



# GOMESA PHASE II PROJECT FUNDING

## Request for Funding FY2026

Submission ID: #202508271346

### PROJECT SUMMARY

#### 1. Title of Project

Development of a stock enhancement program for the Southern Flounder, *Paralichthys lethostigma*

#### 2. Location of Project

Cedar Point research site, Gulf Coast Research Laboratory, The University of Southern Mississippi, Ocean Springs MS.

#### 3. Requesting Organization:

The University of Southern Mississippi

#### 4. Requesting Agency Representative

a. Name:

Erica Kennedy

b. Phone:

601-266-4119

d. Email:

ORA-Pam@usm.edu

c. Address:

118 College Drive, #5157,

Hattiesburg Mississippi

#### 5. Funding Requested:

\$1203837

#### 6. Have any other State or Federal funding sources been identified for the project?

No

#### 7. If yes, enter amount and source of additional funds:

\$

#### Source of Additional Funds:

#### 8. Total Project Funds

\$1203837



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### 9. Provide Brief Project Description/Overview:

Southern Flounder (*Paralichthys lethostigma*) is one of the most popular coastal fishes in Mississippi. It is highly sought after by recreational anglers due to its fine flesh quality. Data on the abundance of Southern Flounder in the northcentral Gulf of Mexico including Mississippi are limited and insufficient in most areas, but substantial declines have been documented in various parts of the range involving overfishing and environmental stressors including temperature and salinity stress. In Mississippi, recreational and commercial landings fluctuate annually, however the trend since 2012 suggests that the fishery is in a state of decline. The Southern Flounder's popularity as a recreational fish combined with its dependence on inshore habitats affected by environmental stressors such as pollution, temperature rise, and extended low salinity stress make it potentially vulnerable to depletion. Fluctuating abundance leads to an unreliable market supply and negatively impacts recreational fishing opportunities. Aquaculture could contribute to addressing the insufficiencies and fluctuations of the resource by providing an independent source of fingerlings to support recruitment in a stock enhancement program where Southern Flounder juveniles produced in aquaculture are released in Mississippi coastal habitats. Stock enhancement will provide managers with an additional tool, alongside traditional fishing regulation approaches, to manage and maintain a sustainable fishery for this species. This project thus aims to establish the culture of juvenile Southern Flounder in Mississippi as a source of seeds for stock enhancement. This will involve acquiring a captive broodstock for seed supply, developing effective spawning protocols, optimizing larval culture techniques to produce weaned juveniles for release, selecting appropriate sites for release, optimizing tagging and release protocols, and quantifying success of releases, and growout. Methods and technologies developed for both culture and stocking will be made available to potential industry partners interested in producing Southern Flounder for transfer through sponsored on-site and off-site hands-on workshop thereby mitigating the risk of poor performance in the existing industry and creating the potential for new job opportunities and workforce development.

### 10. LIST Project Goals/Objectives:

The goals will be to:

- 1) Develop a captive broodstock population
  - a) Collect 80-100 adult flounder by collaborating with DMR and the local charter fleet,
  - b) Develop a method to identify the phenotypic sex of candidate brooders,
  - c) Develop volitional/spontaneous spawning techniques,
  - d) Develop induced/alternative spawning techniques.
- 2) Produce juveniles in recirculating systems
  - a) Optimize larval feeding protocols,
  - b) Optimize post-larval husbandry conditions protocols,
- 3) Develop tools for stock enhancement and implement pilot releases
  - a) Optimize transport and release protocols,
  - b) Identify the best candidate locations for releases,
  - c) Develop tools for large-scale genetic tagging and monitoring of stock enhancement and domestication of Southern Flounder
  - d) Conduct pilot short-term releases of juveniles.
- 4) Workforce development and technology transfer, continue to partner with local high school aquaculture programs, the private sector and DMR to provide educational opportunities, training, and internships.

**11. Which of the following authorized uses set forth in the GOMESA Act does this project fall under? Explain SPECIFICALLY and in detail how the project meets the required criteria. Check all that apply - At least one must be checked.**

(A) Projects and activities for the purposes of coastal protection, including conservation, coastal restoration, hurricane protection, and infrastructure directly affected by coastal wetland losses



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**(B) Mitigation of damage to fish, wildlife, or natural resources.**

The trends since 2012 suggests that the Southern Flounder fishery is in a state of decline. The Southern Flounder's popularity as a recreational fish combined with its dependence on inshore habitats affected by environmental stressors such as pollution, make it potentially vulnerable to depletion. This project could contribute to mitigating damage of there source by providing a fishery-independent source of fingerlings to support a restoration program. Recruitment of Southern Flounder to the fishery could be increased through the stocking of juveniles produced in aquaculture and released in Mississippi coastal habitats.

