

# **Project Status**

# **Award Title:**

Better Bycatch Reduction Devices for the Gulf of Mexico Commercial Shrimp Trawl Fishery: Sea Grant's Role

- NOAA Award Number: NA21OAR4170095 (LA) & NA21OAR4170096 (TX)
- Investigators: PI Julie Lively (Louisiana) and PI Laura Picariello (Texas)
- Project Dates: 1/1/2021 to 12/31/2024\*
- Reporting Dates: 1/1/2023 to 12/31/2023







<sup>\*</sup>Note: includes one year no cost extension

## **Background**

This project is a collaborative effort amongst Louisiana Sea Grant (LASG), Texas Sea Grant (TXSG), NOAA Restoration Center, and NOAA Fisheries to restore finfish populations injured by the Deepwater Horizon oil spill through development and certification of new BRDs for the shrimp industry throughout the Gulf of Mexico.

Finfish bycatch in shrimp trawls impact both shrimpers and the environment. It causes additional labor for shrimpers who must sort and remove unwanted catch, and it is an environmental concern as many of these finfish species are commercially, recreationally, and ecologically important.

This project aims to improve bycatch reduction by identifying, and increasing use of more efficient bycatch reduction devices (BRDs) for the Gulf of Mexico shrimp trawl fishery. Successful BRD designs could be certified for use to provide Gulf shrimpers with additional BRD options.

This is one of 18 Open Ocean Trustee Implementation Group Final Restoration Plan 2 projects selected to restore natural resource injuries caused by the Deepwater Horizon oil spill. Based on public input, this is one of several projects designed to increase opportunities for the fishing industry to engage in restoration efforts. For more information, please visit www.gulfspillrestoration.noaa.gov/restoration-areas/open-ocean.

# NOAA Restoration's Monitoring and Adaptive Management (MAM) plan objectives:

Objective 1: Identify new advances in BRD system technology via regional surveys and domestic and international outreach

Objective 2: Evaluate bycatch reduction capabilities of new BRDs and certify BRDs that would provide a restoration benefit via bycatch reduction

Objective 3: Increase use of new BRD systems in the U.S. Gulf of Mexico shrimp fishery via outreach and incentives

Objective 4: Evaluate bycatch reduction of the new BRDs in the commercial shrimp fishery

Objective 5: Increase bycatch reduction by ensuring new BRD systems are used according to operational recommendations via outreach.

This document highlights Year 3 (January 1, 2023 – December 31, 2023) progress by LASG and TXSG on the activities and deliverables accomplished as part of the Better Bycatch Reduction Device Project. Much of Year 1 and 2 activities focused on the foundations for activity support in context of the MAM plan objectives. Many events and activities crossed multiple tasks, and are charted for further reference. Year 3 saw further shrimp industry involvement through Research and Development as well as a continuation of previous activities.

# **Sea Grant Primary Program Components**

Component 1: Communications and Outreach Component 2: Research and Development

Component 3: New BRD Rollout Component 4: Vessel Support Component 5: Monitoring

### **2023 Key Accomplishments**

- Industry pilot testing of potential new gear started with testing completed on six vessels
- Redesigned and updated existing BRD Gear Installation Guides for all five current certified gear
- Created Industry-requested Quick Checks for current BRDs
- Created public communications products in English, Spanish, and Vietnamese
- Adapted previous products into other formats like video to meet stakeholder needs
- Prioritized netshop outreach efforts
- Reported to NOAA the results from an initial BRD use and knowledge survey
- Held dockside outreach events to survey vessel BRD use
- Met with and updated Stakeholder Working Group on project activities

### **Project Adaptations**

In Year 3, while Hurricane Idalia hit Florida, there were no major hurricanes within the Gulf of Mexico that heavily impacted the shrimp industry. Florida is still recovering from Hurricane Ian (Sept 2022) with many vessels under recovery efforts. Sea Grant continued to monitor the state of the shrimp industry with rising gas prices and declining shrimp prices affecting their bottom line. There were many boats and permits for sale listed through online sources, and interactions at the docks echoed the negative outlook towards shrimp prices. Though there were a few disaster declarations approved by the federal government going back to 2019 (Mississippi River extended flood event), Gulf of Mexico shrimp industry associations (shrimpers, processors, etc.) made a strong push locally and nationally for economic disaster declarations to raise awareness of their plight (20 local; 2 state economic disaster requests). This is an on-going unfolding action that may continue to affect project participation and industry engagement.

