SHELF

SPAWNING HABITAT & EARLY-LIFE LINKAGES TO FISHERIES

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University of South Florida, College of Marine Science

STATE OF FLORIDA INSTITUTE OF OCEANOGRAPHY FIO

FLORIDA RESTORE ACT CENTERS OF EXCELLENCE PROGRAM FLRACEP

USF UNIVERSITY OF SOUTH FLORIDA COLLEGE OF MARINE SCIENCE

Our mission: SHELF uses DNA barcoding of fish eggs collected on annual research cruises to build a multi-decadal, species-level record of spawning on the West Florida Shelf, showing how populations respond to disturbance and management action.

Purpose of this coproduction meeting: With potential funding renewals spanning close to a decade, this is an opportunity to align with our management partners on program direction, so that data collection decisions now support management needs across that horizon.

Florida Institute of Oceanography, Gulf Coast State Entity
for
Florida RESTORE Act Centers of Excellence Program (FLRACEP)

Request for Proposals (RFP) II, # FLRACEP-2016-01

RESTORE Act Discipline 5: *Comprehensive Ecosystem Monitoring and Mapping in the Gulf of Mexico*

Release Date: March 16, 2016
Proposals Due: June 3, 2016

SHELF

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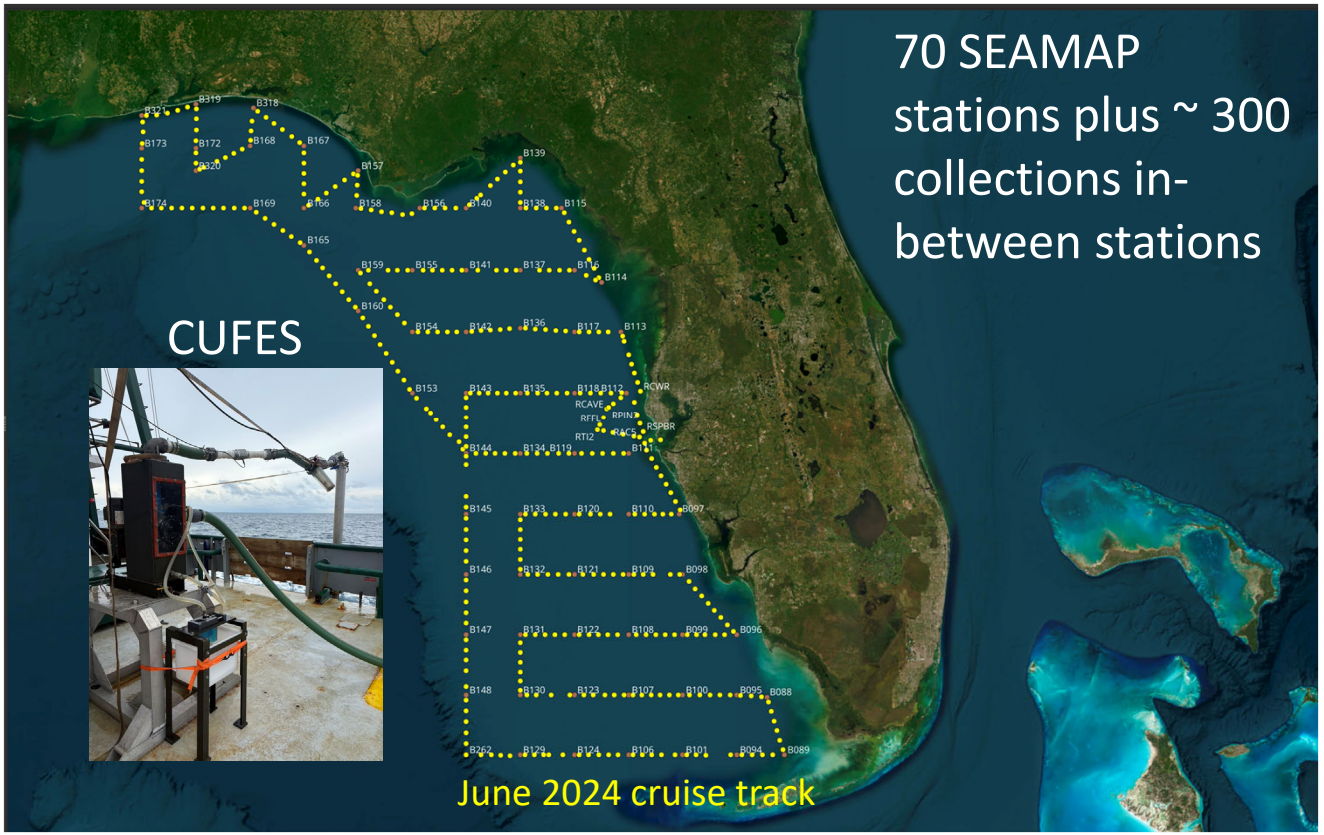
Work Completed		Ongoing & Planned Work	
2017-2018	**2019-2023**	**2023-2027**	**2027-2035**
SHELF I	**SHELF II**	**SHELF III**	**SHELF IV-VI**
Pilot Study	**Egg Monitoring Begins**	**Egg Monitoring Cont.; Targeted Studies**	**Egg Monitoring Cont.; Targeted Studies**

