GEORGIA
DEPARTMENT OF NATURAL RESOURCES
COASTAL RESOURCES DIVISION
ONE CONSERVATION WAY · BRUNSWICK, GA 31520 · 912-264-7218

WALTER RABON
COMMISSIONER

DOUG HAYMANS
DIRECTOR

Shrimp Advisory Panel

May 29, 2025 – 6:00PM-8:00PM
Shipman Building, GADNR Coastal Resources Headquarters in Brunswick
(arrive/call/login by 5:45PM)

Telephone number for call: 470-344-9228
You may be asked to enter the conference ID when you dial in: 514 020 236#

To join by webinar click **Join the meeting now**
Meeting ID: 277 053 169 569 1
Passcode: uw9gc9xd

6:00 Welcome & Introductions

6:10 Fishery Independent Data and Food Shrimp Season Opening Recommendations

6:45 Environmental Drivers of Shrimp Black Gill Disease and Its Impact on Georgia Shrimp - Dr. Marc Frischer (UGA Skidaway Institute of Oceanography)

7:15 Shrimp Vessels and Docks: Assessing Commercial Fishing Infrastructure in Coastal Georgia - Bryan Fluech (UGA Marine Extension & Georgia Sea Grant) and Dr. Jennifer Sweeney Tookes (Georgia Southern University)

7:45 Other Business and Public Comment

8:00 Adjourn

SAP Members: (10) Ricky Boone, Butch Broome, Jack Coursey, Tim Currie, Marc Frischer, Darrell Gale, Pat Mathews, Dale Mock**,** Stevie Morrison and Bruce Woodard.

Guest Speakers: (2) Bryan Fluech and Jennifer Sweeney Tookes (virtual).

GADNR Staff (12): Carolyn Belcher, Julie Califf, Jared Flowers, Dawn Franco, Britney Hall, Doug Haymans, Tyler Jones, Kathy Knowlton (virtual), Eddie Leonard, Shannon Carmichael, Amy Smith, and LED Game Warden.

Summary of Results for White Shrimp, May 2025 Assessment - R/V Reid W. Harris.

	SECTOR	Long-term Data (2004 - 2025)	2025 Data	Difference (%)
CPUE (Pounds per 15 min trawl)	CREEKS	3.4	3.2	-6.15
	SOUNDS	5.3	4.2	-20.92
	BEACHES	2.3	3.9	71.21
	ALL SECTORS	3.6	3.8	3.35
Advanced Gonad Stage (%)	CREEKS	34.4	4.8	-86.05
	SOUNDS	55.5	20.6	-62.90
	BEACHES	82.1	70.1	-14.62
	ALL SECTORS	53.9	27.4	-49.17
Count Size* (Heads On)	CREEKS	22.5	21.1	-6.50
	SOUNDS	19.8	18.7	-5.28
	BEACHES	14.6	11.9	-18.50
	ALL SECTORS	19.0	17.2	-9.70
Salinity	CREEKS	24.7	26.7	8.10
	SOUNDS	28.2	29.9	6.03
	BEACHES	30.9	29.7	-3.88
	ALL SECTORS	27.9	28.8	3.10
Temperature	ALL SECTORS	24.2	25.8	6.4

*Negative count size differences indicate larger sized shrimp.

Environmental Drivers of Shrimp Black Gill Disease and Its Impact on Georgia Shrimp

Marc Frischer
Jeb Byers
Megan Tomamichel
Max Braun

Photo credit – Bryan Fluech

2013 Fishery Disaster Assistance

(~ 10% of the awarded funds)

Project Goals

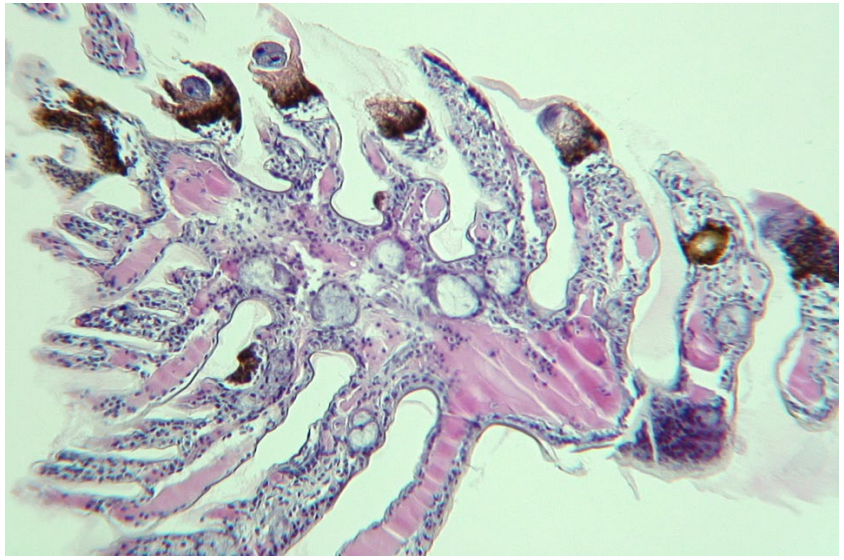
Identify Environmental Drivers of Shrimp Black Gill (sBG) Disease

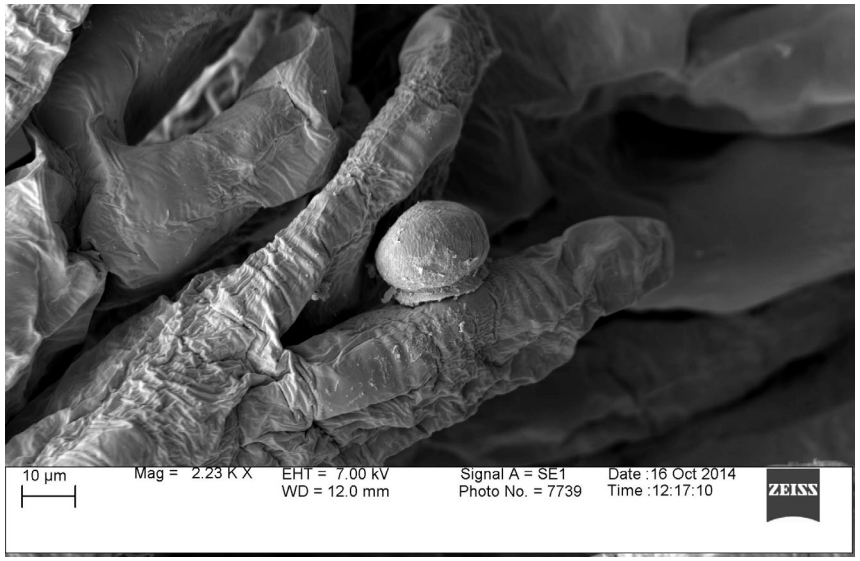
Assess the Impact of sBG Disease (if any) on Georgia Shrimp

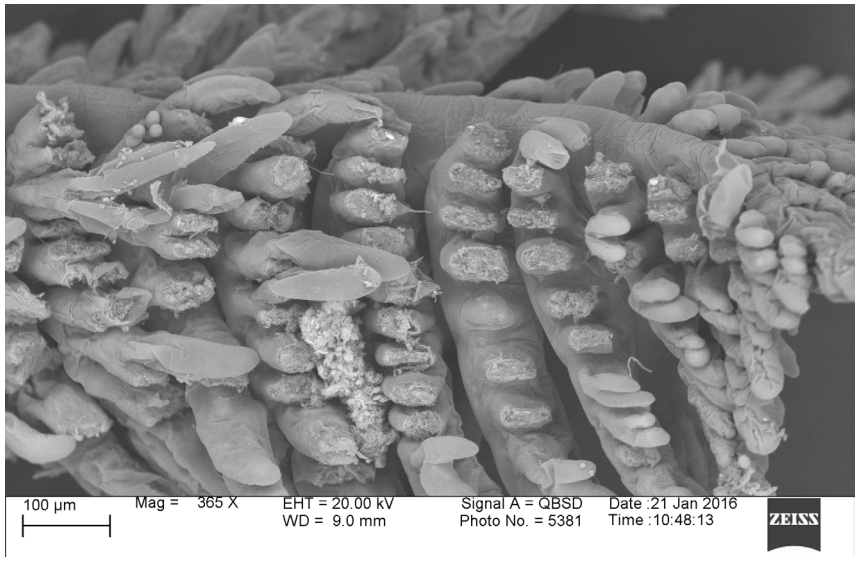
To help inform best management and fishing practices

