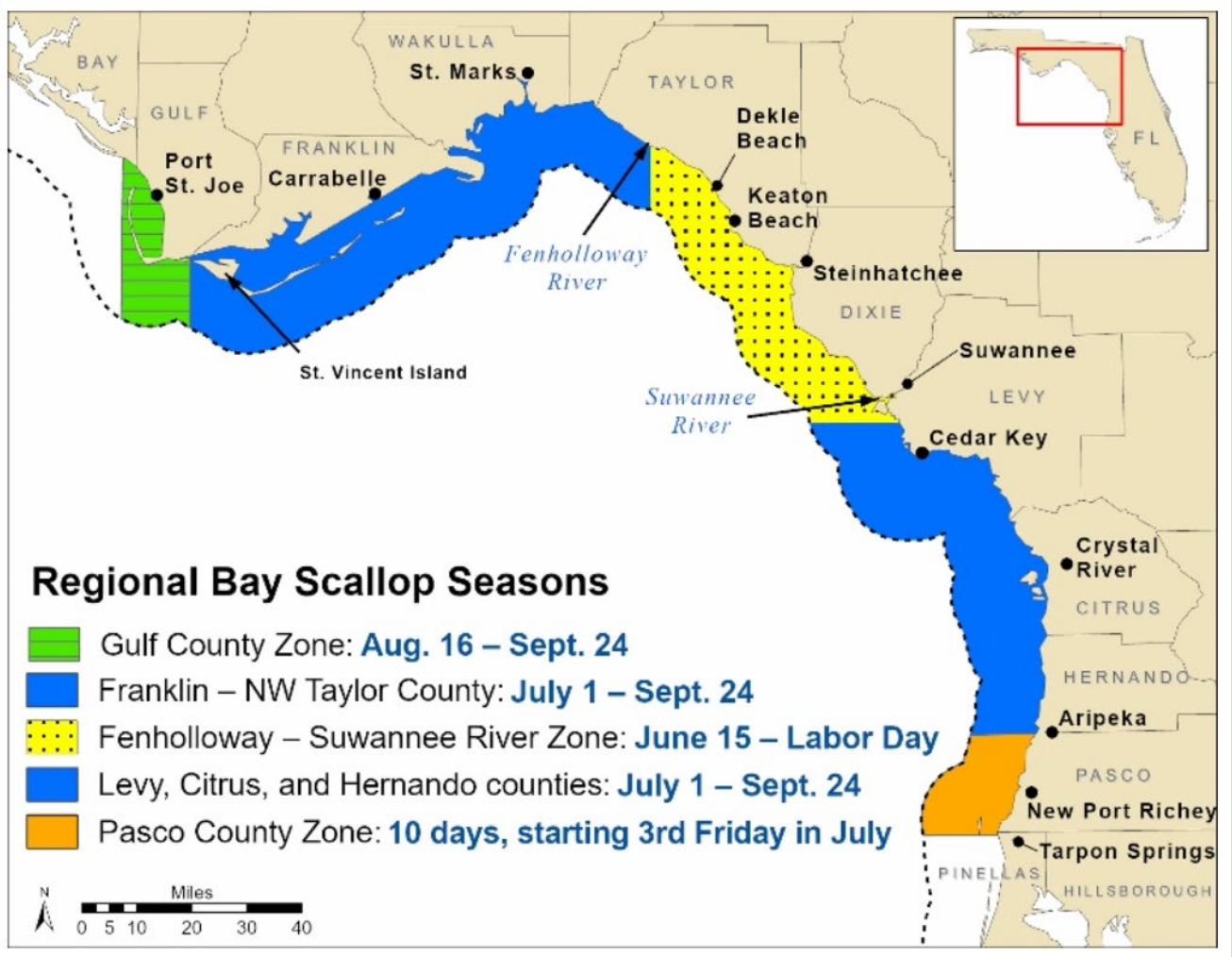
- Historically widespread
  - Local populations still viable
- Short-lived (22 mos.)
  - Managed as annual crop
- Commercial fishery
  - Closed in 1994
- Recreational fishery
  - Increasing in popularity
  - No long-term monitoring

Argopecten irradians

2015 season opening, Citrus County

2021 Recreational Scallop Pilot Study

- CPUE (IJF funds)
  - Field intercept survey
  - 3 seasonal samplers
  - June through Sept.
- Effort (state funds)
  - Monthly mail survey



Scallop Intercept Survey

- Identified 48 sites throughout study region where scallops are landed
- Sites weighted by size
  - # parking spaces
- Sampled proportional to size by:
  - Stratified by region and week
    - 2 weekday assignments
      - 1 a.m., 1 p.m.
    - 2 weekend assignments
      - 1 a.m., 1 p.m.

Sample totals:

- 136 assignments completed
- 518 private boat scallop parties intercepted
- 59 charter scallop parties intercepted

Scallop Intercept Survey

- Trip Data
  - Interview time
  - Mode (PR, CH)
  - Whether party scalloped
  - Whether party finfished
  - # in party
  - # scallopers in party
  - # scallopers w/Saltwater License
  - Time spent in water
- Catch Data
  - Gallons harvested
  - # scallops per unit volume
  - Size measured in mm
    - Up to 20 scallops per party

Monthly Mail Survey

Mae B. Outdoors

CID: 987654321 1980-01-01 W/M 321654987/FL

Item:	Since:	Renew By:
Freshwater Fishing	07/01/2020	06/30/2021
Lobster	07/01/2020	06/30/2021
State Reef Fish Angler	07/01/2020	06/30/2021
Hunting	07/01/2020	06/30/2021
Management Area Permit	07/01/2020	06/30/2021
Saltwater Fishing	07/01/2020	06/30/2021

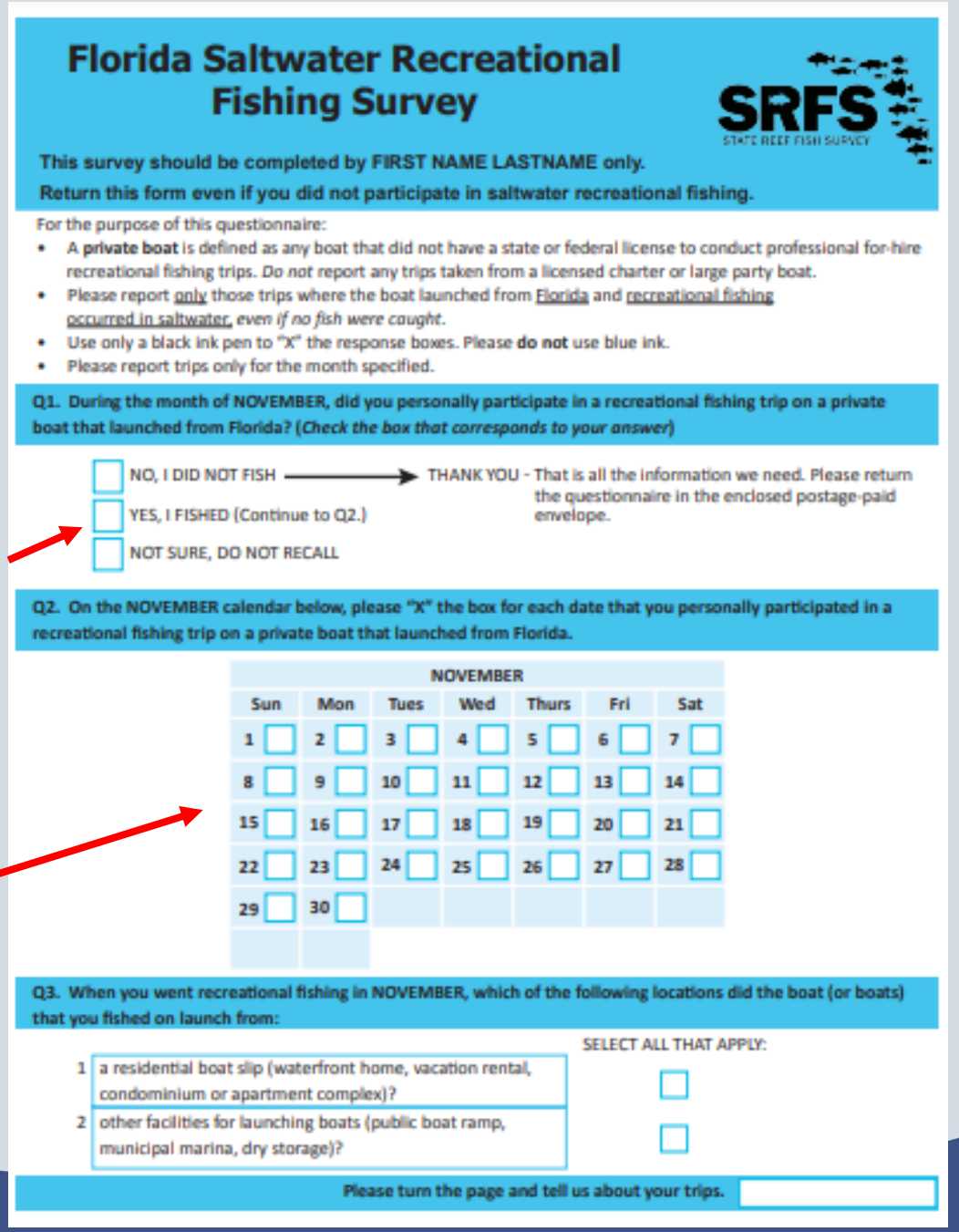
By use of this license I agree to comply with all applicable state laws and rules of the commission. If hunting under the mentoring exemption (deferral), the license holder must hunt under the supervision of, and in the presence of, a person 21 years of age or older who is licensed to hunt or is exempt from licensing requirements. To report fish or wildlife violations, call Wildlife Alert at 1-888-404-3922.

Saltwater license holders:

- Special reef fish angler designation serves as directory of participants for the State Reef Fish Survey.
- Additional surveys mailed to license holders without the reef fish designation.

Mail survey respondents asked to recall whether they fished from a private boat in FL over past month.

Use calendar to mark each day they recall taking a trip.



Florida Saltwater Recreational Fishing Survey

SRFS STATE REEF FISH SURVEY

This survey should be completed by FIRST NAME LASTNAME only.

Return this form even if you did not participate in saltwater recreational fishing.

For the purpose of this questionnaire:

- A **private boat** is defined as any boat that did not have a state or federal license to conduct professional for-hire recreational fishing trips. *Do not* report any trips taken from a licensed charter or large party boat.
- Please report only those trips where the boat launched from Florida and recreational fishing occurred in saltwater, *even if no fish were caught.*
- Use only a black ink pen to "X" the response boxes. Please **do not** use blue ink.
- Please report trips only for the month specified.

Q1. During the month of NOVEMBER, did you personally participate in a recreational fishing trip on a private boat that launched from Florida? (*Check the box that corresponds to your answer*)

- ☐ NO, I DID NOT FISH → THANK YOU - That is all the information we need. Please return the questionnaire in the enclosed postage-paid envelope.
- ☐ YES, I FISHED (Continue to Q2.)
- ☐ NOT SURE, DO NOT RECALL

Q2. On the NOVEMBER calendar below, please "X" the box for each date that you personally participated in a recreational fishing trip on a private boat that launched from Florida.

NOVEMBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
8 ☐	9 ☐	10 ☐	11 ☐	12 ☐	13 ☐	14 ☐
15 ☐	16 ☐	17 ☐	18 ☐	19 ☐	20 ☐	21 ☐
22 ☐	23 ☐	24 ☐	25 ☐	26 ☐	27 ☐	28 ☐
29 ☐	30 ☐					

Q3. When you went recreational fishing in NOVEMBER, which of the following locations did the boat (or boats) that you fished on launch from:

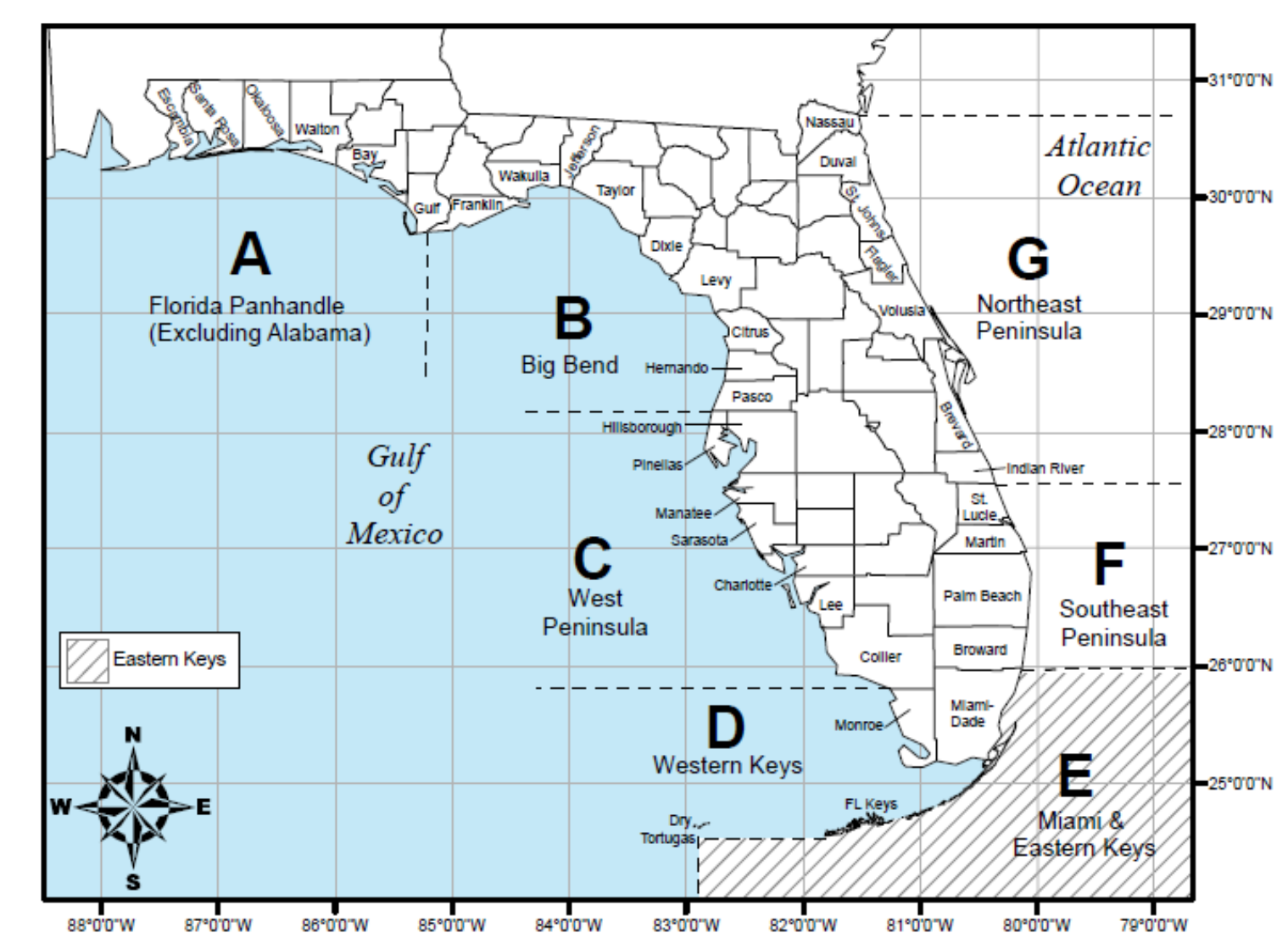
SELECT ALL THAT APPLY:

1 a residential boat slip (waterfront home, vacation rental, condominium or apartment complex)? ☐

2 other facilities for launching boats (public boat ramp, municipal marina, dry storage)? ☐

Please turn the page and tell us about your trips.

Fishing area map provided with questionnaire



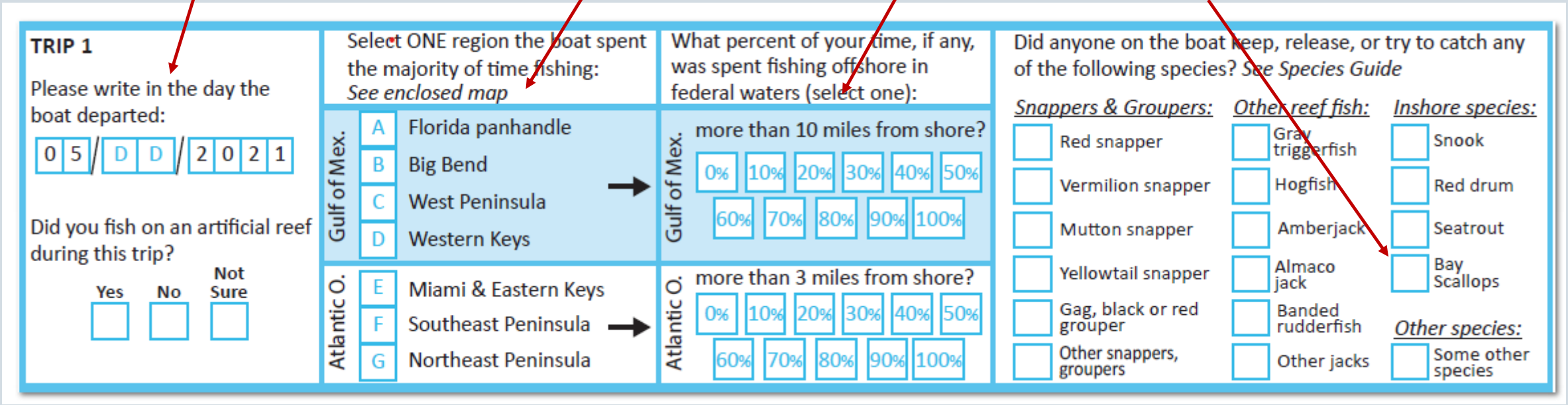
Trip Level Reporting

Trip date

Region fished

% time, if any, fished in EEZ

Bay scallops added to species caught or targeted



TRIP 1

Please write in the day the boat departed:

0 5 / D D / 2 0 2 1

Did you fish on an artificial reef during this trip?

Yes ☐ No ☐ Not Sure ☐

Select ONE region the boat spent the majority of time fishing: *See enclosed map*

Gulf of Mex.
- A Florida panhandle
- B Big Bend
- C West Peninsula
- D Western Keys

Atlantic O.
- E Miami & Eastern Keys
- F Southeast Peninsula
- G Northeast Peninsula

What percent of your time, if any, was spent fishing offshore in federal waters (select one):

Gulf of Mex. — more than 10 miles from shore?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Atlantic O. — more than 3 miles from shore?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Did anyone on the boat keep, release, or try to catch any of the following species? *See Species Guide*

Snappers & Groupers:
- ☐ Red snapper
- ☐ Vermilion snapper
- ☐ Mutton snapper
- ☐ Yellowtail snapper
- ☐ Gag, black or red grouper
- ☐ Other snappers, groupers

Other reef fish:
- ☐ Gray triggerfish
- ☐ Hogfish
- ☐ Amberjack
- ☐ Almaco jack
- ☐ Banded rudderfish
- ☐ Other jacks

Inshore species:
- ☐ Snook
- ☐ Red drum
- ☐ Seatrout
- ☐ Bay Scallops

Other species:
- ☐ Some other species

Allows for estimation of scallop effort in Big Bend

Number of Mail Surveys Sent to State Reef Fish (SRFS) Anglers and non-SRFS Anglers each Month of 2021 Bay Scallop Season

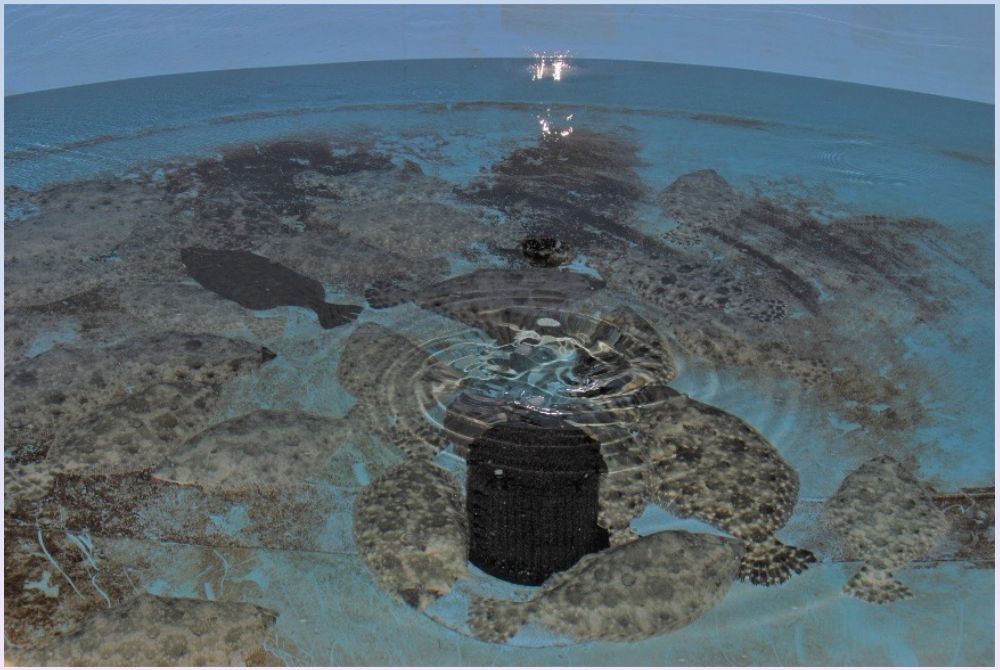
Month	Surveys Mailed	
	SRFS	Non-SRFS
June	7,000	0*
July	7,000	3,000
August	7,000	3,000
September	10,000	3,000

- July fishing month response rates to date (in progress):
  - SRFS: 17.3%
  - Non-SRFS: 14.7%

Items of Note for Bay Scallop Pilot Study in 2021

- Tropical storm weather cancelled several assignments throughout the season
- Difficulty finding applicants for northern region of the study area
- Study would benefit from more samplers for better coverage at high-pressure sites during high effort periods

Alabama Department of Conservation and Natural Resources Marine Resources Division Flounder Research and Stocking Program



John Mareska October 20, 2021 To Technical Coordinating Committee

AL DCNR/Marine Resources Division

Southern Flounder Jobs

- Culture & Stocking
  - CPMC
- Cryogenic technology
  - Auburn
- Movements and Habitats
  - USA/DISL

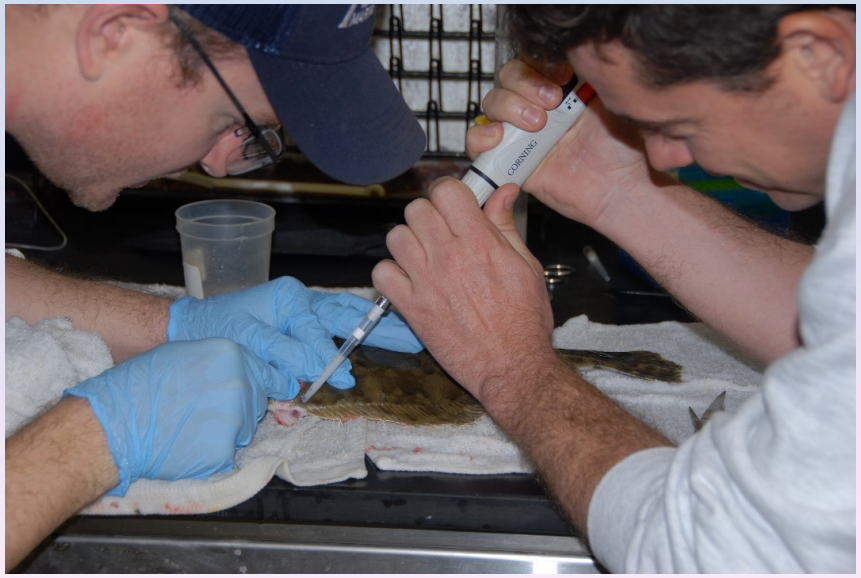
Culture & Stocking

Only reared during their natural spawning season

- January and February due to food availability
- Released at ~ 1”
- Females injected Ovaplant-L [sGnRHa] 50 ug/kg
- Both sexes strip spawned

2019* – 12,236

2020 – 34,591



AL DCNR/Marine Resources Division

Sperm Cryogenic Research

Investigate long-term storage of sperm

- synchronize parental gamete availability,
- conserve sperm volume (sperm limited supply)
- reduce male broodstock numbers
- aids in multiple spawning crosses males to females
- conserve genetic variability in populations
- reduce the risk of disease transfer

Understand effects of sperm cryopreservation for Southern Flounder on viability for production and evaluate offspring performance.

