DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 217

[Docket No. 240410–0195]

RIN 0648–BL68

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys in the Gulf of Mexico

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: NMFS has reassessed the statutorily mandated findings supporting its January 19, 2021 final rule, ''Regulations Governing Taking Marine Mammals Incidental to Geophysical Survey Activities in the Gulf of Mexico,'' issued pursuant to the Marine Mammal Protection Act (MMPA), as the estimates of incidental take of marine mammals anticipated from the activities analyzed for the 2021 final rule were erroneous. NMFS has corrected this error and considered and incorporated other newly available and pertinent information relevant to the analyses supporting some of the findings in the 2021 final rule and the taking allowable under the regulations. There are no changes to the specified activities or the specified geographical region in which those activities would be conducted, nor to the original 5-year period of effectiveness. In light of the new information, NMFS presents new analyses supporting our affirmance of the negligible impact determinations for all species, and affirms that the existing regulations, which contain mitigation, monitoring, and reporting requirements, are consistent with the ''least practicable adverse impact (LPAI) standard'' of the MMPA.

DATES: Effective from May 24, 2024 through April 19, 2026.

ADDRESSES: Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.* In case of problems accessing these documents, please call the contact listed below.

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Purpose and Need for Regulatory Action

On January 19, 2021 (86 FR 5322), in response to a petition request from the Bureau of Ocean Energy Management (BOEM), NMFS issued a final rule under the MMPA, 16 U.S.C. 1361 *et seq.,* for regulations governing the take of marine mammals incidental to the conduct of geophysical survey activities in the Gulf of Mexico (GOM). This incidental take regulation (ITR), which became effective on April 19, 2021, established a framework to allow for the issuance of Letters of Authorization (LOA) to authorize take by individual survey operators (50 CFR 216.106; 86 FR 5322 (January 19, 2021)). Take is expected to occur by Level A and/or Level B harassment incidental to use of active sound sources as described below.

Errors in the estimates of the maximum annual and 5-year take numbers, discovered during implementation of the ITR, preclude NMFS from issuing LOAs for the full amount of activity described by BOEM in the petition (as revised) and intended to be covered under the ITR. As a result, the utility of the ITR has been limited. NMFS has produced corrected take estimates, including updates to the best available science incorporated into the take estimation process (*i.e.,* new marine mammal density information). Changes to the take numbers required additional analysis to ensure that the necessary statutory findings can still be made. This rule revises NMFS' analysis and affirms the statutory findings that underlie its January 19, 2021, final rule (86 FR 5322), based on consideration of information that corrects and updates the take estimates that were considered for the 2021 final rule.

Legal Authority for the Action

Section 101(a)(5)(A) of the MMPA (16 U.S.C. 1371(a)(5)(A)) directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region for up to 5 years if, after notice and public comment, the agency makes certain findings and issues regulations that set forth permissible methods of taking pursuant to that activity and other means of effecting the LPAI on the affected species or stocks and their habitat (see the discussion below in the Mitigation section), as well as monitoring and reporting requirements. Under NMFS' implementing regulations for section 101(a)(5)(A), NMFS issues LOAs to individuals (including entities) seeking authorization for take under the activity-specific incidental take regulations (50 CFR 216.106).

Summary of Major Provisions Within the Regulations

Following is a summary of the major provisions of the current ITR regarding geophysical survey activities, which NMFS reaffirms through this rulemaking. The regulations contain requirements for mitigation, monitoring, and reporting, including:

- Standard detection-based mitigation measures, including use of visual and acoustic observation to detect marine mammals and shut down acoustic sources in certain circumstances;
- A time-area restriction designed to avoid effects to bottlenose dolphins in times and places believed to be of particular importance;
- Vessel strike avoidance measures; and
- Monitoring and reporting requirements.

See 50 CFR 217.180 *et seq.* The ITR continues to govern and allow for the issuance of LOAs for the take of marine mammals incidental to the specified activity (which is unchanged from what was described in the 2021 final rule), within the upper bounds of take evaluated herein.

Background

The MMPA prohibits the ''take'' of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other means of effecting the LPAI on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the

availability of the species or stocks for taking for certain subsistence uses (referred to as ''mitigation''); and set forth requirements pertaining to the monitoring and reporting of the takings. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

On October 17, 2016, BOEM submitted a revised petition [1] to NMFS for rulemaking under section 101(a)(5)(A) of the MMPA to authorize take of marine mammals incidental to conducting geophysical surveys during oil and gas industry exploration and development activities in the GOM. This revised petition was deemed adequate and complete based on NMFS' implementing regulations at 50 CFR 216.104.

