Reducing Juvenile Sea Turtle Bycatch through Development of Reduced Bar Spacing Turtle Excluder Devices (TEDs)

Christy Fellas, NOAA Restoration Center

Jeff Gearhart, NMFS Southeast Fisheries Science Center

Deepwater Horizon Background

April 20, 2010 – *Deepwater Horizon* (DWH) mobile drilling unit exploded, caught fire, and began spilling oil from BP's Macondo well

April 20, 2011 – BP agreed to $1B towards Early Restoration

July 2, 2015 – Trustees and BP reached an agreement in principle to settle natural resource damages

- To provide up $8.8 billion for restoration, paid in installments over 15 years

Feb 2016 – DWH trustee Council the Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS)

Open Ocean Trustee Implementation Group

Consists of Four Federal Trustees (no states):

- NOAA, DOI, USDA and EPA

Open Ocean restoration area total $1.2B in restorations funds across six restoration types:

- A total of $55M is available for sea turtles in the OO TIG
- A total of $380M is available for fish and water column invertebrates in the OO TIG
- Other restoration types are: sturgeon, marine mammals, birds and mesophotic and deep benthic communities

Sea Turtle Restoration

5 of 7 sea turtle species live in the Gulf of Mexico and all 5 were exposed to and injured by the DWH spill

Restoration goals in the PDARP/PEIS include:

- Implement portfolio of restoration approaches to address all injured species and life stages
- Address primary threats to sea turtles on land and at sea
- Restore sea turtles in areas that are relevant to each injured species and life stage
- Support existing conservation efforts by ensuring consistency with recovery plans

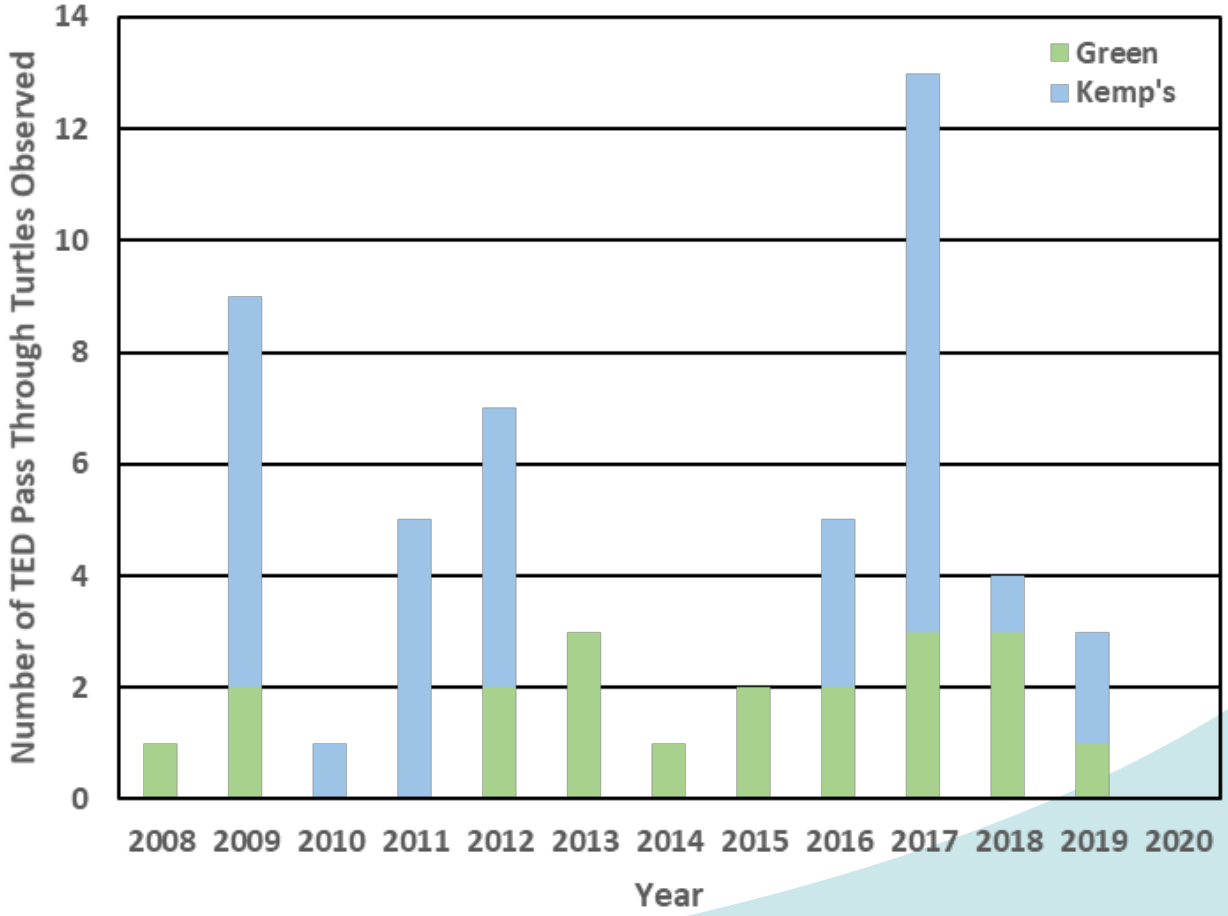
OO TIG proposed 8 projects for sea turtle restoration