Sperm Cryogenic Results

1) Cryoprotectant treatments (3)
   - DMSO + Trehalose[1]
   - DMSO + Lactose
   - DMSO

2) Cryoprotectant treatments (20)
   - DMSO, Propylene glycol, egg yolk, Trehalose, Lactose
     - varying levels of Trehalose and Lactose

   - DMSO + 0.5% Lactose + egg yolk
   - Propylene glycol + Trehalose 200 mM

Future; Cryogenic and fresh sperm used in triplicate crosses to evaluate survival and hatching success.

Acoustic and T-bar tagging

Flounder tagged in rivers and bays throughout Mobile Bay system

AL DCNR/Marine Resources Division

Results

- 2019 – 55 tagged ~200 days transmitter
- Average length 17.7” TL
- 30% migrated offshore 14 - 22.5” TL (acoustic)
- Non- migratory 14.75 – 25” TL (acoustic)

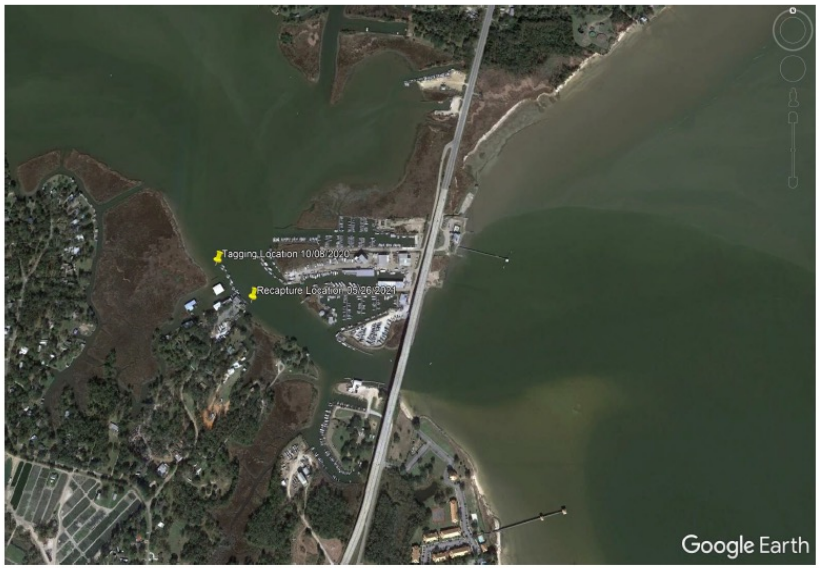
- 2020 – 70 tagged ~200 days transmitter
- Average length 18.7” TL
- 21% migrated offshore 15.7 - 23” TL (acoustic)
- Non- migratory 14 – 20” TL (acoustic)

- 2021 – 71 tagged ~365 days transmitter
- Target of 100 acoustic tagged fish
- Several 10+ flounder tagged per day

Future Tagging Research

- Residency
  - Habitat of non-migratory flounder
  - Leave rivers, but not the bay
- Homing
  - Return to rivers from which they egress
- Integrate movement data and reproductive data
  - Improve estimate of annual reproductive potential (skip spawning or bay spawning?)

	Tag/Release Information	Recapture Information
Date:	10/08/2020	05/26/2021
Total Length:	13 inches	17.75 inches
Weight:		2.25
Days at Liberty:	231 days	



AL DCNR/Ma

ENHANCE ★ PROTECT ★ CONSERVE

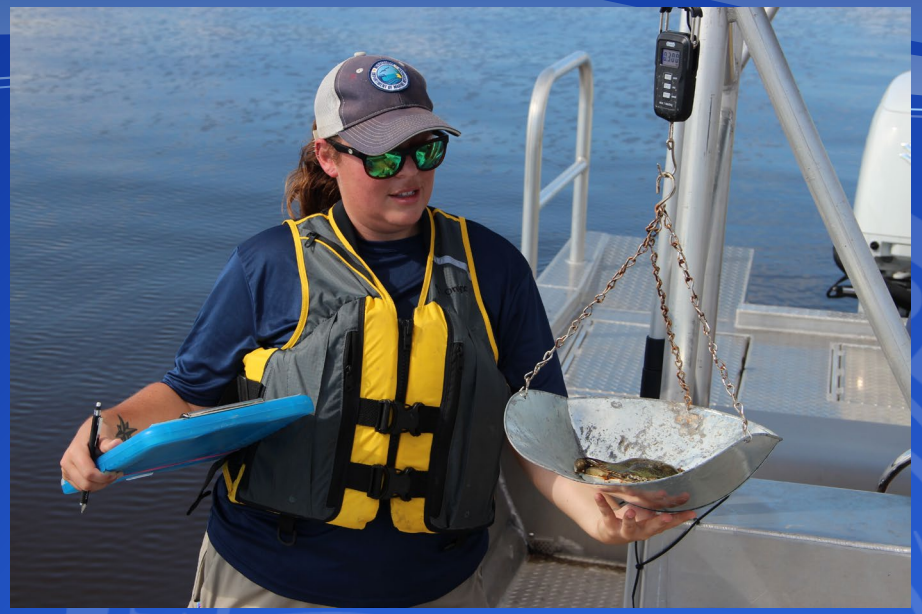
2021 Mississippi SuRF Project Updates

Presented to GSMFC Technical Coordinating Committee

October 20, 2021

Alternative Gear Studies

- Objective: Conduct standardized sampling within inshore waters using crab traps, 6’ & 12’ trawls, and 50’ bag seines.
- Status:
  - Monthly sampling began in January in Jackson, Harrison and Hancock counties
  - 72 trawls, 108 crab trap sets and 36 seine pulls from Jan – June 2021
  - Testing includes use of 2 trawl sizes, use of crab traps in commercial harvest waters, and catch efficiency of two seining methods



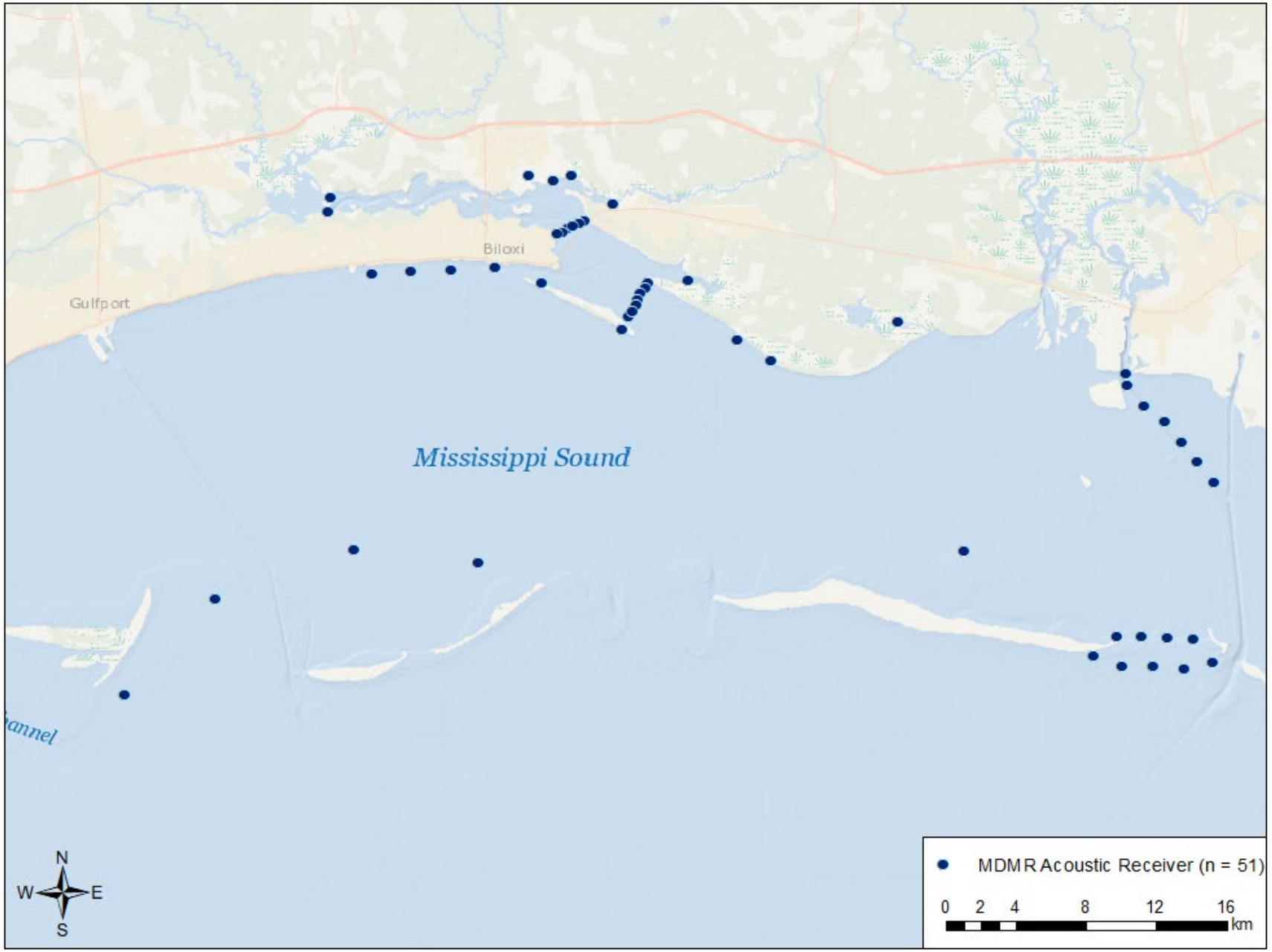

HANKO
GARMIN

Alternative sampling methods for Southern Flounder, *Paralichthys lethostigma*, in Mississippi Inshore Waters

- Objective: Compare catch efficient of various FID sampling methods for targeting Southern Flounder in Pascagoula River and St. Louis Bay.
- Status:
  - Primary gear used are Fyke nets; 3 sample sites were established in each drainage
  - Biweekly sampling began in May 2021; sampling frequency increased in late August to assist in capturing fish for concurrent tagging project

Monitoring Movements and Habitat Use of Southern Flounder

- Objective: Use passive acoustic telemetry to investigate spatial and temporal movement patterns and habitat use of adult Southern Flounder with the lower Pascagoula River
- Status:
  - Acoustic array was installed in August between Horn and Sand Islands
  - Released 34 acoustic-tagged flounder from August to September
  - Targeting fish ≥30.5 cm
  - Intend to deploy 60 tags in 2021