NMFS published a notice of proposed rulemaking in the **Federal Register** for a 60-day public review on June 22, 2018 (83 FR 29212) (''2018 proposed rule''). All comments received are available online at *www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.*

On February 24, 2020, BOEM submitted a notice to NMFS of its ''updated proposed action and action area for the ongoing [ITR] process[.]'' This update consisted of removal of the area then under a Congressional leasing moratorium under the Gulf of Mexico Energy Security Act (GOMESA) (Sec. 104, Pub. L. 109–432) [2] from consideration in the ITR. BOEM stated in its notice that survey activities are not likely to be proposed within the area subject to the leasing moratorium during the 5-year period of effectiveness for the ITR and, therefore, that the ''number, type, and effects of any such proposed [survey] activities are simply too speculative and uncertain for BOEM to predict or meaningfully analyze.'' Based on this updated scope, BOEM on March 26, 2020, submitted revised projections of expected activity levels and corresponding changes to modeled acoustic exposure numbers (*i.e.,* take estimates). BOEM's notice and updated information are available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.* NMFS incorporated this change in scope with the revised take estimates and issued a final rule and ITR on January 19, 2021 (86 FR 5322) (''2021 final rule'' or ''2021 ITR''), which became effective on April 19, 2021. Consistent with section 101(a)(5)(A) and NMFS' implementing regulations, NMFS may issue LOAs under the 2021 ITR for a period of 5 years.

While processing requests for individual LOAs under the ITR using the methodology for developing LOA-specific take numbers presented in the 2021 final rule, NMFS discovered that the estimated maximum annual incidental take and estimated total 5-year take from all survey activities that BOEM projected for its revised scope appeared to be in error, in that maximum annual incidental take was likely to be reached much sooner than anticipated for some species based on the level of activity described in BOEM's petition as revised in 2020. NMFS contacted BOEM regarding this, and BOEM determined that, when it reduced its scope of specified activity in March 2020 by removing the GOMESA moratorium area from its proposed action, it underestimated the level of take by inadvertently factoring species density estimates into its revised exposure estimates twice. Generally, this miscalculation caused BOEM to underestimate the total predicted exposures of species from all survey activities in its revision to the petition, most pronouncedly for those species with the lowest densities (*e.g.,* killer whales).

BOEM provided NMFS with an explanation of the miscalculation with regard to its incidental take estimate and revised take estimates, which is available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.* See the Estimated Take section for additional discussion. NMFS then determined it would conduct a rulemaking to analyze the revised take estimates and, if appropriate, revise its incidental take rule accordingly. On January 5, 2023, NMFS published a proposed rule, requesting comments for a period of 30 days on its revised negligible impact analyses and proposed findings and proposed retention of the existing regulations as consistent with the MMPA's LPAI standard (88 FR 916, January 5, 2023).

Our proposed and final rule together provide analysis of the same activities and activity levels considered for the 2021 final rule, for the original 5-year period, and utilize the same modeling methodology described in the 2021 final rule. We incorporate the best available information, including consideration of specific new information that has become available since the 2021 rule was published, and updates to currently available marine mammal density information. We also incorporate expanded modeling results that estimate take utilizing the existing methodology but also consider the effects of using smaller (relative to the proxy source originally defined by BOEM) airgun arrays currently prevalent, as evidenced by LOA applications received by NMFS to date (see *https://www.fisheries.noaa.gov/issued-letters-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*).

There are no changes to the nature or level of the specified activities within or across years or to the geographic scope of the activity. Based on our assessment of the specified activity in light of the revised take estimates and other new information, we have determined that the 2021 ITR at 50 CFR 217.180 *et seq.,* which include the required mitigation and associated monitoring measures, satisfy the MMPA requirement to prescribe the means of effecting the LPAI on the affected species or stocks and their habitat, and therefore, do not change those regulations, nor do we change the requirements pertaining to monitoring and reporting. This rulemaking supplements the information supporting the 2021 incidental take rule. This rule does not change the existing April 19, 2026, expiration date of the 2021 ITR. In addition, NMFS' demarcation of ''years'' under the 2021 final rule for purposes of accounting for authorized take (*e.g.,* Year 1 under the rule extended from April 19, 2021, through April 18, 2022) remains unchanged under this rule.

