TURTLE EXCLUDER DEVICE (TED) COMPLIANCE POLICY

BACKGROUND

The April 18, 2014, biological opinion is the current Endangered Species Act (ESA) authorization for the southeastern shrimp fisheries, which includes both state and federal shrimp fisheries. One of the non-discretionary terms and conditions for this biological opinion was the following:

> 14) NMFS must develop a policy specifying data requirements or minimum data standards for taking various actions (e.g. time area closures) to address non-compliance. Our goal is to use observer data for compliance analyses because the program is based on a representative sample and avoids potential biases from using enforcement data. However, until that time we must continue to rely on OLE [Office of Law Enforcement] and GMT [Gear Monitoring Team] data and increased enforcement. As part of this policy, NMFS must develop a general policy or guidelines outlining methods and standards for determining if a documented lack of compliance is throughout the entire Gulf area or Atlantic area) or concentrated in certain portions of an area. This policy must be finalized within one year of completing the opinion and be updated as necessary.

The following document presents a draft design for a potential TED compliance policy.

Table 1. TED inspections by month and corresponding TED effective rate (audited February 2016)

MONTH	TED INSPECTIONS	OVERALL TED EFFECTIVE RATE
DECEMBER 2014	7	93.14%
JANUARY 2015	5	97.00%
FEBRUARY 2015	1	97.00%
MARCH 2015	44	89.34%
APRIL 2015	27	85.15%
MAY 2015	28	97.00%
JUNE 2015	39	88.36%
JULY 2015	63	94.84%
AUGUST 2015	15	97.00%
SEPTEMBER 2015	33	94.15%
OCTOBER 2015	13	91.31%
NOVEMBER 2015	13	93.77%
DECEMBER 2015	25	95.12%

NUMBER OF PERMITTED/LICENSED SHRIMP VESSELS

GULF OF MEXICO FEDERAL FISHERY: 1,368 (AS OF FEBRUARY 16, 2016)
SOUTH ATLANTIC FEDERAL FISHERY: 482 (AS OF FEBRUARY 16, 2016)
INDIVIDUAL STATES (RESIDENT AND NON-RESIDENT): RANGES FROM 300-1,000+[1]

[1] Obtaining an accurate number of shrimp licenses in each state is problematic due to issues related to gear identification (otter versus skimmer), licensing each net versus an individual vessel, and latent effort.

Table 2. 2014 otter trawl shrimping effort

MONTH	GULF OF MEXICO (24-HOUR DAYS)	GULF OF MEXICO EFFORT PERCENTAGE	SOUTH ATLANTIC (DAYS)	SOUTH ATLANTIC EFFORT PERCENTAGE
JANUARY	5,726	6	1,225	6
FEBRUARY	4,185	5	832	4
MARCH	5,151	6	490	2
APRIL	3,296	4	281	1
MAY	3,461	4	1,842	8
JUNE	11,213	12	3,476	16
JULY	8,463	9	2,972	14
AUGUST	13,375	15	1,954	9
SEPTEMBER	11,608	13	2,331	11
OCTOBER	9,491	11	3,046	14
NOVEMBER	7,740	9	1,814	8
DECEMBER	6,123	7	1,698	8

SAMPLING PERIODS

Due to past low numbers of inspections in any given month (Table 1), we have opted to use a longer sampling period to obtain better insight on the fisheries as a whole. This will help reduce potential law enforcement bias (i.e., inspections that may target suspected violators) and also avoid issues inherent with constantly obtaining, reviewing, and reacting to inspection data over brief ~30-day periods, particularly given that fisheries effort (Table 2) is not constant throughout the year. While we are working to increase the number of monthly inspections by planned inclusion of fishery observer and state agency inspection data, there are logistical, budgetary, and program issues likely to be a constant into the future that may limit overall inspection numbers.

