

Developing a Comprehensive Strategy for Evaluating the Effectiveness of MMPA Take Reduction Plans

General Purpose of Evaluation Strategy

The ultimate goal of each Take Reduction Plan (TRP) developed under the Marine Mammal Protection Act (MMPA) is to reduce to insignificant levels the mortality and serious injury of affected marine mammals that occurs incidental to the commercial fisheries addressed by each TRP. The MMPA includes two distinct statutory goals – short-term and long-term – that must be achieved as a result of the measures in each TRP.

To evaluate whether those goals have been met and assess the effectiveness of each TRP, NMFS must develop a comprehensive Strategy that clearly defines the statutory goals of a TRP (i.e., specific quantitative goals for each stock affected) as well as the performance measures necessary to achieve those goals. Additionally, this Strategy should identify other performance-based goals that may contribute to successful TRP implementation, and ultimately to marine mammal bycatch reduction in commercial fisheries.

After developing Strategies for each TRP, NMFS and TRTs should review them annually to assess progress in achieving both statutory and performance goals, as well as to document accomplishments under each performance measure. By developing and regularly evaluating these Strategies, NMFS can determine the appropriate next steps.

GAO Review of Take Reduction Program

In August 2007, the U.S. Government Accountability Office (GAO) initiated a review of the marine mammal take reduction process. The U.S. Congress, specifically the Chairman of the Committee on Natural Resources, House of Representatives, asked GAO to determine the extent to which NMFS:

1. Could accurately identify the marine mammal stocks that meet the MMPA's requirement for establishing TRTs;
2. Established TRTs for stocks that meet the requirements;
3. Met MMPA deadlines associated with the take reduction process; and
4. Evaluates the effectiveness of take reduction regulations.

In December 2008, GAO released their report entitled "Improvements Are Needed in the Federal Process Used to Protect Marine Mammals from Commercial Fishing". GAO concluded by suggesting several matters for Congressional consideration as well as one recommendation for executive action by NMFS. Specifically, GAO recommended that NMFS develop a comprehensive strategy for assessing the effectiveness of each TRP and implementing regulations, including establishing appropriate goals and steps for comprehensively monitoring and analyzing compliance rates with take reduction measures. The rationale behind this recommendation is that without a strategy, NMFS is unable to discern whether (1) a TRP is

achieving its goals and (2) if it is not, whether that is because the intended bycatch reduction measures are inadequate or because the fishing industry is not complying with those measures. NMFS agreed with the recommendation and committed to develop a comprehensive strategy for each TRP. In addition to the formal matters for consideration and recommendation, GAO acknowledged that limited resources (both data and funding) severely affect NMFS' ability to implement the take reduction program effectively; thus any strategy for assessing effectiveness of TRPs, should also identify needed resources to achieve the elements within.

Charge to FKWTRT

NMFS will work with TRTs to develop a Strategy for each TRP using the following steps:

- NMFS describes the requirements for developing a Strategy
- Team develops recommendations
- NMFS develops Strategy based on Team recommendations; seeks input from Team
- NMFS implements Strategy when TRP is finalized
- NMFS compiles accomplishments (both internally and externally) for each component of the Strategy
- NMFS annually assesses whether the TRP is meeting its goals, reports the overall effectiveness of the TRP in reducing marine mammal bycatch, and revises TRP if necessary
- NMFS and the TRT periodically review and update the Strategy

Format and Content of FKWTRP Strategy for Evaluating Effectiveness

Statutory and Performance Goals

A TRP will be considered successful if and when both the short-term and long-term goals are met (i.e., mortality and serious injury levels are reduced below the relevant metric – PBR or 10% of PBR, respectively). Therefore, the Strategy must identify specific goals for measuring the success of a TRP. These goals include the short- and long-term statutory goals required by the MMPA, as well as performance goals that may also be considered when evaluating a TRP's effectiveness. Statutory goals are required elements in each Strategy. NMFS suggests there is also value in developing goals that are beyond the requirements of the MMPA. These "performance goals" can address subjects such as completing the weak hook trial, reducing the take rate, etc. NMFS suggests TRTs consider including performance goals in each Strategy.