As to the negligible impact findings, the revised take numbers remain within those previously analyzed for most species. (Take numbers increased compared with the 2021 final rule for 4 species: Rice's whale (formerly Bryde's whale), Fraser's dolphin, rough-toothed dolphin, and striped dolphin. See tables 5 and 6. Because of the new category of ''blackfish,'' there is uncertainty on any change in the take numbers for the individual species that comprise that category, though collectively the take numbers for all species in the blackfish category remain within the levels previously analyzed.) However, we revisited the risk assessment framework used in analyses for the 2021 final rule for all species, as elements of the framework are dependent on information related to stock abundance,

[1] In the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018), NMFS provided a brief history of prior petitions received from BOEM's predecessor agencies.

[2] The Congressional moratorium in GOMESA was in place until June 30, 2022. On September 8, 2020, the President withdrew, under section 12 of the Outer Continental Shelf Lands Act, the same area covered by the prior GOMESA moratorium from disposition by leasing for 10 years, beginning on July 1, 2022, and ending on June 30, 2032.

which has been updated (Hayes *et al.,* 2021; Garrison *et al.,* 2023). For most species, we provide updated negligible impact analyses and determinations. For those species for which take numbers decreased and associated evaluated risk remained static or declined, we incorporate (by either repeating, summarizing, or referencing) applicable information and analyses in the prior rulemaking and supporting documents. For those species, there is no other new information suggesting that the effect of the anticipated take might exceed what was considered in the 2021 final rule. Therefore, the analyses and findings provided in the 2021 final rule remain current and applicable. Please see the Negligible Impact Analysis and Determinations section for further information. As to the small numbers standard, we do not change the interpretation and implementation as laid out in the 2021 final rule (86 FR 5322, 5438, January 19, 2021).

Description of the Specified Activity

Overview

The specified activity for this action is unchanged from the specified activity considered for the 2021 ITR, consisting of geophysical surveys conducted for a variety of reasons. BOEM's 2016 petition described a 10-year period of geophysical survey activity and provided estimates of the amount of effort by survey type and location. BOEM's 2020 update to the scope of activity included revisions to these level-of-effort projections, including reducing the projections to 5 years and removing activity assumed to occur within the areas removed from the scope of activity. Actual total amounts of effort (including by survey type and location) are not known in advance of receiving LOA requests, but take in excess of what is analyzed in this rule would not be authorized. Applicants seeking authorization for take of marine mammals incidental to survey activities outside the geographic scope of the rule (*i.e.,* within the former GOMESA moratorium area) would need to pursue a separate MMPA incidental take authorization. See Figures 1 and 2.

Geophysical surveys in the GOM are typically conducted in support of hydrocarbon exploration, development, and production by companies that provide such services to the oil and gas industry. Broadly, these surveys include deep penetration surveys using large airgun arrays as the acoustic source; shallow penetration surveys using a small airgun array, single airgun, or other systems that may achieve similar objectives (here considered broadly as including other similar sources such as boomers and sparkers) as the acoustic source; or high-resolution surveys, which may use a variety of acoustic sources. Geophysical surveys and associated acoustic sources were described in detail in NMFS' 2018 notice of proposed rulemaking and in the notice of issuance for the 2021 final rule (83 FR 29212, June 22, 2018; 86 FR 5322, January 19, 2021). Please refer to those notices for detailed discussion of geophysical survey operations, associated acoustic sources, and the specific sources and survey types that were the subject of acoustic exposure modeling. Information provided therein remains accurate and relevant and is not repeated here. The use of these acoustic sources produces underwater sound at levels that have the potential to result in harassment of marine mammals. Marine mammal species with the potential to be present in the GOM are described below (see table 2).

The specified geographical region is illustrated below but generally speaking, survey activity may occur within U.S. territorial waters and waters of the U.S. Exclusive Economic Zone (EEZ) within the GOM (*i.e.,* to 200 nautical miles (nmi)), except for the former GOMESA moratorium area).

Dates and Duration

The dates and duration of the specified activities considered for this rule are unchanged from the dates and duration for the 2021 final rule, which may occur at any time during the period of validity of the regulations (April 19, 2021, through April 18, 2026).

