

<i>NATIONAL MARINE FISHERIES SERVICE PROCEDURE 02-204-02</i> Effective on: June 17, 2020	
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Protected Resources Management 02-204 Marine Mammal Protection	
Criteria for Determining Negligible Impact under MMPA Section 101(a)(5)(E)	
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I. Introduction

The Marine Mammal Protection Act (MMPA or Act) generally prohibits the harassment, hunting, capturing, or killing of marine mammals, or any attempt to engage in such activities. However, the Act includes exceptions to this prohibition for certain activities and situations. Section 101(a)(5) allows the Secretary of Commerce to authorize the take of marine mammals incidental to certain activities provided (among other things) that the take will have a “negligible impact” on the stock. The term negligible impact is explicitly referenced in three sections of the MMPA: 101(a)(5)(A) regulations for incidental take other than commercial fishing; 101(a)(5)(D) incidental harassment authorizations; and 101(a)(5)(E) takes incidental to commercial fishing.

The contexts in which “negligible impact” appears in the three sections of the MMPA differ. First, they differ in terms of the types of take being considered and consequently, the effects of the takes on population dynamics. In sections 101(a)(5)(A) and (D), NOAA’s National Marine Fisheries Service (NMFS) must determine if the taking by harassment, injury, or mortality (or a combination of these) incidental to specified activities will have a negligible impact. In section 101(a)(5)(E), NMFS must determine if mortality and serious injury (M/SI) incidental to commercial fisheries will have a negligible impact. NMFS considers mortalities and serious injuries to be removals from the population that can be evaluated using well-documented models of population dynamics, whereas harassment and non-serious injury (sub-lethal taking) are not

considered to be removals from the population. Second, they differ in whether they apply to all marine mammal stocks or only those stocks or species listed under the Endangered Species Act (ESA): sections 101(a)(5)(A) and (D) apply to all marine mammal stocks (regardless of ESA listing status or MMPA depleted status), while section 101(a)(5)(E) applies only to stocks designated as depleted because of their listing under the ESA. Because of these differences, the process by which negligible impact determinations (NID) are made differs between MMPA sections 101(a)(5)(A), (D), and (E). This procedure outlines how NMFS conducts NID analyses for commercial fisheries under MMPA section 101(a)(5)(E).

There is no definition of negligible impact in the MMPA. There is, however, a reference to negligible impact in the House of Representatives committee report for the MMPA Amendments of 1981, which is when Congress added “negligible impact” to the MMPA. The report states, “‘negligible’ is intended to mean an impact which is able to be disregarded.” Further, the committee notes that Webster’s Dictionary defines the term “‘negligible’ to mean ‘so small or unimportant or of so little consequence as to warrant little or no attention.’” (House of Representatives, Report 97-228, Sept. 16, 1981).

NMFS’ implementation of the 1981 amendments included a regulatory definition for negligible impact:

“an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.” (50 CFR 216.103)

While this is the regulatory definition for negligible impact under MMPA 101(a)(5)(A) and 101(a)(5)(D), which are not the subject of this directive, it remains the only regulatory definition of negligible impact for implementing the MMPA and is included here to inform the discussion.

MMPA section 101(a)(5)(E) and implementing regulations (50 CFR 229.20) provide for NMFS to authorize the incidental taking of marine mammals from a species or stock, designated as depleted because of its listing under the ESA, in the course of commercial fishing operations if NMFS determines, after notice and opportunity for public comment, that:

- 1) The incidental M/SI from commercial fisheries will have a negligible impact on the affected species or stock;
- 2) A recovery plan has been developed or is being developed for such species or stock under the ESA; and
- 3) Where required under MMPA section 118, a monitoring program has been established, vessels engaged in such fisheries are registered, and a take reduction plan (TRP) has been developed or is being developed for such species or stock.

MMPA 101(a)(5)(E) authorizations are required for commercial fisheries with frequent or occasional incidental M/SI of ESA-listed marine mammals (i.e., fisheries classified as Category I

or II fisheries on the MMPA List of Fisheries¹ (LOF)). Authorizations are not required for commercial fisheries involving a remote likelihood of or no known incidental taking of marine mammals (i.e., fisheries classified as Category III fisheries on the LOF). Authorizations are for periods of up to three consecutive years, but may be shortened or revoked if necessary.² Prior to issuing authorizations, NMFS must publish in the *Federal Register* a list of U.S. commercial fisheries for which these three determinations have been made and a summary of the information used to make the determinations. While it is fairly straightforward for NMFS to make the second and third determinations, NMFS must conduct analyses to make the first determination.

II. Objective

Before NMFS can authorize incidental M/SI of ESA-listed marine mammals by a commercial fishery under MMPA section 101(a)(5)(E), we must determine that the fishery is having a negligible impact on the ESA-listed marine mammal species or stock. This directive outlines a process and standards to employ when determining negligible impact under this section of the MMPA.

III. Guidance

Since 1999, NMFS has used five criteria, referred to as the NID criteria, to evaluate negligible impact pursuant to MMPA section 101(a)(5)(E). The criteria were quantitative and accounted for multiple scenarios; however, they proved problematic when conducting NID analyses. Subsequently, NMFS and the Marine Mammal Commission (Commission) recognized that the 1999 criteria were in need of revisiting. NMFS reviewed the NID criteria and developed the process for conducting NID analyses as outlined below. Additional information on the history of the NID criteria, improving the criteria and development of the NIT thresholds can be found in section V Additional Background and Rationale.

¹ The MMPA mandates that all commercial fisheries be classified by the level of incidental marine mammal death and serious injury. The level of marine mammal death and serious injury that occurs incidental to each commercial fishery is reported in the annual Marine Mammal Stock Assessment Reports for each stock. Accordingly, the List of Fisheries puts each commercial fishery into one of three categories: 1) frequent incidental death or serious injury of marine mammals, 2) occasional incidental death or serious injury of marine mammals and 3) remote likelihood of/no known incidental death or serious injury of marine mammals.

² If, during the course of the commercial fishing season, the Secretary determines that the level of incidental mortality or serious injury from commercial fisheries for which a determination was made under clause (i) has resulted or is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Secretary shall use the emergency authority granted under section 1387 of this title to protect such species or stock, and may modify any permit granted under this paragraph as necessary....The Secretary may suspend for a time certain or revoke a permit granted under this subparagraph only if the Secretary determines that the conditions or limitations set forth in such permit are not being complied with. The Secretary may amend or modify, after notice and opportunity for public comment, the list of fisheries published under clause (ii) whenever the Secretary determines there has been a significant change in the information or conditions used to determine such list 16 U.S.C. 1371(a)(5)(E)(iii) & (iv).