Background

sBG disease caused by a parasitic ciliate – *Hyalophysa lynni*

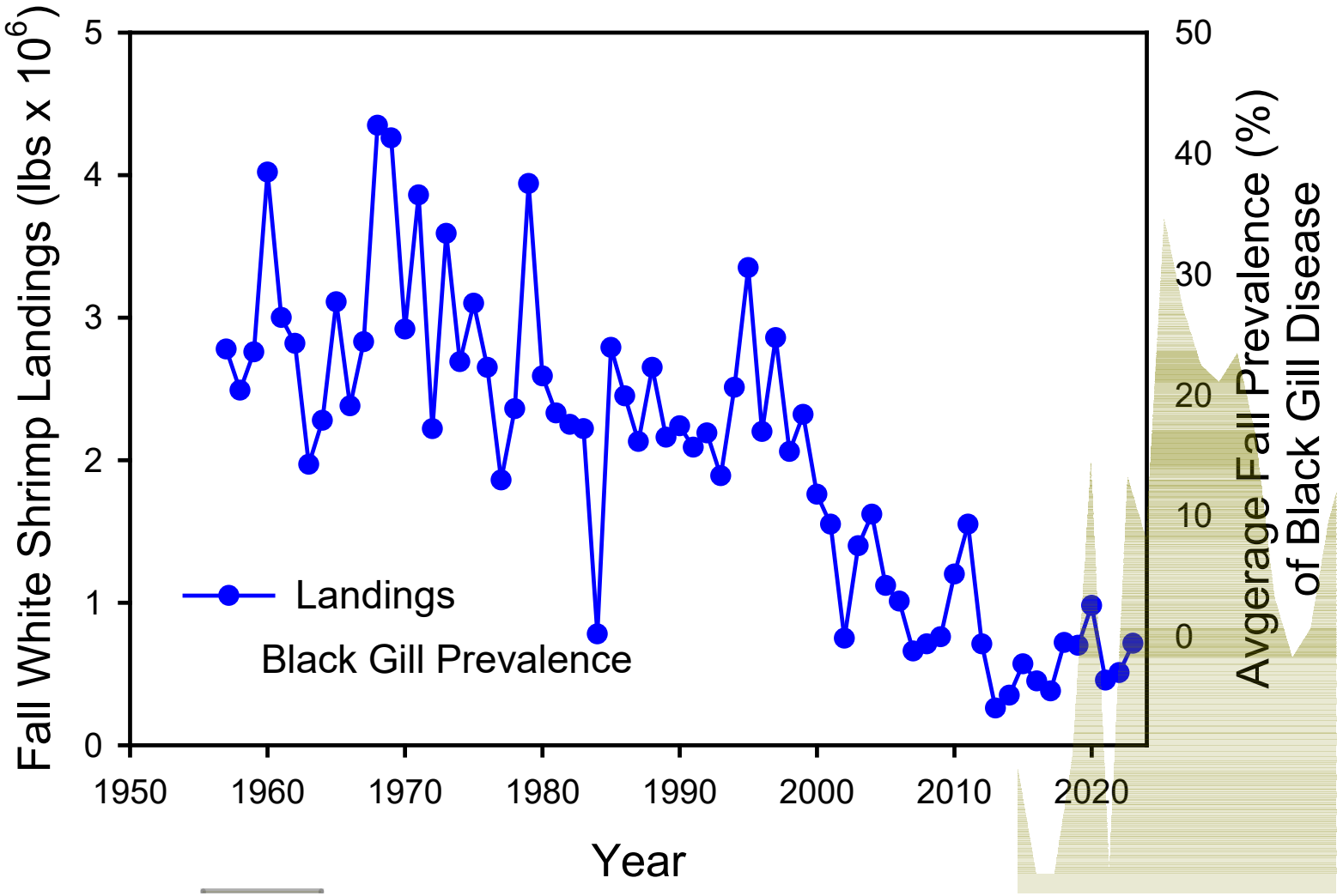






Historical Georgia Shrimp Landings

(data **NOT** corrected for effort and sBG disease based on visual symptoms only)



Correlation ≠ Causation

The goal of this study was to analyze long-term fishery dependent and independent stock assessments to assess the impact of environmental conditions, disease emergence, and other socioeconomic influences on the fishery

Getting Started

- Determine if the prevalence of visual symptoms of sBG disease are equivalent to infection rates
- Utilize effort normalized relative shrimp abundance estimates (CPUE) instead of Landings
- Derived sBG disease parameter; Emergence timing (E)

Data and QA/QC (2002-2023)

Environmental Data

Long term records of temperature, salinity, river discharge, etc…

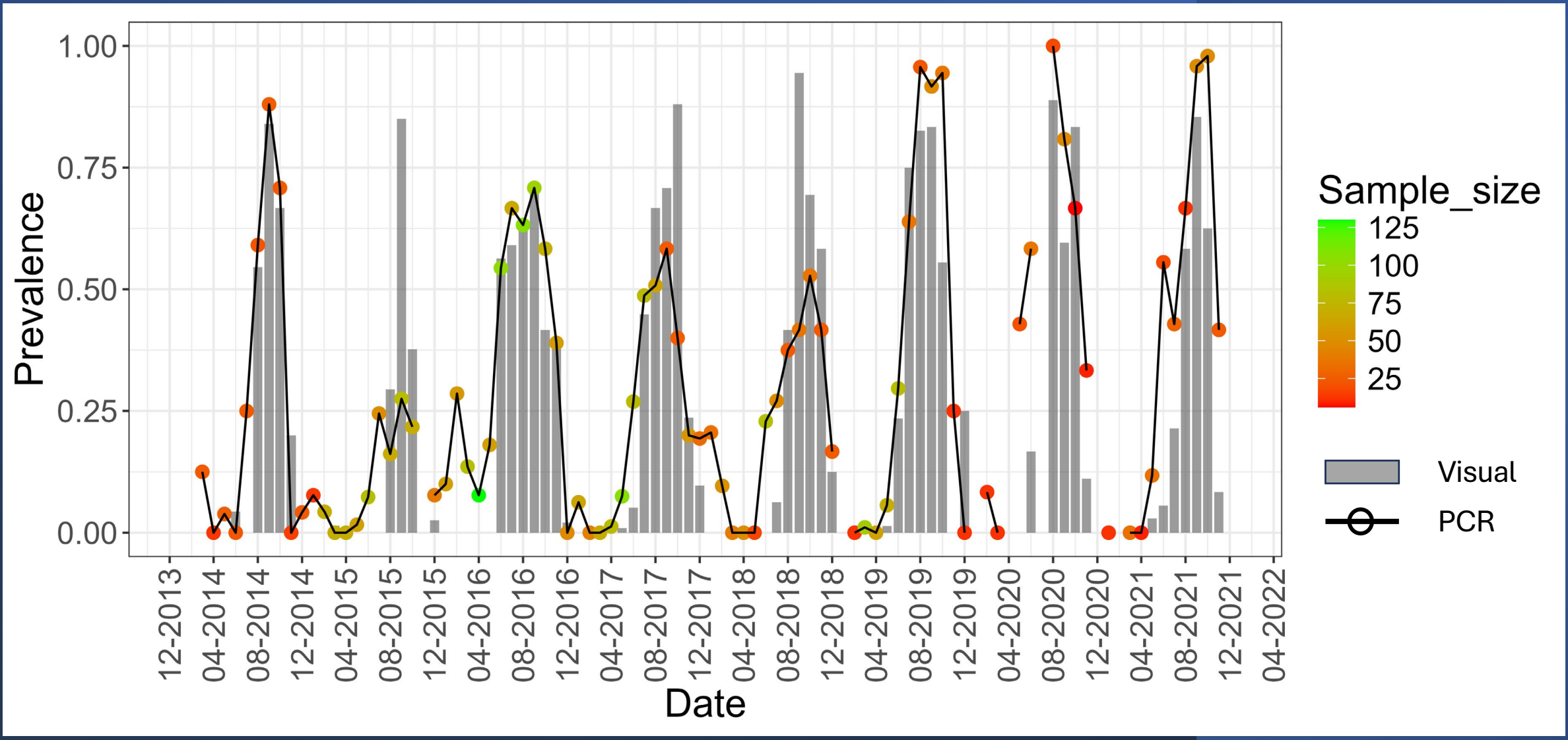
Fishery INDEPENDENT Data (GA CRD EMTS Program)

CPUE (shrimp per 15 min net tow), species, size, sex, reproductive status, disease

Fishery DEPENDENT Data (GA CRD Landings – Trip Tickets)

cCPUE (lbs tails per net hr-1), # of nets fished, hours fished, size

PCR Detection of *H. lynni* & Visual Detection of sBG disease symptoms



Use longer record visual black gills as metric of sBG disease prevalence

Getting Started

Effort Normalized Relative Shrimp Population – Catch per Unit Effort (CPUE)