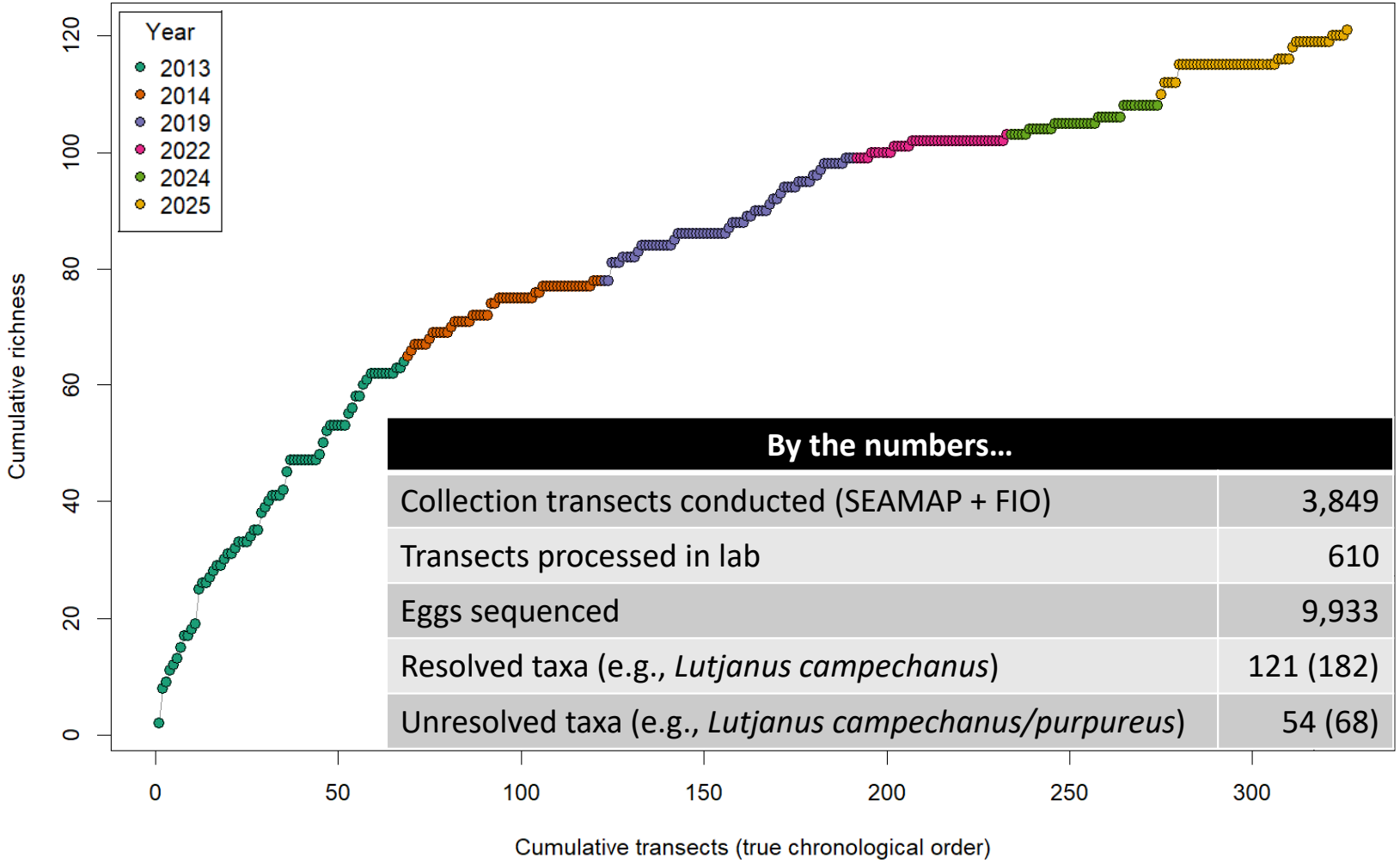
SHELF collects eggs across the WFS in collaboration with SEAMAP