Due to setbacks from COVID-19 and major hurricane landfalls over the last three years, Sea Grant has requested a no cost extension to finish activities (industry testing, economic survey) under the current award. This extends the time period for completion of activities to December 31, 2024.

# **Project Personnel**

There have been no changes to Sea Grant project personnel in Year 3.

Sea Grant Personnel	State	Work locale	Primary responsibility BBRD	
Julie Lively	LA	Louisiana Sea Grant – Baton Rouge	Principal Investigator	
Laura Picariello	TX	Texas Sea Grant – Galveston	Principal Investigator	
Tiffany Pasco	LA	Louisiana Sea Grant – Baton Rouge	Program Manager	
Matthew Kammann	TX	Texas Sea Grant – Corpus Christi	Program Manager	
Merritt McCall Walker	LA	Louisiana Sea Grant – Baton Rouge	Program Manager	
Sara Stewart	TX	Texas A&M – College Station	Graduate Student - Science	
Julie Falgout	LA	Louisiana Sea Grant – Houma	Industry Liaison	
Corley-Ann Parker	TX	Texas Sea Grant	Communications	
Roy Kron	LA	Louisiana Sea Grant – Baton Rouge	Communications	
Robert Ray	LA	Louisiana Sea Grant – Baton Rouge	Communications	
Thu Bui	LA	Louisiana Sea Grant – Abbeville	Agent	
Mark Shirley	LA	Louisiana Sea Grant – Abbeville	Agent	
Gary Graham	TX	Texas Fishery Liaison	Industry Liaison	
Rex Caffey	LA	Louisiana Sea Grant – Baton Rouge	Economics	
Steve Midway	LA	LSU-Baton Rouge	Science	
Tony Reisinger	TX	Texas Sea Grant – Port Isabel	Agent	

## **Project Overview**

### TRAINING AND OUTREACH

Provide support and materials on existing and new BRDs in the federal fleet

### • PHASE 1: BRD HUNT

Identify new advances in BRDs

### • PHASE 2: TESTING

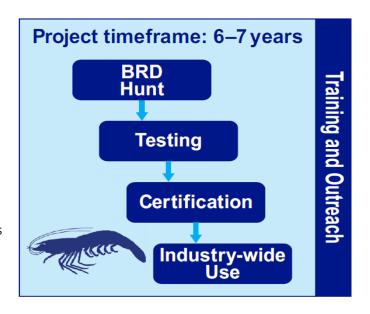
Test bycatch reduction and shrimp retention of new BRDs through research pilot testing

### • PHASE 3: CERTIFICATION

Certify successful new BRDs for use in the Gulf shrimp industry

### • PHASE 4: INDUSTRY-WIDE USE

Increase voluntary use of new BRDs via outreach and incentives



# **PROGRESS**

This section documents progress towards meeting three of the five primary program components (1) communications and outreach, (2) research and development, and (4) vessel support. This report is part of (5) monitoring, and the project has not yet reached (3) new BRD rollout.

# **COMPONENT 1: TRAINING AND OUTREACH**

The implementation of Better BRD requires training and outreach on all levels (project team and industry) across all stages of the project (MAM objectives 1-5).

### **Outreach and Communications**

The Communications and Outreach Committee updated the communications plan during Year 3. Decisions were made to focus some outreach effort to netshops to aid BRD construction and installation efforts at the front end. Another communication effort created messaging around industry testing recruitment and engagement. Quarterly project updates were sent to the regional shrimp associations to increase project awareness as many associations continued to not hold regular meetings this year.

At the request of shrimpers, Sea Grant produced "Quick Check" guide factsheets for the two most common devices seen within the Gulf of Mexico shrimp fisheries: Fisheye and Composite Panel (Cone and/or Square Mesh Panel). These summaries highlight the measurements and features of the BRD to ensure it lies within regulations and is operating to the recommended standards. When a shrimper is on their vessel, they can reference these factsheets without "rebuilding" the gear. Like most outreach products, these were translated into Vietnamese and Spanish. A video of the Quick Check for Fisheye is available in English. The Spanish and Vietnamese translations, as well as the Composite Panel video in all three languages, are still in production, but will be published in 2024. Also requested by industry was a video explaining how BRDs work. The whiteboard video finished production in December 2023 with Spanish and Vietnamese translations available in 2024. A full list of Better BRD communication products can be found in Table 1.