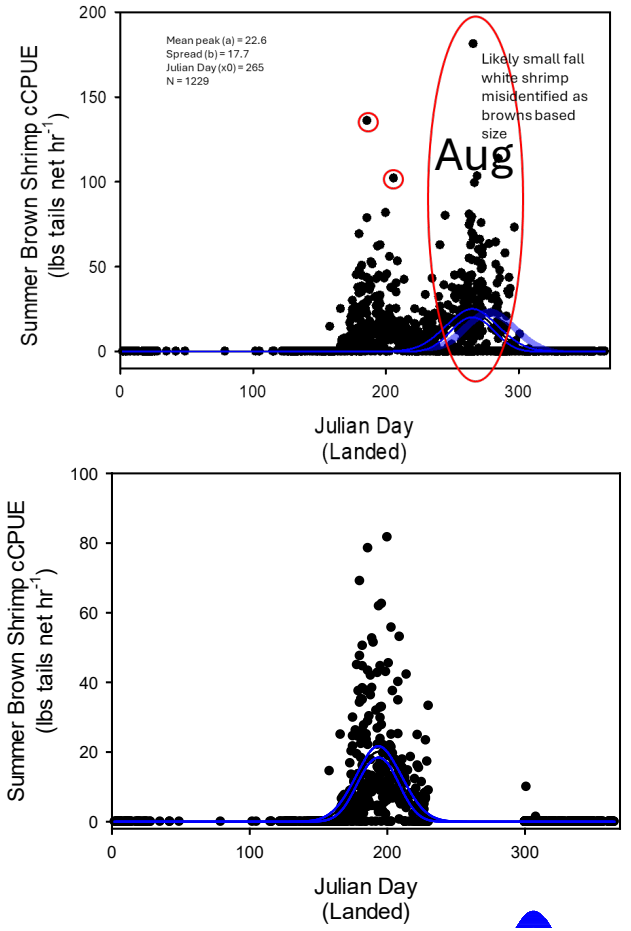
Fishery Independent from EMTS program

- Monthly 15 min tows from 36 stations in 6 sound system ***(~ 10,000 tows)***
- CPUE (shrimp per 15 min trawl)
- Condition data, species, size, sex, disease

Fishery dependent from Trip Tickets

- Seasonal trips of boats towing 1-2 nets ***(~ 12,500 tows)***
- cCPUE (lbs tails per hour)
- Species estimated by size and time of year

QA/QC Example
2005 summer brown shrimp from commercial trawls



[1] CRD determination that only data from 2002 to present meets quality standards for CPUE determination for both fishery dependent & independent assessments

[2] Commercial trawlers towing 1-2 nets

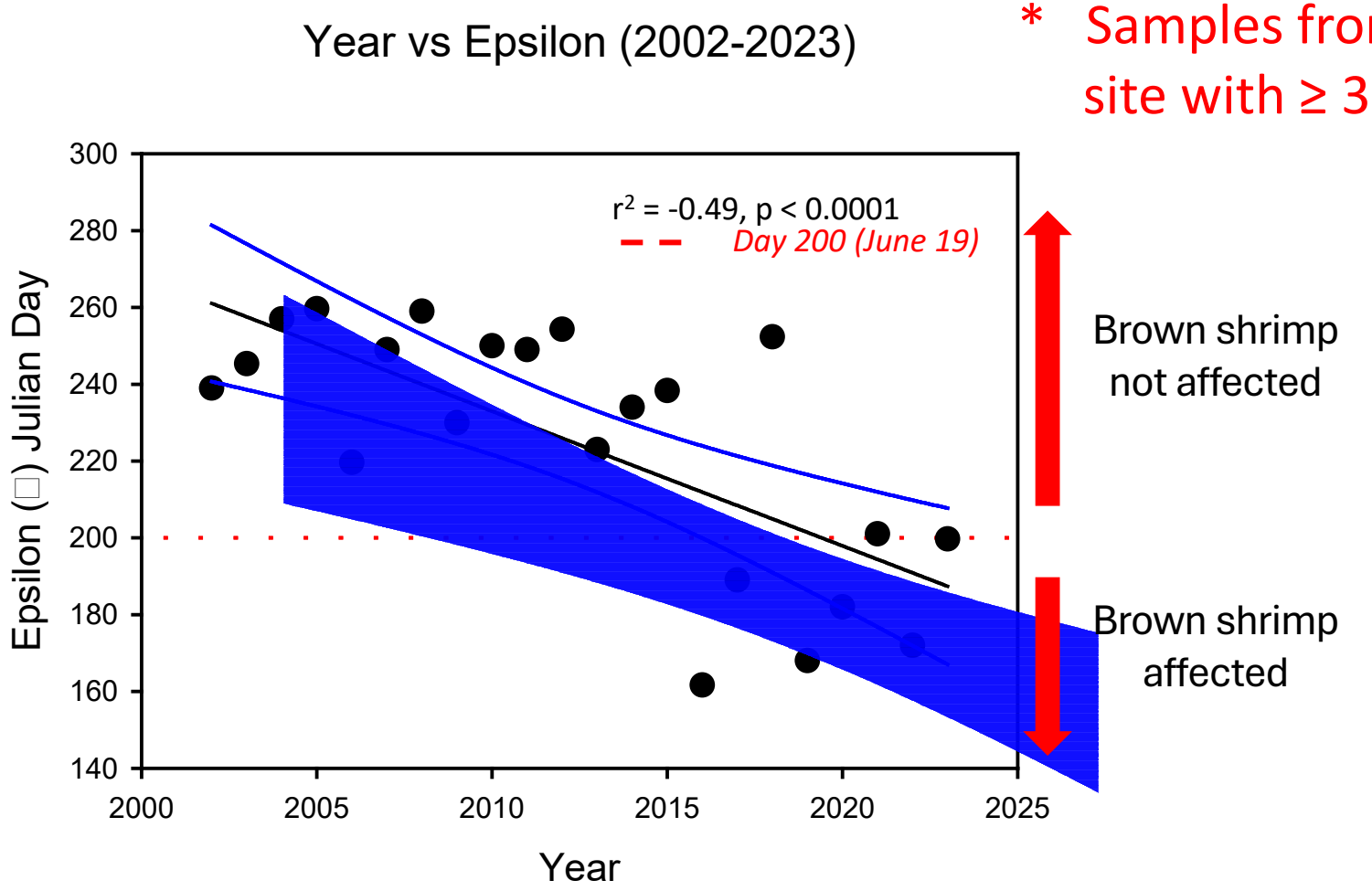
Epsilon (E)

Estimated Date of Annual Emergence of Visible Black Gill

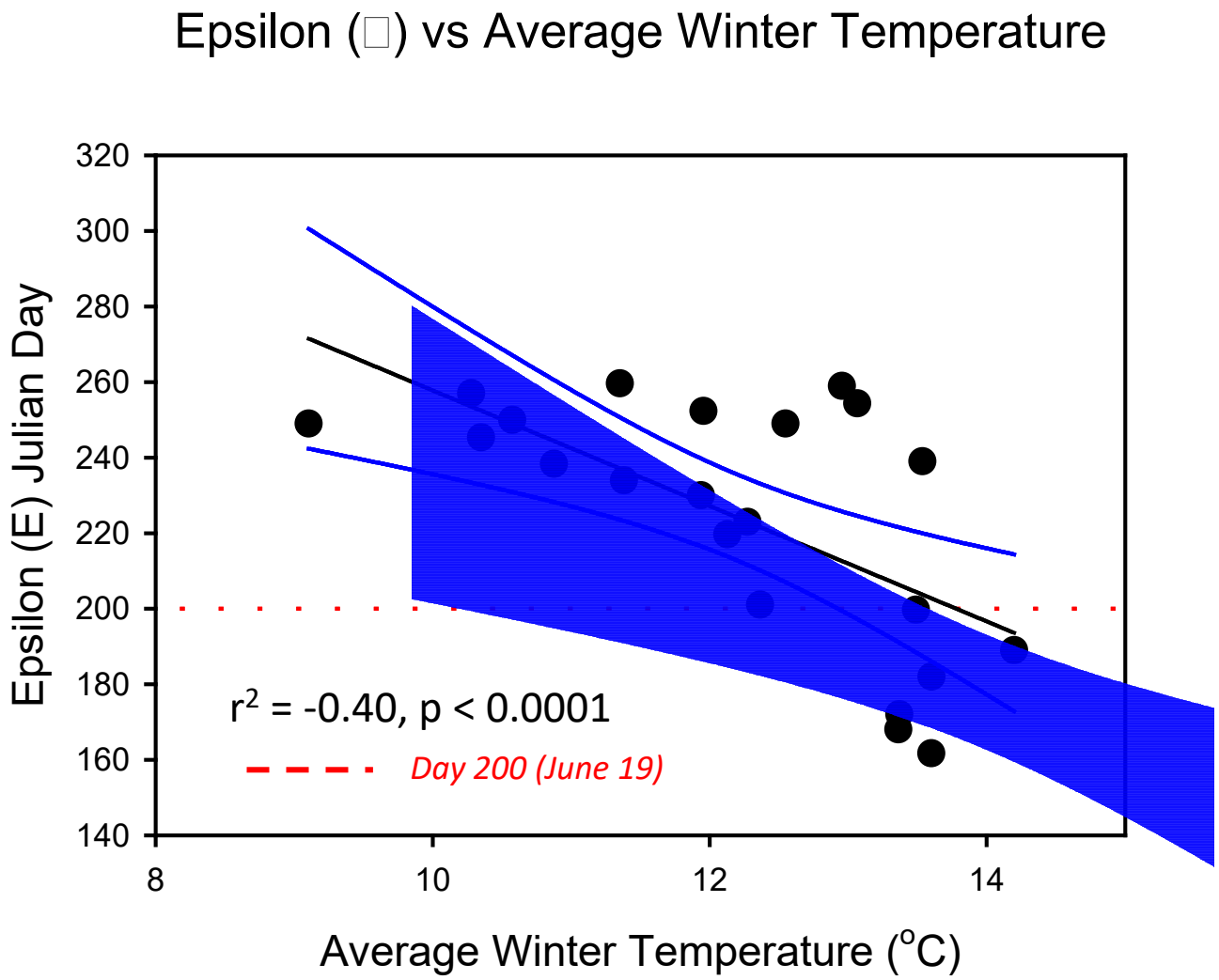
E = Average date between first 3 collections* in a year where sBG prevalence ≥ 25%