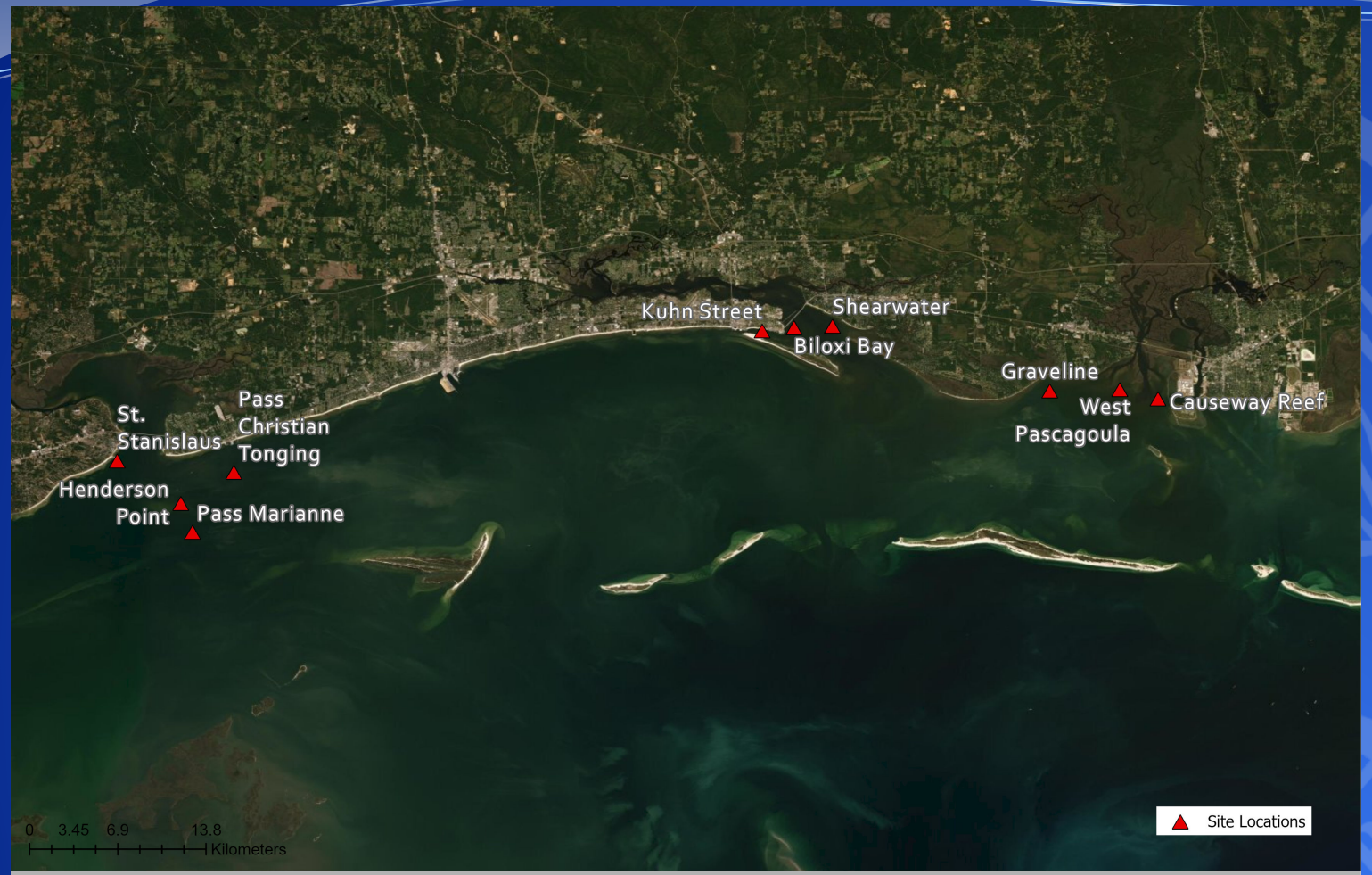

Biloxi
Gulfport
Mississippi Sound
N
W
E
S
MDMR Acoustic Receiver (n = 51)
0 2 4 8 12 16
km

MS FID Integration Project

- Objective: Develop an MDMR-centered data management system
- Status:
  - Completed – identified and compiled historical FID data; designed data structure
  - Ongoing – data standardization and QA/QC;
  - Next steps – database development; interface design

MDMR Eastern Oyster Recruitment and Settlement Patterns on Oyster Reefs in the Mississippi Sound

- Objective: To identify peak seasons and locations for oyster spat settlement in the Mississippi Sound to improve effectiveness of oyster restoration in Mississippi.
- Status:
  - Two settlement plates were deployed at ten historic oyster reef sites across the Mississippi Sound.
  - 162 settlement plates were deployed and collected from January to September 2021.



Eastern Oyster Recruitment and Settlement Patterns

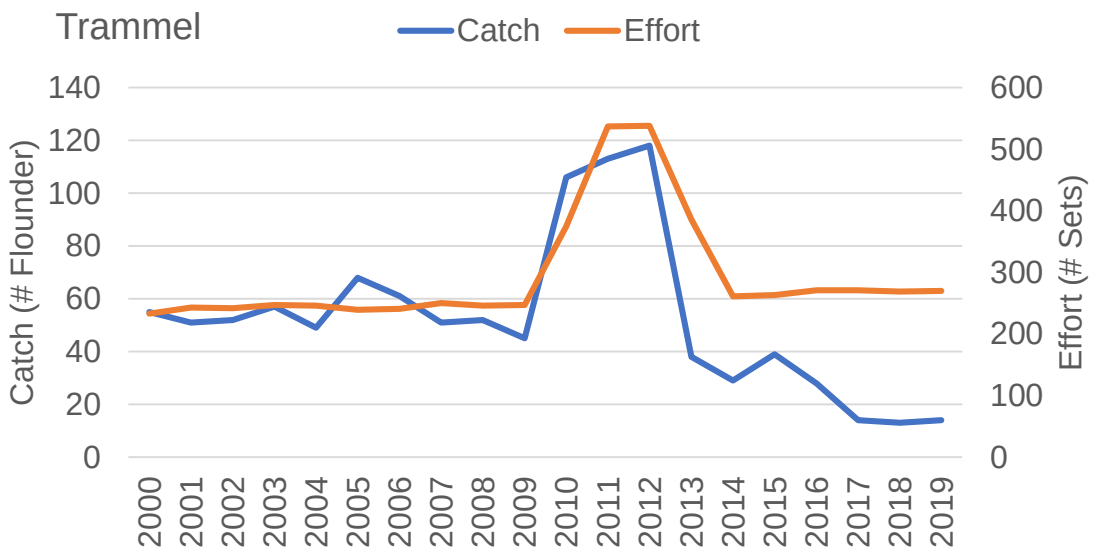
Flounder Fisheries Independent Survey

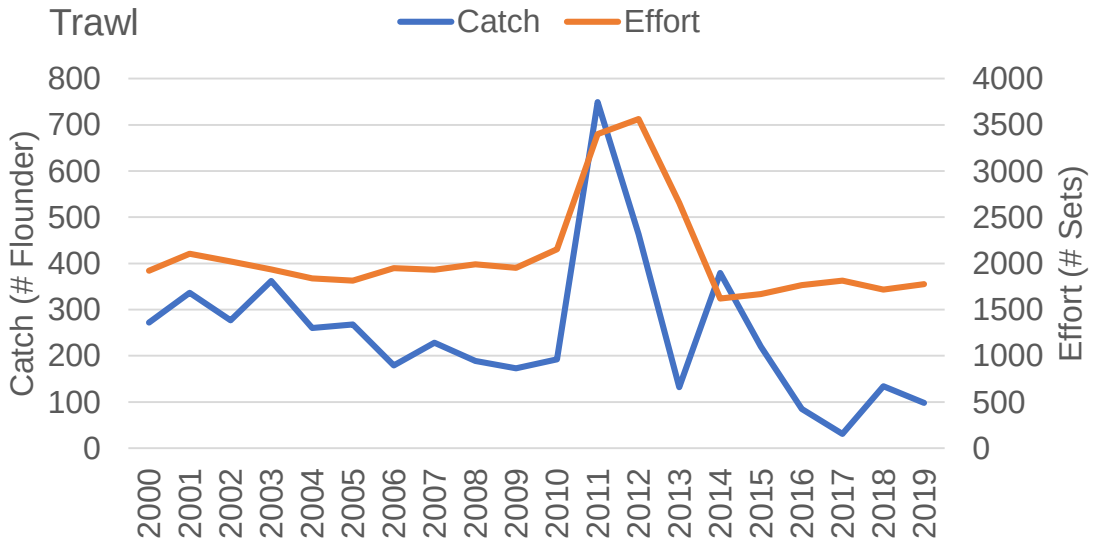
Erik Lang | FRL | October 2020

LDWF FI Surveys

- Flounder Annual Catch Since 2010
  - Gill Net- 32 Southern Flounder
    - 2,162 Spotted Seatrout
    - 430 Red Drum
  - Trammel Net- 51 Southern Flounder
    - 811 Red Drum
    - 252 Spotted Seatrout
  - Trawl- 248 Southern Flounder
- Flounder Average Size Since 2010
  - Trammel Net- 295mm TL (11.6 inches)
  - Trawl- 168mm TL (6.6 inches)

Flounder CPUE





New FI Survey

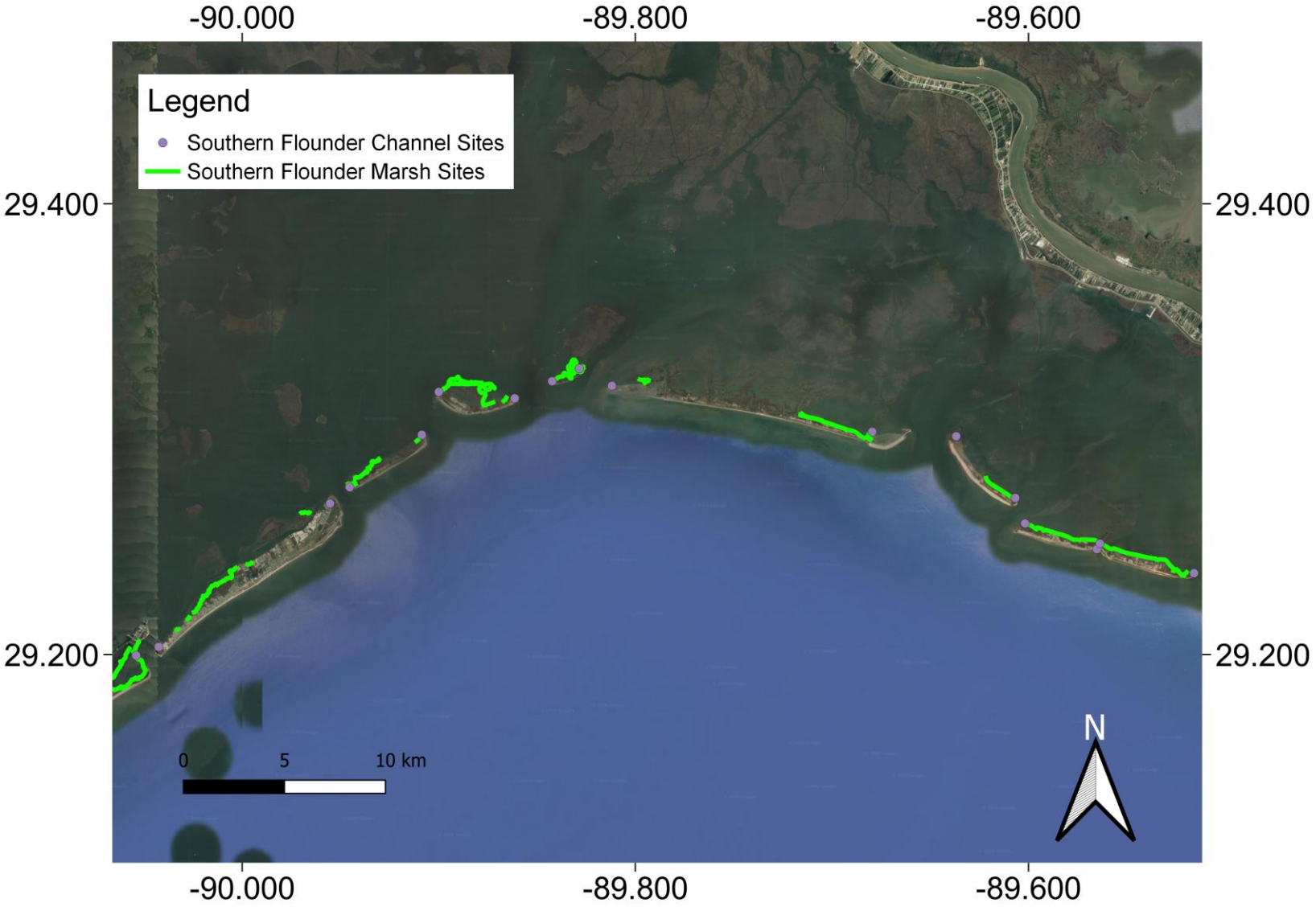
- Target Adults
  - More adults need to be captured in a Fisheries Independent survey to accurately characterize flounder abundance
  - Adults are the most concentrated during the migration offshore and movement back inshore during the end of winter
    - This is shown in recreational fishing catch increasing during October/November
- Pound Net/Fyke Net Commercial Fisheries
  - The east coast has a historical flounder commercial fishery where the gear of choice was pound and fyke nets
    - Pound nets require a stationary set of pilings that the net can be fished from
      - Creates complications with the coast guard and a stationary area that will allow for easy interaction from other fishermen
    - Fyke nets are mobile and basically a small pound net (method of catch is the same)