**(C) Implementation of a federally-approved marine, coastal, or conservation management plan**

This project addresses Goal 4, Enhance Community Resilience and Goal 5, Restore and Revitalize the Gulf Economy. Recreational fishing has been impacted by freshwater flooding, hurricanes, habitat degradation, and the Deepwater Horizon oil spill. Stock enhancement will improve the availability and consistency of Southern Flounder and thereby facilitate resilience in the recreational fishing community. The project will enhance economic activity by stimulating the use of working waterfronts and fishing-related economic activities. Aquaculture technologies can be transferred to facilitate the development of an industry that could revitalize the economy in local communities.



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(D) Mitigation of the impact of Outer Continental Shelf activities through funding of onshore infrastructure projects.

### 12. Project Timetable/Milestones:

July 2026-June 2027:

1. Collect brood animals,
2. Develop genotyping panel, genotype broodstock,
3. Quarantine transfer to maturation tanks and sex and condition broodstock,
4. Induce reproductively mature individuals to spawn,
5. Rear larvae to juveniles to develop culture protocols,
6. Pilot scale release of juveniles - Coordinating with state management agency.

July 2027-June 2028

1. Collect brood animals to supplement inventory and improve genetic diversity,
2. Genotype broodstock,
3. Quarantine transfer to existing maturation tanks and sex and condition broodstock,
4. Induce reproductively mature individuals to spawn,
5. Improve and optimize culture protocols, transport and release protocols,
6. Assess release locations to improve postrelease survival,
7. Establish genetic tagging using the genotyping panel and fish recovered during release trials.

July 2028-June 2029

1. Collect brood animals to supplement inventory and improve genetic diversity,
2. Genotype broodstock,
3. Quarantine transfer to existing maturation tanks and sex and condition broodstock,
4. Induce reproductively mature individuals to spawn,
5. Improve and optimize culture protocols, transport and release protocols,
6. Release fingerlings,
7. Transfer technology.

### 13. Project Timing

Short-term (3 year or less)



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### APPLICATION SUMMARY QUESTIONNAIRE

#### 14. Current status of architectural/engineering plans & specifications for this project (if applicable):

**Group 1:**

Not Applicable

**Group 2:**

Funds not budgeted

#### 15. In what way does this project meet the goals and objectives of the Department of Marine Resources, which includes enhancing, protecting and conserving the marine interest of Mississippi for present and future generations.?

This project promotes sustainability and conservation of marine resources by providing stock enhancement as an additional tool for DMR to use in their fishery management plans. The program also potentially relieves pressure on wild harvests by facilitating the development of commercial aquaculture. Concurrently, the program promotes economic and workforce development through aquaculture industry development.

#### 16. Estimated number of years to completion:

3

#### 17. Estimated Completion Date:

June 30, 2029

#### 18. Prioritize if your agency has submitted multiple projects:

N/A



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### BUDGET

Category	Total
Salaries	503706
Travel	19592
Architecture & Engineering	
Legal	
Consulting	
Construction	
Site Work	
Equipment	38000
Indirects	374118
Other	268421
Total	1203837

#### Attachments

1. blaylock\_mdmr\_application26\_8.16.25\_wlgv3---signed.pdf
2. gomesa-flounder-budget\_usm.pdf

I hereby certify under penalty of perjury that all information contained in this application packet is true and correct. I have not knowingly or intentionally provided any false information. I understand that a false statement on this application may be grounds for rejection of my application or termination of the award. In addition, a false statement may be punishable under applicable state or federal laws, which may also result in a fine and/or imprisonment.

I certify that the above referenced agency / entity has given me the authority to submit this application.