For statutory goals, the Strategy should identify the specific, numeric metrics for each marine mammal stock addressed by the TRP, as well as the data necessary to evaluate whether the goals have been achieved. Further, each goal should specify a date by which that goal should be achieved.

Achieving the statutory goals is the ultimate measure of a TRP's success. However, identifying and satisfying performance goals may contribute to achieving statutory goals

and further marine mammal bycatch reduction in commercial fisheries. Further, if data are unavailable to define or evaluate statutory goals, performance goals should be developed as proxies for evaluating TRP effectiveness.

This Strategy will help NMFS determine whether: (1) a TRP is achieving its goals and (2) if it is not, whether that is because the intended bycatch reduction measures are inadequate or because the fishing industry is not complying with those measures. Depending on the reason why a TRP is not achieving its goals, NMFS may reconvene the TRT, revise the existing take reduction measures and/or develop additional measures, and amend the TRP, or NMFS may increase or restructure observer coverage, and/or modify enforcement and/or outreach efforts.

Milestones

The Strategy should also identify incremental steps (i.e., milestones) necessary to achieve each statutory and performance goal. The milestones should include specific, measurable metrics by a particular date, specifying the method for obtaining information, the person/group who will be collecting the information, and at what interval. Further, because GAO acknowledged that limited resources (both data and funding) severely affect NMFS' ability to implement the take reduction program effectively, each milestone should also identify needed resources to satisfy that milestone.

There are two required milestones for the short-term statutory goal, and three milestones for the long-term statutory goal (*see page 4 for required milestones*). Additional milestones may be developed for each statutory goal.

Defining performance goals is at the discretion of the TRT; however, NMFS suggests that TRTs consider developing performance goals; therefore, there are no required milestones for performance goals.

Evaluating Overall TRP Effectiveness

The Strategy will contain a section, to be updated annually, that reports on the effectiveness of the TRP. It should detail whether and how statutory and performance goals were or were not met, and report accomplishments completed under each relevant milestone. Importantly, this section should also include discussion of overall effectiveness of the TRP.

NMFS should evaluate this Strategy each year until such time that a TRT is disbanded. It is important to note that a once-successful TRP may become unsuccessful over time due to a range of factors (e.g., compliance rates change, bycatch rates increase, PBR levels decline leading to a lower target bycatch rate).

General Considerations

Some general questions that TRTs and NMFS should consider when developing these Strategies include the following:

- Do abundance and mortality estimates exist for each stock?
- Has stock structure been identified for take reduction purposes?
- How do mortality estimates compare to PBR levels for each stock?
- Are observer programs, outreach efforts, and enforcement adequate?
- What data sources and metrics are available to evaluate whether goals and milestones have been achieved?

More specific guiding questions and example goals and milestones are included in the appendix.

Strawman Outline of Strategy for Evaluating the Effectiveness of a TRP

I. Goals for TRP

A. Statutory Goals (*Required*)

- 1. MMPA Short-term goal:** Reduce, within 6 months of TRP implementation, incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to levels less than the PBR level established for each stock.

- Mortality and serious injury (M/SI) must be reduced below (*insert PBR level for each stock from relevant SAR(s)*) by (*insert date 6 months after TRP becomes effective*)

a. Milestones

Milestone 1: Calculate abundance estimate(s) to determine PBR.

Milestone 2: Estimate M/SI to compare to PBR.

- 2. MMPA Long-term goal:** Reduce, within 5 years of the TRP's implementation, the incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate, taking into account the economics of the fishery, the availability of existing technology, and existing State or regional fishery management plans.

- Mortality and serious injury (M/SI) must be reduced below (*insert 10% of PBR level for each stock*) by (*insert date 5 years after TRP becomes effective*).

a. Milestones

Milestone 1: Identify relevant economic considerations and articulate how such considerations may relate to take reduction planning.

Milestone 2: Assess previous research on fishing gear and practice modifications with regard to the availability of existing technology and articulate whether and how such technology could be implemented and monitored.