Negligible Impact Thresholds

3.1 Negligible Impact Thresholds

NMFS applies two thresholds for making negligible impact determinations under MMPA section 101(a)(5)(E). The first threshold, termed the Total Negligible Impact Threshold (NIT_t), represents the maximum total amount of human-caused M/SI from all sources³ that NMFS would consider negligible for a given stock when evaluating under MMPA section 101(a)(5)(E).⁴ In using the concept of NIT_t , NMFS recognizes that in order to meet the goals of the MMPA, M/SI from commercial fisheries should be evaluated in the context of other, non-fishery related human-caused M/SI because all such M/SI has the potential to diminish stocks below their optimum sustainable population. If total human-caused M/SI from all sources does not exceed NIT_t , there is no reason to go further, and a NID for all relevant commercial fisheries can be made. If the total human-caused M/SI reported for a stock exceeds its NIT_t , NMFS evaluates the effects of individual commercial fisheries using a second, lower threshold, termed the Single Negligible Impact Threshold (NIT_s). NIT_s represents the amount of M/SI from a *single fishery*⁵ that NMFS would consider negligible for a stock when evaluating under MMPA section 101(a)(5)(E) if the total human-caused M/SI from all sources reported for the stock exceeds NIT_t . In using the concept of NIT_s , NMFS recognizes that some stocks may experience non-negligible levels of human-caused M/SI, but one or more commercial fisheries may contribute a very small portion of that M/SI such that its individual effect is negligible and virtually undetectable. As described below, NMFS relies on these thresholds because they represent levels of removal that result in small or undetectable differences to the population dynamics of the stock.

The two negligible impact thresholds are calculated similar to the potential biological removal (PBR) as defined in the MMPA. Both thresholds can be calculated as:

$$NIT_i = N_{min} \cdot 0.5R_{max} \cdot NIF_i$$

Where the subscript i represents either t for total or s for single, NIT_i is the threshold of interest, N_{min} is the minimum abundance estimate for the species or stock, R_{max} is the maximum net productivity rate, and NIF_i represents a “negligible impact factor”, which is similar to the “recovery factor” (F_r) used to calculate PBR.

For the calculation of NIT_t , NMFS selected a default NIF of 0.1. Using this NIF value in the calculation of NIT_t , which is equal to or smaller than the F_r used in the calculation of PBR for an

³ The estimate of total human-caused M/SI should incorporate consideration of all sources including, where applicable: commercial fisheries; lethal take observed and recorded as resulting from activities authorized by NMFS under MMPA section 101(a)(5)(A) (Letters of Authorization) or section 104(c)(3) (research permits); subsistence harvest; ship strikes; and recreational, tribal, or foreign fisheries.

⁴ Comparison of total human-caused mortality to NIT_t is a simple evaluation to determine the level of analysis needed. It does not imply that the MMPA requires the agency to make a NID across all sources of human-caused M/SI or activities.

⁵ Fisheries are defined and classified on the LOF based on gear type and fishing operations as related to the risk of killing or injuring marine mammals. Fisheries should not be redefined or split on the LOF solely for purposes of making a negligible impact determination.

endangered stock, results in NIT_t causing no more than a 10% delay in recovery due to total human caused mortality.

For the calculation of NIT_s , NMFS selected a default NIF of 0.013. This corresponds to no more than 1% delay in time to recovery, assuming no biases in the estimates of abundance, M/SI , or R_{max} (See section 5.3 and Figure 1 below for additional background and rationale). “Recovery” is defined as a small population recovering to the maximum net productivity level (MNPL). A NIF of 0.013 (1% delay) enables NMFS to authorize commercial fisheries that are only minimally contributing to M/SI when NIT_t is exceeded. These default NIF values are the same for both endangered and threatened species because they are based on the maximum allowable percent delay in time to recovery for theoretical marine mammal populations (see section 5.3). For simplicity and to be precautionary, the smallest NIF value among the four simulated populations that corresponded with the selected percent delay in time to recovery was chosen as the default rather than having separate NIF values for different populations or taxa (see section 5.3). Using the default NIF values, the following negligible impact thresholds are used for the NID analysis:

$$\begin{aligned} NIT_t &= N_{min} \cdot 0.5R_{max} \cdot 0.1 \\ NIT_s &= N_{min} \cdot 0.5R_{max} \cdot 0.013 \end{aligned}$$

Which simplifies to:

$$\begin{aligned} NIT_t &= N_{min} \cdot 0.05R_{max} \\ NIT_s &= N_{min} \cdot 0.0065R_{max} \end{aligned}$$

where N_{min} and R_{max} are equal to the values currently applied in calculations of PBR for the stock and determined based on NMFS Guidelines for Preparing Stock Assessment Reports (SARs) (NMFS 2016⁶).

The model simulations supporting the negligible impact thresholds (see section 5.3, Development of the Two NIT Thresholds) inherently assume that the ESA-listed stock’s dynamics conform to the underlying assumptions of PBR; that is, depleted stocks should show growth, some fraction of which can be removed without preventing recovery. However, there are some circumstances where an ESA-listed stock does not conform to the PBR framework, if, for example a stock is failing to recover for reasons unrelated to known direct human-caused M/SI (e.g., Cook Inlet beluga whales⁷). In such cases, the NIT criteria and following NID process may still be appropriate, but the analyst should consider how the stock’s not conforming to the underlying assumptions of PBR affects the NID analysis and whether an alternative approach is necessary.

Application of, and exceptions to, these thresholds in conducting a negligible impact analysis are discussed below.

⁶ Note that previous versions of these guidelines have been referred to as Guidelines for Assessing Marine Mammal Stocks (GAMMS).

⁷ See the 2015 SAR for the Cook Inlet beluga whale for an example of such text.

Conducting the Negligible Impact Analysis

3.2 Conducting the Negligible Impact Analysis

The following sections provide a process for conducting a NID analysis under section 101(a)(5)(E). The analysis steps are summarized in Figure 1 below.

A. *Identify Species/Stocks and Commercial Fisheries*

MMPA section 101(a)(5)(E) applies to incidental M/SI, by commercial fishing operations, of stocks that are designated as depleted because of listing under the ESA. Therefore, the analyst should use the current MMPA LOF to identify all of the U.S. commercial fisheries (including state- and federally-managed fisheries) that have incidental M/SI of ESA-listed marine mammal stocks in the appropriate region(s). The NID analysis is conducted for each commercial fishery classified as a Category I or II fishery on the current LOF due to incidental M/SI of ESA-listed marine mammals. Category III fisheries and fisheries determined to be Category I and II based solely on incidental M/SI of non-ESA-listed marine mammals have a negligible impact on stocks of ESA-listed marine mammals⁸, thus no NID analysis is conducted. The NID analysis should reference the most current SAR and final LOF for each affected stock.