RV Gordan Gunter


RV Weatherbird II

SHELF sampling has captured the species present



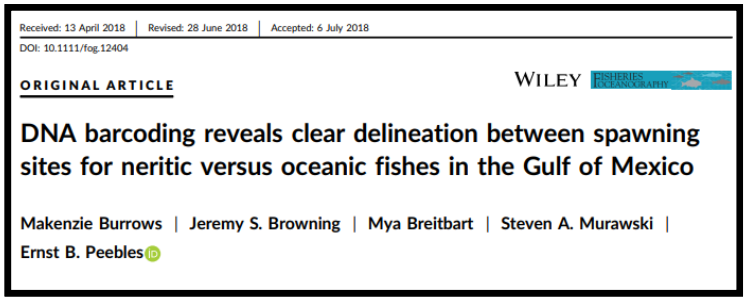
By the numbers…	
Collection transects conducted (SEAMAP + FIO)	3,849
Transects processed in lab	610
Eggs sequenced	9,933
Resolved taxa (e.g., *Lutjanus campechanus*)	121 (182)
Unresolved taxa (e.g., *Lutjanus campechanus/purpureus*)	54 (68)

Species of management concern

SEAMAP season

Family	Taxon	Common Name	Overfished	Overfishing	Spring (4)	Summer (20)	Fall (16)	Winter (1)
Carangidae	*Trachinotus carolinus*	Florida pompano	Unknown	Unknown				
Carangidae	*Trachinotus falcatus*	Permit	Unknown	Unknown				
Coryphaenidae	*Coryphaena equiselis*	Pompano dolphinfish	Unknown	Unknown				
Coryphaenidae	*Coryphaena hippurus*	Mahi-mahi	Unknown	Unknown				
Epinephelidae	*Hyporthodus flavolimbatus*	Yellowedge grouper	No	No				
Istiophoridae	*Istiophorus platypterus*	Sailfish	No	No				
Labridae	*Lachnolaimus maximus*	Hogfish	No	No				
Lutjanidae	*Lutjanus campechanus*	Red snapper	No	No				
Lutjanidae	*Lutjanus griseus*	Gray snapper	Unknown	Yes				
Lutjanidae	*Lutjanus synagris*	Lane snapper	Unknown	Yes				
Lutjanidae	*Pristipomoides aquilonaris*	Wenchman	No	No				
Lutjanidae	*Rhomboplites aurorubens*	Vermilion snapper	No	No				
Rachycentridae	*Rachycentron canadum*	Cobia	No	Yes				
Sciaenidae	*Cynoscion arenarius*	Sand seatrout	Unknown	Unknown				
Sciaenidae	*Cynoscion nebulosus*	Spotted seatrout	Unknown	Unknown				
Sciaenidae	*Cynoscion nothus*	Silver seatrout	Unknown	Unknown				
Sciaenidae	*Sciaenops ocellatus*	Red drum	Unknown	Unknown				
Scombridae	*Acanthocybium solandri*	Wahoo	Unknown	Unknown				
Scombridae	*Euthynnus alletteratus*	Little tunny	Unknown	Unknown				
Scombridae	*Katsuwonus pelamis*	Skipjack tuna	No	No				
Scombridae	*Scomberomorus cavalla*	King mackerel	No	No				
Scombridae	*Thunnus atlanticus*	Blackfin tuna	Unknown	Unknown				
Scorpaenidae	*Pterois volitans*	Red lionfish	Unknown	Unknown				
Serranidae	*Centropristis striata*	Black sea bass	Unknown	Unknown				