We have analyzed fisheries effort (Table 2) and determined that a 4-month sampling period would be a reasonable duration of time to evaluate TED performance in the otter trawl fleet. The periods have been designed to better standardize intervals based on annual effort, which will also help reduce issues associated with months witnessing low fishing activity in many areas of the Gulf of Mexico and South Atlantic, where crews may not be available to facilitate dockside inspections. The 3 sampling periods are March-June, July-October, and November-February.

Within 30 days after each sampling period we will review the TED inspection data to determine the corresponding TED effectiveness rate. In calculating the TED effectiveness rate, we evaluate the various types and degrees of severity of documented TED violations and their corresponding estimated effects on both small and large sea turtles; not all TED violations have the same impact on sea turtles capture rates. The April 18, 2014, biological opinion reviews different types of violations and associated sea turtle capture estimates and analysis methods. For more information, please review the April 18, 2014, biological opinion, Table 15, Sections 2.1.1 and 5.1.3.2. The calculated TED effectiveness rate will then be posted on NOAA's Southeast Regional Office website (http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/index.html).

TED COMPLIANCE DATA

We plan to collect TED compliance data via 3 avenues: NOAA's Southeast Fisheries Science Center Galveston Laboratory Observer Program, NOAA's Southeast Fisheries Science Center Pascagoula Laboratory Harvesting

Systems Branch Gear Monitoring Team, and by various law enforcement agencies that include NOAA's Office of Law Enforcement, state resource agencies operating under a Joint Enforcement Agreement, and the U.S. Coast Guard. The TED compliance data necessary for inclusion in our database is presented in NOAA's current TED Enforcement Boarding Form (Attachment 1).

Observer Program
Fishery observers collect catch and bycatch data from commercial shrimp trawl vessels. Beginning in 2016, observers will also inspect TEDs on shrimp trawl vessels selected to be observed by the program. TED inspections will be conducted prior to the start of the trip, and will be recorded by video camera so that it may be reviewed later to insure the inspection was conducted correctly and consistently. We anticipate approximately 125 annual TED inspections will be obtained by this program.

Gear Monitoring Team (GMT)
GMT activities include TED training workshops and courtesy TED inspections. We anticipate approximately 150 annual TED inspections will be conducted by the GMT in 2016, with possible expansion in 2017.

Law Enforcement (NOAA's Office of Law Enforcement, Joint Enforcement Agreement Parties, U.S. Coast Guard)
NOAA's Office of Law Enforcement (OLE) is responsible for the enforcement of over 100 legislative acts and 32 statutes related to the conservation and protection of marine resources, with the majority of their resources concentrated on 5 major acts (Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, National Marine Sanctuary Act, Lacey Act, and ESA). As part of the enforcement program for ESA, OLE conducts courtesy TED examinations for the purposes of compliance assistance, as well as examinations of operational vessels that may result in an enforcement action if a TED is far enough out of compliance. OLE works with state partners through a Joint Enforcement Agreement, which provides funding for patrol and inspection services conducted by the states to address federal priorities. OLE has established TED enforcement as one of the agency's higher priorities. We anticipate approximately 125 TED examinations will be conducted by OLE, and 100 examinations will be conducted by state partners, annually.

COMPLIANCE THRESHOLDS

In the May 8, 2012, and the April 18, 2014, biological opinions, NMFS proposed to monitor and ensure compliance with the sea turtle conservation regulations at a level that would keep sea turtle catch rates of shrimp trawls required to use TEDs at or below 12% of all sea turtle interactions (i.e., maintain an 88% TED effectiveness rate). Therefore, the 88% effectiveness is the immediate threshold that needs to be maintained to ensure ESA compliance and to allow the shrimp fisheries' status quo operation. The question that needs to be addressed next is at what level and at what point should a fishery closure be implemented to improve TED compliance and to protect and conserve sea turtles, should TED effectiveness fall below the 88% threshold?