Milestone 3: Evaluate measures implemented under FMPs for their contribution to marine mammal bycatch reduction in applicable fisheries and articulate whether and how they advance (or constrain) TRP implementation.

B. Performance Goal(s)

II. Evaluating Overall TRP Effectiveness

APPENDIX – Guiding Questions and EXAMPLE Goals and Milestones

This appendix includes guiding questions and examples for defining statutory and performance goals. As mentioned in the main document, the statutory goals must be included in each Strategy; each Strategy may also include additional performance goals that, when achieved, contribute to successful TRP implementation and ultimately to marine mammal bycatch reduction in commercial fisheries.

The various goals and associated milestones should include how to consider and evaluate key data sources. The data sources can include biological (e.g., direct or indirect measures of interactions) as well as compliance (e.g., industry behavior and awareness) metrics. These include, but are not limited to, annual mortality and serious injury estimates, interaction rates (e.g., scarification, entanglement, non-serious injuries, depredation), compliance rates, and outreach efforts.

A. Statutory Goals

1. MMPA Short-term goal (*Required*)

a. Milestones

*Milestone 1: Calculate abundance estimate(s) to determine PBR. (*Required*)*

Guiding Questions/Considerations

- Does an abundance estimate exist for each affected stock?
 - If so, include a milestone for performing calculations at some interval.
 - If not, explain how this affects determination of PBR(s) and develop milestone that are necessary to obtain an abundance estimate.
- Is the existing abundance estimate adequate? Explain why or why not. If not, develop milestone to improve accuracy and/or precision of estimate.
- Are PBRs defined for each stock addressed by the TRP? If not, include milestone necessary to define PBRs.
- If abundance estimates are unattainable, explain why we cannot completely assess whether the short-term goal has been met and refer to relevant performance goals.
- Note which years of data will be used and how this comports with most recent SAR(s).

*Milestone 2: Estimate M/SI to compare to PBR. (*Required*)*

Guiding Questions/Considerations

- Is observer coverage adequate to estimate M/SI for affected stocks?

- If so, state current coverage levels used to estimate M/SI for each stock and compare against PBR at some interval.
- If not, develop milestone to increase or improve coverage, as well as how these increases or improvements will affect accuracy and/or precision of resulting estimates. Or, if observer programs are not feasible, are other data sources available from which to estimate M/SI?
- At what interval can M/SI by stock be estimated (quarterly, yearly, etc.)? Note which years of data will be used and how this comports with most recent SAR(s).
- What is the CV associated with M/SI estimates? What would be considered acceptable for evaluating effectiveness?
- If M/SI estimates are unattainable, explain why we cannot completely assess whether the short-term goal has been met.
- Are other commercial fisheries not addressed by the TRP, recreational fisheries, or international fisheries documented as having M/SI of affected stocks? If so, explain whether and how that factors into assessing statutory goals.

2. MMPA Long-term goal (*Required*)

[See “MMPA Short-term goal” for guiding questions and considerations. Refer to appropriate performance goals]

a. Milestones

Milestone 1: Identify relevant economic considerations and articulate how such considerations may relate to take reduction planning.

Milestone 2: Assess previous research on fishing gear and practice modifications with regard to the availability of existing technology and articulate whether and how such technology could be implemented and monitored.

Milestone 3: Evaluate measures implemented under FMPs for their contribution to marine mammal bycatch reduction in applicable fisheries and articulate whether and how they advance (or constrain) TRP implementation.

B. Performance Goals and Milestones (*Optional*)

1. Identify stock structure for take reduction purposes.

Guiding Question/Considerations

- If stock structure is not or cannot be determined currently, explain why we cannot completely assess whether the short-term or long-term goal has been met on a particular date. What milestones are necessary to obtain data necessary for determining stock structure?

2. M/SI of affected marine mammal stocks is declining (or stable depending on progress in achieving statutory goals).

Milestone 1: Assess whether observer coverage is adequate to determine M/SI rates; if not, increase and/or improve.

Guiding Questions/Considerations

- How long would it take to detect a change in mortality or serious injury rates considering statistical power, level of observer coverage, seasonality of fisheries, etc.?