# Table 1. Public-facing documents associated with Better BRD Project (Dec 31, 2023). Green boxes are updates and/or new documents. Documents listed below can be found on the project website or by request from the project team. (www.laseagrant.org/outreach/projects/better-brds/brd-resources/)

Outreach Documents 2023 updates				
Description	English	Spanish	Vietnamese	
Industry Overview	Х	Х	X	
Project Info Card	Х	X	Х	
Project Team Contact Card	X			
Industry Survey (BRD knowledge)	Х	X	Х	
Current BRD Construction and Installation Guide – Fisheye	X	X	Х	
Current BRD Construction and Installation Guide – Composite Panel with Square Mesh Panel	Х	X	Х	
Current BRD Construction and Installation Guide – Composite Panel with Cone	Х	X	Х	
Current BRD Construction and Installation Guide – Jones-Davis	X	X	X	
Current BRD Construction and Installation Guide – Modified Jones-Davis	X	X	X	
BRD Project Website	X updated			
BRD Hunt Testing Gear	Х			
Fisheye – Quick Guide	X	Х	X	
Composite Panel – Quick Guide	Х	X	Х	
Current Certified BRD Fact Sheet	X	X	Х	
BBRD Pilot Testing Recruitment Flyer	Х	X	Х	
Fisheye Quick Check VIDEO	Х	In progress	In progress	
Fish Behavior – Whiteboard	Х	Х	In progress	
Better BRD Booth Materials	Х			

Two large-scale events allowed Sea Grant to inform industry and the general public on the project and related topics:

Louisiana Fisheries Forward Summit (March 1, 2023; Kenner, LA) and Ocean Commotion (October 27, 2023, Baton Rouge, LA) (see Outreach table below). The Summit is an industry-focused conference and trade show bringing together commercial fishermen, processors, and dock owners with local businesses, government agencies (local and national), and educational institutions (Image 1). Better BRD project team members created a booth with booth materials (posters) and had project materials available for industry including proper BRD installation and usage as well as the personnel available to answer questions about the project and recruit for pilot testing.

Ocean Commotion is a yearly educational event sponsored by Louisiana Sea Grant for elementary to middle school-aged children within the greater Baton Rouge area. There was an opportunity to educate K-8 students on bycatch, ways to reduce bycatch in the shrimp fishery, and the project (Image 2). Project team members created two interactive booths: one focusing on bycatch reduction within the net and the other showcasing catch sorting with various amounts of bycatch. Students and escorts self-reported learning goals about what bycatch is and how net modifications aid in escape.



Image 1. Better BRD Sea Grant team converses with interested industry members at the Louisiana Fisheries Forward Summitt (1 March 2023). (photo by Louisiana Sea Grant)



Image 2. Students sorting "bycatch" of various densities as part of the Ocean Commotion education event. (photo by Louisiana Sea Grant)

### **Key Activities: Outreach and Communications**

- Updated project website (www.laseagrant.org/outreach/ projects/better-brds/) including:
  - All five updated and translated current BRD installation guides
  - Current state and federal BRD regulations
  - Better BRD project updates
- Created industry-requested Quick Check guides for Fisheye and Composite Panel.
- Created booth material representing Better BRD for industry outreach events.
- Attended the Louisiana Fisheries Forward Summit as booth presenter. (Industry/Public event)
- Attended Ocean Commotion as booth presenter. (Public outreach)

## **Trainings and Dockside Outreach**

Part of ensuring the success of Better BRD is training not only the project team, but also agents from Sea Grant, state and federal agencies, and shrimpers (MAM 1).

In Year 3, two additional Sea Grant agents (one each LA and TX) were trained on proper BRD installation (current gear) during dockside work. The entire project team was able to meet once to review current gear and discuss potential new BRDs. This was critical to 2023 industry pilot testing (see "Research and Development") as Sea Grant personnel verified installation of test gear. With no COVID restrictions heading into 2023, Sea Grant agents returned to hosting industry meetings and scheduled dockside gear characterization events in coordination with NOAA Gear Monitoring Team (GMT) (Table 2). Hosted industry outreach events had good participation and interactions (e.g. Intracoastal shrimpers meeting, Abbeville, LA). However, despite consistent effort compared to 2022, dockside events scheduled with NOAA GMT saw low participation, with many shrimpers citing extreme weather events (e.g. oppressive heat, TX) and poor economic outlook (e.g. many boats staying docked with minimal buyers for domestic shrimp) for their absence.