In the Gulf of Mexico, TED compliance was documented at approximately 66% during the period of March-November 2011 (Table 10, NMFS 2012), although this compliance rate is not the same as the TED effectiveness rate, which is weighted to determine a violation's effect on sea turtle capture probability. That is, not all violations impact sea turtle capture probability the same (e.g., a 70-degree TED angle is more significant than a single bent TED grid bar) and some common violations can have a relatively minor effect on sea turtle capture. The corresponding TED

effectiveness rate for the same March-November 2011 period was calculated to be 83.82% for small sea turtles and 85.02% for large sea turtles (Table 16, NMFS 2012). Improvements in TED compliance and the corresponding TED effectiveness rates, however, were observed in mid-2011, which are believed to be due to outreach and enforcement efforts relating to shrimp fisheries.

To prevent a significant increase in sea turtle captures and subsequent mortalities, we propose to utilize the average low TED effectiveness rate observed during the period March-November 2011 (i.e., 84%) as the threshold for a fishery closure. We use this period as it is the earliest documented timeframe using our current methodology for determining TED effectiveness (i.e., for consistency), and it represents a period of low TED effectiveness within the southeastern shrimp fleet. As a statistical matter, we need enough of a difference between the minimum target effectiveness rate (i.e., 88%) and the effectiveness rate at which a closure would be implemented to be able to statistically detect actual differences in compliance, as opposed to the variance associated with a point estimate of TED effectiveness. Setting the closure threshold closer to the 88% target makes this issue more problematic. This issue is compounded with small sample sizes, in this case the number of boardings during the period in question. With small numbers of inspections in a sampling period (e.g., ~80), a single violation can have a significant impact on the overall TED effectiveness rate. To illustrate, if 80 vessels were inspected in a period and 13 were found with significant violations (i.e., 10 vessels were found to have a level 2[2] or level 3[3] violation, and 3 vessels were found to have a level 4[4] violation), the overall TED effectiveness rate would be 87.49%. If that number increased to 17 significant violations (i.e., 12 vessels were found to have a level 2 or level 3 violation, and 5 vessels were found to have a level 4 violation), however, overall TED effectiveness would drop to 83.89%. Based on the calculations in NMFS (2012), an 84% effectiveness rate would represent a 33% increase in sea turtle captures over the 88% effectiveness rate required in both the 2012 and 2014 biological opinions. We certainly want to avoid this level of increase in turtle captures, but we also need to be aware of the above statistical considerations to avoid implementing closures that are not based on actual decreases in TED effectiveness. We believe that this policy strikes the appropriate balance between these considerations.

The jeopardy analysis in the 2014 biological opinion analyzed impacts from the fishery based on the 88% effectiveness rate continuing over the longer term into the future. Short term decreases or increases in estimated TED effectiveness (i.e., over a few sampling periods) were anticipated in those analyses and may not change the long-term average effectiveness and the associated effects to listed species. The biological opinion's terms and conditions, including this policy, are intended to accommodate this variance without undermining the conclusions regarding the longer term anticipated effects from the fisheries and objectives of the biological opinion relative to the fishery (i.e., insuring no jeopardy).

Therefore, this policy would implement the following responses based on a corresponding documented TED effectiveness rate:

1) >/= 88% EFFECTIVENESS REQUIRED BY THE APRIL 18, 2014, BIOLOGICAL OPINION: GMT OUTREACH;
2) < 88% BUT >/= 84% EFFECTIVENESS: ENFORCEMENT PULSE AND GMT OUTREACH; AND

[2] EXAMPLE: 60 DEGREE TED ANGLE
[3] EXAMPLE: MISSING BAR; 8" BAR SPACING
[4] EXAMPLE: 71 DEGREE TED ANGLE; ESCAPE OPENING SEWN SHUT; NAKED NET

3) < 84% EFFECTIVNESS FOR TWO CONSEQUTIVE PERIODS: MINIMUM OF 30-DAY SHRIMP FISHERY CLOSURE IN RESPECTIVE AREA, ENFORCEMENT PULSE, AND GMT OUTREACH.