Fyke Net

Experimental Design

- Randomly Assigned Sampling Sites
  - 8 randomly assigned stations on the backside of barrier islands
    - Based upon an outline of the barrier islands in GIS software
  - 4 randomly assigned pass stations
    - Based upon 17 preselected pass adjacent locations
- Sampling Frequency
  - Each of the above 12 sampling sites (8+4) will be sampled monthly
    - Each station will be randomly assigned to soak during a rising or falling tide
    - The net at each station will be checked after 2, 4, and 24 hours
    - Flounder will be sampled for otoliths and ovaries

Randomizing Map



Measurements Taken

- Hydros
  - Depth at the first hoop (opening) at net set and with each net check
  - Salinity
  - Temperature
  - Dissolved oxygen
  - Turbidity (NTU)
  - Minimum sediment size
  - Maximum sediment size
- Age structure and Maturity
  - Total length (mm) will be measured along with body weight (g)
  - Flounder will be sampled for otoliths and ovaries
  - Ovaries will be weighed before and after fixation

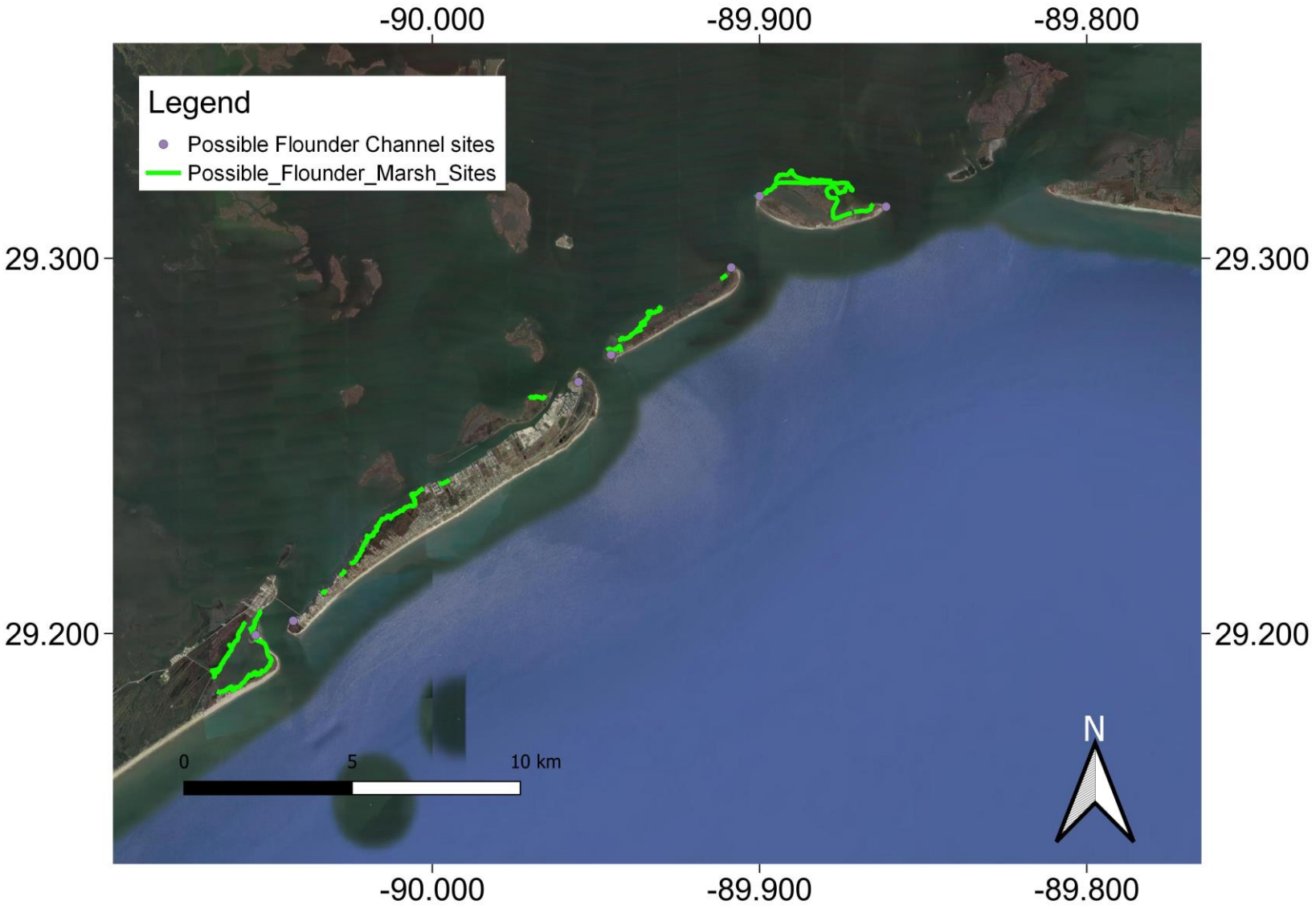
Disappointing Results

Species	Number
Atlantic Stingray	5
Southern Stingray	0
Alligator Gar	2
Gulf Menhaden	3
Striped Mullet	58
Hardhead Catfish	42
Black Drum	9
Red Drum	24
Spotted Seatrout	2
Sheepshead	16
Southern Flounder	3
Stone Crab	1
Blue Crab	31
Diamondback Terrapin	6

Lessons Learned

- 3 Flounder Caught Total
  - Seasonality
    - Late first sampling date
      - November 16th 2020
  - Net Construction
  - Inefficient Sampling Design
    - Sites were spread out allowing for less stations completed
  - Recreational catch-Flounder return in March and April
- Change in Sampling Design
  - Less area to sample same number of sites
    - 12 sites (4 Pass, 8 Marsh)
    - Elmer’s Island, Grand Isle, East/West Grand Terre
  - Change Net Design
    - 6 Nets Total
      - 4 Modified
      - 2 Unmodified

Randomizing Map



Net Modifications

Questions?

Commercial Blue Crab Sampling

Michelle Bromschwig | GSMFC Meeting | October 20, 2021

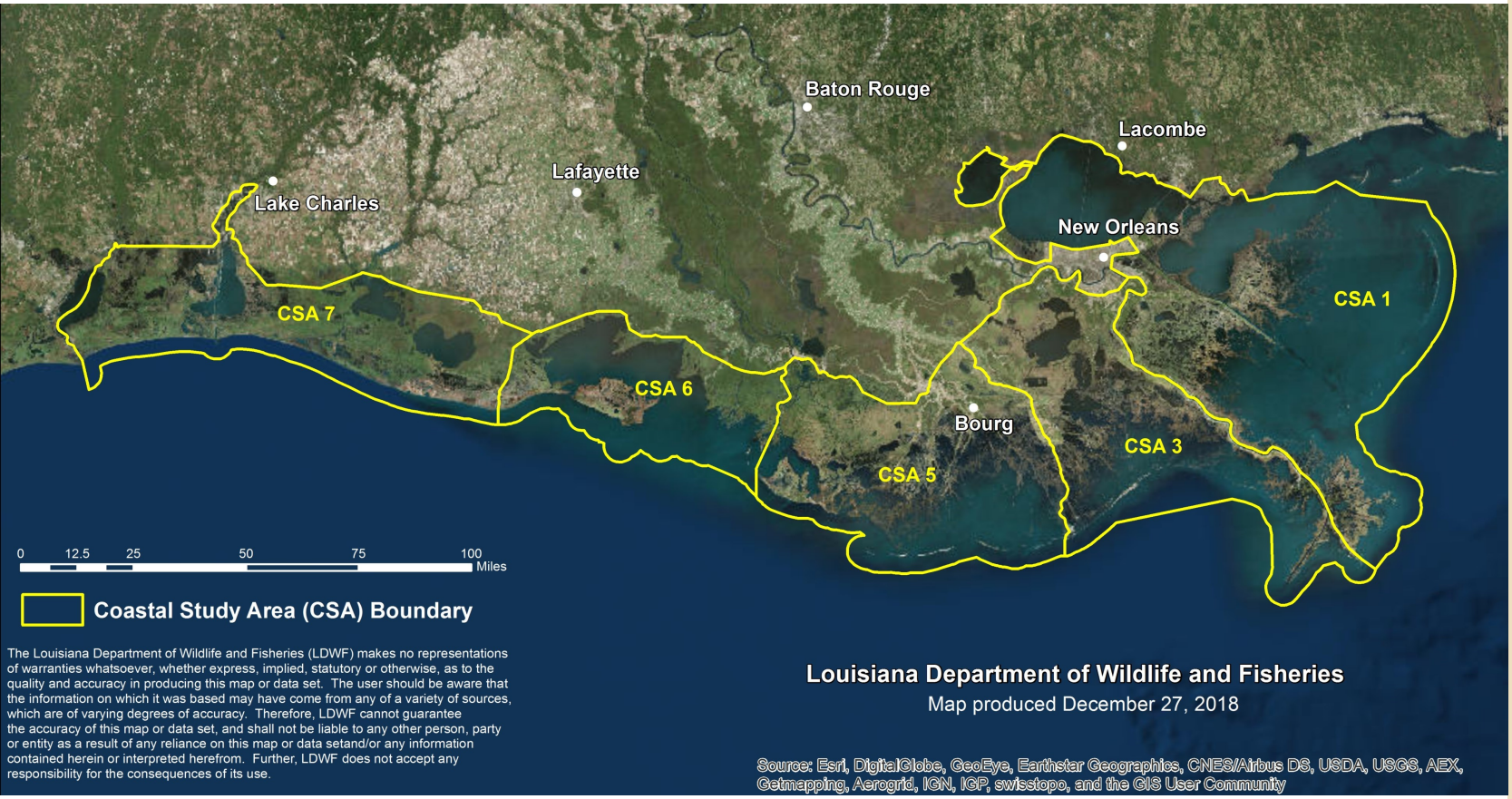
Program Overview

- Characterize the size, sex and maturity composition of commercially landed blue crabs for current management and future stock assessment purposes.

- Sample at minimum 510 individuals from each LDWF Coastal Study Area (CSA) bimonthly (here defined as every two months or wave).

- Random sampling was ensured via use of a randomized bimonthly CSA-specific dealer draw for determination of sampling location.

- A minimum of four sampling days per bimonthly period were conducted, with at least two sampling days scheduled per month.


Baton Rouge
Lacombe
Lafayette
Lake Charles
New Orleans
CSA 7
CSA 6
CSA 1
Bourg
CSA 3
CSA 5
0 12.5 25 50 75 100
Miles
Coastal Study Area (CSA) Boundary
The Louisiana Department of Wildlife and Fisheries (LDWF) makes no representations of warranties whatsoever, whether express, implied, statutory or otherwise, as to the quality and accuracy in producing this map or data set. The user should be aware that the information on which it was based may have come from any of a variety of sources, which are of varying degrees of accuracy. Therefore, LDWF cannot guarantee the accuracy of this map or data set, and shall not be liable to any other person, party or entity as a result of any reliance on this map or data setand/or any information contained herein or interpreted herefrom. Further, LDWF does not accept any responsibility for the consequences of its use.
Louisiana Department of Wildlife and Fisheries
Map produced December 27, 2018
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Data collected:

- sample date and sampler ID
- dealer license number/ name
- trip ticket number/ type
- commercial grade code/ name
- gear type
- basin harvested
- carapace width
- sex and maturity

Commercial Sampling Data

Blue Crab Sampled per CSA and Wave

CSA	Wave 1	Wave 2	Wave 3
1 (1N and 1S)	647	701	550
3	484	488	516
5	597	572	527
6	589	550	533
7	520	518	520
Total	2,837	2,829	2,646

- All CSAs met their quotas except CSA3.
- CSA3 had early difficulty with crab availability for sampling.