Table 2. 2023 (Year 3) Sea Grant or Sea Grant and NOAA Better BRD Outreach efforts. Some netshop events were broken out from dockside outreach as they involved dedicated trips.

Event	Date	Total Attendees (#)	Activity Type
MS Boat Outreach - Pascagoula, MS	1/10/2023	3	Dockside outreach
AL Boat Outreach - Bayou La Batre, AL	1/11/2023	1	Dockside, Industry outreach
2023 Florida Netshop and Dockside Outreach – South Central Gulf Florida (Tampa base)	2/19/2023	12	Dockside, Industry outreach
2023 Louisiana Fisheries Forward Summit – New Orleans, LA	3/1/2023	400	Industry event
2023 SW Louisiana Fishermen Meeting – Abbeville, LA	3/14/2023	60	Industry event
2023 Louisiana Netshop Day 1- Delcambre, LA	3/14/2023	1	Netshop outreach
2023 Louisiana Dockside BRD Outreach – Intracoastal, LA	3/15/2023	14	Dockside outreach
2023 Louisiana Netshop Day 2 – Greater NOLA, LA	3/16/2023	3	Netshop outreach
2023 Louisiana Dockside/Netshop Outreach – Houma /Grand Isle, LA March 28-30	3/28/2023	12	Dockside outreach
2023 North Florida Panhandle Outreach	4/19/2023	8	Dockside, Netshop outreach
2023 North Texas Pre-Season Outreach Day 1 Palacios, TX	6/26/2023	9	Dockside outreach
2023 North Texas Pre-Season Outreach Day 2 Palacios, TX	6/27/2023	21	Dockside outreach
2023 North Texas Pre-Season Outreach Day 3 Galveston/Bolivar, TX	6/28/2023	14	Dockside outreach
2023 North Texas Pre-Season Outreach Day 4 Port Arthur, TX	6/29/2023	14	Dockside outreach
2023 South Texas Pre-Season Day 1 Port Isabel, TX	7/10/2023	18	Dockside outreach
2023 South Texas Pre-Season Day 2 Brownsville, TX	7/11/2023	15	Dockside outreach
2023 South Texas Pre-Season Day 3 Palacios, TX	7/12/2023	3	Dockside outreach
2023 MS/AL Outreach Day1 Bayou La Batre, AL	7/31/2023	4	Dockside, Netshop outreach
2023 MS/AL Outreach Day 2 Bayou La Batre, AL	8/1/2023	3	Dockside, Netshop outreach
2023 MS/AL Outreach Day 3 Biloxi, MS	8/2/2023	6	Dockside, Netshop outreach
2023 MS/AL Outreach Day 4 Pass Christian, MS	8/3/2023	1	Dockside, Netshop outreach
2023 Ocean Commotion by Louisiana Sea Grant at Louisiana State University - Baton Rouge, LA	10/25/2023	2,012	Public event
Fisheries & Seafood Leadership Program Fall Meeting - Houma, LA	11/8/2023	9	Industry event
Southern Shrimp Alliance update – Dec 2-3 2023 Tampa, FL	12/2/2023	20	Industry outreach
	Total 2023		

It was during previous dockside outreach that shrimpers requested the "Quick Check" guide factsheets (see "Outreach and Communications"). The Better BRD team was able to disseminate these materials during 2023 outreach events. Though low participation, 2023 dockside outreach was productive in reaching applicants for industry pilot testing. Recruitment material was shared with interested parties along with gear guides, contact cards, and any other requested project information.

In conjunction with dockside outreach events, Sea Grant and NOAA team members visited known netshops across the Gulf of Mexico and found others that were mentioned by local fishermen (Table 3). Project team members were able to provide netshops with the updated and translated installation guides for current certified BRDs as well as provide recruitment materials on gear testing information for their customers.

Table 3. Netshop visited during outreach activities. Visits would last half an hour to one hour.