Standard academic products



Received: 13 April 2018 | Revised: 28 June 2018 | Accepted: 6 July 2018

DOI: 10.1111/fog.12404

ORIGINAL ARTICLE

WILEY FISHERIES OCEANOGRAPHY

DNA barcoding reveals clear delineation between spawning sites for neritic versus oceanic fishes in the Gulf of Mexico

Makenzie Burrows | Jeremy S. Browning | Mya Breitbart | Steven A. Murawski | Ernst B. Peebles

PeerJ

PeerJ Hubs
Published on behalf of

Evaluation of DNA metabarcoding for identifying fish eggs: a case study on the West Florida Shelf

Mya Breitbart, Makenzie Kerr, Michael J. Schram, Ian Williams, Grace Koziol, Ernst Peebles and Christopher D. Stallings

College of Marine Science, University of South Florida, Saint Petersburg, Florida, United States

Received: 28 February 2023 | Revised: 25 August 2023 | Accepted: 31 August 2023

DOI: 10.1111/fog.12655

ORIGINAL ARTICLE

FISHERIES OCEANOGRAPHY WILEY

Retention and export of planktonic fish eggs in the northeastern Gulf of Mexico

Bich Vi Viviane Nguyen[1] | Yonggang Liu[1] | Christopher D. Stallings[1] | Mya Breitbart[1] | Steven A. Murawski[1] | Robert H. Weisberg[1] | Makenzie Kerr[1] | Eva-Maria S. Bønnelycke[1,2] | Ernst B. Peebles[1]

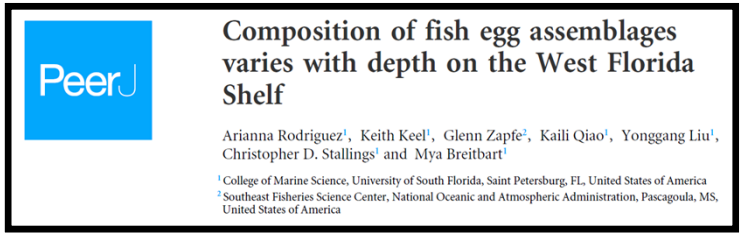
Fisheries Oceanography WILEY

FISHERIES OCEANOGRAPHY

ORIGINAL ARTICLE OPEN ACCESS

Spatial and Temporal Heterogeneity of Fish Spawning Dynamics on the West Florida Shelf During Fall

Keith Keel[1] | Makenzie Kerr[1] | Laura Y. Liu[1,2] | Yonggang Liu[1] | Joshua P. Kilborn[1] | Glenn Zapfe[3] | Ernst B. Peebles[1] | Christopher D. Stallings[1] | Mya Breitbart[1]



PeerJ

Composition of fish egg assemblages varies with depth on the West Florida Shelf

Arianna Rodriguez[1], Keith Keel[1], Glenn Zapfe[2], Kaili Qiao[1], Yonggang Liu[1], Christopher D. Stallings[1] and Mya Breitbart[1]