B. *Identify Appropriate M/SI Annual Estimates*

For each of the ESA-listed marine mammal stocks subject to incidental M/SI by commercial fisheries, identify the associated estimates for total human-caused M/SI and commercial fisheries-related M/SI (by fishery).

B.1 *Mortality and Serious Injury Estimates*

Estimates of Total Human-Caused M/SI

The estimate of total human-caused M/SI should incorporate consideration of all sources including, where applicable: commercial fisheries; lethal take observed and recorded as resulting from activities authorized by NMFS under MMPA section 101(a)(5)(A) (Letters of Authorization) or section 104(c)(3) (research permits); subsistence harvest; ship strikes; and recreational, tribal, or foreign fisheries. This information is generally available as a 5-year

⁸ Category III fisheries are those commercial fisheries that have a remote likelihood of or no known incidental mortality or serious injury of marine mammals (MMPA section 118(c)(1)(A)(iii)). Per 50 CFR 229.2, all commercial fisheries interacting with a stock are classified as Category III fisheries for that stock if the total annual incidental M/SI of that stock across fisheries is 10% or less of the stock's PBR level. Because 10% or less of PBR is less than NIT_i (see Table 1, assuming a default NIF and F_T), NMFS considers all such Category III fisheries to have a negligible impact on that marine mammal stock. If the total annual incidental M/SI of the stock from all commercial fisheries that interact with the stock is not less than 10% of the stock's PBR level, then any given commercial fishery may be classified as a Category III fishery for that stock if the annual incidental M/SI of the stock in the given commercial fishery is 1% or less of the stock's PBR level (50 CFR 229.2). Because 1% or less of PBR is less than NIT_s (see Table 1, assuming a default NIF and F_T), any individual commercial fishery classified as a Category III fishery for a stock in this way has a negligible impact on that stock. For the purposes of section 101(a)(5)(E) of the MMPA, a commercial fishery classified as Category I and II on the LOF solely because of incidental M/SI of non-ESA-listed marine mammals, would be considered a Category III fishery for NID purposes, because the fishery has a remote likelihood of or no known incidental M/SI of ESA-listed marine mammals.

annual average M/SI estimate in the SAR, but if data from other sources are verified but not yet included in the SAR (for example, an Unusual Mortality Event has been declared but not yet reported in the most recent SAR due to the SAR publishing/revision schedule), the analyst should consider them in the analysis.

As described below, there may be circumstances when it is appropriate to use a longer or shorter time period to calculate the average annual M/SI.

Estimates of Commercial Fishery-Related M/SI

Commercial fishery-related M/SI information, by fishery, is generally available as 5-year annual average M/SI estimates in the SAR or other M/SI estimation reports (e.g., Science Center reference documents and reports, see section B.2.2 below for circumstances when may be appropriate to use a longer or shorter time period to calculate the average annual M/SI). However, it is important to note that injuries that would otherwise be classified as serious injuries if it were not for successful post-interaction mitigation (e.g., disentanglement) are not counted in the SAR against PBR, but are counted when classifying fisheries on the LOF⁹ and should be counted when comparing to NIT_t and NIT_s because including such injuries more accurately reflects the actual level of M/SI occurring incidental to commercial fishing operations, and it is uncertain whether any potential future post-interaction mitigation efforts will be successful. In addition, in some cases, estimates of commercial fishery specific M/SI may be underestimated or unavailable, but likely non-zero, as evidenced by a non-zero estimate for the total fishery related M/SI. This may occur when interactions with fishing gear cannot be easily attributed to individual fisheries. In cases where NIT_t is exceeded and commercial fishery specific M/SI estimates are unavailable or suspected to be underestimates, analysts should consider ways to assess the relative proportion of the total commercial fishery related M/SI that may be due to individual commercial fisheries listed on the LOF and/or planned mitigation measures that will ensure any future M/SI specific to the individual commercial fishery can be monitored for exceedance of NIT_s (e.g., gear marking). Finally, if, during the 3-year period of the MMPA 101(a)(5)(E) permit, NMFS anticipates changes in the nature or scope of fishing operations that would reasonably be expected to affect the M/SI rate, such as area closures or effort limitations, the analyst may incorporate that information into the analysis accordingly to account for these changes in nature or scope.

B.2 *Data Considerations*

B.2.1 *Data Sources and Best Available Science*

The NID analysis must rely on the best available science as described generally under the NOAA Information Quality Guidelines and in conformance with Administrative Procedure Act (5 U.S.C. § 500 et seq.). If verified information more recent than what is contained in the latest SAR is considered the best available science (e.g., abundance, bycatch estimates, stranding and serious injury determination reports), then the analyst should include it in the NID analysis. Although not directly applicable to NID analysis, 50 CFR 600.315(a)(6) provides informative

⁹ See further details in Assessing and Documenting the Injury Status of Marine Mammals after Successful Post-Interaction Mitigation Efforts in NMFS Procedural Directive 02-204-01: Process for Distinguishing Serious from Non-Serious Injury of Marine Mammals

criteria to consider when evaluating best available science, including relevance, inclusiveness, objectivity, transparency and openness, timeliness, verification and validation, and peer review. It is generally inadvisable to include raw stranding or observer data that have not yet been evaluated for serious injury determinations or, in the case of stranding data, not yet evaluated to determine their validity (e.g. in the case where there are multiple reports of the same interaction). If data beyond what are contained in the SAR are considered in the NID analysis, Science Center staff should be engaged in conducting an evaluation of the data in accordance with established policies (e.g., the NMFS Procedural Directive 02-204-01: Process for Distinguishing Serious from Non-Serious Injury of Marine Mammals; NMFS 2014).

The analysis should use extrapolated M/SI estimates, when available, rather than the number of observed or reported M/SI, unless there is a sound reason not to (for example, extrapolated estimates are not available, and observed or reported M/SI have been verified and reviewed through the serious injury determination process). If extrapolated estimates have yet to be calculated, Science Center staff should be engaged to develop estimates for use in the NID analysis, if practicable. While these estimates may not be “final” and may be different from estimates eventually incorporated into a SAR, they may represent an improvement over the minimum number of observed M/SI. If extrapolated estimates cannot be calculated, the analysis should use observed M/SI. If extrapolated estimates are available but are not being used (e.g., because of significant issues with the data or analysis), the reason should be clearly stated. The analyst should be cautious when using un-extrapolated estimates, since they are known to be underestimates. This would be particularly important if the un-extrapolated estimate falls just below the applicable negligible impact threshold.