Event	Date	Visits
2023 Florida Netshop and Dockside Outreach – South Central Gulf Florida	2/19/2023	2 netshops
2023 Louisiana Netshop Day 1– Delcambre, LA	3/14/2023	1 netshop
2023 Louisiana Netshop Day 2 – Greater NOLA, LA	3/16/2023	3 netshops
2023 Louisiana Dockside/Netshop Outreach – Houma /Terrebonne Parish, LA March 28-30	3/28/2023	5 netshops
2023 North Florida Panhandle Outreach	4/19/2023	2 netshops
2023 Palacios,TX Netshop Visit	6/27/2023	2 netshops
2023 Port Arthur, TX Netshop Visit	6/29/2023	2 netshops
2023 MS/AL Outreach Day 1 Bayou La Batre, AL	7/31/2023	2 netshops
2023 MS/AL Outreach Day 2 Bayou La Batre, AL	8/1/2023	2 netshops
2023 MS/AL Outreach Day 4 Pass Christian, MS	8/3/2023	1 netshop

### **Key Activities: Trainings and Dockside Outreach**

- Two additional Sea Grant agents trained on current BRD gear. Full team reviewed current gear training.
- Dockside outreach for all states completed
- Netshop outreach in all states (22 shops).

### **Stakeholder Working Group**

The project's Stakeholder Working Group met twice during Year 3, once virtually and once in-person. Members were updated on gear moving to industry testing and then preliminary results from the testing. Members expressed

interest in testing, provided valuable insights into the initial data, and asked relevant questions about the process. They also indicated a desire to continue on this process to try and find a new BRD. This group will remain active through the testing phase conclusion at which time its necessity will be evaluated. (MAM objectives 1-5)

# **Key Activities: Stakeholder Working Group(SWG)**

- SWG Meeting 4 (virtual) Industry Pilot Testing updates including application, recruitment strategy, and compensation plans
- SWG Meeting 5 (Galveston, TX) Industry Pilot Testing preliminary results, next steps, recruitment strategies.

# **COMPONENT 2. RESEARCH AND DEVELOPMENT**

### **BRD Hunt**

Better BRD closed the NOAA-led BRD Hunt at the end of 2022 after gear was identified from industry with potential to increase bycatch reduction across the Gulf of Mexico. The database designed for the BRD Hunt remains the data repository for routine gear evaluations from this project. Sea Grant conducted quality control and accuracy efforts twice during 2023. (see Tables 4 and 5)

### **Industry Survey on BRD use**

Federal permit holders were surveyed electronically on their knowledge of current BRDs, their BRD use, and any details that would increase willingness to accept new designs (Want more or equal shrimp", "get rid of sharks"). Results validated dockside observations of the fisheye being the most used and preferred BRD of the Gulf of Mexico federal shrimp fleet. Comments as to why included that it "worked well", or shrimpers "didn't know of other options." All expressed interest in new gear, particularly if it increased shrimp retention as well as reduced bycatch.

Table 4. Total 2023 vessels from Sea Grant and joint Sea Grant and NOAA efforts. Shown is the total number of boats by state for each group effort.

Total # of Vessels Inspected	NOAA	Sea Grant	Sea Grant and NOAA	2023 Total
2023	3	20	108	131
Alabama		1	24	25
Florida			2	2
Louisiana		1	32	33
Mississippi	3	1	15	19
Texas		17	35	52

Table 5. Total 2023 nets from Sea Grant and joint Sea Grant and NOAA efforts. Shown is the total number of nets by state for each group effort.

Total # of Nets Inspected	NOAA	Sea Grant	Sea Grant and NOAA	2023 Total
2023	3	30	139	172
Alabama		1	25	26
Florida			3	3
Louisiana		1	38	39
Mississippi	3	1	21	25
Texas		27	52	79

Table 6. Total vessels from Sea Grant and joint Sea Grant and NOAA efforts over the project lifetime.

The project goal was to survey 20 percent of the active fleet over the project's initial three years.

Shown is the total number of boats by state and year for each group effort.