[1] College of Marine Science, University of South Florida, Saint Petersburg, FL, United States of America
[2] Southeast Fisheries Science Center, National Oceanic and Atmospheric Administration, Pascagoula, MS, United States of America

Theses and Dissertations

2 MS completed

1 MS underway

1 PhD underway

Potential management applications (i.e., why we're here)

1) Egg indices of relative abundance for stock assessment (tuning or independent checks), following the approach used in SEDAR red snapper and other species with larval indices

Red Snapper (*Lutjanus campechanus*) larval indices of relative abundance from SEAMAP Fall Plankton Surveys, 1986 to 2019

David S. Hanisko, Adam G. Pollack, Denice M. Drass, Pamela J. Bond, Christina Stepongzi, Taniya Wallace, Andrew Millet, Christian M. Jones, Glenn Zapfe and Consuela Cowan

SEDAR74-DW-31

2 May 2022
Updated: 13 July 2022

This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

King mackerel (*Scomberomorus cavalla*) larval indices of relative abundance from SEAMAP Fall Plankton Surveys, 1986 to 2024

David S. Hanisko, Glenn Zapfe and Adam G. Pollack

SEDAR99-WP-17

8 April 2026

This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

King mackerel (*Scomberomorus cavalla*) egg indices of relative abundance and their spatial distribution from SEAMAP Fall Plankton Surveys, 2013 to 2025

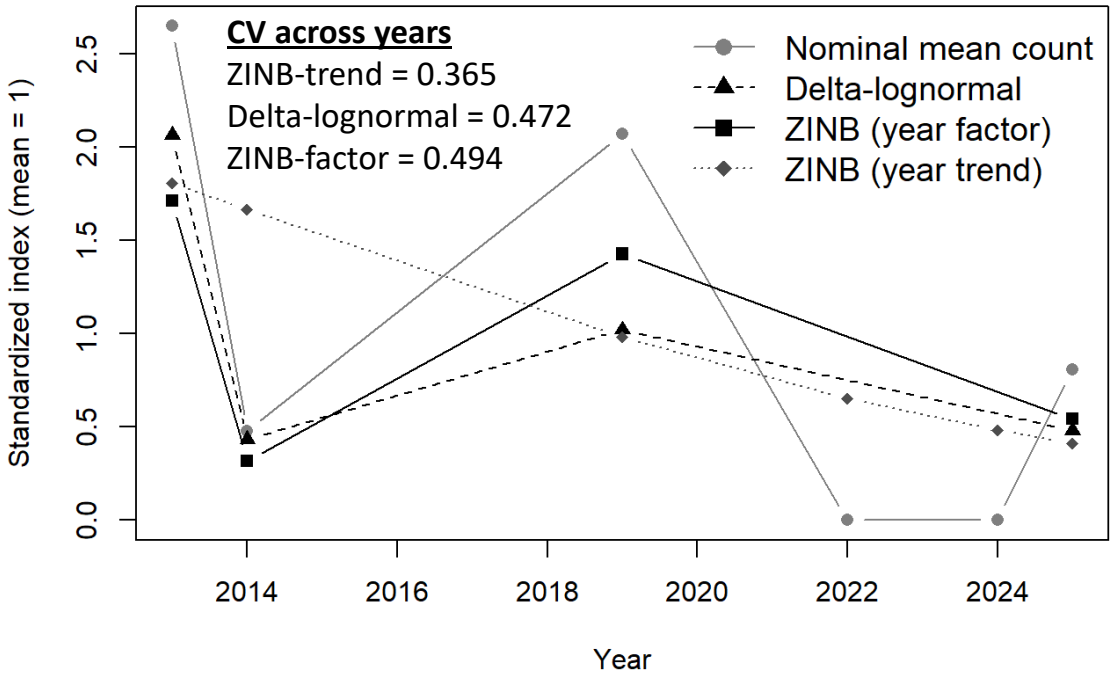
Christopher D. Stallings and Mya Breitbart