Specified Geographical Region

The specified geographical region for this action is unchanged from the one considered for the 2021 final rule. The OCS planning areas are depicted in Figure 1, and the specified geographical region (with the modeling zones and depicting the area withdrawn from leasing consideration) is depicted in Figure 2. NMFS provided a detailed discussion of the specified geographical region in the 2018 notice of proposed rulemaking.

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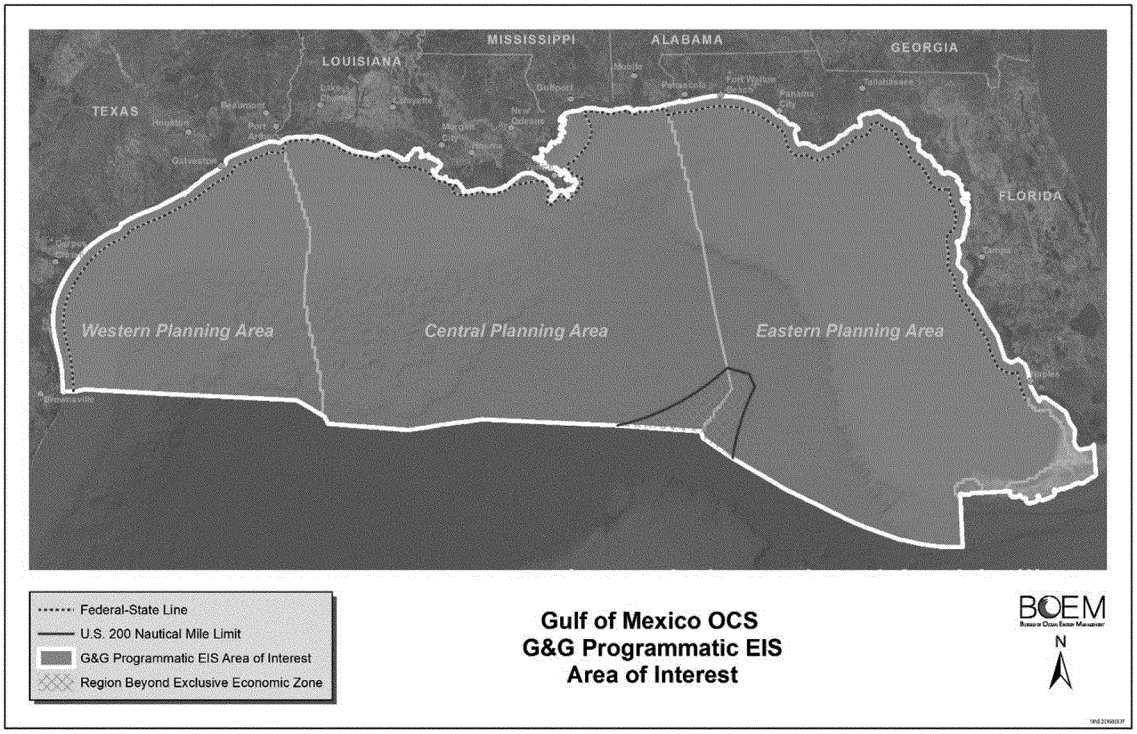