Dealers Sampled per CSA and Wave

CSA	Wave 1	Wave 2	Wave 3
1 (1N and 1S)	4	4	5
3	3	2	4
5	2	3	2
6	3	4	3
7	2	2	3
Total	14	15	17

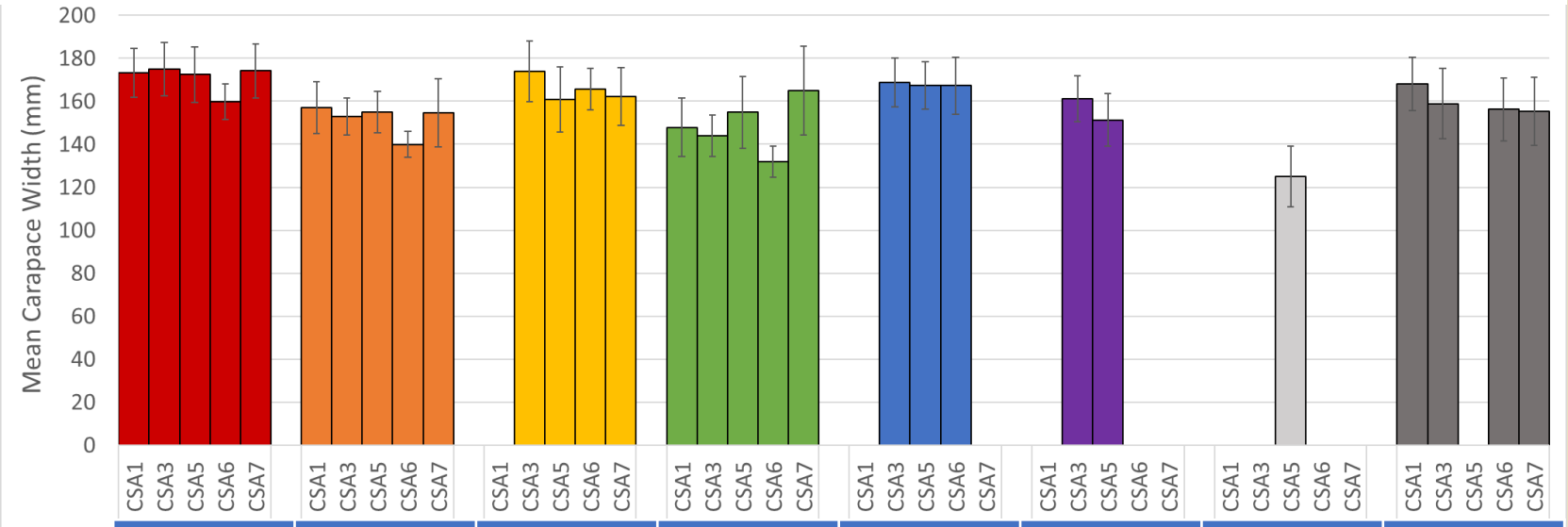
- Some CSAs had difficulty sampling multiple dealers due to damages from the 2020 hurricane season.
- We will work to establish new relationships with additional dealers.

Sampling Days per CSA and Month

CSA	Jan	Feb	Mar	Apr	May	Jun
1 (1N and 1S)	2	2	6	1	3	4
3	2	2	2	1	1	3
5	2	2	2	2	2	2
6	2	1	2	2	2	2
7	2	3	2	2	2	2
Total	10	10	14	8	10	13

- The number of days sampled per month by CSA had an 87% success rate.

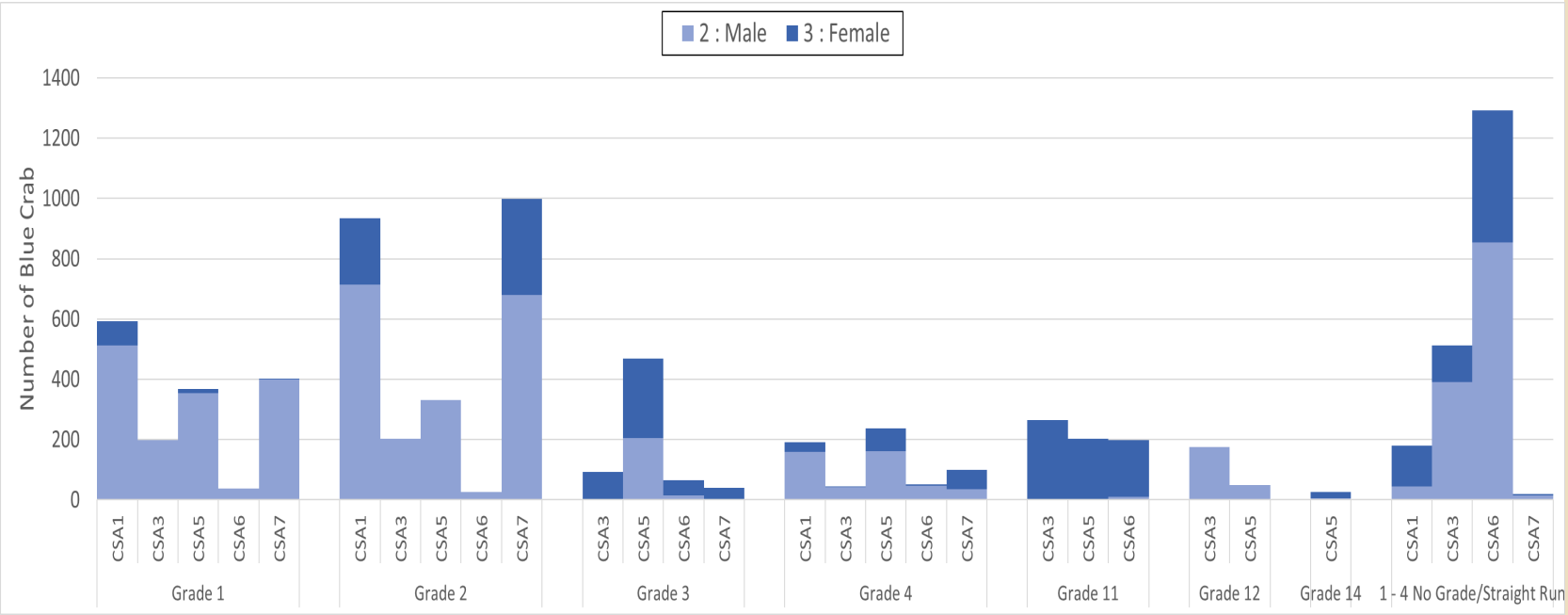
Mean Carapace Width per CSA, Waves 1-3



Grade 1	Grade 2	Grade 3	Grade 4	Grade 11	Grade 12	Grade 14	1 – 4
Large	Medium	Small	Factory	Females	Males	Buster	No Grade

- Some differences in how dealers grade/report

Sex Composition per CSA, Waves 1-3



- Male crabs made up 68% of total crabs sampled, females 32%
- Grade 2 contained the largest percentage of male crabs
- Grade 1-4 (no grade) contained the largest percentage of female crabs

Expenditures

Grant Budget and Expenditures thru June

	Budget (1 year)	Actual Expenditure (6 months)
Personnel	$77,570.00	$33,079.91
Fringe Benefits	$39,661.54	$16,955.49
Travel	$0.00	$0.00
Equipment	$0.00	$0.00
Supplies	$3,570.50	$476.49
Fuel	$7,000.00	$810.03
Other	$3,000.00	$87.90
Total	$130,802.04	$51,409.82

- Through June, 39% of the total budget expended.
- Expected increase in salaries expenditure from dock visits after hurricanes and reporting.

QUESTIONS?

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Project 1 (TX): Sex Determination of Southern Flounder Juveniles Exposed to Seasonal Environmental Temperatures

2021 Interjurisdictional fisheries small project award, Marine Development Center, Texas Parks and Wildlife, Corpus Christi, TX, and Texas A&M Corpus Christi

Experimental net pens

Stocking of juveniles

Juveniles on pen walls

Study Objectives

To evaluate the sex proportion of two sizes of hatchery reared Southern Flounder (*Paralicthys lethostigma*) juveniles before and after exposure to seasonal environmental temperatures.

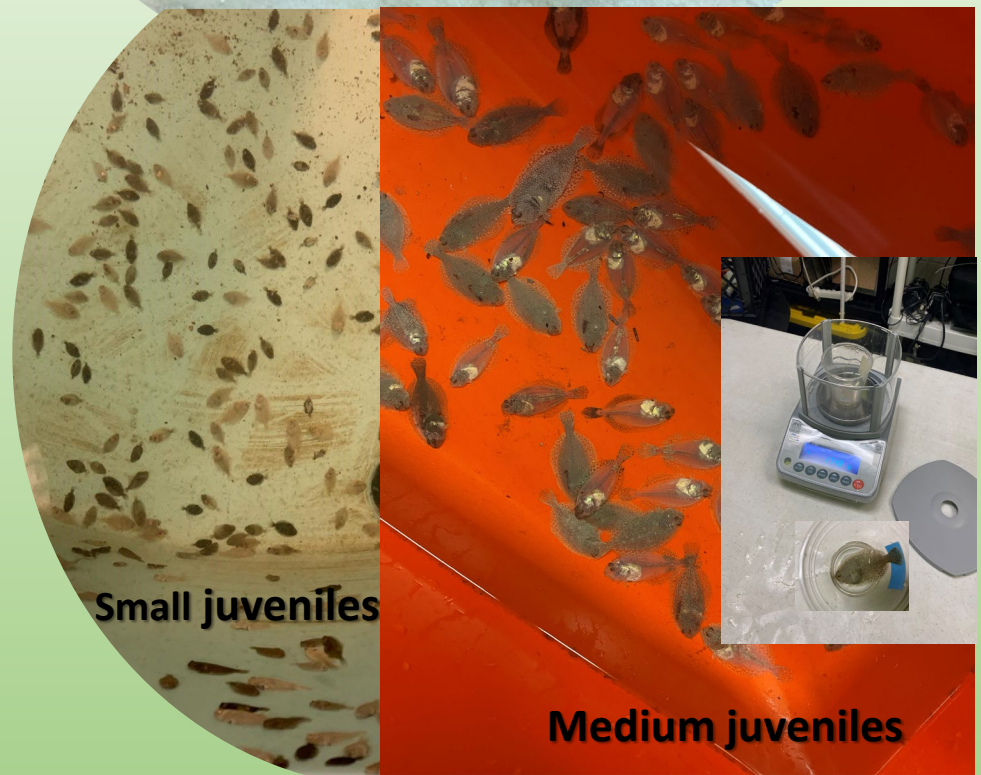
To provide TPWD with information to assist the refinement of sizes at release for hatchery stocking protocols across different seasons

Rationale

- TPWD has implemented a Stock Enhancement Program (SEP) for Southern Flounder on the Texas Coast.
- Two hatchery buildings with climate control can maintain stable temperature conditions critical for larval and juvenile rearing. This infrastructure improved the capacity of the (TPWD-SEP) program to produce juveniles for stocking year-round.
- Southern Flounder juveniles possess a narrow range of temperature that regulates the sex on females. The reported temperature to produce a 50:50 ratio is (18°C). Juveniles of smaller size could potentially experience post-stocking effects by seasonal environmental temperatures that can bias the sex of the juveniles (females/converted to males).
- Novel molecular markers identified by a Southern Flounder transcriptome study will be applied to determine the sex proportions (female:male) of two stocking sizes of Southern Flounder juveniles after exposure to seasonal environmental temperatures. Gonad formation and differentiation will also be assessed with histological analysis.