B.2.2 *Data Timeframe*

The MMPA does not stipulate the number of years of data to use in the negligible impact analysis. In general, the analyst should consider incidental M/SI over the most recent 5-year period (consistent with the LOF, Guidelines for Preparing SARs, and SARs). However, there may be circumstances when it is appropriate to use a time period longer or shorter than 5 years to calculate the average annual M/SI for a particular commercial fishery or other sources of M/SI to increase precision. For example, pooling more years may be necessary to reduce bias and increase precision of M/SI estimates from rare take events (Carretta and Moore 2014). Pooling over fewer years may be more appropriate if something has significantly changed (e.g., fisheries operations, implementation of a TRP) that has likely affected M/SI rates. Whatever timeframe used, the NID analysis should clearly explain the rationale.

C. *Calculate Negligible Impact Thresholds*

For each affected depleted stock identified, the analyst should calculate the NIT_t , and NIT_s , if needed, according to the formulae described above. If PBR is known, this is simply a matter of using the same N_{min} and R_{max} used in the PBR calculation, but replacing the recovery factor with the appropriate NIF (i.e., 0.10 for NIT_t and 0.013 for NIT_s). In rare cases where the default NIF is not used, the document supporting the NID analysis should describe why the default NIF was not appropriate and provide a strong justification for the use of an alternative NIF. Note that any alternative NIF value used in the calculation of NIT_t should not exceed the value of the F_r used in the calculation of PBR for the stock being considered (see section 5.3)

For stocks where PBR is not known because an estimate of N_{\min} does not exist or is not included in the SAR, the analyst should work with NMFS experts to develop alternative methods to estimate an N_{\min} for use in calculating negligible impact thresholds. For example, alternative approaches might include the use of older or spatially limited abundance estimates, documented sightings, or density extrapolations. Whatever alternative N_{\min} is selected should be reviewed by NMFS experts on that species or stock to evaluate whether such an N_{\min} is appropriate. Use of an alternative N_{\min} must be well described and justified in the NID analysis.

If there are no appropriate alternative approaches to estimate N_{\min} , an evaluation of negligible impact may still be possible. See section D.1 below for details on evaluation of negligible impact without an N_{\min} .

D. *Compare M/SI Estimates to Negligible Impact Thresholds*

Similar to the procedures for developing the annual LOF, the analyst should conduct a two-tier NID analysis. Tier 1 considers the total human-caused M/SI for a particular stock, while Tier 2 considers each individual commercial fishery-specific M/SI for a particular stock.

- Tier 1: For each affected stock, compare the total human-caused average annual M/SI estimate from all sources to NIT_t . If the total M/SI estimate is less than or equal to NIT_t , then all commercial fisheries are considered to have a negligible impact on that stock. If the total M/SI estimate exceeds NIT_t , conduct the Tier 2 analysis.
- Tier 2: Evaluate each individual commercial fishery's average annual M/SI of the stock relative to the stock's NIT_s . If an individual commercial fishery's M/SI is less than or equal to NIT_s , then the individual commercial fishery is considered to have a negligible impact on that stock. If the estimate exceeds NIT_s , then the individual commercial fishery is considered to have a non-negligible impact on that stock.

For transboundary, migratory stocks that, if available, may have PBR thus apportioned (total PBR is based on the fraction of time the stock spends in U.S. waters), the analyst should go directly to the Tier 2 analysis, and compare individual commercial fisheries to the NIT_s threshold because we cannot know for certain the M/SI that occurs outside of U.S. waters; therefore, we assume that total M/SI exceeds NIT_t and proceed to the NIT_s analysis.

There may be circumstances, such as when the M/SI estimate is slightly below or slightly above the negligible impact threshold(s), where the analyst may deviate from the determination that would be dictated by strictly adhering to the NIT thresholds. Such deviations may be due to the consideration of additional factors affecting the likelihood or impact of the incidental M/SI such as data uncertainty and reliability, information on the population trend, and expected trends in commercial fisheries impacts including implemented or concurrently implemented management measures aimed at reducing M/SI below the threshold. For example, if the M/SI estimate is slightly above the NIT threshold, but there is a reasonable expectation that a closure or a restriction of a portion of a commercial fishery will lead to a reduction of M/SI to below the threshold within the timeframe of the authorization, NMFS may make a NID. In such circumstances, NMFS should provide the rationale in the document supporting the NID.

The NID documentation should discuss the evaluation and outcome for each commercial fishery

and stock.

D.1 *Evaluating Negligible Impact without an N_{min}*

If no estimate of N_{min} is available, the NIT cannot be calculated directly. However, in some circumstances it may be possible to determine whether the estimated M/SI is below the applicable NIT, to inform the determination process.

Using the NIT_t formula and the default NIF, the threshold N_{min} necessary for the M/SI to be below the applicable threshold can be calculated. First, solve the NIT_t formula for N_{min} :

$$N_{min} = \frac{20NIT_t}{R_{max}}$$

Then substitute the estimate of total human-caused M/SI for NIT_t :

$$N_{min} = \frac{20 \cdot \text{Total human caused M/SI}}{R_{max}}$$

The analyst should then evaluate available information to determine whether the minimum population size is likely to exceed the threshold N_{min} for NIT_t . If there is reasonable assurance that the stock size is equal to or greater than the threshold N_{min} for NIT_t , then the estimated total human-caused M/SI is likely to be below the NIT_t and all commercial fisheries may be considered to have a negligible impact on that stock.

If there is not reasonable assurance that the minimum population size is likely to exceed the threshold N_{min} for NIT_t , then evaluate individual commercial fisheries. For each commercial fishery, the analyst should solve the NIT_s formula for N_{min} and substitute the estimate of commercial fishery-related M/SI for NIT_s . Using the default NIF for NIT_s , this would be:

$$N_{min} = \frac{2000NIT_s}{13R_{max}}$$

$$N_{min} = \frac{2000 \cdot \text{Individual fisheries related M/SI}}{13R_{max}}$$

Similar to above, the analyst should evaluate available information to determine whether the minimum population size is likely to exceed the threshold N_{min} for NIT_s . If there is reasonable assurance that the stock size is equal to or greater than the threshold N_{min} for NIT_s , then the commercial fishery-specific estimate of M/SI is likely to be below the NIT_s , and the commercial fishery may be considered to have a negligible impact on the stock.