SEDAR99-WP-XX

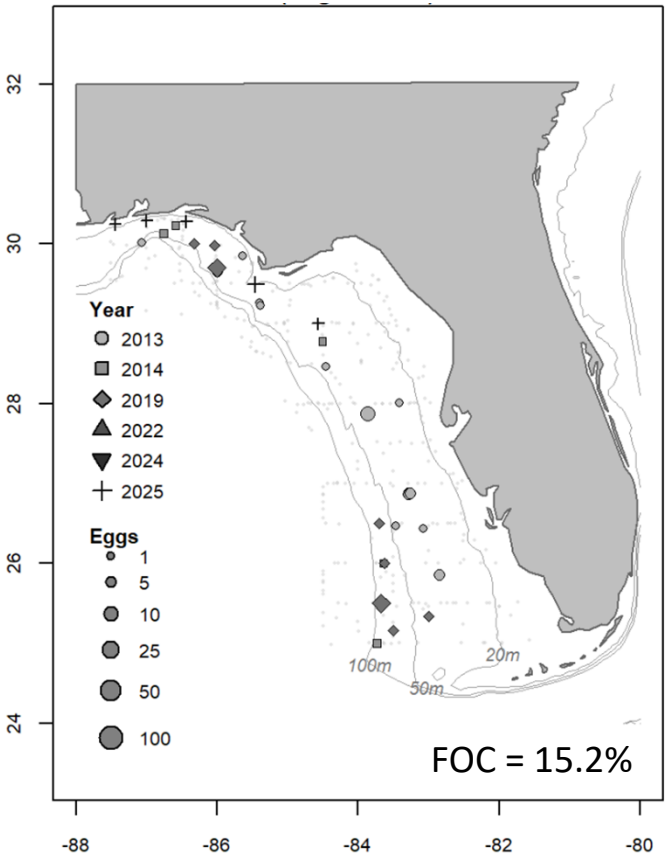
30 September 2026

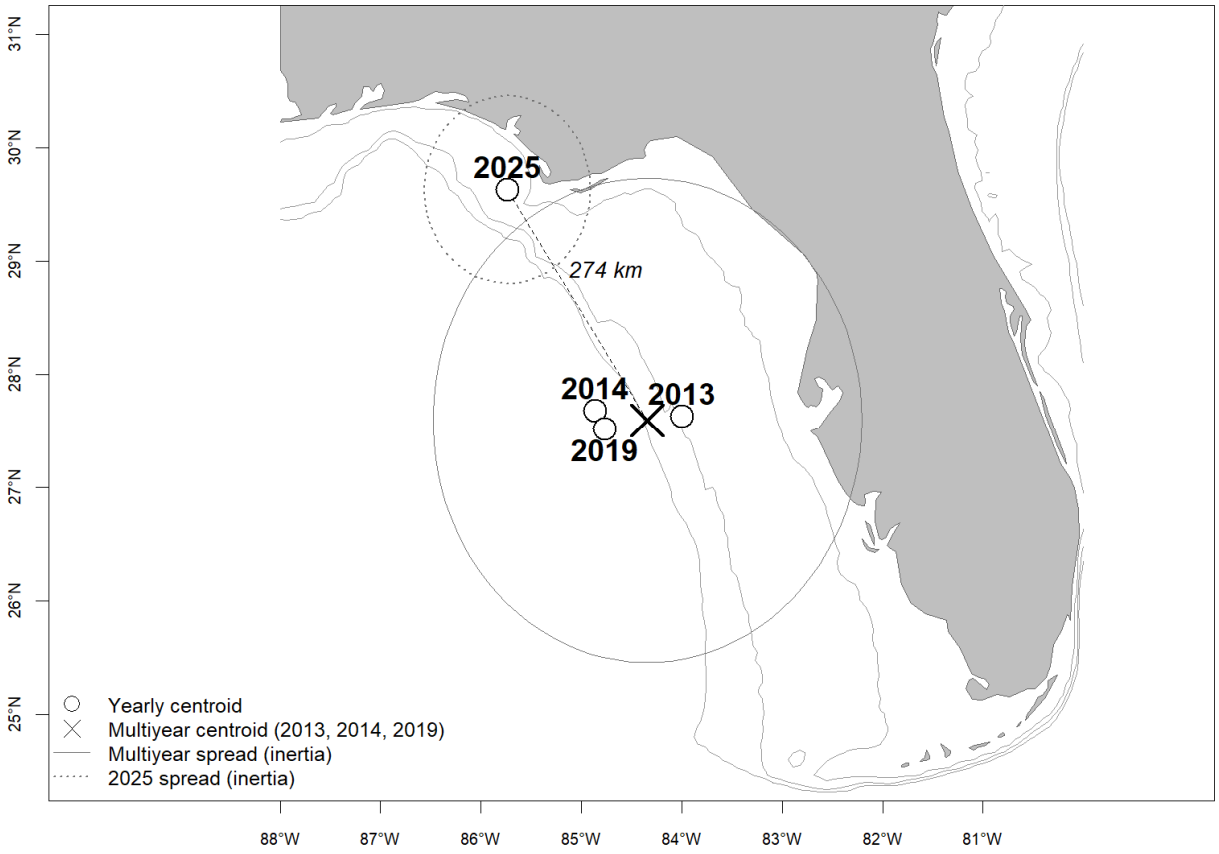
This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