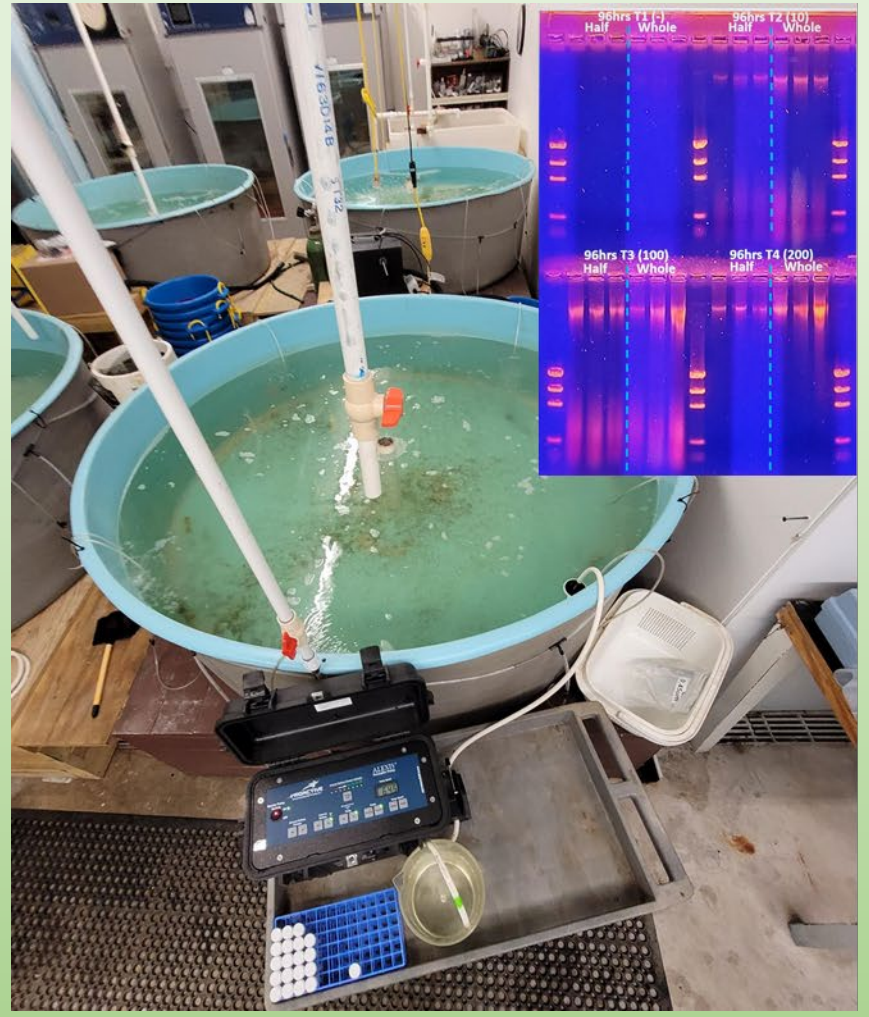
Project Progress

- Adult Southern Flounder (N=100) were collected for the research project.
- Fish were acclimated to tank conditions and temperature-photoperiod manipulations for spawning.
- Two larvae cohorts were reared at control treatment temperature (18°C) to juveniles until they reached the sizes needed for the experiment.
- Two set of samples (N=50 each) were collected prior to stocking. One set for the gonad histological study and other for molecular analysis. IACUC guidelines were applied.
- Net pens (N=3 replicates/per fish size=Total of 6 pens) and bird netting protection were deployed in Corpus Christi bay under permits from US FWS, Texas General Land Office, & USACE.
- Juveniles were measured /weighed prior to stocking in the net pens, 50% of the group were tagged.
- A total of 200 fish of the smaller size (15-20 mm TL) were stocked in three pens (3 replicates) and 100 of the medium size (45-55 mmTL) were stocked in three net pens (3 replicates). Additionally, a group of 50 fish >250 mm TL were tested in only 1 pen.
- Environmental data sondes that collected data each hour were installed in most of the pens. Prey items and nutrients were monitored during the trial. These data are being processed.
- One trial was completed this summer, fish were measured (TL), weighed (g) and processed under IACUC guidelines to collect tissues for analysis.
- Temperatures registered in the shallow bay were very high and dissolved oxygen was low on occasions.
- Predation by blue crabs and environmental conditions affected survival
- Southern Flounder broodstock have been maintained and scheduled to spawn in October to start the larval rearing for the winter trial.



Project 2 (TX): Investigating the use of environmental DNA (eDNA) for assessing presence and abundance of marine finfish in the coastal waters of Texas

2021 Interjurisdictional fisheries small project award, Perry R. Bass Marine Research Station and Hatchery, Texas Parks and Wildlife, Palacios, TX



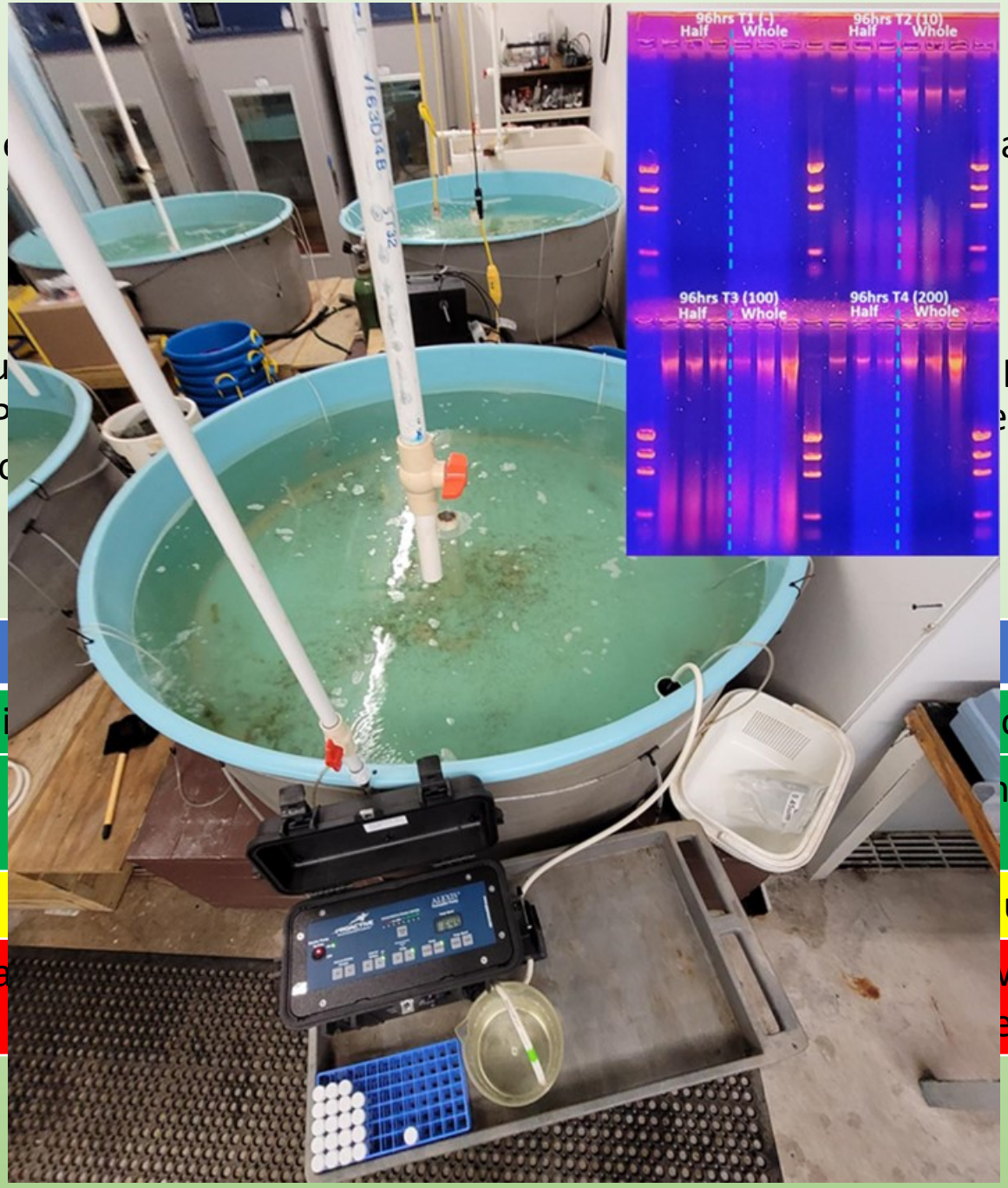
Project Objective:

Determine the applicability of (and potentially relative abundance, of marine

Proof-of-concept:

This project will utilize Red Dru pling methods and a single-species genetic qP eadily available from the hatchery we have at (

Project phases:



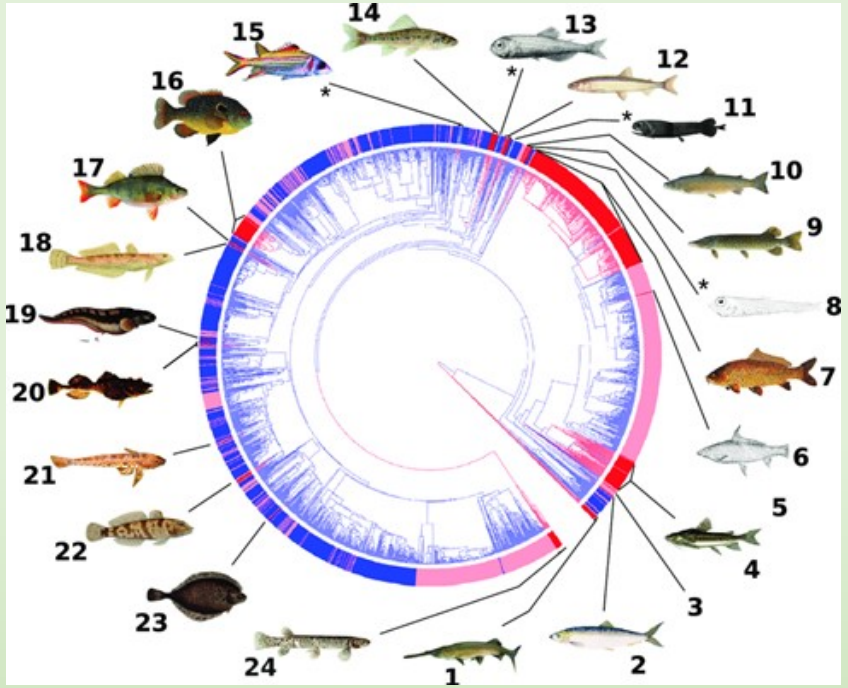
Phase	
Assay development and optimi	ositive and negative controls
Lab-testing of qPCR assay	known quantities of Red
Field-testing of qPCR assay	uring current gill net season
Field-deployment of qPCR assa	vith water sampling e this phase of the study

Future work (year #2 and beyond):

1. Year 2 SuRF funding (if awarded) will be used to assess the efficacy of eDNA *metabarcoding*. Metabarcode data is different than a single-species assay in that the objective is to observe *everything* in the water, rather than just detect a single species (e.g. Red Drum).

2. We have already developed a western Gulf of Mexico "reference file", which consists of barcode sequences of over 700 common finfish and invertebrates that have been encountered in TPWD fishing gears since 1980. Reference files are essential for rapid processing of metabarcode data and this file will be useful to others working with eDNA metabarcoding data in the Gulf.

3. We have received State Wildlife Grant (SWG) funding to use eDNA as a means of assessing use of Texas' streams and rivers as migration routes for American eels (*Anguilla rostrata*). This project will be collaborative with University of Houston Clear Lake and will take advantage of "lessons learned" over the past year, as well as a refined laboratory assay for eels developed by USFWS.