Figure 1 -- BOEM Planning Areas

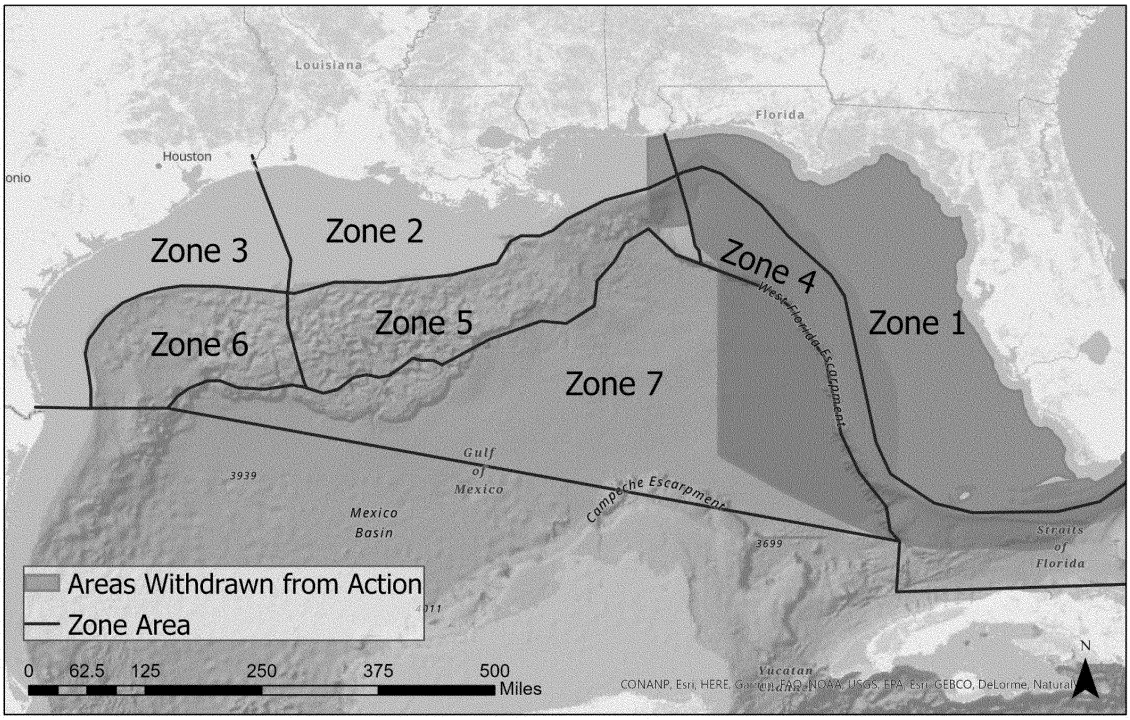

Figure 2 -- Specified Geographical Region

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Summary of Representative Sound Sources

The 2021 final rule allows for the authorization of take, through LOAs, incidental to use of airgun sources of different sizes and configurations (as well as similar sources). The supporting modeling considered two specific airgun array sizes/configurations (as well as a single airgun). Acoustic exposure modeling performed in support of the 2021 rule was described in detail in ''Acoustic Propagation and Marine Mammal Exposure Modeling of Geological and Geophysical Sources in the Gulf of Mexico'' and ''Addendum to Acoustic Propagation and Marine Mammal Exposure Modeling of Geological and Geophysical Sources in the Gulf of Mexico'' (Zeddies *et al.,* 2015, 2017a), as well as in ''Gulf of Mexico Acoustic Exposure Model Variable Analysis'' (Zeddies *et al.,* 2017b), which evaluated a smaller, alternative airgun array. For this final rule, modeling of a third airgun array size that is also smaller than the original large array and more representative of survey activities occurring under the current rule was specifically considered (Weirathmueller *et al.,* 2022). These reports provide full detail regarding the modeled acoustic sources and survey types and are available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.*

Representative sources for the modeling include three different airgun arrays, a single airgun, and an acoustic source package including a CHIRP sub-bottom profiler in combination with multibeam echosounder and side-scan sonar. Two major survey types were considered: large-area (including 2D, 3D narrow azimuth (NAZ), 3D wide azimuth (WAZ), and coil surveys) and small-area (including single airgun surveys and high-resolution surveys; the single airgun was used as a proxy for surveys using a boomer or sparker). The nominal airgun sources used for analysis of the specified activity include a single airgun (90-cubic inch (in^3) airgun) and a large airgun array (72-element, 8,000 in^3). In addition, the Model Variable Analysis (Zeddies *et al.,* 2017b) provides analysis of an alternative 4,130-in^3 array, and the most recent modeling effort using the same methodology provides analysis of a 32-element, 5,110-in^3 array (Weirathmueller *et al.,* 2022), with specifications defined by NMFS in consultation with industry operators to provide exposure modeling results more relevant to arrays commonly in use (see Letters of Authorization section). Additional discussion is provided in the Estimated Take section.

While it was necessary to identify representative sources for the purposes of modeling take estimates for the analysis for the 2021 rule, the analysis is intended to be, and is appropriately, applicable to takes resulting from the use of other sizes or configurations of airguns (*e.g.,* the smaller, 5,110-in^3 airgun array currently prevalent in GOM survey effort and described in Weirathmueller *et al.* (2022), and the alternative 4,130-in^3 array initially modeled by Zeddies *et al.* (2017b)). Although the analysis herein is based on the modeling results presenting the highest estimated take number for each species (for most species, those resulting from use of the 8,000-in^3 array), actual take numbers for authorization through LOAs are generated based on the results most applicable to the array planned for use.