Data compiled from EMTS, MECA, and collected by Frischer group

* Samples from unique site with ≥ 3 shrimp



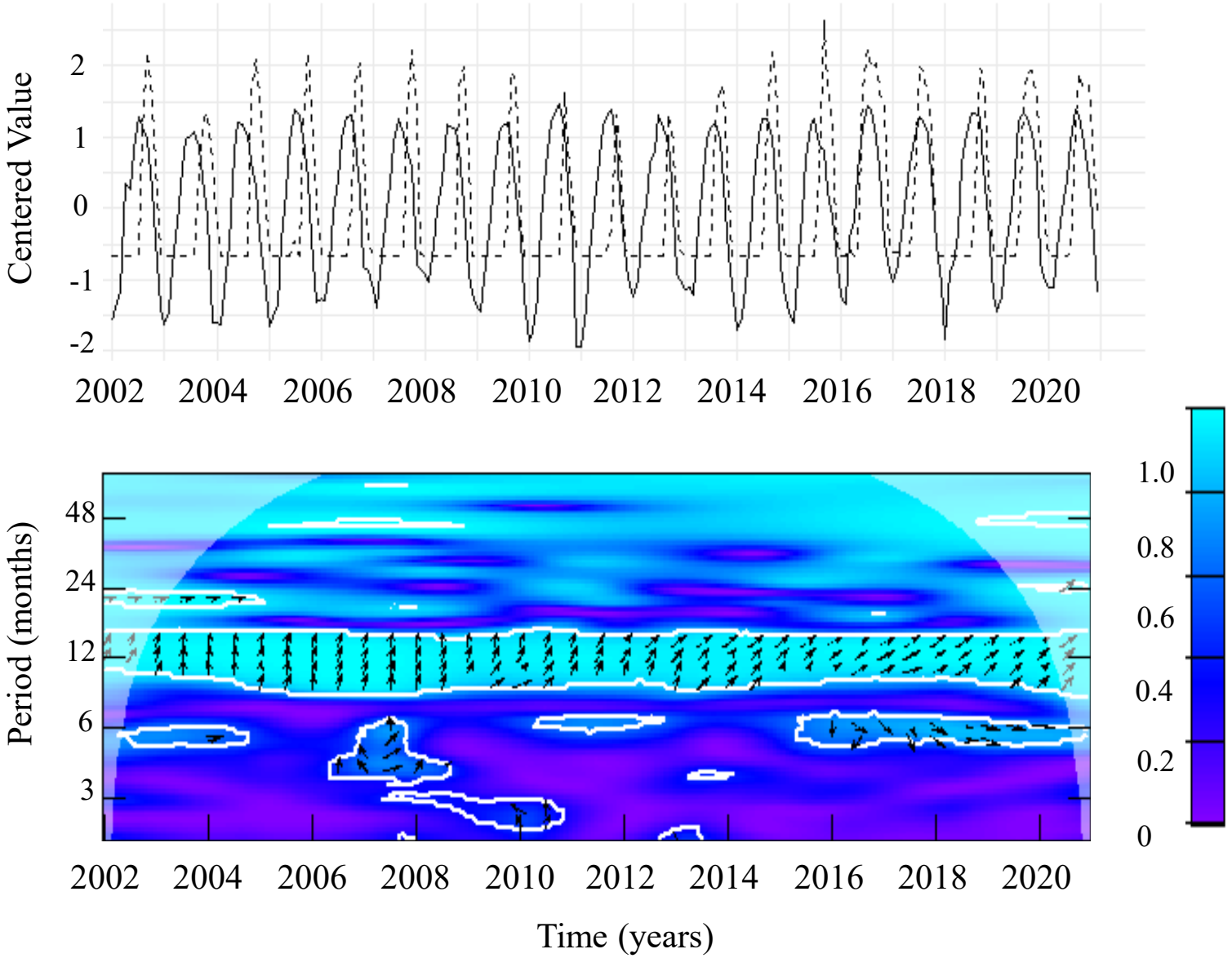
Most significant correlation between E and environmental parameters is with winter temperature



Cooler winters tend to result in later emergence of black gill
Warmer winters tend to result in earlier emergence of black gill

Consistent with the hypothesis that environmental change is a driver of shrimp black gill disease

Temperature is The Most Strongly Correlated with sBG Prevalence

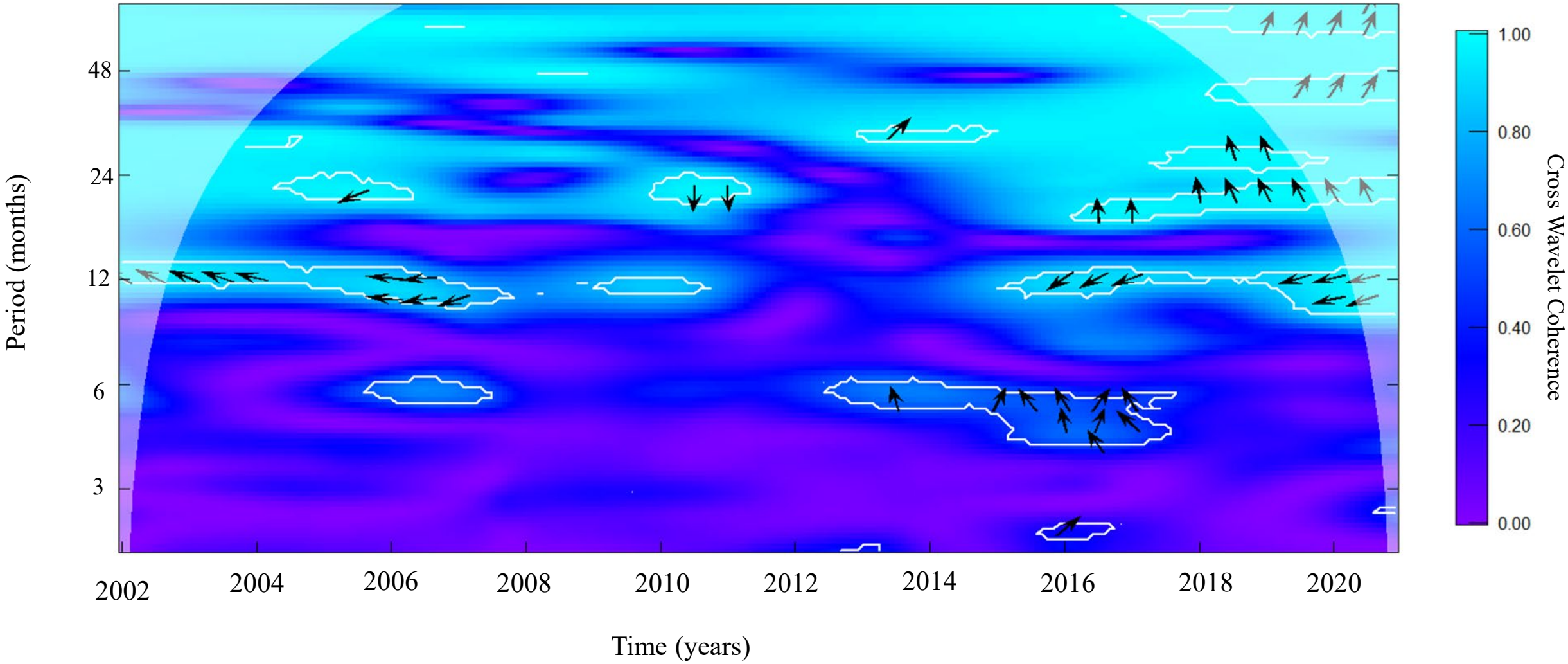


Peak sBG prevalence is also becoming more closely aligned with temperature over time