FISHERY CLOSURE

A fishery closure due to poor TED compliance is a last-resort management action, and one that would occur only after education/outreach and enforcement activities failed to remedy the situation. A potential closure would affect the segment of the fishery were TED performance was demonstrated to be poor over 2 consecutive sampling periods; for example, if inspections in Gulf federal waters indicated TED effectiveness was less than 84% in two consecutive periods, a closure would be implemented in federal or state waters in a subsequent period and potentially until compliance levels improved significantly; both federal and state waters could be closed to shrimp fishing to prevent deficient vessels from shifting effort from federal to state waters. If deficient vessels were documented to be strictly state-licensed vessels, a state-waters closure could be implemented. Because the federal shrimp fishery is highly migrant (i.e., depending on the season, Texas boats may fish off Florida, Alabama boats may fish off Louisiana, and Louisiana boats may fish off Texas), a closure may impact all federal waters or a portion where a significant number of the fleet may be working in the immediate future (e.g., pink shrimp season off Florida, Texas opening). The intended effect of the closure is to significantly increase TED compliance so as to protect and conserve threatened and endangered sea turtles.

A fishery closure would be implemented by emergency rule per regulatory authority at 50 CFR 223.206(d)(4)(i)(A), which states "the exemption for incidental takings of sea turtles in paragraph (d) of this section does not authorize incidental takings during fishing activities if the takings would violate the restrictions, terms, or conditions of an incidental take statement or biological opinion." 50 CFR 223.206(d)(4)(iv) authorizes the Assistant Administrator to restrict fishing activities for a period of up to 30 days, which can be renewed for additional periods of 30 days each, in the event of a determination that fishing activities violate the terms or conditions of a biological opinion (i.e., TED effectiveness is < 88%). The fishery closure would allow time for focused outreach with industry to address deficiencies in TED installation that would ultimately improve sea turtle exclusion.

With a closed fishery, dockside TED inspections would be conducted to evaluate vessels for compliance with TED requirements. In order to lift a fishery closure, sample size would need to be equivalent to the number of inspections that led into the closure, and the corresponding TED effectiveness rate would need to be 88% or greater (i.e., the minimum required by the April 18, 2014, biological opinion). For example, 90 inspections were conducted in the first sampling period and 80 inspections were conducted in the second period, both of which resulted in a TED effectiveness rate less than 84%. During the closure and before fishing would be allowed to resume, at least 85 inspections (i.e., the average between the two sampling periods) would need to be conducted demonstrating a TED effectiveness rate 88% or greater.

GENERAL OBSERVATIONS ON TRIGGERING CLOSURES

The below examples demonstrate that with adequate sample size, a fishery closure would only result from significant compliance deficiencies across multiple vessels (that would need to be observed over multiple sampling periods), and not from 1-2 violations.

In a random sampling period, 130 Gulf of Mexico federally-permitted vessels are inspected (i.e., ~10% of the fleet) and 100 of the vessels found to be in full compliance (77%). Of the 30 vessels found to have violations, 25 vessels were found to have a level 2 or 3 violation, and 5 vessels were found to have a level 4 violation. These significant violations (i.e., resulting in 70%/30% capture rate and 100% capture rate, respectively) would result in a fleet-wide TED effectiveness rate of 84.23% for the period, which, while poor, would not result in a fishery closure based on the above guidelines. In this scenario, extensive outreach/education and enforcement activities would be pursued to raise the TED effectiveness rate back above the 88% minimum required in the April 2014 biological opinion.

If the sample size was increased to 200 vessels with the same 30 significant violations cited above, fleet-wide TED effectiveness increases to 88.70%. Conversely, if the number of TED inspections decreased to only 80 vessels in a sampling period with the same 30 significant violations, TED effectiveness drops to 76.25%. Therefore, it is important that as much TED compliance data is available as possible each sampling period to remove bias and to get the most accurate picture of TED compliance in the shrimp fisheries.

