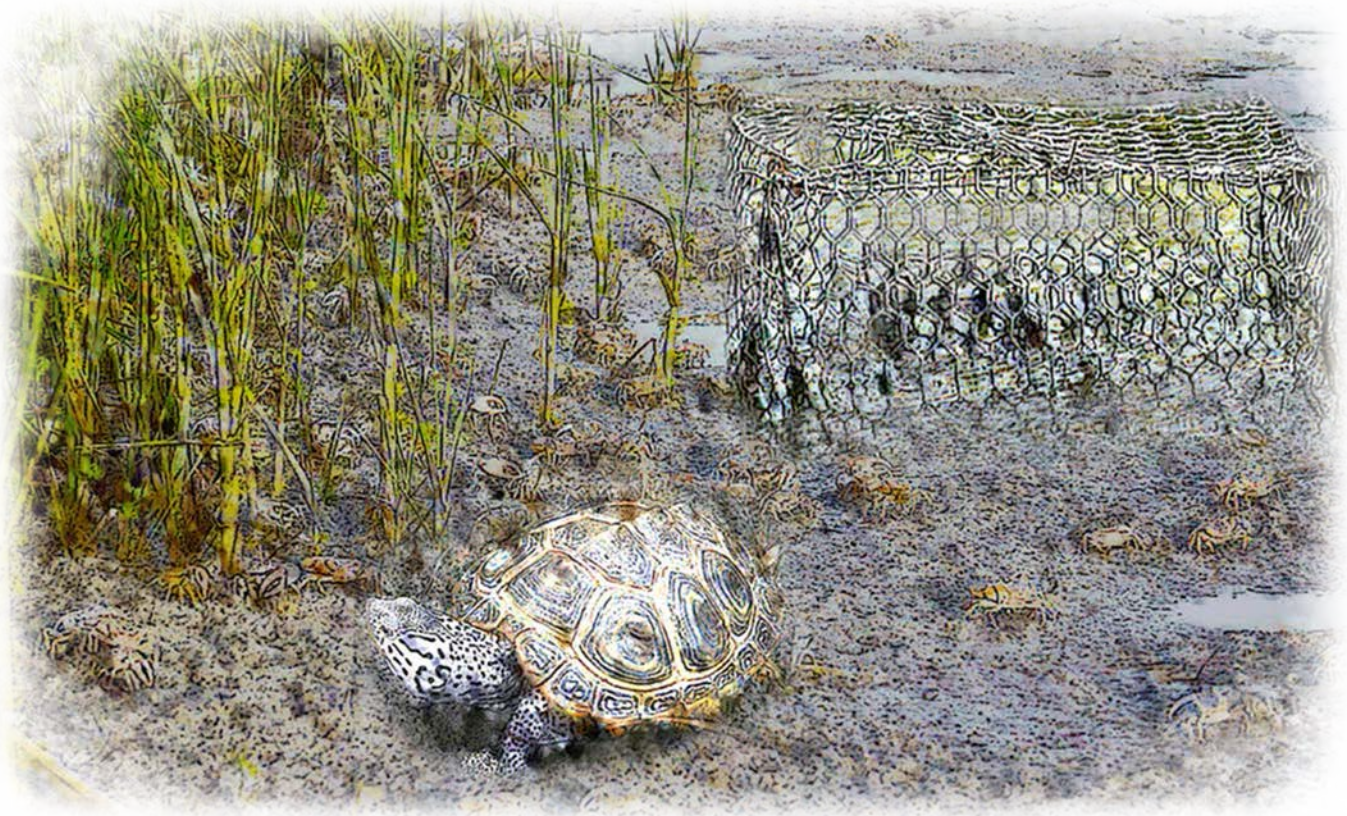


TERRAPINS AND CRAB TRAPS

**Examining interactions between terrapins and
the crab industry in the Gulf of Mexico**



GULF STATES MARINE FISHERIES COMMISSION

October 18, 2017

Battle House Renaissance Hotel

Mobile, Alabama

October 2017

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TERRAPINS AND CRAB TRAPS

Gulf States Marine Fisheries Commission • 68th Annual Meeting
Battle House Renaissance Hotel • Mobile, Alabama
October 18, 2017 • 8:00 a.m. – 11:45 a.m.