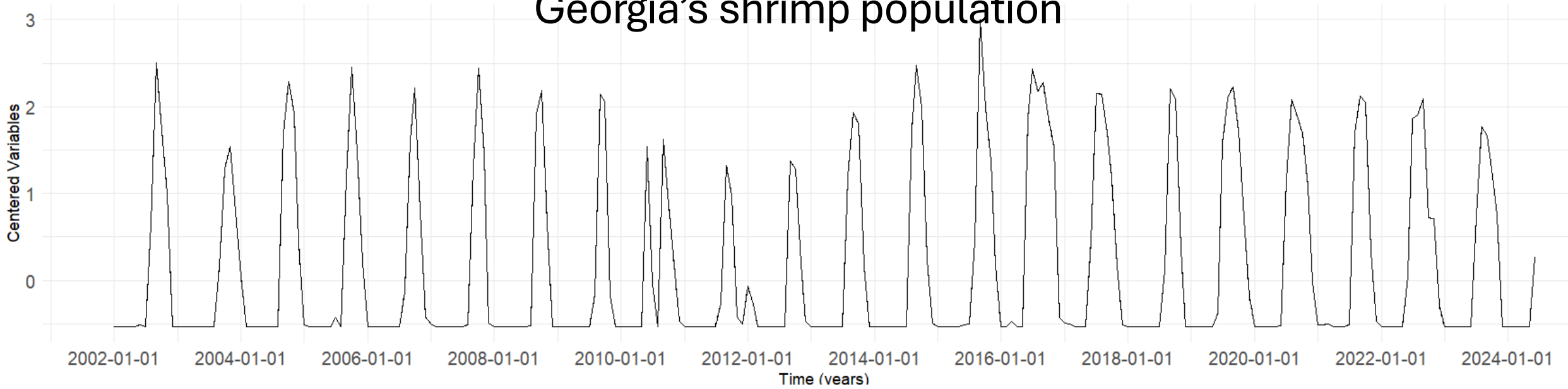
Megan Tomamichel

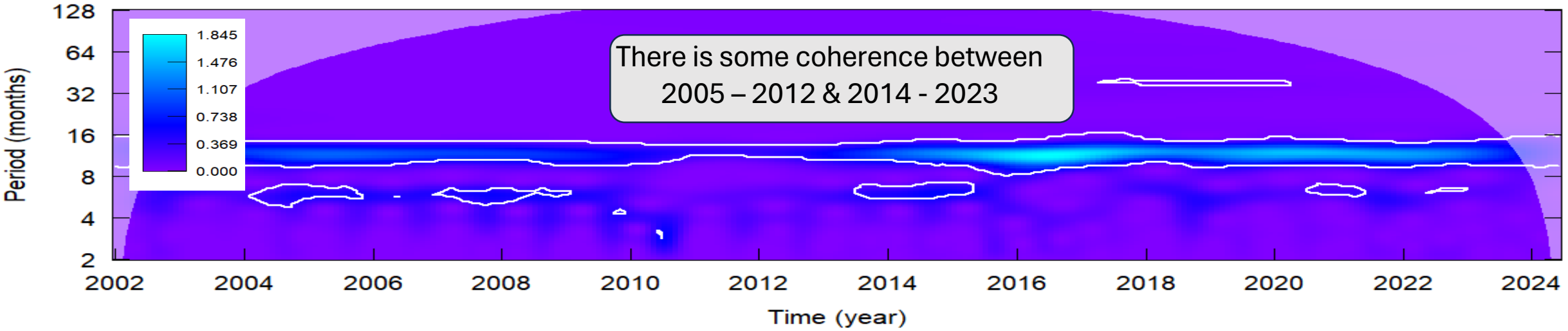
Cross Wavelet Transform (CWT) Timeseries Analysis

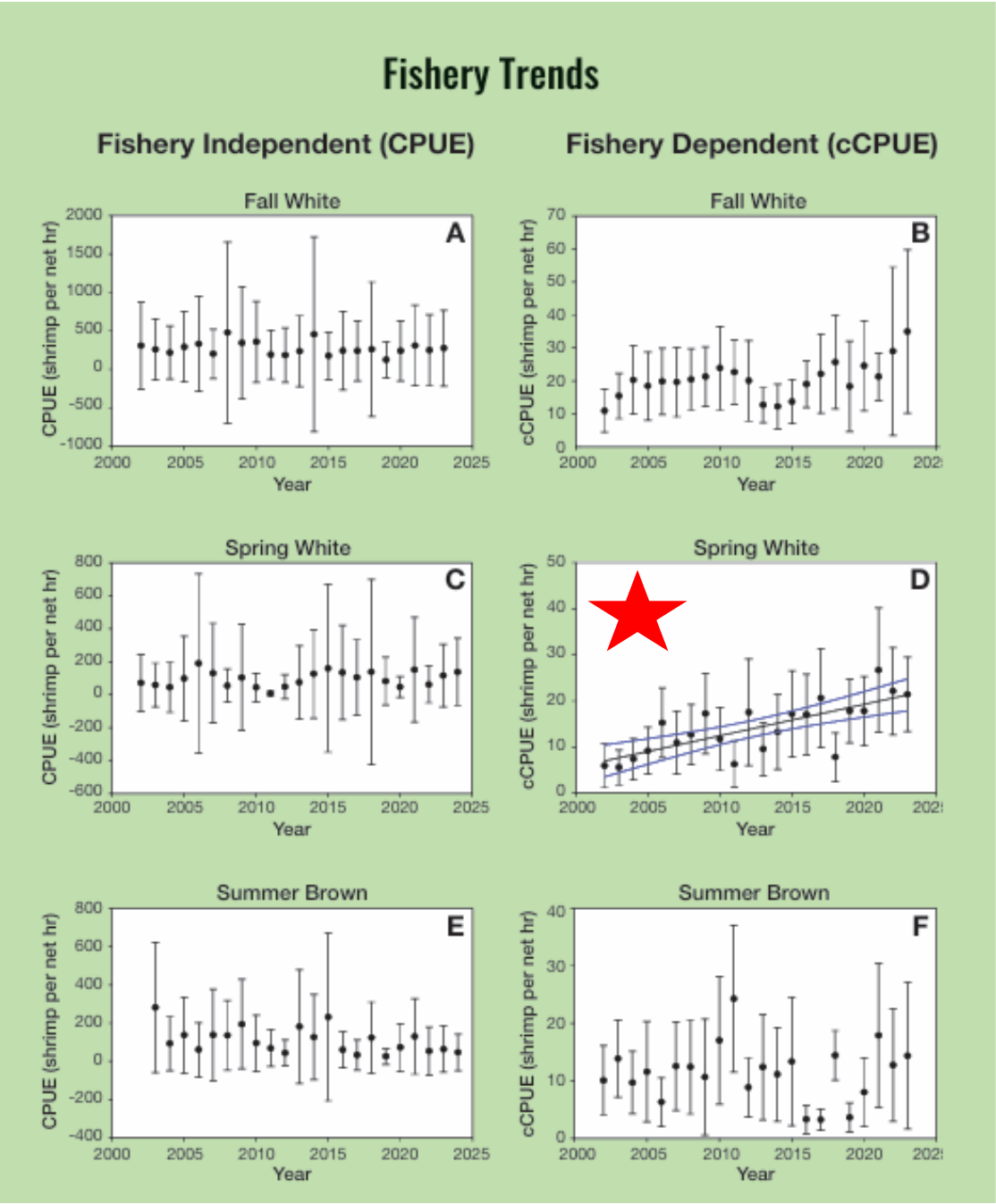
River discharge (salinity) is not strongly correlated with sBG prevalence



CPUE is not strongly or consistently correlated with sBG disease prevalence suggesting that it is not the primary causative factor in the dynamics of Georgia's shrimp population







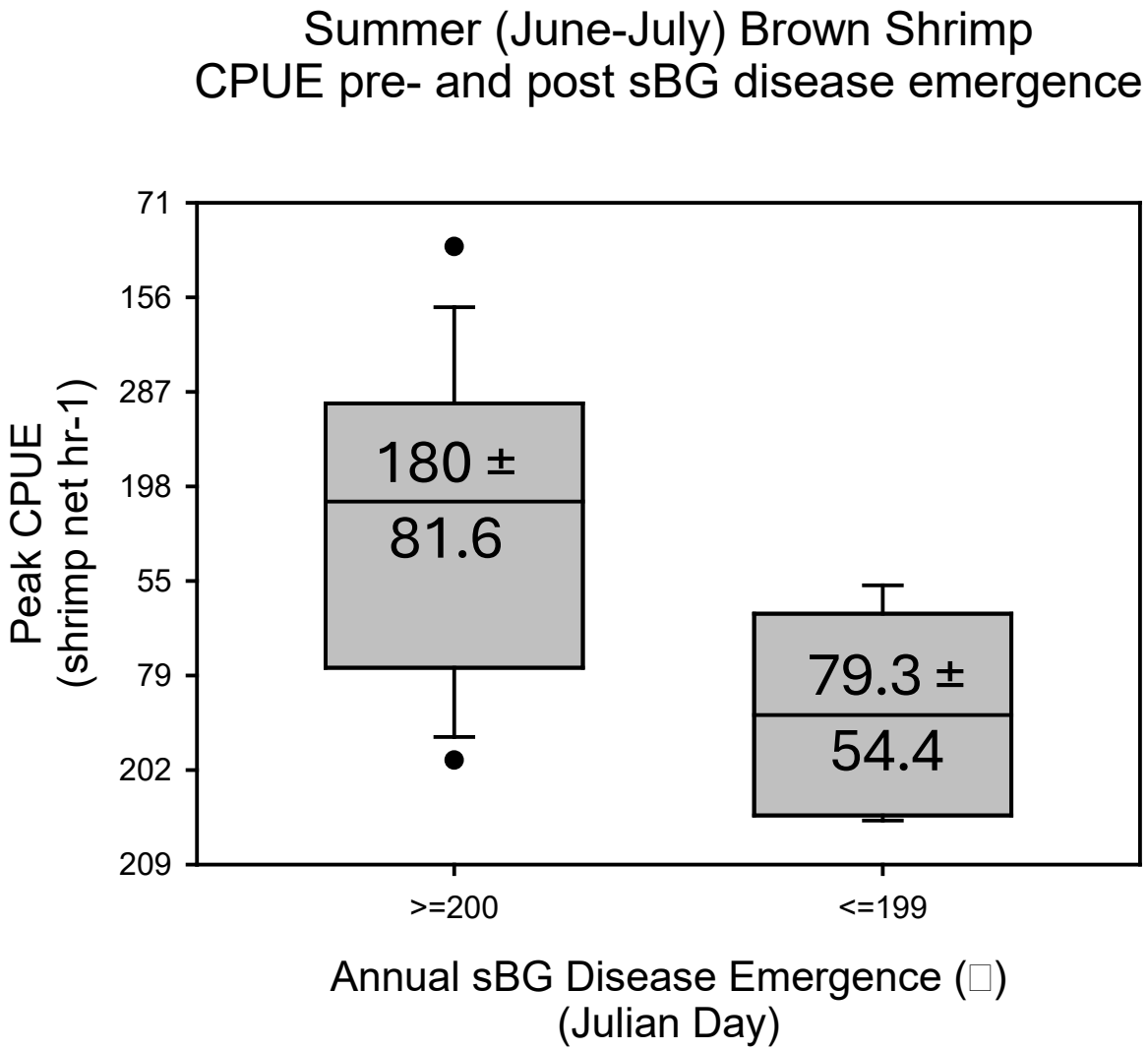
No significant trends in CPUE (fishery independent) between 2002 – 2023