6 projects moved forward, including Small Bar Spacing TED project: $2.1M, 4 year duration

Small Bar TED Project Overview

- The use of TEDs have significantly reduced sea turtle mortality in shrimp trawl fisheries
- TEDs are federally required in all otter trawls, however current TED configurations are less successful at excluding smaller sea turtles with body depths (BDs) less that the maximum 4” TED bar spacing requirement
- Turtles with BDs less than 4” may pass through deflector bars, which results in captures and subsequent mortality
- The development of new TED prototypes that would allow small turtles (<4” BD) to escape would provide a restoration benefit

Number of TED Pass Through Sea Turtles Observed in GOM 2008-2020



Based on approximately 2% observer coverage of the U.S. Gulf of Mexico shrimp fishery

Small Bar TED Project Activities: Captive Rearing Turtles

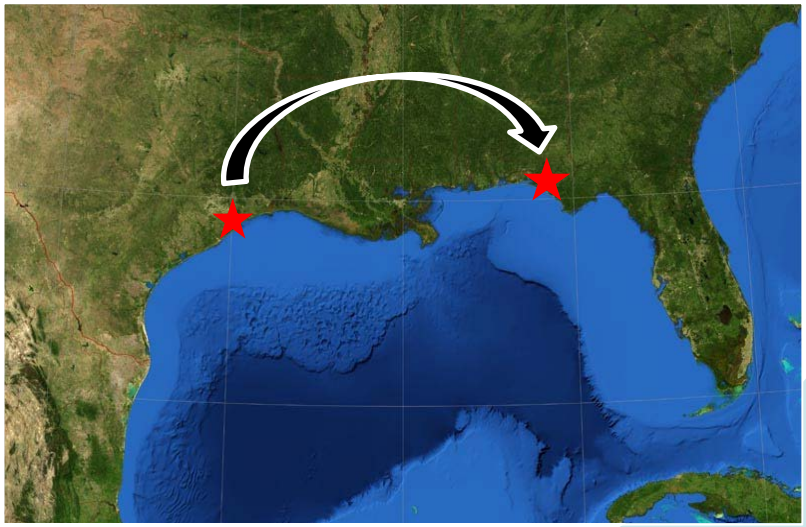
- Loggerhead hatchlings will be collected from the East coast of Florida and transported to the National Marine Fisheries Service Galveston Sea Turtle Facility for rearing

- Turtles will be collected in Aug 2021 and reared until July 2022

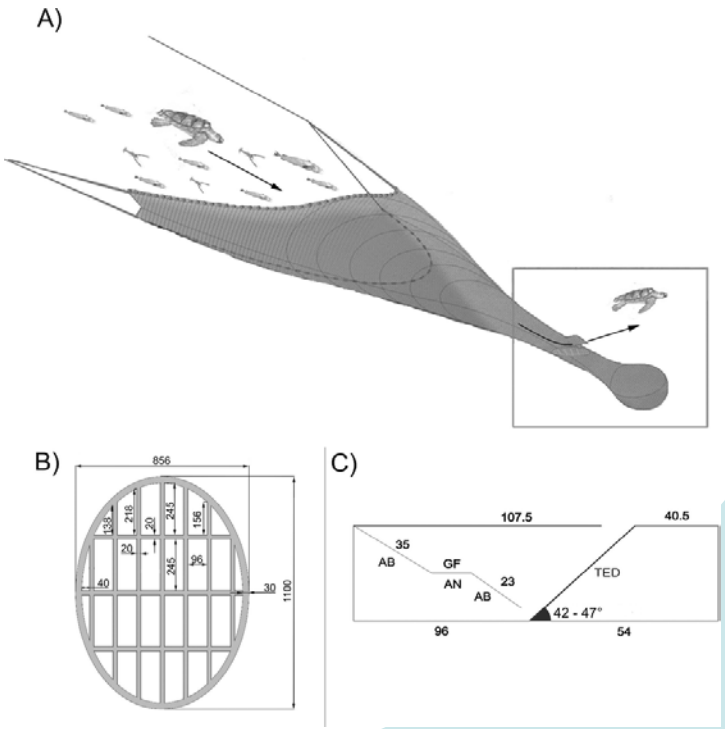
Small Bar TED Project Activities: Captive Rearing Turtles