King mackerel egg indices indicate reduced spawning in recent years (consistent with landings data)



Recent occurrences of king mackerel eggs occupied a smaller spatial extent and shifted in location





Potential management applications (i.e., why we're here)

1) Egg indices of relative abundance for stock assessment (tuning or independent checks), following the approach used in SEDAR red snapper and other species with larval indices

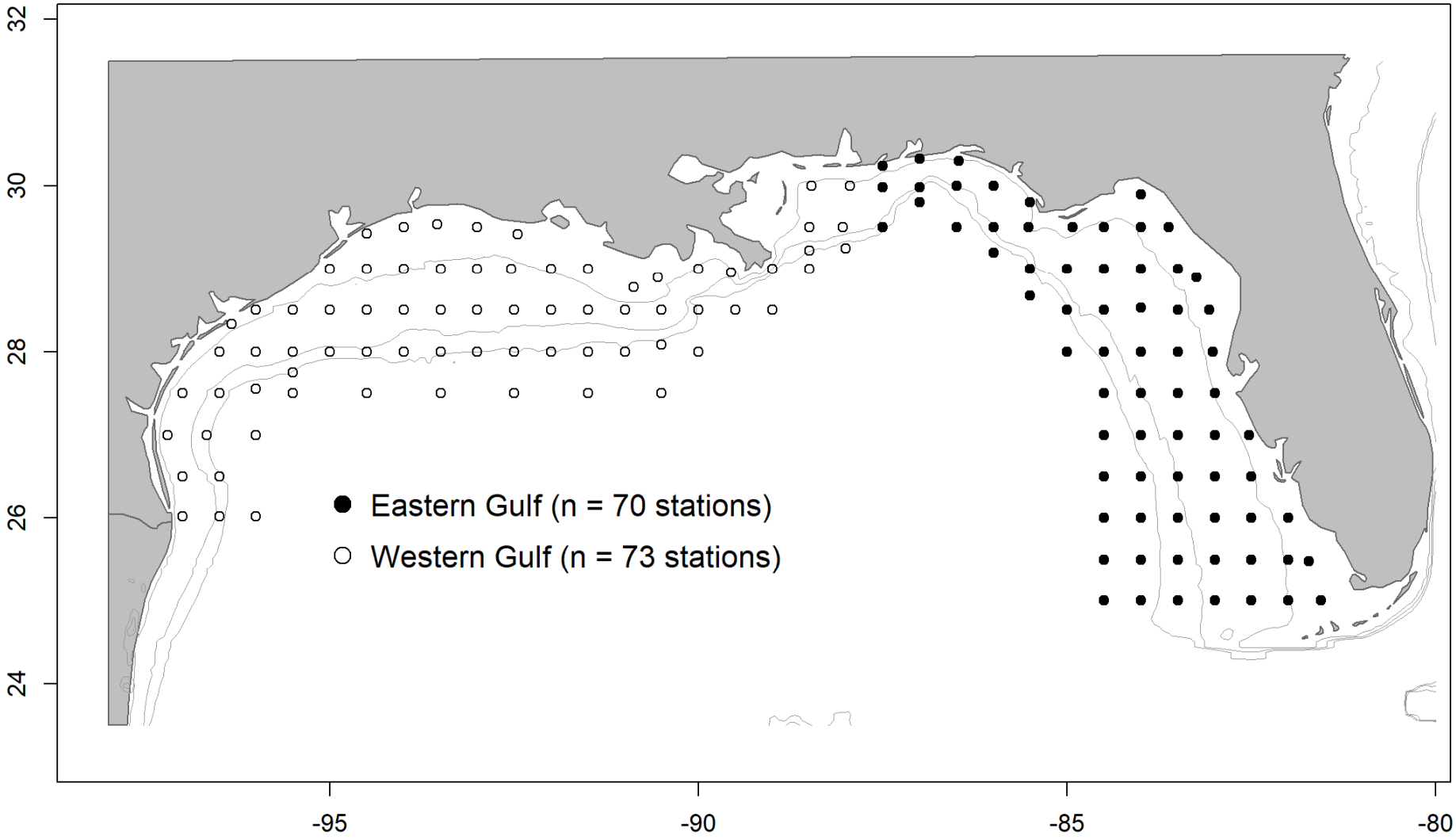
2) Tracking recovery under rebuilding plans

3) Tracking ecosystem change (ecosystem & food web modeling)

4) Forage fish and lower trophic level dynamics, relevant to the hypotheses linking higher trophic level losses to prey declines

Primary limitations

1) Our efforts currently focus on eastern Gulf (West Florida Shelf)
solution: expand (not replace) efforts to include archived and new samples from western Gulf (requires funder permission)


32
30
28
26
24
-95
-90
-85
-80
Eastern Gulf (n = 70 stations)
Western Gulf (n = 73 stations)

Primary limitations

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solution: expand (not replace) efforts to include archived and new samples from western Gulf (requires funder permission)