Total # of Vessels Inspected –				
Project Lifetime	NOAA	Sea Grant	Sea Grant and NOAA	Grand Total
2021	5	27		32
Florida		27		
Mississippi	5			
2022	43	80	121	244
Alabama	20			
Florida		15		
Louisiana		30	48	
Mississippi	23			
Texas		35	73	
2023	3	20	108	131
Alabama		1	24	
Florida			2	
Louisiana		1	32	
Mississippi	3	1	15	
Texas		17	35	

### **Testing**

Two types of evaluations of candidate BRDs will identify gear to move to the certification stage: NOAA- Testing and Sea Grant-led Industry Trials.

NOAA-Testing (see 2021-2022 report for summary)

### Sea Grant-led Industry Trials

Industry trials are designed to put potential new gear through commercial fishing conditions. The industry pilot testing trips are focused on qualitative information on test gear. This includes how the new gear pulls in the net, if the shrimpers felt the bycatch was the same or different from their regular nets, and if there were any other noticeable differences. Then, they were asked to make any adjustments, or modifications, that they think would increase device effectiveness. The goal was at least two vessels testing each device as well as testing across fisheries across the Gulf of Mexico, for at least 10 vessels testing during this phase. BRD vs BRD industry testing will put a new device recommended from pilot testing against the fisheye (GOM standard device) for paired data collection. A collegiate researcher will be onboard during these trials, and no gear adjustments will be made outside of regularly swapping the nets containing new and standard gear. This trial will help inform NOAA certification efforts.

Testing gear was purchased from local netshops recommended by test vessels. This allowed netshops to benefit from Better BRD project activities in addition to vessels compensated for testing. As of December 2023, six netshops across the Gulf of Mexico were engaged to build equipment for gear testing.

Testing recruitment was launched at the Louisiana Fisheries Forward Summit, and the first testing vessel was on the water in mid-March. Testing remained on-going at the end of 2023, with six vessels completing their trials and several additional vessels under contract for early 2024 (Table 7). There was a delay during the summer while vessels gauged the economic landscape and were hesitant to take on experimental gear.

A preliminary BRD vs BRD trial was completed during 2023. The innovator of the large mesh section tested their gear. This allowed university researchers to test their methods and post-trial analyses. A few protocol adjustments were recommended by Stakeholders and NOAA gear specialists. BRD vs BRD recruitment and trials will run in 2024.

Table 7. The number of applicants who applied to industry testing in pilot testing during 2023.

There are contracts awaiting completion within early 2024.

Pilot Testing	
# of applicants	15
# of accepted applicants	14
# of contracts	12
# completed contracts	6

#### **Permits**

As previously reported, Texas Sea Grant applied for and was granted an Exempted Fishing Permit (EFP) to extend through December 2024. The EFP was updated to include each vessel that joined the program. This year, it was brought to Sea Grant's attention that an additional Letter of Acknowledgement (LOA) was needed to cover each vessel testing flapless turtle exclusion devices. The first LOA was granted in July 2023 and updated for each subsequent vessel. Care was taken with the impending government shut-down in September 2023 to cover any potential vessels at that time in case the offices were shut down for an extended period. Both permits are part of the testing packet given to vessels before their testing trip.

# **Key Activities: Research and Development**

- BRD database reviewed for accuracy by Sea Grant
- The BRD-use survey closed and an internal report was submitted to NOAA. Highlights include extensive use of fisheye, areas of education need, and willingness to accept new BRDs without additional regulations.
- Created factsheets, datasheets, and other documents to aid industry testing
- Six vessels have completed pilot testing
- One vessel completed preliminary BRD v. BRD testing.
- "New gear summary chart" updated with industry testing events.

### **COMPONENT 4: VESSEL SUPPORT**

Lynker remains the contracting entity assisting with vessel support. Through 2023, they finalized a vessel application and contract (professional service agreement or PSA) for use during initial pilot testing, and served as clearinghouse for data post-trip. Lynker has issued payments to completed testing vessels and alerted Sea Grant to any issues in any part of the process. They have regularly met with Sea Grant through 2023 and will carry their duties through 2024 until the completion of industry testing.

# **Key Activities: Vessel Support**

- Lynker and Sea Grant finalized vessel application and PSA. Both were translated into English, Spanish, and Vietnamese.
- Lynker established a participant tracking sheet to follow vessels through the various contracted, testing, and closeout stages.
- Lynker designed and updated the database of Sea Grantrequested information (datasheets) completed as part of the vessel agreements.
- As the contracting entity, Lynker has closed out and issued payment to the six vessels completing testing.