Agenda

- 8:00 Welcome and Overview – *Ms. Christina Mohrman (GoM Alliance)*
- 8:10 Encouraging Fisheries Cooperation in Conservation of the Diamondback Terrapin in Mississippi – *Mr. Rick Burris (MDMR)*
- 8:30 Evaluation of Diamondback Terrapin (*Malaclemys terrapin*) Nesting Ecology throughout Coastal Louisiana – *Dr. Steven H. Pearson (LDWF)*
- 8:50 Bycatch in the Commercial Blue Crab Fishery in Louisiana – *Dr. Julie Lively (LSU AgCenter)*
- 9:10 Terrapins, TEDs, and Disintegration Timelines – *Dr. Willem Roosenburg (Ohio Univ.)*
- 9:30 Developing monitoring techniques and management tools to understand the conflict between the blue crab (*Callinectes sapidus*) fishery and diamondback terrapin (*Malaclemys terrapin macropilota*) populations in Florida– *Dr. Ryan Gandy (FWC)*
- 9:50 *Break*
- 10:15 Regional Overview of Current Terrapin Collaboration – *Mr. Thomas Mohrman (TNC)*
- 10:45 Current Crab Research and Regulations Related to Reducing Terrapin Interactions
- TX – *Mr. Glen Sutton*
LA – *Mr. Jeffrey Marx*
MS – *Mr. Rick Burris*
AL – *Mr. Jason Herrmann*
FL – *Dr. Ryan Gandy*
- 11:30 Working Together in the Future – *Ms. Christina Mohrman (GoM Alliance)*
- 11:45 *Adjourn*

Summary

The general session was an effort to improve communication with the Diamondback Terrapin research community and the Gulf's crab industry and state agencies. It was intended to begin to change the narrative and approach to terrapin protection and recovery. Utilizing the working knowledge of the Commission's Crab Subcommittee (Subcommittee) to meet the research needs of the Diamondback Terrapin Workgroup (DTWG), it is hoped that we will begin to change the tone regarding interactions between terrapins and the Gulf's crab industry.

Several presentations were made by members of the Subcommittee and the DTWG related to management of the commercial crab fishery in the Gulf of Mexico and local/regional terrapin populations and the effectiveness of bycatch reduction efforts in reducing terrapin mortalities. Following the presentations, a panel discussion allowed the Subcommittee representatives to explain current management practices and efforts related to derelict trap removals and bycatch monitoring and reduction in the fishery.

The panel discussions ended up centering primarily on the use of TEDs in crab traps. Dr. Willem Roosenburg (Ohio Univ.) described the region in Maryland where he works and noted that they have extremely high encounters of terrapins drowning in commercial crab pots in that region. He explained that most turtles in general are very slow to mature, more like whales and sharks. Additionally, terrapins can live up to 40 years and have relatively low fecundity. Predation on nests is very high, resulting in very slow population growth. Therefore, when 'pots' are fished heavily in an area, mortality is increased even more and can result in the elimination of a terrapin population in a matter of a few years. Dr. Roosenburg noted the lack of terrapins showing up in the derelict traps in the Gulf of Mexico and reported that they have studied the deterioration rates of carcasses in unfished traps. He indicated that in Maryland, they rot very quickly and the shells and skeletons disarticulate within about 30 days. The remains end up falling through the mesh when the trap is recovered during a cleanup and therefore, are not likely to be recorded. He indicated that, with the warmer waters in the Gulf, the process could be much faster and we are simply missing the mortality when conducting cleanups.

Dr. Roosenburg challenged the group to consider putting TEDs in our crab traps Gulf-wide. The Subcommittee members explained the reality of imposing harsh regulations on fishermen when the majority of traps are not likely to encounter terrapins. There are a number of tools available to managers to examine options for reducing bycatch rather than making large sweeping regulatory changes. The biggest issue for fishermen is that most of the TED studies have shown a reduction in crab catches where they have been implemented. Most crab trap fishermen will never encounter a terrapin and therefore, this is not something that would be well received and compliance could be difficult to enforce.