Name

Phone

Date

Joseph Steadman

601-266-4119

08/27/2025

**PI:** Reg Blaylock  
**Co-PIs:** Saillant, Apeitos  
**Proposal Title:** Development of a stock enhancement program for the southern flounder *Paralichthys lethostigma*  
**Agency:** GOMESA  
**Start Date:** 1-Jul-26  
**End Date:** 30-Jun-29

	Monthly Pay Rate	Year 1		Year 2		Year 3		CUMMULATIVE	
		Agency	USM	Agency	USM	Agency	USM	Agency	USM
<b>SALARY (SALARY)</b>									
Reginald Blaylock, PI	11786	1.5	17,679	1.5	18,033	1.5	18,393	54,105	
Eric Saillant, Co-PI	8727	2.0	17,454	2.0	17,803	2.0	18,159	53,416	
Angelos Apeitos, Co-PI	5968	3.0	17,904	3.0	18,262	3.0	18,627	54,793	
Brooke Doucet, Lab Manager	3657	3.0	10,972	6.0	22,363	6.0	22,831	56,186	
Kevin Bishop, Biologist II Finfish	3657	4.0	14,629	4.0	14,922	4.0	15,220	44,771	
Andrew Gima, Systems Specialist	5373	0.5	2,687	0.5	2,740	0.5	2,795	8,222	
Aquaculture Technician II	2567	6.5	16,686	6.5	17,019	6.5	17,360	51,065	
Aquaculture Technician I (PT)	1235	6.0	7,410	6.0	7,558	6.0	7,709	22,677	
Graduate Student	1900	6.0	11,400	6.0	11,628	6.0	11,861	34,889	
New Employee	0	0.0	0	0.0	0	0.0	0	0	
	<b>Subtotal</b>		<b>116,821</b>		<b>36.0 130,348</b>		<b>36.0 132,955</b>		<b>380,124</b>
<b>FRINGE (FRINGE)</b>									
Reginald Blaylock, PI	30.6398%		5,417		5,525		5,636		16,578
Eric Saillant, Co-PI	33.9637%		5,928		6,047		6,167		18,142
Angelos Apeitos, Co-PI	34.6870%		6,210		6,335		6,461		19,006
Brooke Doucet	39.3633%		4,319		8,811		8,987		22,117
Kevin Bishop	39.3633%		5,758		5,874		5,991		17,623
Andrew Gima	35.5921%		956		975		995		2,926
Aquaculture Technician II	45.5442%		7,600		7,751		7,906		23,257
Aquaculture Technician I (PT)	8.0000%		593		605		617		1,815
Graduate Student	6.0816%		693		707		721		2,121
New Employee	0.0000%		0		0		0		0
	<b>Subtotal</b>		<b>37,474</b>		<b>42,630</b>		<b>43,481</b>		<b>123,585</b>
<b>TOTAL PERSONNEL</b>			<b>154,293</b>		<b>172,977</b>		<b>176,436</b>		<b>503,706</b>
<b>COMMODITIES (COMMOD)</b>			<b>56,059</b>		<b>46,389</b>		<b>44,989</b>		<b>147,437</b>
Salt	\$0.12/ liter for 150,450 liters in Y-1, 72,200 Liters in Y-2 and 72,200 L in Y-3		18,054		8,664		8,664		35,382
Shrimp@4.88/ lb, Squid @ 4.88/ lb, Cigar Minnows @ \$2.98/ lb, Vitamins @ \$200 annually, gelatin @ \$200 annually			4,375		4,375		4,375		13,125
Rotifer concentrate @ \$50.59/Liter for 50 Liters (\$2,529.50), Artemia cysts @ 54.00/can for 90 cans (\$4,860), enrichments @ \$0.95/g for 1,620 g (\$1,539), Bleach @ \$2.99/gal for 40 gal. (\$119.60), Sodium Hydroxide @ \$0.183/g for 5000 g (\$915.00), Sodium thiosulfate @ \$4.47/kg for 10 Kg (\$44.70), defoamer for \$9.91/L for 2 liters (\$19.82)			10,029		10,029		10,029		30,087
Otohime diet (A2, 1 kg @ \$67.00, B1, 2 kg @ \$51.50, B2, 4kg @ \$103.00, C1, 6 kg @ 124.50, C2, 10 kg @ \$415.00, S2, 10 kg @ \$415.00, EP1, 20 kg @ \$210.00)			1,386		1,386		1,386		4,158
Ammonia @ \$34.00/25 strips (\$538.30 for 16 containers), Nitrite @ \$31.50/25 strips (\$538.30 for 17 containers) and Alkalinity @ \$18.30/25 strips (\$538.30 for 29 containers)			1,615		1,615		1,615		4,845
pH 4 @ \$30.00/liter (\$60.00 for 2 liters), pH 7 @ \$30.00/liter (\$270.00 for 9 liters), pH 10 @ \$30.00/liter (\$270.00 for 9 liters)			600		600		600		1,800
