

A Fisheye Perspective on Bycatch Reduction Devices in the Gulf of Mexico Shrimp Fishery

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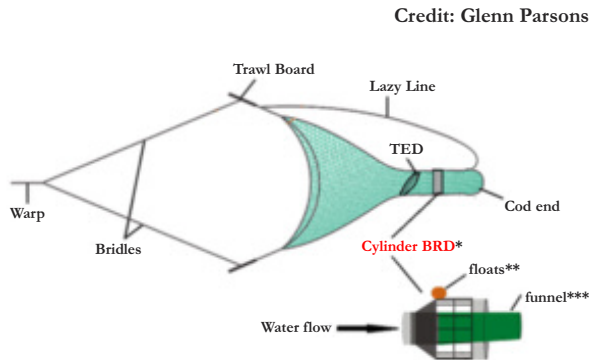
Red Snapper has been the most fought over fish in the Gulf of Mexico for well over the last decade. An iconic fish that was once on the verge of collapse now enjoys a triumphant return. Along with the increase in abundance of red snapper comes an increase in controversy as user groups fight over allocation.

Bycatch Reduction Devices for Shrimpers

Behind the rebuilding of the famed red snapper is a series of obscure management measures within the Gulf of Mexico shrimp fishery involving bycatch reduction devices (BRDs)

that helped paved the way for the return of the most sought-after finfish. A recent publication indicated that bycatch mortality of red snapper in shrimp trawls comprised about 4% of the total juvenile mortality, much less than previously believed.¹ While shrimp trawl mortality is clearly not the “driver” of Gulf of Mexico red snapper population losses as was previously estimated, the BRDs contributions to marine conservation should not go unacknowledged in the red snapper debate. We must not preclude the efforts of the Gulf shrimp industry to help this most sought after species recover.

Federal regulations mandated the use of specific BRDs in the western Gulf of Mexico shrimp fishery beginning in May 1998. The two BRDs certified for use were the midsize “fisheye” BRD in the 30-mesh position and the extended funnel BRD. The midsize fisheye BRD reduced shrimp trawl bycatch mortality by 58%. Two states have made the use of BRDs in state territorial waters mandatory as well: Texas and Florida.



* Please note that the BRD should be sewn into the net between the TED and the cod end (bag) with the floats** on the top of the BRD. The tail end of the funnel*** should be attached to the top of the inside of the bag with a couple of zip ties or with twine.

A diagram of a Cylinder BRD

Turtle Excluder Devices for Shrimpers

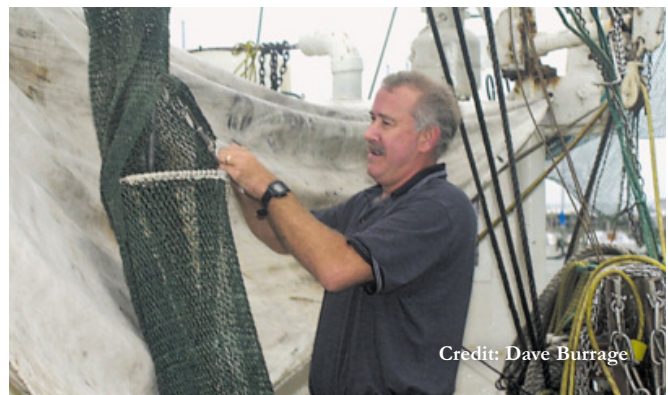
The contributions of the U.S. Gulf of Mexico shrimp fishery towards the conservation of marine ecosystems has been tremendous due to the use of BRDs. However, the widespread use of BRDs in the shrimp trawl fishery was not the first major mandated conservation effort handed down to the shrimp fishery. Previously, in 1987 federal regulations mandated the use of turtle excluder devices also known as TEDs. These TEDs not only help shrimp trawls safely and passively release sea turtles, they have proven effective at reducing bycatch of larger species of finfish, sharks and rays.

Turtle Excluder Devices consist of a metal tubular frame with grates or bars that are spaced 3-4 inches apart to prevent sea turtles from entering the cod end of a shrimp trawl. If a sea turtle is caught in a shrimp trawl, the TED acts as a passive release device allowing the sea turtle to swim freely through a moderately size escape hole adjacent to the TED frame. Otter trawl shrimp vessels are required to use TEDs in both state and federal waters. Skimmer trawl shrimp vessels are exempt from the TED regulation due to their unique mode of operation but skimmer trawls vessels are required to limit tow times to less than 55 minutes in summer months and 75 minutes in

winter months to limit turtle bycatch. The American shrimp industry has contributed to the rebuilding of sea turtle populations and nesting sites in part to these conservation measures in place for nearly the past three decades.