When asked what would help the state agencies to better address the terrapin issue, all the states stated that they need information on where the terrapin populations are and where the best potential nesting habitats currently exist. Without an understanding of the 'hotspots', managers can't begin to address the impacts in those areas. By addressing all the potential impacts on terrapins, fishery managers can do a better job at focusing management into something that is actually beneficial. They pointed out that they need to vet all the options before they act to make regulations... any action must be defensible and with more information from the DTWG, more useful changes can occur.

It was agreed that the DTWG and the Subcommittee are well on the way to begin develop working relationships with the terrapin people. Dr. Roosenburg complimented the Gulf on being proactive to address these issues. He noted that the Atlantic Coast is way behind in dealing with abandoned and lost crab traps and the Gulf has definitely set a high bar. In addition, the Atlantic states crab community has very little interaction with the DTWG and this type of a forum and effort is commended. It will go a long way to improve both fisheries management and threatened or endangered species.

Ms. Harriet Perry (GCRL) suggested that perhaps what is needed in each state is a new type of subcommittee or task force to bring in terrapin researchers, crab managers, and crab industry representatives to begin to address some of these issues on a state by state basis. The DTWG is planning additional meetings regionally and will meet again nationally and will include the Commission's Crab Subcommittee to perhaps provide some presentations on the work being conducted in the Gulf.

Abstracts

Encouraging Fisheries Cooperation in Conservation of the Diamondback Terrapin in Mississippi

Mr. Rick Burris, Mississippi Department of Marine Resources

Diamondback Terrapin mortality rates have been linked to nest predation, habitat loss through increased coastal development, and bycatch within the blue crab fishery. Derelict crab traps lost by fishermen also pose a threat to terrapins through ghost fishing. The Mississippi Department of Marine Resources, Office of Marine Fisheries has been actively promoting terrapin conservation through a variety of different approaches such as encouraging the use of Terrapin Excluder Devices (TEDs) in the blue crab fishery, increasing public awareness about the potential threats Mississippi's terrapin population face, and through the removal of derelict crab traps in Mississippi's marine waters. The Mississippi Derelict Crab Trap Removal Program, the most successful terrapin conservation initiative, through the help of Mississippi's commercial crab fishermen, has removed and recycled over 21,600 derelict traps from Mississippi waters since its inception of the program in 1999. The Mississippi Crab Trap Bycatch Reduction Device/TED Program has also been highly effective in distributing over 19,500 TEDs (4,800 traps) to both commercial and recreational blue crab fishermen.

Evaluation of Diamondback Terrapin (*Malaclemys terrapin*) Nesting Ecology throughout Coastal Louisiana

Dr. Steven H. Pearson, Louisiana Department of Wildlife and Fisheries

The Louisiana Department of Wildlife and Fisheries (LDWF) implemented a multi-year (2013-2015) project which evaluated diamondback terrapin (*Malaclemys terrapin*) nesting ecology. Diamondback terrapins are coastally distributed between south central Texas in the Gulf of Mexico along the Gulf and Atlantic Coast north through Massachusetts. Throughout their range many different biotic and abiotic factors have been shown to influence terrapin abundance, distribution and nesting success. In Louisiana our research has been principally focused on determining nest site locations, nest predators, nest surface characteristics, nest depth, clutch size, egg morphometrics, nest depredation rates and nest survivorship. Our results indicate that terrapin nesting occurs statewide in locations where suitable nesting substrates exist. Nests are laid in open areas and beneath dense vegetative cover with surface slopes in all orientations. Average nest ceiling height is varied between sand and shell hash substrate. Clutch size averages 5.5 eggs and varies between 1 and 13 eggs. Statewide, average egg morphometrics are: mass 11.8 g, length 38.1 mm and width 24.5 mm. Depredation rates are between 50 and 100 percent depending on location. In 2015 we implemented a detailed study within a single nesting site at which 92 nests were surveyed. Within these nests 43% of eggs were depredated, 31% successfully hatched and the fate of 26% of eggs was not determined. At the nest level 76% of all nests surveyed were fully or partially depredated while 43% of nests successfully hatched at least 1 egg. Collectively, these data are considered paramount in determining the overall conservation status of diamondback terrapins within Louisiana and can be useful in developing restoration projects.