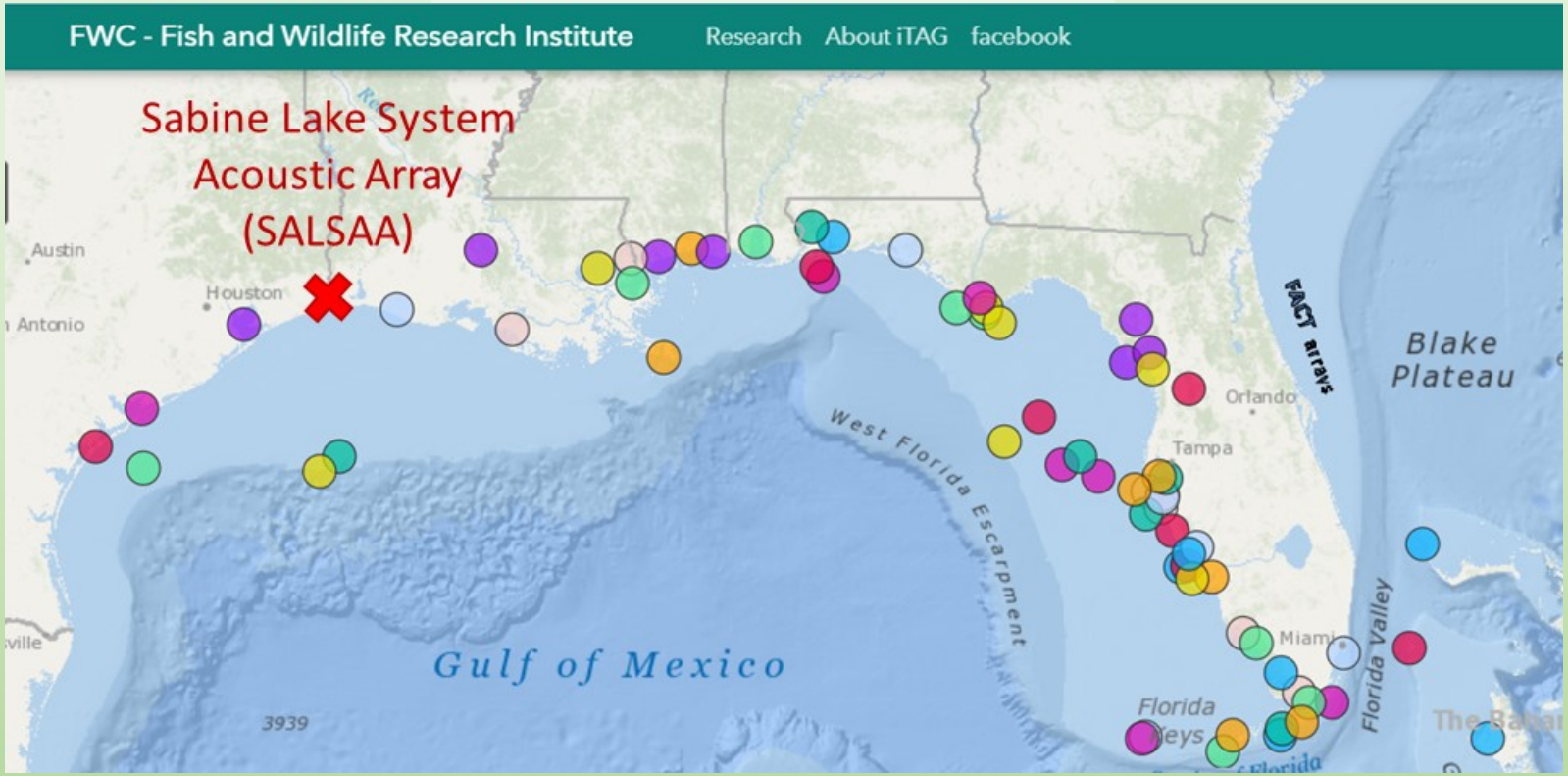
Project 3 (TX): Temporal movement of fish within local habitats in Sabine Lake, TX/LA using bioacoustics – the Texas Acoustic Array Network

2021 Interjurisdictional fisheries small project award, Sabine Lake Field Station, Texas Parks and Wildlife, and Texas A&M University Galveston

Objectives

- Deploy a high resolution acoustic array in the Sabine Lake System
  - Add to regional scale monitoring efforts from array networks such as Texas Acoustic Array Network (TEXAAN) and Gulf wide through the iTAG network
  - Fill a gap in previous iTAG coverage along the Northern Gulf of Mexico
- Fill research and data needs on species with IJF management plans and species profiles
- Collect movement data of primary members of Texas fish community
- Expand life history information on commercial and game fish
- Create predictive models of fish behavior based on environmental factors that aid management
- Participate and contribute to the Gulf-wide fish migration research community

iTAG Array Network



Progress

- 20 VEMCO acoustic receivers have been strategically placed throughout the Sabine Lake System
  - Range of receivers is 0.5 km
  - Morphology of Sabine Pass as well as other bottlenecks within the system allows capture of ingress and egress of tagged individuals
- Receiver sites were chosen to monitor multiple estuarine and Gulf habitat types including: surrounding marsh; oyster reef; rivers; ICWW; and nearshore Gulf of Mexico
- Initial acoustic tagging focusing on southern flounder and spotted seatrout, and the effects of environmental forcings that influence their behavior.
  - Both spp. have undergone regulatory changes in Texas recently and are the subject of much debate surrounding movements within and between estuaries
- Tagging has begun with the goal of 100 tags placed into southern flounder and spotted sea trout by early 2022

Current Sabine Lake System Acoustic Array Deployed 2020 and 2021

Receiver Deployment

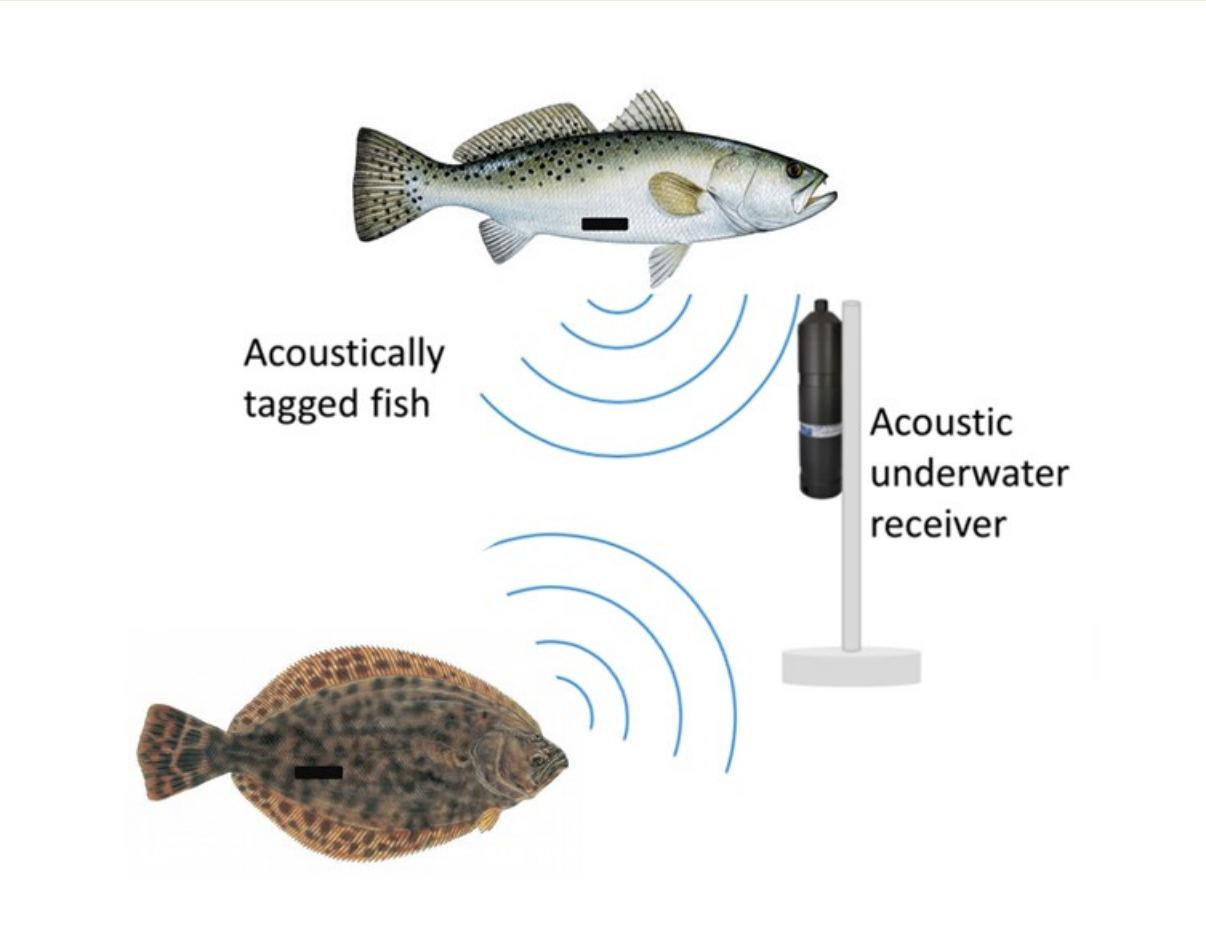
- Angle iron is bolted to permanent structure and the Acoustic Receiver is attached to a 1” pole that is then bolted into the angle iron so that receiver is below the waterline
- Allows retrieval for data download

Fish Tagging and Data Collection

- After capture the individual fish are fitted internally with acoustic transmitters with a battery life of approximately 1-2 years
- Environmental data taken during TPWD Coastal Fisheries routine sampling as well as at two fixed data sondes at the Northern and Southern ends of Sabine Lake and federal and state monitoring locations in surrounding marsh will be used in correlation with movement patterns to understand drivers of fish behavior including residency, bay-scale movement, inter-estuarine exchange, and large scale movements along the Gulf
- These data can then be used to predict the probability of species movement given changing environmental conditions such as large-scale temperature and salinity shifts to small-scale temporal changes (i.e., seasonal, cold-fronts)
- Two receivers deployed in Sabine Pass in December and downloaded in August have already picked up bull shark and black drum tagged in other bay systems

Future Work

- Continue tagging and data collection with Texas A&M Galveston
- Year 2 SuRF funding (if awarded) will be used to expand the species included in tagging within Sabine Lake to include red drum, black drum, alligator gar, and bull shark
- These species include those for which Gulf States Marine Fisheries Commission Management Plans exist and for which fishery profiles are in progress
- Also expand array to develop a higher resolution understanding of fish movement within expansive surrounding habitats such as the Salt Bayou System and Sabine National Wildlife Refuge in collaboration with state and federal partners



Project 1 (TX): Sex Determination of Southern Flounder Juveniles Exposed to Seasonal Environmental Temperatures

TPWD Personnel (Principal Investigators): Ivonne Blandon, Ph.D., and Christopher Mace, Ph.D.
Marine Development Center, Texas Parks and Wildlife, Corpus Christi, TX

Project 2 (TX): Investigating the use of environmental DNA (eDNA) for assessing presence and abundance of marine finfish in the coastal waters of Texas

TPWD Personnel (Principal Investigators): Joel Anderson, Damon Williford, Ph.D., Jillian Swinford, and Nicolette Beeken
Perry R. Bass Marine Research Station and Hatchery, Texas Parks and Wildlife, Palacios, TX

Project 3 (TX): Temporal movement of fish within local habitats in Sabine Lake, TX/LA using bioacoustics – the Texas Acoustic Array Network

TPWD Personnel (Principal Investigator): Carey Gelpi, Ph.D.
Sabine Lake Field Station, Texas Parks and Wildlife, and Texas A&M University Galveston

IJF Small Grants FY2022

FWC	Fisheries Dependent Recreational Scallop Creel Survey
	Commercial Sampling of State Priority Species
ADCNR/MRD	Flounder Research and Stocking Program
	Cryogenic Technology for Southern Flounder Sperm
	Investigating Movement and Habitat Associations of Southern Flounder in Alabama
MDMR	Alternative Gear Studies in Mississippi Waters – Traps, Seines, and Trawls
	Acoustic Monitoring of Southern Flounder in Mississippi Inshore Waters
	Mississippi Fishery Independent Data Integration
	Eastern Oyster Recruitment and Settlement Patterns on Oyster Reefs in the Mississippi Sound
LDWF	Collect biological data from blue crabs at commercial docks
	Southern Flounder Sampling
TPWD	Bioacoustic Receiver Installation and Use in Sabine Lake System
	Investigating the use of environmental DNA (eDNA) for assessing presence and abundance of marine finfish in the coastal waters of Texas
	Preliminary evaluation of temperature-dependent sex determination in hatchery released Southern Flounder in the natural environment.

IJF Small Grants FY2021/2022

Research Proposals	SOW/Budgets	Approval	Project Dates
March	July	October	Jan - Dec
State Agencies	TCC	SFFMC	

IJF Small Grants FY2022

Research Proposals	SOW/Budgets	Approval	Project Dates
March	July	October	Jan - Dec
State Agencies	TCC	SFFMC	

Year	Total Available	Total per State
2021	$1,400,000	$280,000*
2022	$974,800	**$194,960**
2023		

* FY2021 included two years of IJ funding