Milestone 2: If M/SI cannot be estimated with observer programs, assess M/SI using alternate data sources (e.g., scarification, entanglement, stranding).

Guiding Questions/Considerations

- What other data sources are available and how would they be used?
- How long would it take to detect a change in mortality or serious injury considering amount of data and statistical power?
- How long does NMFS wait to take action if M/SI estimates remain unchanged or increase for some predetermined period? What would that action be (e.g., reconvene team)?

Milestone 3: Evaluate whether regulations have affected rate of serious vs. non-serious injuries.

Guiding Questions/Considerations

- How long would it take to detect a change in mortality or serious injury rates considering statistical power, level of observer coverage, seasonality of fisheries, etc.?
- How much of a change in the rate is necessary to achieve statutory goals?
- Are there incremental changes in rates that would be considered successful?
- How long does NMFS wait to take action if rates remain unchanged for some predetermined period? What would that action be (e.g., reconvene team)?

Milestone 4: Determine fishing effort for fisheries subject to the TRP.

Guiding Questions/Considerations

- Is there currently a system for determining fishing effort? If not, what actions are necessary to obtain data for estimating effort? If yes, are the estimates of effort adequate for take reduction purposes (e.g., sampling/reporting is done in relevant seasons, areas, etc.)?

Example: NMFS has implemented a permit system to determine and track fishing effort in the lobster fishery. Having this information would allow NMFS to determine bycatch rates of large whales in the lobster trap/pot fishery. (January 2013)

3. Fishing industry fully complies with TRP implementing regulations (i.e., 100% compliance). (Optional)

Milestone 1: Analyze available data (e.g., observer, stranding, logbook, citations, etc.) for compliance with gear and fishing requirements.

Guiding Questions/Considerations

- Consider including a milestone for individual requirements (e.g., hook type, pingers (whether they were deployed as well as whether they function), branch line specifications, etc.)
- For fisheries with observer programs, consider how and which specific elements would be analyzed to evaluate compliance.
- For fisheries with unobservable vessels, what other mechanisms exist for evaluating compliance? How would they be used?
- Are gear marking requirements adequate?
- At what level of non-compliance would NMFS take action? What are potential actions (e.g., reconvene team, increase enforcement, increase outreach, etc.) to counter non-compliance?

Milestone 2: Identify and implement adequate enforcement efforts.

Guiding Questions/Considerations

- Consider specific elements that would be part of an inspection, such as number of required pingers per net – what number of missing or non-functional pingers equals non-compliance? Consider milestones specific to each regulatory requirement.
- Consider the number and type of warnings and violations, the number and type of patrol hours.
- At what level of non-compliance would NMFS take action? What are potential actions (e.g., reconvene team, increase enforcement, increase outreach, etc.) to counter non-compliance?

Milestone 3: Identify and implement adequate gear marking requirements.

Guiding Questions/Considerations

- Is current gear marking adequate? If so, consider including a milestone to continue and reassess at various intervals to ensure it remains adequate.
- How would non-compliance be evaluated?
- Potentially link to other Performance Goals?

4. NMFS regularly reaches out to affected fishermen to increase their awareness of TRP regulations.

Milestone 1: Identify and implement necessary outreach efforts.

Guiding Questions/Considerations

- After a TRP is finalized, how does NMFS educate affected entities (e.g., printed materials (permit-holder letters, placards, etc.), press releases, workshops, conference/trade show participation, direct communications on a more individual basis such as by fishery liaisons)?
- What other entities (e.g., industry groups) could conduct outreach and how?
- How often should outreach efforts be conducted?
- What level of awareness is considered successful?

5. Additional research needed to achieve statutory goals or otherwise contribute to the effectiveness of a TRP has been identified and completed.

Milestone 1: Identify and prioritize research needs.

Milestone 2: Identify funding sources or external partners to complete research.

Milestone 3: Conduct research and disseminate results to TRT and others.

6. NMFS maintains data collection programs to support take reduction planning and implementation.

Milestone 1: Update models that were used in developing TRP regulations to inform whether goals are being met.