2) Barcoding throughput from SEAMAP stations (143 in full Gulf)
solution: increase sample size with collections made between SEAMAP stations

Primary limitations

1) Our efforts currently focus on eastern Gulf (West Florida Shelf)
solution: expand (not replace) efforts to include archived and new samples from western Gulf (requires funder permission)

2) Barcoding throughput from SEAMAP stations (143 in full Gulf)
solution: increase sample size with collections made between SEAMAP stations

2) Our efforts currently focus on Fall SEAMAP collections
solution: augment SEAMAP sampling with cruises in other seasons

Summer collections add 6 new species and extends seasons for 13 species

SEAMAP cruise

Family	Taxon	Common Name	Overfished	Overfishing	Spring (4)	Summer (20)	Fall (16)	Winter (1)
Carangidae	*Trachinotus carolinus*	Florida pompano	Unknown	Unknown				
Carangidae	*Trachinotus falcatus* ✓	Permit	Unknown	Unknown		✓		
Coryphaenidae	*Coryphaena equiselis* ✓	Pompano dolphinfish	Unknown	Unknown		✓		
Coryphaenidae	*Coryphaena hippurus*	Mahi-mahi	Unknown	Unknown				
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Rachycentridae	*Rachycentron canadum* ✓	Cobia	No	Yes		✓		
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