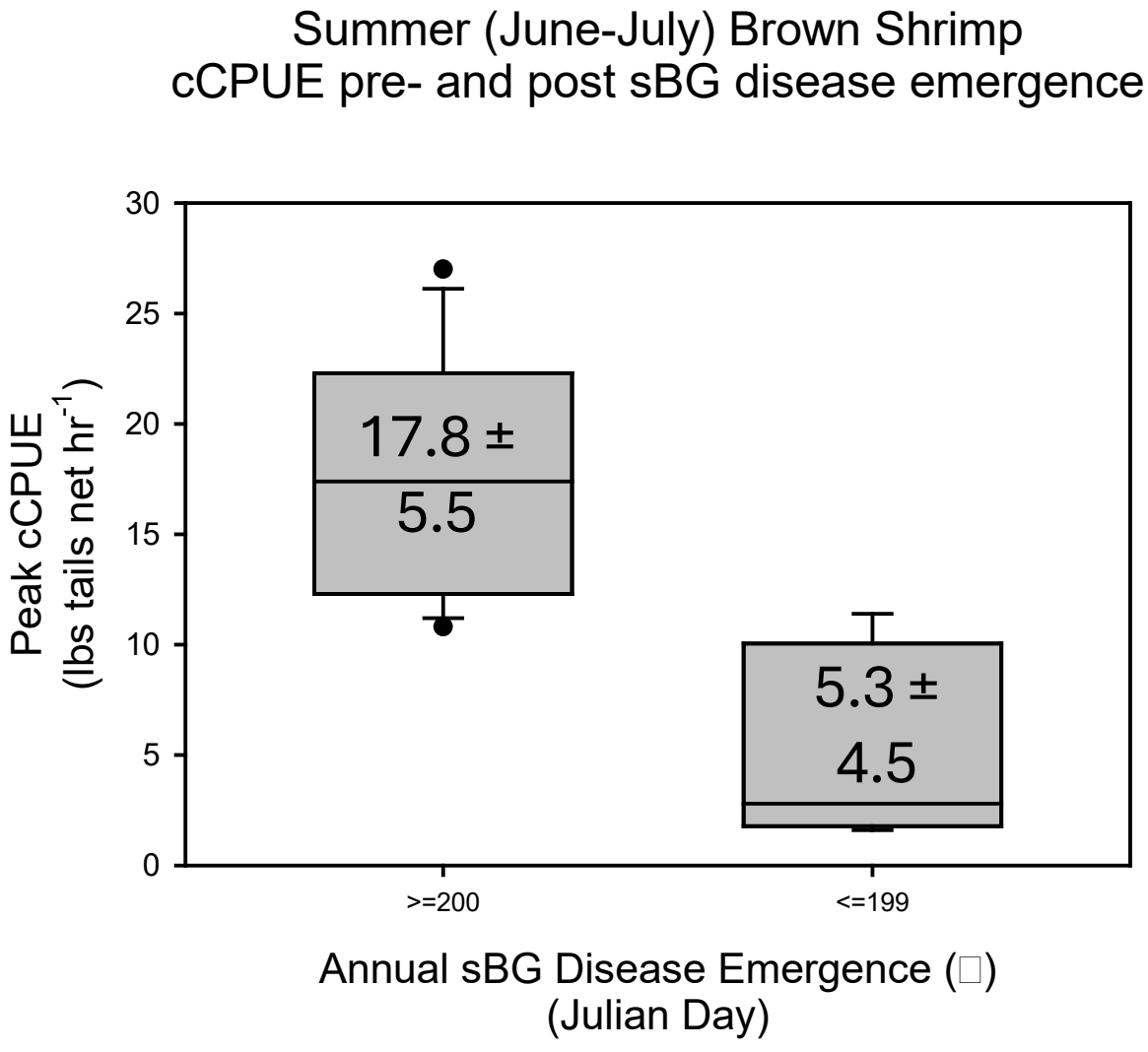
No significant trends in Fall white and Summer brown shrimp cCPUE (fishery dependent) between 2002 – 2023

Significant ($p < 0.0001$) **increasing** trend in Spring white shrimp cCPUE (fishery dependent) between 2002 – 2023

Large error bars indicate that additional QA/QC may be needed (in progress)

Effort normalized estimates of brown shrimp relative abundance are higher in years when sBG disease emerged after the brown shrimp season that in years when sBG emerged during the brown shrimp season





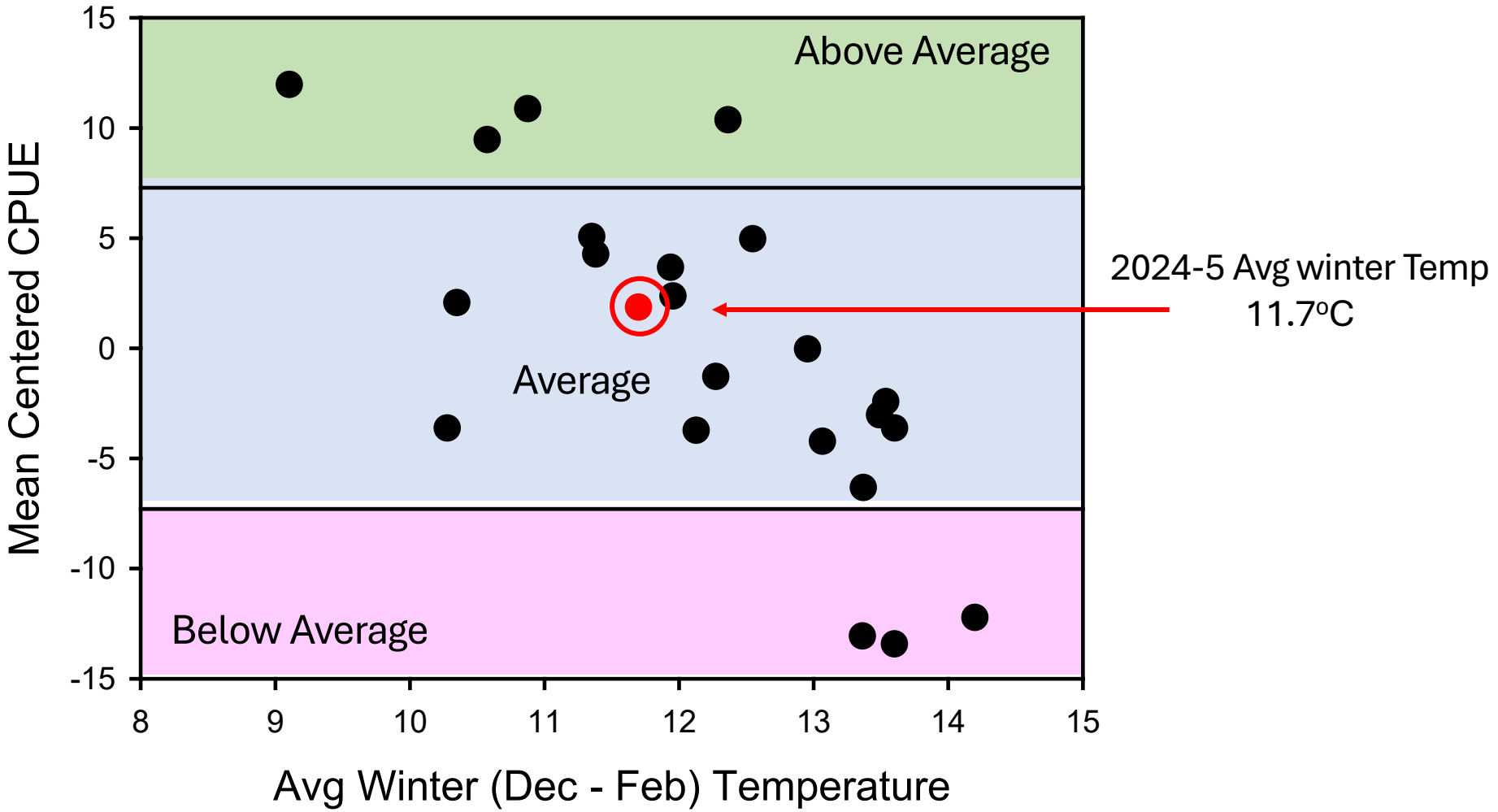
Summary Conclusions

- *The weight of evidence suggests that changing environmental conditions, especially warmer winters, triggered sBG disease in Georgia (SAB and Gulf regions as well)*
- *Lower post-sBG emergence CPUE and cCPUE, however, suggests a negative effect of sBG disease that is not fully due to warmer winters.* *Additional analyses are ongoing*
- *It is not, however, possible to completely rule out the possibility that sBG disease has (is) negatively impacting Georgia's shrimp.*

Best Management and Fishing Practices Implications?