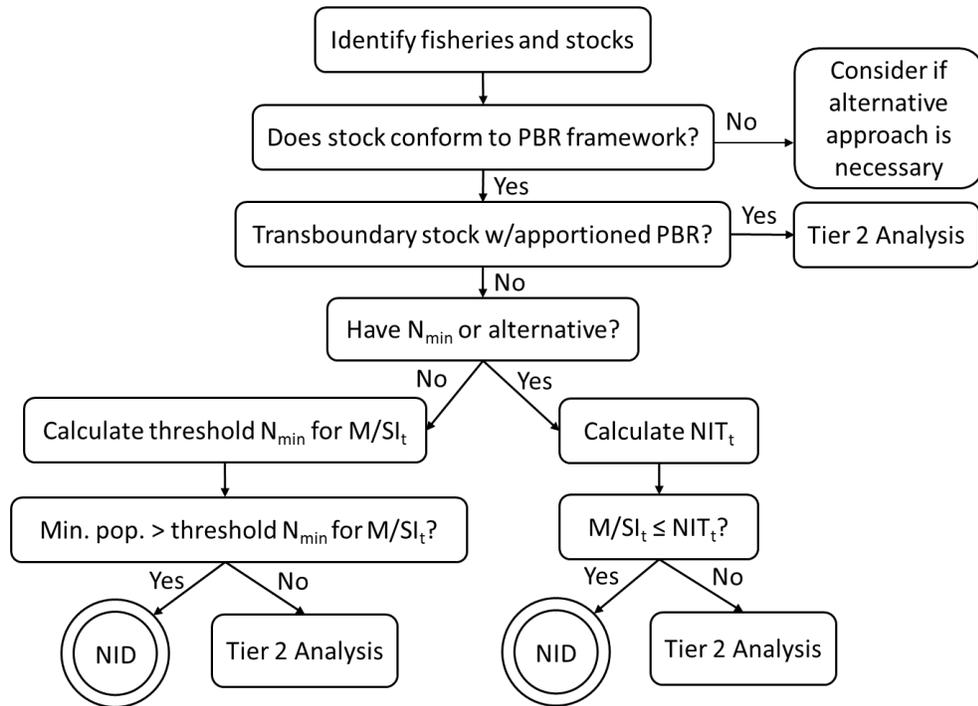
E. *Overall Determination*

The NID analysis should summarize the outcome of the evaluation of each stock. If a commercial fishery has a negligible impact across all of the ESA-listed stocks for which it has

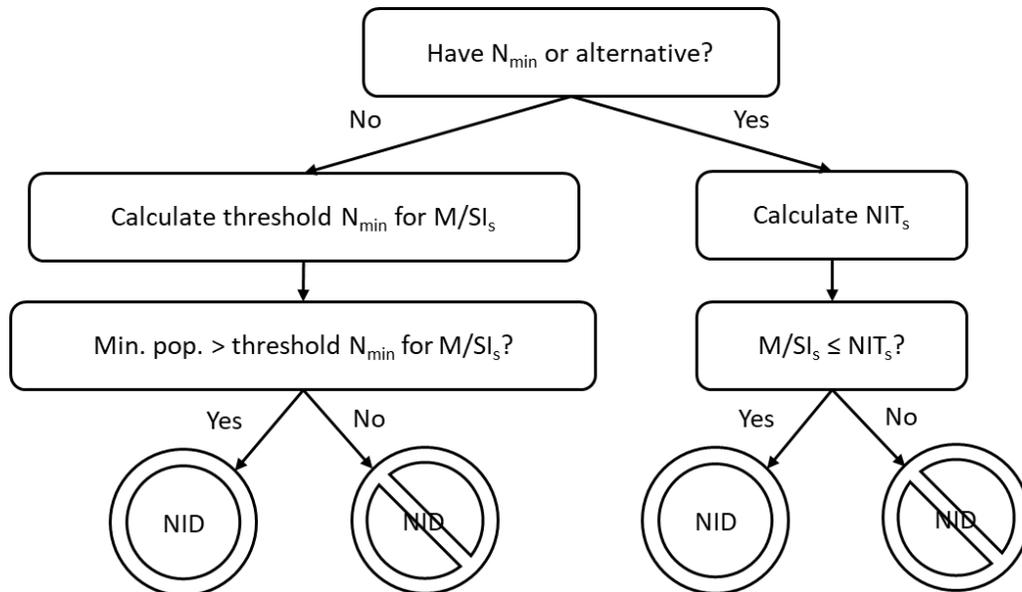
record of incidental M/SI, then the first of three findings necessary for issuance of an MMPA section 101(a)(5)(E) permit to the commercial fishery has been met. If a fishery has a non-negligible impact on any of the analyzed ESA-listed stocks, then we will not issue an MMPA section 101(a)(5)(E) permit to the commercial fishery.

Figure 1. Flowchart for conducting a NID analysis under section 101(a)(5)(E).

Tier 1 Analysis



Tier 2 Analysis



IV. Relationship of Negligible Impact Thresholds to Other Thresholds

4.1 MMPA Potential Biological Removal

PBR is calculated and reported in each SAR and is the basis for managing fisheries interactions under MMPA section 118. PBR calculations generally use default F_r of 0.1 for an endangered species and 0.5 for a threatened species (NMFS 2016). The NIT are calculated in the same way as PBR but use a NIF instead of a recovery factor. The default NIF is the same for both endangered and threatened species because the NIF is based on the maximum allowable percent delay in time to recovery for theoretical marine mammal populations (see Section 5.3). In contrast, F_r for PBR calculation account for delay in recovery time (for endangered stocks) as well as other considerations such as stock status and uncertainty in mortality estimates, and can vary depending upon the specifics of the situation. For example, after considering trend estimates and probability of decreasing trends, the PBRs for some harbor seal stocks in Alaska are calculated using recovery factors other than the default 0.5 (0.7 for five stocks, 0.3 for two stocks). For the NID calculation, the analyst would typically use a default NIF of 0.1 for NIT_t and 0.013 for NIT_s , regardless of population specific trend. See *Table 1* below for a comparison of NIT thresholds to PBR and F_r for endangered and threatened species.

4.2 MMPA Zero Mortality Rate Goal (ZMRG)

Section 118(a)(1) of the MMPA specifies the goal of reducing incidental M/SI of marine mammals occurring in the course of commercial fishing operations to insignificant levels

approaching a zero M/SI rate. NMFS established a threshold level of M/SI that would meet this goal, defining an “insignificance threshold” as 10% of a stock’s PBR level (50 CFR 229.2; 69 FR 43338, July 20, 2004). This goal is expected to be achieved through TRPs: section 118(f)(2) of the MMPA indicates that the short-term goal of a TRP shall be to reduce M/SI incidental to commercial fisheries to below PBR, and the long-term goal shall be to reduce M/SI to insignificant levels approaching a zero M/SI rate, taking into account the economics of the fishery, the availability of existing technology, and existing State or regional fishery management plans.