- In July of 2022, yearling turtles grown to a size that matches those observed on the fishing grounds will be transferred to the NMFS Panama City Beach Laboratory for acclimation and TED testing

- Post testing, turtles are taken back to the East coast of Florida, for release offshore



Small Bar TED Project Activities: TED Prototype Development



TED development:

- New prototypes with smaller bar spacing (<4”) and other configuration adjustments that facilitate exclusion of small turtles will be developed
- Besides mechanical separation, physical ability of small turtles must also be considered when developing TEDs designed to exclude turtles with BDs less than 4”

Small Bar TED Project Activities: TED Prototype Development

- All TED designs will be evaluated utilizing the published small turtle testing protocol
- Testing will take place over 8 days and using 30-35 turtles each day

Small Bar TED Project Activities: TED Prototype Development

Data analysis

- Turtle exclusion rates of new prototypes will be compared to a control TED
- Prototypes that perform as good or better than the control with regard to turtle exclusion will be recommended for independent proof-of-concept testing

Small Bar TED Project Activities: Proof-of-Concept Testing

- Independent testing will be conducted aboard the NOAA RV Caretta
- Paired comparisons (candidate TED vs. control TED) will be conducted with tows standardized to 2 hours for all testing
- Total catch, total shrimp, and total bycatch weights along with weights of bycatch categories (fish, non-shrimp crustaceans, invertebrates, and debris) for each net will be collected for each tow
- Prototypes that meet the minimum shrimp loss criteria will be recommended for dependent commercial trials aboard one of two contracted commercial vessels

Small Bar TED Project Activities: Regional Industry Engagement

- Regional industry meetings open to all shrimp fishermen will be held in years 1 and 4.
- Potential locations: Corpus Christi, Galveston, Intracoastal City, New Orleans, Biloxi, Bayou la Batre, Pensacola, and Tampa

Small Bar TED Project Activities: Regional Industry Engagement

Year 1 meetings open to all in shrimp fishery will communicate:

- Project need and bycatch issue
- Proposal to address the bycatch issue and develop potential restoration measures through the project
- Aspects of key components of the project
- How NOAA plans to engage industry and how industry can provide feedback
- How NOAA will monitor project success/failure
- Expected outcomes
- Next steps to maximize restoration benefits

Small Bar TED Project Activities: Regional Industry Engagement

Year 4 meetings open to all in shrimp fishery will communicate:

- Project results and lessons learned
- How the project was successful/unsuccessful at addressing the bycatch need and developing restoration measures
- Potential next steps to maximize restoration benefits to specific GoM resources
- How industry may become involved in subsequent projects as a result of this project

Small Bar TED Project Activities: Stakeholder Engagement

Stakeholder Working Group

- Includes a member from each Gulf state, TED manufacturers, and NOAA staff.
- Will provide input into TED prototype development, proof-of-concept testing, and commercial trials.
  - Will meet semi-annually in years 2 and 3 of the project (meeting location vs virtual TBD)
  - Will meet prior to initial turtle exclusion testing to review and recommend modifications to TED prototypes
  - Will meet after proof-of-concept testing to review results

Small Bar TED Project Activities: Stakeholder Engagement

Stakeholder Working Group

This group will choose:

- Which designs move forward to proof-of-concept testing
- Which designs will be modified for additional testing
- Which designs will not be recommended for further testing

- Year 3 meeting:
  - Recommend TED prototype designs for potential future projects that seek to maximize restoration benefits through widespread incentivized use

Small Bar TED Project: COVID update

- Project start was delayed from 2020 to 2021
- Due to use of live sea turtles, once hatchlings are acquired, the Project Team will need to ensure that all aspects of the project will proceed, and be able to be conducted safely
- In-person vs virtual meetings are still being decided upon
- This is an unexpected factor that our team is closely monitoring with regards to effects on the project

Questions?

Christy Fellas
NOAA Fisheries
Office of Habitat Conservation
Restoration Center
Christina.fellas@noaa.gov

Rebeccah Hazelkorn
NOAA Fisheries
National Marine Fisheries Service
Southeast Regional Office
Rebeccah.hazelkorn@noaa.gov

Jeff Gearhart
NOAA Fisheries
Southeast Fisheries Science Center
Jeff.gearhart@noaa.gov

Additional Gulf Spill Restoration information can be located at:
https://www.gulfspillrestoration.noaa.gov/project?id=219