- *It is not obvious that management changes would be helpful or are necessary. Georgia shrimp populations appear to be relatively stable over the long-term following current management policy.*
- *Warmer winters tend to result in poorer shrimp seasons. Fishery may need to calibrate (plan) using this knowledge. Winter water temperatures should perhaps be included in the decision-making process about when to open the spring season.*
- *Efforts should continue to maximize the Economic Value of wild caught Georgia Shrimp.*
- *Efforts should continue to foster the fishery (education, infrastructure support, recruitment of the next generation, etc)*

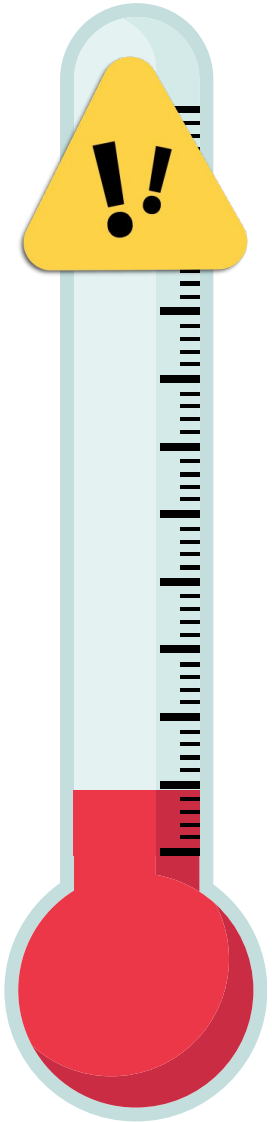
2024 GA Shrimp Season Prediction



The Future of Georgia's Shrimp Fishery?

"Shrimp won't go extinct, but the industry might if we're not careful"

Pat Geer
Former Chief of Marine Fisheries
Georgia DNR, Coastal Resources Division



HOST
Shrimp

PATHOGEN
H. Lynni

DISEASE STATE
Black Gill

ENVIRONMENT
Warm Winters

Shrimp Vessels and Docks

Assessing Commercial Fishing Infrastructure in Coastal Georgia

Marine Extension and Georgia Sea Grant
UNIVERSITY OF GEORGIA

Sea Grant

GEORGIA SOUTHERN UNIVERSITY
DEPARTMENT OF SOCIOLOGY AND ANTHROPOLOGY

Future Funding Opportunities

Priority #1

- Direct disbursements of maximum amounts

Priority #2a

- Vessel repairs? Railway work?

Priority #2b

- Assess Dock Needs?

Part 1: Vessels and Railways

Image Credits: Bryan Fluech

Project Purpose

Fill Vessel and Railway Data Gaps to better inform present and future GA DNR-CRD spending of federal relief/disaster funding

Project Tasks

- Create survey about vessel needs & costs
  - Consult Shrimp AP & CRD
- Survey 25 vessel and 2 railways owners
- Working status of vessels
  - Maintenance & Repair Needs
  - Associated Time & Costs
- Craft collaborative price list & interested partners

Table 2: Proposed Interview Participants and Completed Participants, by Permit and County

Eligible permit holders per county		Proposed number of permit holders targeted to interview	Actual number of permit holders interviewed
Brantley	2	1	1
Bryan	1*	.5*	1
Camden	2	1	2
Candler	1*	.5*	1
Chatham	7	4	2
Effingham	1*	.5*	0
Glynn	8	3	3
Liberty	1*	.5*	1
McIntosh	26	12	11
Tattnall	1*	.5*	0
Toombs	2	1	2
Wayne	1*	.5*	1
TOTAL	**53**	**25**	**25**

*Counties with only one permit-holder were grouped into a single population, with a goal of 3 interviews total from *any* of those 6 included counties

Important to Remember…

- No “shrimper opinion” that can reliably speak for majority of industry
- Unlikely that GA DNR-CRD will satisfy industry as a whole
  - “*can’t make everyone happy*”
- General appreciation for industry member engagement

Image Credit: Bryan Fluech

Collaborative Price List *(in part)*

	Generator expenses for steel hull vessels (> 63 feet in length) ranged from $8,500 to $23,000			
	Generator expenses for wood/fiberglass hull vessels (<62 feet in length) ranged from $350-$10,000			
1	Power Take Off Repair	$200	12 hrs	Self
7	Power Take-off	$1,000	2 hrs	Self
20	Power takeoff	$2,500	3 days	-88
18	Fuel Filters	$24		
14	Fuel Filters	$60 each	-88	-88
15	Fuel Filters	$150/ Year	-88	-88
12	Fuel Sensor	$500	1 day	Allen's Brother
4	Fuel Systems	$1,800		Coastal Alloy Welding
13	Turbo	$200	2-3 hrs	Marty Hatcher
9	Tune-ups/ Turbo/ Changed two	$6,800	1 day	labor
14	Turbo	$12,000	2 month	-88
1	Oil Changes	$200 X 6	1 hr	-88
1	Generator Oil	$50/month	500 hrs total (1hr each)	self
2	Oil Changes	$1000/month and a half	1.5 hours	self
3	Oil Filters	$ 650/year	1.5 hrs each	self
4	Valves and Oil Filters	$1,000	-88	-88
6	Oil Filters	$500/Year		
7	Oil/ Filters	$250	-88	-88
8	Oil Filters	$8,000	4 hours each time	Self
9	Oil Filters	$280	-88	self
10	Oil Filters	$5,500	5 times a year, 200 hrs	Self
11	Oil Filters	$350	1 hr each	Self
12	Oil Filters	$1,200	1 day X4	Self
13	Oil filters	$3,300	1 hr each time	-88
14	Generator Oil Filters	$200/ month	-88	-88
15	Oil Filters	$360/ Every 3 Months	-88	-88
16	Oil/ Filters	$2,000	-88	-88
17	Oil Filters	$500	-88	-88
18	Oil	$36	Every 2 months	-88
19	Oil Filters	$600	3/Year	-88
20	Oil Monthly (Filters too)	3900/year	-88	-88
21	Oil Filters	$ 300/ 2 weeks	-88	-88
22	Oil Cooler	$3,000	200 hrs/Year	-88
23	Oil/Filters	$350/400 hrs	-88	-88
24	Oil Filters	$500/ Y	-88	-88
25	Oil Filters	$250	6-7 times per year	-88
	Captains/owners reported changing oil and replacing filters from every two weeks to every 3-4 months depending on how much they ran their boats and the vessel size. Expensese ranged from $500/year to over $8,000/year.			
1	Keel Cooler Leak	$500	1 day	self plus help
16	Keel Cooler	$1,200	2 weeks	-88

survey #	Safety Equipment			
"-88" = no response	Repairs/Maintenance			
	what	cost	time	who
2	EPIRBs	$100	-88	Self
3	EPIRBs	$700	-88	self
6	EPIRBs	$80	-88	Lindsey Parker
7	EPIRBs	$2500 Every 3 Years	-88	-88
8	EPIRBs	$600	-88	Self
10	EPIRBs	$900	-88	Self
13	EPIRBs	$1,500	-88	-88
14	EPIRBs	$600	-88	-88
16	EPIRBs	$1,200	-88	-88
17	EPIRBs	$700	-88	-88
18	EPIRBs	$600	-88	-88
20	EPIRBs	$700	-88	-88
21	EPIRBs	$800	-88	-88
22	EPIRBs	$1,500	-88	River Services and Rafts
23	EPIRBs	$800	-88	-88
	New EPIRBs range roughly $600-$900/each			
1	Fire Extinguishers	$300	-88	-88
2	Fire Extinguishers	$300 inspect	-88	-88
4	Fire Extinguishers	$850	-88	local Guys in Brunswick
6	Fire Extinguishers	$375	-88	A & A
7	Fire Extinguishers	$300-900	-88	-88
8	Fire Extinguishers	$1,000/Year	-88	-88
11	Fire Extinguishers	$300	-88	-88
12	Fire Extinguishers	$120	-88	-88
13	Fire Extinguishers	$500	-88	-88
14	Fire Extinguishers	$300	-88	-88
18	Fire Extinguishers	$150	-88	-88
19	Fire Extinguishers	$600	-88	-88
21	Fire Extinguishers	$500	-88	-88
24	Refilled Fire Extinguisher	$50	-88	Waycross
25	Fire Extinguishers	$300	-88	-88
	Number of fire extinguishers/vessel will vary on size and captain's preference; average price roughly $50-$100/piece depending			
1	Flares	$300	-88	-88
4	New Flares	$250	-88	West Marina
6	Flares	$400	-88	-88
11	Flares	$500	-88	-88
12	Flares	$600	-88	-88
13	Flares	$400	-88	-88
14	Flares	$270	-88	-88
15	Flare Kits	$300	-88	-88
16	Flare Kit & Lights for Ves	$400	-88	-88
18	Flares	$300	-88	-88