Section 118(a)(2) indicates that the provisions of both sections 118 and 101(a)(5)(E) apply in the case of incidental taking of marine mammals from species or stocks designated as depleted on the basis of their ESA listing. This supports the idea that there is a separate, though complementary, standard in each section of the statutes.

Table 1 outlines the relationship between NIT_i , NIT_s , and other MMPA thresholds for endangered and threatened species. The negligible impact thresholds represent larger portions of an endangered compared to a threatened species’ PBR because the default NIF values were selected to be protective of endangered species, which by default, have a smaller F_r . That is, the thresholds are designed to be protective of the worst case scenario (i.e., endangered status), which when applied to threatened stocks, results in limiting the proportion of the stock affected to that which would be allowed for a smaller, endangered stock.

Table 1. Comparison of negligible impact thresholds to other MMPA thresholds.

	Endangered species	Threatened species
Default F_r for PBR	0.1	0.5
ZMRG % of PBR	10%	10%
Default NIF for NIT_t	0.1	0.1
NIT_t % of PBR	100%	20%
Default NIF for NIT_s	0.013	0.013
NIT_s % of PBR	13%	2.6%

4.3 ESA Jeopardy Standard

ESA section 7(a)(2) requires Federal agencies to consult with NMFS and the U.S. Fish and Wildlife Service (FWS) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat. Joint NMFS and FWS regulations (50 CFR 402.02) define “jeopardize the continued existence of” as “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.”

ESA section 7(b)(4) and the joint regulations (50 CFR 402.14(i)(1)) require NMFS or FWS (as applicable to the species) to provide an incidental take statement with a biological opinion if it concludes that an action (or implementation of any reasonable and prudent alternatives) and the resulting incidental take of listed species will not violate ESA section 7(a)(2) (i.e., is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat). Where an endangered or threatened marine mammal species is involved, ESA section 7(b)(4) and the joint regulations also require that NMFS or FWS must conclude that any incidental take is authorized pursuant to section 101(a)(5) of the MMPA in order to provide an incidental take statement. The conclusion that an action and the resulting incidental take of an ESA-listed species will not violate ESA section 7(a)(2) and the conclusion regarding negligible impact under MMPA 101(a)(5)(E) are separate and the applicable standards are not the same; therefore, a conclusion of negligible impact under MMPA section 101(a)(5)(E) may inform a conclusion regarding jeopardy under ESA section 7(a)(2), but it is not necessarily determinative of that decision. Similarly, a conclusion regarding jeopardy under ESA section 7(a)(2) may inform a conclusion of negligible impact under MMPA section 101(a)(5)(E), but is not necessarily determinative of that decision.

V. Additional Background and Rationale

5.1 History of NID Criteria

As required by the 1988 amendments to the MMPA, the Commission submitted to NMFS guidelines¹⁰ to govern the incidental taking of marine mammals during the course of commercial fishing operations. In those guidelines, the Commission recommended NMFS determine

¹⁰ Letter from John Twiss, Executive Director of the Marine Mammal Commission to Dr. William Fox, NMFS Assistant Administrator, dated 12 July 1990.

negligible impact for ESA-listed marine mammals if the M/SI incidental to commercial fishing operations, “by itself and in combination with other sources of mortality,” would cause no more than a 10% increase in the time to recovery. The Commission’s recommendation was a quantitative approach to assessing negligible impact; however, it did not identify what limit on M/SI would delay a stock’s recovery by no more than 10%.

NMFS investigated such a limit of annual M/SI while implementing the 1994 MMPA amendments. At a June 1994 workshop convened to develop initial guidance for preparation of marine mammal SARs, participants noted that reserving 90% of net annual production of endangered stocks of marine mammals for recovery was appropriate “to allow stocks to recover at near maximum rates, and to minimize the probability that naturally occurring stochastic mortality would result in extinction of the stock” (Barlow *et al.* 1995). Workshop participants also noted that “authorized levels of human-caused mortality should increase recovery time of endangered stocks by no more than 10 percent” (Barlow *et al.* 1995), where “recovery” is defined as a small population recovering to the MNPL. MNPL is the lower limit of the optimum sustainable population level (Barlow *et al.* 1995). Simulations showed that a PBR level calculated with an F_r of approximately 0.15 would achieve a high probability (0.95) of not delaying time to recovery by more than 10% (Wade 1998). Workshop participants recommended that PBR for endangered stocks be calculated with a F_r value equal to 0.1 (the smallest value allowed by the MMPA, which specifies the F_r must range from 0.1 to 1.0). This value was set lower than the 0.15 indicated by the simulations (which assumed no substantial biases in the relevant data) in order to provide additional assurance that recovery would be delayed by no more than 10% if there existed potential unknown biases or uncertainties (Barlow *et al.* 1995). Accordingly, a default F_r of 0.1 is used in the PBR equation for endangered stocks of marine mammals (Barlow *et al.* 1995). Thus, when total human-caused M/SI of these stocks was limited to no more than the stock’s PBR level, such M/SI would not cause more than a 10% delay¹¹ in the recovery of the stock.

NMFS understood that the workshop participants were recommending that total human-caused M/SI limited to a level no greater than a PBR calculated with F_r of 0.1 would be negligible; however, MMPA section 101(a)(5)(E) required a determination related specifically to the impact of M/SI incidental to commercial fishing rather than incidental to all human activities. Accordingly, NMFS proposed, and subsequently used, 10% of any stock’s PBR as the upper limit of M/SI incidental to commercial fishing in making the first NIDs¹² (proposed rule: 60 FR 31666, June 16, 1995; interim final permits: 60 FR 45399, August 31, 1995). The rationale for this approach was that a negligible (or insignificant) level of commercial fishery-related M/SI should be only a small portion of the maximum level of M/SI a stock could sustain.

In the *Federal Register* notice for the interim final permits (60 FR 45399, August 31, 1995), NMFS noted that a strict application of 10% of PBR was not appropriate in some cases, and such

¹¹ As noted above, a F_r of 0.15 would achieve a high probability (0.95) of not delaying time to recovery by more than 10% (Wade 1998); a PBR calculated with a F_r of 0.1 would have a high probability of not delaying recovery time by approximately 5.5%.