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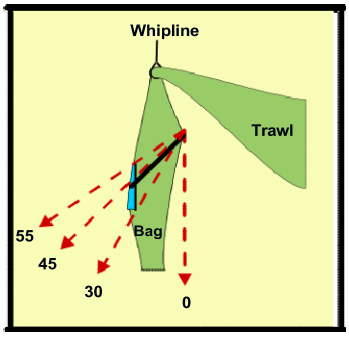
TED Enforcement Boarding Form

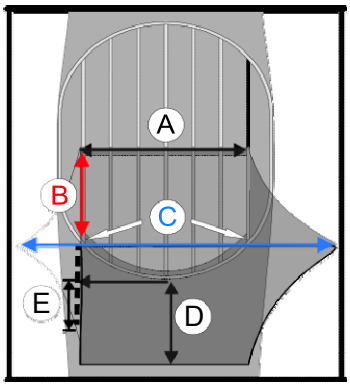
Date/Time	
Vessel Name	
Doc Number/Reg.	
COLREGS Line	INSHORE OFFSHORE
Latitude/Dockside	N.
Longitude/Port	W.

Federal Agency	NOAA OLE GMT USCG
State Agency	
Inspector	
Officer/ Witness	
Courtesy Inspect	YES NO
Net Type	OTTER SKIMMER

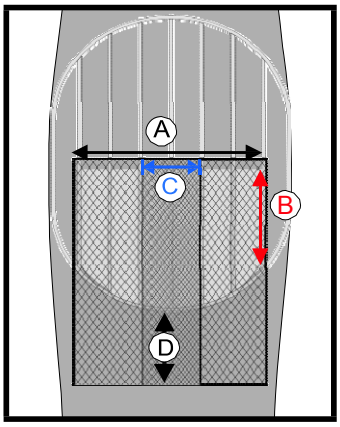
How to find angle



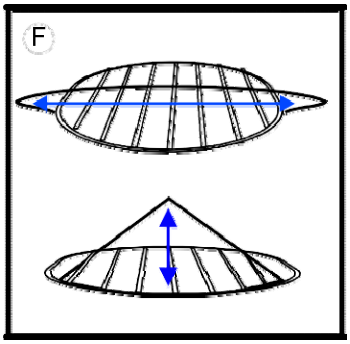
Single cover (71") TED



Double Cover (DC) TED



Inshore (44") TED



Grid Measurements	Port 1	Port 2	Stbd 1	Stbd 2
Angle (55° max)				
Bar Spacing (4" max)				
Grid length and width (32" min)				
Top shooter (TS) or bottom shooter (BS)				
SFSTCA Compliant (50 CFR 223.207 (a)(3)(ii))	Y / N	Y / N	Y / N	Y / N
Do all bottom shooters have proper flotation? (If no explain in comment section)	Y / N	Y / N	Y / N	Y / N

Opening and Flap Measurements (all stretched except D)

	Identify each TED as Inshore, 71", or DC				
A	Leading edge of 71" must be ≥ 71".				
A	Leading edge of DC must be ≥ 56".				
B	Forward cut of 71" must be ≥ 26".				
B	Forward cut of DC must be ≥ 20".				
C	The 71" opening must be ≥ 71"of stretched flap between the 2 points where flap is sewn to grid.				
C	The DC overlap must be ≤ 15".				
D	Length of flap not stretched below grid ≤ 24".				
E	The 71"/44" flap can be sewn down the side no more than 6" from bottom of grid.				
F	Inshore TED must be ≥ 44" wide with a vertical measurement ≥ 20" from the grid.				

Allowable Modifications

Accelerator Funnel must stretch ≥ 71" on the 71"/ DC or ≥ 44" for 44" opening.				
Chafing gear for 71"/44" is the proper size, sewn along leading edge only. Not allowed on DC.				

Comments:

Captain's Name (print) **Signature**