Development of BRDs

Researchers from Mississippi-Alabama Sea Grant Consortium (MASGC) paved the way for the use of the BRD and the subsequent recovery of red snapper. Nearly two decades ago, MASGC researcher Dr. Dave Burrage of Mississippi State University led a study on a promising new bycatch reduction device dubbed the “fisheye.” It was an inexpensive triangular metal frame with a football shaped hole that could be easily sewn into the cod end of any shrimp net. This device, after months of arduous testing was proven to work efficiently at releasing juvenile finfish, including red snapper, captured in shrimp trawls while allowing very minimal shrimp loss. The concept is simple: as the catch enters the net, shrimp are forced to the cod end of the net while the stronger swimming finfish are able to swim freely forward out the escape hole(s) in the BRD.



Dave Burrage with BRD

This innovative bycatch reduction devices didn’t make its way into being a mandatory NOAA requirement overnight. Researchers worked tirelessly to bring the idea to fruition. Dr. Burrage spent weeks out on our family owned shrimp boat testing out the BRD’s effectiveness by moving it up and down throughout the cod end of the net, counting every shrimp and bycatch that came on board. Dr. Burrage not only spent weeks at sea on our boat, he also spent weeks at sea on several other shrimpers’ boats as well. Eventually we figured out just the right location to place the BRD so that we had optimal fish reduction with minimal shrimp loss.

Dr. Burrage's study help provides the best available science to guide management and regulatory decisions. Now, the BRDs are widely used across the Gulf and most fishermen never even want to take it out. Many inshore shrimp fishermen use BRDs in state waters because the industry recognizes the efficiency and conservation benefits of doing so even though states like Mississippi, Louisiana, and Alabama do not mandate their use. A survey conducted in 2017 by Mississippi Commercial Fisheries United and the Audubon Nature Institute's Gulf United for Lasting Fisheries (G.U.L.F.) Program revealed that nearly 89% of shrimpers surveyed indicated that they already use BRDs voluntarily.



Credit: Ryan Bradley

BRD Innovations

Innovations in bycatch reduction in the shrimp trawl fishery have not stopped here. In fact, many shrimpers use more than one BRD per net, releasing much more bycatch than originally thought was possible. Additionally, researcher Dr. Glenn Parsons with the University of Mississippi has

been working for several years to improve the efficiency of the extended funnel BRD by developing and testing new prototypes in cooperation with the shrimp industry. He has received numerous grants to design, modify, and test new designs. The shrimp industry has worked cooperatively with Dr. Parsons and other researchers to advance the sustainability of the shrimp industry which has become increasingly important as the Gulf shrimp industry leans toward independent, third-party sustainability certification of the entire fishery.

Much of the work done to advance the use of BRDs and the sustainability of our nation's marine resources has been facilitated by the National Sea Grant Program – an invaluable asset to the United States. The program is tasked with a variety of marine research, development of cutting-edge technologies, and transfer of these technologies from universities to industry. Just as in the case of the bycatch reduction device, Sea Grant programs all across the nation are paying dividends on the future sustainability of marine resources for decades to come. Regardless of what state you live in or seafood preference, we can all appreciate the great work that the National Sea Grant Program produces. Together, working cooperatively with industry and academia we can yield results that empower our fishermen and enhance the resources we all enjoy. 🐟

Ryan Bradley is the Executive Director of Mississippi Commercial Fisheries United, Chairman of the Mississippi-Alabama Sea Grant Advisory Council, a fifth-generation commercial fisherman in Mississippi, and founder of Sea Alis Seafood Company out of Long Beach, MS. The Mississippi Commercial Fisheries United, Inc. (MSCFU) is a non-profit serving to protect the common interests of Mississippi's commercial fishing industry, promote sustainable fisheries through leadership in stewardship, and advocate on behalf of commercial fishermen, fishing businesses and consumers of the resources our industry provides. It was originally established as the Mississippi Gulf Coast Fisherman's Organization, Inc. in 1974. To learn more about Mississippi Commercial Fisheries United visit www.MSCFU.org.

Endnotes

1. Benny J. Gallaway, et al., *An Updated Descriptions of the Benefits and Consequences of Red Snapper Shrimp Trawl Bycatch Management Actions in the Gulf of Mexico*, North American Journal of Fisheries Management, Vol. 37:2 (2017).