¹² In 1995, NMFS used 10% of PBR as an upper limit of M/SI that could be considered negligible and that could also be considered an insignificant level of incidental M/SI approaching a zero M/SI rate. The latter of these is the “target” level of M/SI that NMFS applied to the MMPA’s Zero Mortality Rate Goal (69 FR 43338, July 20, 2004). See section 4.2 for more information on this goal.

a criterion would not be the only factor in evaluating whether a particular level of M/SI would be considered negligible. The notice indicated that factors such as population trend and reliability of abundance and M/SI estimates should also be considered. In addition, NMFS announced that, consistent with the provisions of MMPA section 101(a)(5)(E)(ii) and codified at 50 CFR 229.20(d), permits were not required for commercial fisheries involving a remote likelihood of or no known incidental taking of marine mammals.

On December 30, 1998 (63 FR 71894), NMFS extended existing MMPA section 101(a)(5)(E) permits until June 30, 1999 and also announced that it was reviewing the criteria for issuance of permits and requested public comments on whether the criteria initially used in the 1995 determinations were adequate or whether changes should be made. No comments were received. On May 27, 1999 (64 FR 28800), NMFS proposed issuing permits for those commercial fisheries that had negligible impacts on ESA-listed marine mammal stocks for a period of three years. The notice announced that, based on internal review, NMFS would use different criteria for making a NID under section 101(a)(5)(E):

- 1) The threshold for initial determination will remain at 0.1 PBR. If total human-related serious injuries and mortalities are less than 0.1 PBR, all commercial fisheries may be permitted;
- 2) If total human-related serious injuries and mortalities are greater than PBR, and commercial fisheries-related mortality is less than 0.1 PBR, individual commercial fisheries may be permitted if management measures are being taken to address non-fisheries-related serious injuries and mortalities. When commercial fisheries-related serious injury and mortality is less than 10% of the total, the appropriate management action is to address components that account for the major portion of the total;
- 3) If total commercial fisheries-related serious injuries and mortalities are greater than 0.1 PBR and less than PBR and the population is stable or increasing, commercial fisheries may be permitted subject to individual review and certainty of data. Although the PBR level has been set up as a conservative standard that will allow recovery of a stock, there are reasons for individually reviewing commercial fisheries if serious injuries and mortalities are above the threshold level. First, increases in permitted serious injuries and mortalities should be carefully considered. Second, as serious injuries and mortalities approach the PBR level, uncertainties in elements such as population size, reproductive rates, and fisheries-related mortalities become more important;
- 4) If the population abundance of a stock is declining, the threshold level of 0.1 PBR will continue to be used. If a population is declining despite limitations on human-related serious injuries and mortalities below the PBR level, a more conservative criterion is warranted; or
- 5) If total commercial fisheries related serious injuries and mortalities are greater than PBR, permits may not be issued.

5.2 Improving and Formalizing the NID Criteria

The preceding five criteria, referred to as the NID criteria, were used by NMFS since 1999 in making NIDs pursuant to MMPA section 101(a)(5)(E). While NMFS used these criteria for

analyses, they were never formalized as an official agency policy in the Policy Directive System. The criteria were quantitative, accounted for multiple scenarios, and referenced PBR, which is a familiar and well-established concept. However, the following issues proved problematic when conducting NID analyses using them:

- PBR is undetermined for some stocks, largely due to a lack of or an outdated minimum abundance estimate, making a NID analysis using PBR-based criteria challenging.
- The criteria did not cover all scenarios of total human-caused M/SI and commercial fisheries M/SI with respect to PBR. For example, there have been cases where total human-caused M/SI was between PBR and 0.1 PBR and commercial fisheries-related mortality was less than 0.1 PBR.
- Some elements of the criteria were ambiguous. For example, Criterion 4 specifies that the 0.1 PBR threshold “will continue to be used,” but it is unclear whether the threshold applies to total human-caused M/SI or only commercial fisheries-related M/SI. Additionally Criterion 4’s two sentences could be interpreted as contradicting each other, as the first specifies a threshold for declining stocks (0.1 PBR) and the second notes that a “more conservative criterion is warranted” for some declining stocks.
- Because an endangered species’ PBR calculated with a F_r value of 0.1 would cause no more than a 10% delay in the recovery of the stock and thus meets the negligible impact threshold recommended by the Commission in 1990, Criterion 1’s threshold of 0.1 PBR for total human-caused M/SI is up to an order of magnitude more conservative than the Commission’s recommendation.
- NMFS may not have the ability to manage non-fisheries-related sources of M/SI, as required under Criterion 2.

Both NMFS and the Commission recognized that the NID criteria needed to be revised. In its letter to NMFS commenting on the proposed MMPA section 101(a)(5)(E) permit for vessels registered in the California thresher shark/swordfish drift gillnet fishery and the Washington/Oregon/California sablefish pot fishery (78 FR 26751, May 8, 2013), the Commission noted that the criteria for making a negligible impact determination under section 101(a)(5)(E) of the MMPA are not well defined. The Commission recommended that NMFS, in consultation with the Commission, review the NID criteria and their application, and take the necessary steps to establish improved criteria that are clear, logical, internally consistent, and cover all probable scenarios.

In response to this recommendation, NMFS and the Commission convened an internal workshop in spring 2015 to revisit the NID criteria and review the NMFS procedures for making NIDs under MMPA section 101(a)(5)(E). NMFS developed the process as set forth in this directive based on the discussions from that workshop and subsequent internal NMFS discussions.

5.3 Development of the Two NIT Thresholds

To develop the negligible impact thresholds, NMFS evaluated PBR recovery factors and their corresponding delays in time to recovery, using identical simulation methods as those done in Wade (1998). NMFS also performed additional simulation iterations to explore what values of NIF resulted in delays in recovery time of less than 5%, a range below that considered by Wade (1998). Figure 1 summarizes the results of the simulations.