Bycatch in the Commercial Blue Crab Fishery in Louisiana

Dr. Julie A. Lively, Louisiana State University AgCenter and Louisiana Sea Grant

Through a combination of blue crab research studies, our lab has documented the bycatch, specifically terrapins, across Louisiana since 2011. These research studies include documenting bycatch in a mixture of derelict fishing gear during clean ups, simulated derelict traps, and baited traps across multiple sites and seasons. From this information, we have been able to calculate some rates of terrapin catch and likelihood of encounters.

Terrapins, TEDs, and Disintegration Timelines

Dr. Willem Roosenburg, Center for Ecology and Evolutionary Studies, Ohio University

When first introduced into the commercial crab fishery, the Maryland Department of Natural Resources commissioned a study to investigate the potential impact of crab pots on bycatch species. That study published in 1942 identified the crab pots threaten air breathing organisms that lived in the shallows of Chesapeake Bay including Diamond-backed Terrapins. The result was that crab pot use was restricted to the open, deeper waters to limit the impacts, in part, on terrapins. Most states do not have similar location restriction of where crab pots can be used. Since the 1970s, the recreational use of crab pots was allowed in the previously excluded zones of Chesapeake Bay posing a threat to terrapins in areas where they were previously immune. In 1981 the first study quantified the impact of crab pots on terrapins in North Carolina, but subsequent studies in several states began to raise the alarm about crab pots and their substantial impact including data of high terrapin catch rates that can quickly extirpate local populations. Turtle excluder devices or bycatch reduction devices were developed, tested and required in some states, particularly in the near shore use of crab pots to reduce terrapin mortality. Nonetheless, resistance from recreational and commercial fisheries has cited the absence of terrapins in current day catches and recovered ghost crab pots as justification that terrapins are minimally affected. The surprisingly rapid decomposition of terrapins in crab pots and widespread reduction in their populations by a long-term fishery throughout the range have reduced crabbers' interactions with terrapins. My talk will integrate the history of crab pots and terrapin interactions, crab pots' potential to cause terrapin population decline and why terrapins are rarely encountered in abandoned crab pots, and discuss testing turtle excluder devices and implementing regulations with a hopeful eye toward the reduction of terrapin mortality in crab pots.

Developing Monitoring Techniques and Management Tools to Understand the Conflict between the Blue Crab (*Callinectes sapidus*) Fishery and Diamondback Terrapin (*Malaclemys terrapin macrospilota*) Populations in Florida

Dr. Ryan Gandy, Florida Fish and Wildlife Conservation Commission

The diamondback terrapin (*Malaclemys terrapin macrospilota*) shares Florida's coastal zone with the blue crab (*Callinectes sapidus*) and its associated fishery. Several subspecies of diamondback terrapin

collectively inhabit coastal zones throughout Florida, three are endemic and all share the potential for interaction with blue crab traps. Seasonal terrapin behaviors and commercial crab fishing patterns vary spatially and temporally in Florida and necessitate the development of a science-based mechanism for informed management decisions. Data from investigations into the development of standardized and habitat specific population survey methods, trap mortality, and maps of blue crab fishery effort within terrapin population 'hot spots' in Florida are presented.

Regional Overview of Current Terrapin Collaboration

Mr. Thomas Mohrman, The Nature Conservancy

The Diamondback Terrapin Working Group provides a forum for terrapin stakeholders to communicate, present, and collaborate research, outreach, and conservation efforts. In the Gulf Coast Region efforts have been made recently to increase this collaboration and effect outcomes at a regional scale. Two examples of this type of collaboration will be presented, demonstrating how stakeholders from each Gulf State have worked together.

Panel Round Table - Current Crab Research and Regulations Related to Reducing Terrapin Interactions

Mr. Glen Sutton, Texas Parks and Wildlife Department

Mr. Jeffrey Marx, Louisiana Department of Wildlife and Fisheries

Mr. Rick Burris, Mississippi Department of Marine Resources

Mr. Jason Herrmann, Alabama Department of Conservation and Natural
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Dr. Ryan Gandy, Florida Fish and Wildlife Conservation Commission

Ms. Harriet Perry, Gulf Coast Research Laboratory (USM)

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