Models for Future Spending

	1	2	3	4	5	6	7	8	9
Model	***Equal Money for All***	***Equal Fixes for All***	***Matching Funds****	***Triage***	***Support the Productive***	***Maintain the High-Functioning***	***Emergency Funds***	***Regulatory Support***	***Outside the Scope***
Definition	Each person gets the same amount of money to spend on needed repairs	Each person gets the same element fixed, even if amount needed to fix is not equal	For money spent on approved things/ at approved places, DNR matches that money (either reimbursement to shrimper or direct pay to the vendor)	Invest in getting the least functional vessels up to speed in order to preserve the fleet	Utilize a percentage of landings to determine the more productive members of the fleet, and invest in them at a higher rate than other vessels	Invest primarily on the higher-functioning vessels, as indicated by landings.	Reserve DNR funding for handling unexpected and sudden repairs	DNR funding for required items that are not essential for vessel function would free up shrimper funds to invest back into vessel repairs and upkeep	Initial responses often centered around issues that can likely not be solved by increased DNR CRD investment
Example	Direct payment to vendor (railway, net building or repair, electrical vendor, etc.)	This could cover all the zincs, or fiberglass, or paint that each vessel needs, regardless of quantity	If $X is paid to the railway, DNR could reimburse for half; OR if shrimper pays $X to railway, DNR pays railway the same amount	Repair and rehabilitate the least functional vessels so they can continue shrimping	A "sliding scale" model that ensures those who are actively shrimping (and are therefore most likely depending on this income) are able to continue to do so	Use one of the models in #1-3 to make sure the most successful vessels who have invested most heavily in their own businesses and boats are rewarded for that foresight and dedication	If someone loses an engine or catches on fire they likely don't have funds set aside to deal with this	Provision every vessel with the same excluder devices or safety gear, OR, provide vouchers for the gear to a local vendor so they can replace when needed	Many shrimpers raised concerns about imported shrimp, lack of tariffs, area closures, and the cost of fuel

Vessels and Railways-Assessing Commercial Fishing Infrastructure in Coastal Georgia

Final Report

Prepared by

Bryan Fluech[1] & Dr. Jennifer Sweeney Tookes[2]

[1] Associate Marine Extension Director, University of Georgia Marine Extension and Georgia Sea Grant
[2] Associate Professor, Georgia Southern University Department of Sociology and Anthropology

Full Project Report

Part Two: Dock Stories

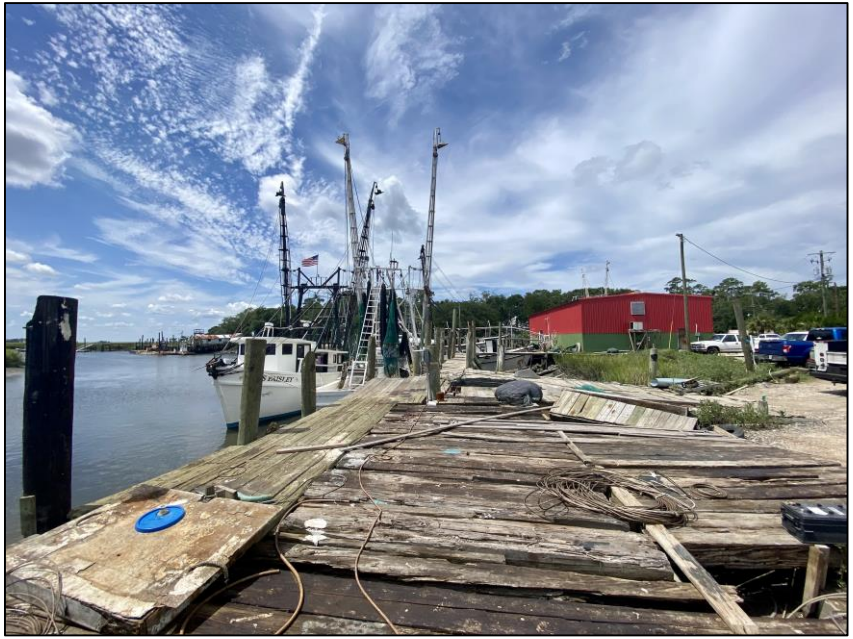


Image Credits: Bryan Fluech

Project Purpose

Image Credit: Bryan Fluech

Identify opportunities to improve infrastructure and industry sustainability in conjunction with existing constraints on land use, environmental impacts, changing weather patterns, aging physical infrastructure, and changing vessel needs.

Dock Assessments: Top 3 Physical Issues

- Pilings (N=5)
- Floor (N=4)
- Docking/Gangway (N=4)
- Upgrade/Repair Icehouse/Cooler Room (N= 3)
- Fix road leading into dock (N= 2)
- Ice machine (N= 2)
- Roof (N= 2)
- Vat (N=2)
- Replace the whole fish house (N=2)
- Seawall repair, fuel pump, ice equipment (beyond ice machine), electrical (N=1 each)

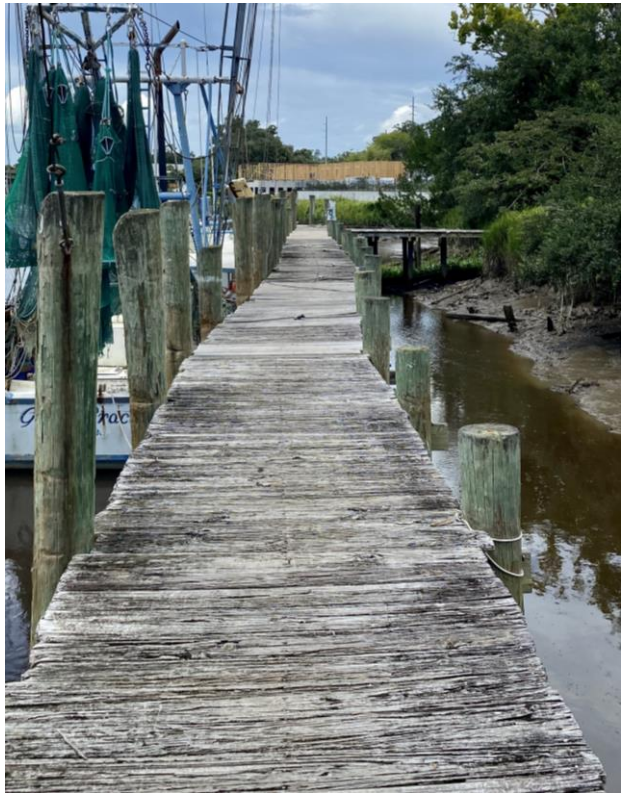


Image Credit: Bryan Fluech

Capturing the Cultural Importance of Georgia's Fish Docks

EVERY FISH DOCK HAS A STORY...
WE WANT TO HEAR YOURS!

DOCK STORIES

We are looking for current and past commercial fishing dock owners, managers, workers, or fishermen to tell us about the histories of the fish docks where they have worked as well as their memories working there.

VOLUNTEERS WILL BE COMPENSATED FOR THEIR PARTICIPATION.

HELP US:

- Raise awareness about the importance of commercial fishing waterfronts
- Preserve historical and cultural information about commercial fish docks and their role in coastal Georgia
- Teach others about the rich history of commercial fishing on our coast

Interviews will take place in **April 2024** in Glynn, McIntosh and Camden Counties.

CONTACT

Jennifer Sweeney Tookes
Georgia Southern University
(912) 567-6805

Bryan Fluech
UGA Marine Extension and Georgia Sea Grant
(912) 264-7269

Marine Extension and Georgia Sea Grant UNIVERSITY OF GEORGIA | Sea Grant

GEORGIA SOUTHERN UNIVERSITY

Image Credit: Bryan Fluech

GSU anthropology students have conducted 17 oral history interview since 2024.

Next Steps

The body of data gathered from the docks during Stages 1 and 2 will be the focus of Stage 3

<u>Key Gatekeeper/ Stakeholder Interviews</u>

- *Councils, commissioners, and other regulatory bodies to be identified with CRD*
- *Identify **potential opportunities, recommendations, adjustments, and obstacles** to the incorporation of these suggested strategies*
- *Solicit expert opinions for revisions to more realistically refine suggestions proposed by the commercial fishing industry*

Thank You!

Bryan Fluech
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