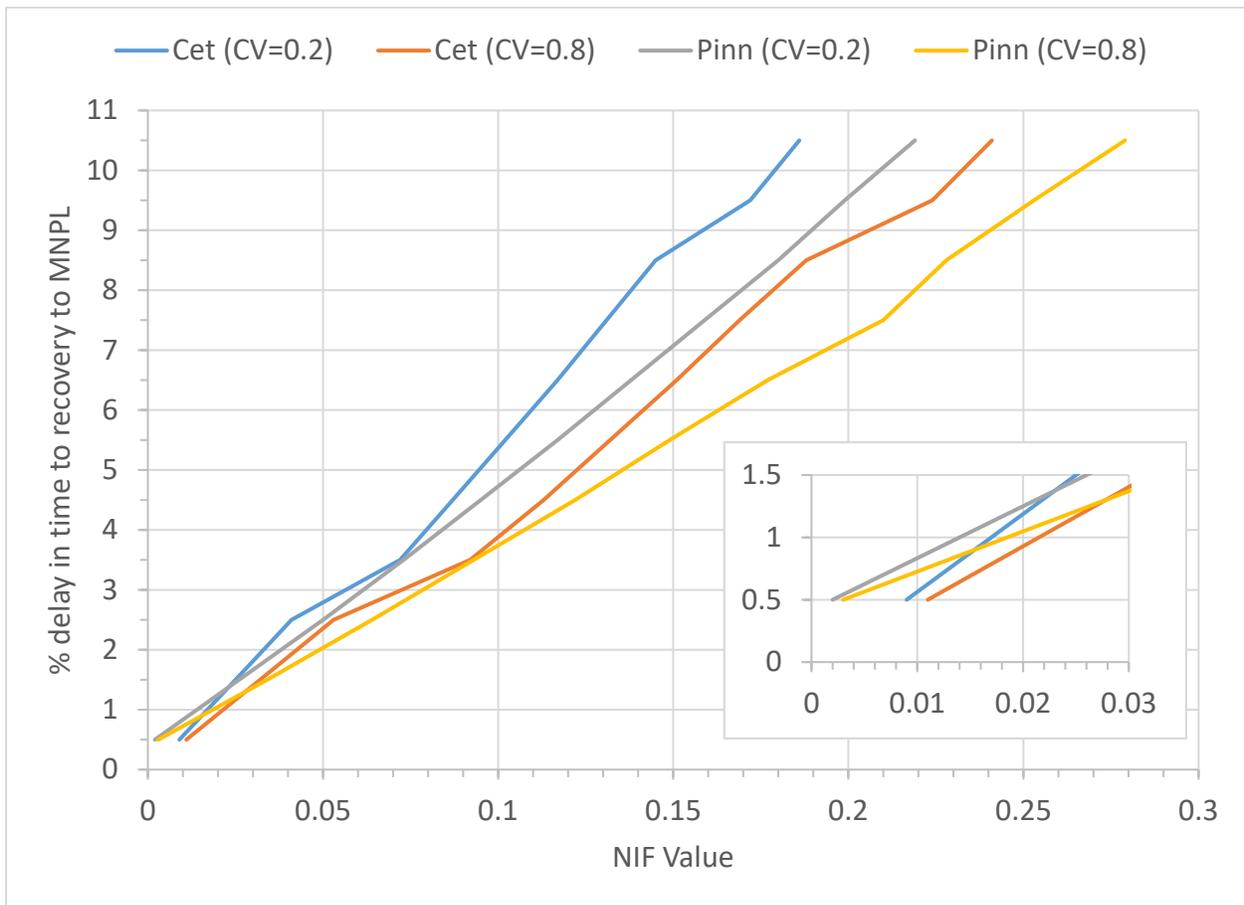


Figure 1. Percent delay in a population’s time to recovery to MNPL resulting from removals at threshold levels calculated with various NIF values, for cetaceans ($R_{max} = 0.04$) and pinnipeds ($R_{max} = 0.12$) with a low (0.2) and high (0.8) coefficient of variation (CV) for their abundance estimates. Inset depicts range of NIF values resulting in delays in recovery near 1%.

The results indicate that using an NIF of 0.18 in the calculation of NIT_t will ensure no more than a 10% delay in time to recovery, whereas using a NIF of 0.013 in the calculation of NIT_s will ensure no single commercial fishery results in no more than a 1% delay in time to recovery, assuming no biases in the estimates of abundance, M/SI, or R_{max} (Figure 1). The 10% delay in time to recovery was selected based on the Commission’s initial recommendation to NMFS regarding negligible impacts from commercial fisheries on ESA-listed marine mammals, as well as the original PBR framework. The 1% delay in time to recovery was selected to provide reasonable assurance that the contribution of M/SI from any individual commercial fishery to the Total M/SI would not have a significant effect on the population dynamics of any marine mammal stock. Furthermore, any delay in recovery of 1% or less would be virtually undetectable given natural variation in population trajectories due to random stochasticity and environmental factors. That is, it would be virtually impossible to detect the difference between a population recovering with no human-caused mortality and one recovering with human-caused mortality at a level expected to cause a 1% delay or less in the time to recovery.

To be precautionary, as a default NMFS decided to use the smallest NIF value among the four

simulated populations (cetaceans and pinnipeds, each with a high or low CV for their abundance estimate) that corresponded with the selected percent delay in time to recovery. For example, 10% delay corresponds with a NIF of 0.27 for pinnipeds with a 0.8 CV of abundance estimate, while the NIF of 0.18 corresponds with a 6.5% delay in time to recovery for them. Additionally, for simplicity NMFS chose just one default NIF value for these populations, rather than have separate NIFs for different populations or taxa. However, NIF values can be adjusted to accommodate additional information and to allow for management discretion as appropriate and consistent with the goals of the MMPA so long as: (a) there is strong justification for why an alternative NIF is more appropriate and, (b) the alternative NIF used in the calculation of NIT_t does not exceed the value of the F_r used in the calculation of PBR for that stock. NMFS reduced F_r from 0.15 to 0.1 in the calculation of PBR for endangered species to provide additional assurance of success in the face of potential unknown biases or uncertainties (see Section 5.1). Using a NIF in the calculation of NIT_t that is larger than the F_r in the calculation of PBR would result in NIT_t exceeding PBR for an endangered stock. To avoid this situation, NMFS reduced the default NIF from 0.18 to 0.1 in the calculation of the metric used for the first tier analysis (NIT_t).

NMFS Guidelines for Preparing SARs (NMFS 2016) state that if a transboundary stock is migratory and it is reasonable to do so, the fraction of time the stock spends in U.S. waters should be noted, and the PBR for U.S. fisheries should be apportioned from the total PBR based on this fraction. However, the total human-caused mortality is not pro-rated, which can result in NIT_t being greater than PBR.

5.4 References

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5.5 List of Acronyms and Abbreviations

CV	Coefficient of Variation
ESA	Endangered Species Act
F_r	Recovery factor (in the PBR equation)
FWS	U.S. Fish and Wildlife Service
LOF	List of Fisheries
M/SI	Mortality and serious injury
MMPA	Marine Mammal Protection Act
MNPL	Maximum net productivity level
NID	Negligible impact determination
NIF	Negligible impact factor (in the NIT equation)
NIT	Negligible impact threshold
NIT_s	Negligible impact threshold – single
NIT_t	Negligible impact threshold – total
N_{min}	Minimum abundance estimate
PBR	Potential biological removal
R_{max}	Maximum net productivity rate
SAR	Stock assessment report
TRP	Take Reduction Plan