Extraction and DNA evaluation @\$5/sample, 100 samples in yr 1, 1,500 samples in yrs 2 and 3			500		7,500		7,500		15,500
Library preparation @\$30 per sample			2,500						2,500
ELISA 11-KT kits, tubes, solvents for extraction			500		320		320		1,140
Anesthetic, Copper sulphate, citric Acid			3,000		3,000		3,000		9,000
Biological filter media, bacteria for system maturation, Ammonium chloride for system maturation, tank service and cleaning supplies, water quality testing			4,000		3,000		3,000		10,000
Miscellaneous commodities			0		200		0		200
Nets			0		1,200		0		1,200
PVC replacement parts, Lights, motors for pumps and miscellaneous replacement parts for system			2,500		4,500		4,500		11,500
System repairs									
water quality measurement	YSI quattro Pro multiparameter meter for water quality surface pro with keyboard and case for data logging x2		4,000						4,000
Computer	for data entry		3,000						3,000
<b>COMMUNICATIONS (COMCAT)</b>			<b>2,500</b>		<b>2,500</b>		<b>2,500</b>		<b>7,500</b>
shipping			2,500		2,500		2,500		7,500
<b>CONTRACTUAL SERVICES (OTCSVC)</b>			<b>6,000</b>		<b>6,000</b>		<b>6,000</b>		<b>18,000</b>
Charters	brood fish collection		6,000				6,000		
<b>PROFESSIONAL FEES (PROFES)</b>			<b>20,000</b>		<b>16,000</b>		<b>16,000</b>		<b>52,000</b>
Array development and assays			20,000		15,000		15,000		
Health checks					1,000		1,000		
<b>TRAVEL (TRAVEL)</b>			<b>4,600</b>		<b>7,496</b>		<b>7,496</b>		<b>19,592</b>
conferences/meetings	conferences/meetings [air[600], hotel[800], per diem[225], registration[425], vehicle rental [250]] = 2300 per person [air [\$600], hotel[\$500], per diem[\$168], vehicle rental [\$180]= \$1,448 per person x2 people		4,600		4,600		4,600		
Travel (Extension/ training)			0		2,896		2,896		
<b>EQUIPMENT (EQUIP) (&gt;\$5,000)</b>			<b>38,000</b>		<b>0</b>		<b>0</b>		<b>38,000</b>
Aluminum Trailer	For securing the live hauler		14,000						
Aluminum Hauler	For hauling juveniles to the release site		16,000						
Ozone	Ozone generator plus cut off switch with probe		8,000		0		0		
<b>PARTICIPANT COSTS (PARTIC)</b>			<b>0</b>		<b>4,400</b>		<b>9,400</b>		<b>13,800</b>
Travel for participants to attend workshop at TCMAC	average mileage (\$600) or air (\$450) + 1 night lodging (\$100) + 1 day per diem (\$56) x 10 people				3,500		3,500		
Participant Cost to attend workshop (Extension)	food for Scoping Meeting - \$15/person (lunch) + \$30/person (reception) x 20				900		900		
Workshop Cost (Extension)	training materials						5,000		
<b>RENTS (RENTS)</b>			<b>1,800</b>		<b>1,800</b>		<b>1,800</b>		<b>5,400</b>
TCMAC vessel	Collections, assesments and releases		1,800		1,800		1,800		
<b>SUBCONTRACTS (SUBCON) (F&amp;A charged on first \$25K/sub)</b>			<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>
<b>TUITION (SCHOL)</b>			<b>7,703</b>		<b>8,088</b>		<b>8,493</b>		<b>24,284</b>
(AY24-25: \$12,498 (in-state) + 5% increase/yr; add \$2,000 for OOS, if needed)			7,703		8,088		8,493		

TOTAL DIRECT COSTS		290,955		265,650		273,114		829,719
MTDC		243,452		251,362		253,421		748,235
F&A (INDIRT) MTDC	Rate* =	50% 121,726		50% 125,681		50% 126,711		374,118
	*Adjust % as needed							
TOTAL PROJECTS COSTS		412,681		391,331		399,825		1,203,837

19,693

As a % of Total Project  
As a % of 12.5% Center Distro

12.5