While these descriptions reflect existing technologies and current practice, new technologies and/or uses of existing technologies may come into practice during the remaining period of validity of these regulations. As stated in the 2021 final rule (86 FR 5322, 5442; January 19, 2021), NMFS will evaluate any such developments on a case-specific basis to determine whether expected impacts on marine mammals are consistent with those described or referenced in this document and, therefore, whether any anticipated take incidental to use of those new technologies or practices may appropriately be authorized under the existing regulatory framework. See Letters of Authorization for additional information.

Estimated Levels of Effort

As noted above, estimated levels of effort are unchanged from those considered in the 2021 final rule. Please see the 2021 final rule notice for additional detailed discussion of those estimates and of the approach to delineating modeling zones (shown in Figure 2).

In support of its 2020 revision of the scope of the rule, BOEM provided NMFS with revised 5-year level of effort predictions and associated acoustic exposure estimates. Table 1 provides those effort projections for the 5-year period, which are unchanged. This table corrects table 2 in NMFS' notice of issuance of the 2021 ITR, which erroneously presented the difference in activity levels between the 2018 proposed ITR and the revised levels after GOMESA removal. The correct information was used in the take calculations, and was concurrently made available to the public via BOEM's 2020 notice to NMFS of its updated scope.

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Table 1 -- Projected Levels of Effort in 24-hour Survey Days for 5 Years, by Zone and Survey Type[1]

Year	Zone[2]	2D[3]	3D NAZ[3]	3D WAZ[3]	Coil[3]	VSP[3]	Total (Deep)[3]	Shallow hazards[4]	Boomer[4]	HRG[4]	Total (Shallow)[4]
1	1	0	0	0	0	0	0	0	0	0	0
	2	0	236	0	0	0	236	2	0	18	20
	3	0	30	0	0	0	30	0	0	4	4
	4	0	0	0	0	0	0	0	0	0	0
	5	54	373	184	79	2	692	0	0	25	25
	6	0	186	49	21	0	256	0	0	10	10
	7	46	346	166	71	1	630	0	0	23	23
	Total	100	1,171	399	171	3	1,844	2	0	80	82
2	1	0	0	0	0	0	0	0	0	0	0
	2	0	354	42	19	0	415	2	0	18	20
	3	0	0	0	0	0	0	0	0	4	4
	4	6	0	0	0	0	6	0	0	0	0
	5	0	373	184	79	2	638	0	0	25	25
	6	0	99	0	0	0	99	0	0	11	11
	7	20	336	162	69	1	588	0	0	23	23
	Total	26	1,162	388	167	3	1,746	2	0	81	83
3	1	0	0	0	0	0	0	0	0	0	0
	2	0	236	0	0	0	236	2	0	18	20
	3	0	0	0	0	0	0	0	0	4	4
	4	0	0	0	0	0	0	0	0	0	0
	5	0	328	154	66	2	550	0	0	26	26
	6	0	186	49	21	0	256	0	0	12	12
	7	0	306	139	60	1	506	0	0	24	24
	Total	0	1,056	342	147	3	1,548	2	0	84	86
4	1	0	0	0	0	0	0	0	0	0	0
	2	0	354	42	19	0	415	2	1	16	19
	3	0	30	0	0	0	30	0	0	3	3
	4	12	11	0	0	0	23	0	0	0	0
	5	27	237	92	40	2	398	0	0	26	26
	6	0	99	0	0	0	99	0	0	12	12
	7	63	255	94	40	1	453	0	0	24	24
	Total	102	986	228	99	3	1,418	2	1	81	84
5	1	0	0	0	0	0	0	0	0	0	0
	2	0	236	0	0	0	236	0	0	19	19
	3	0	0	0	0	0	0	0	0	3	3
	4	0	17	0	0	0	17	0	0	0	0
	5	0	283	184	79	2	548	2	1	24	27
	6	0	99	0	0	0	99	0	0	13	13
	7	0	313	162	69	2	546	2	1	23	26
	Total	0	948	346	148	4	1,446	4	2	82	88

[1]Projected levels of effort in 24-hour survey days. This table corrects table 2 in NMFS' notice of issuance of the 2021 ITR, which erroneously presented the difference in activity levels between the 2018 proposed ITR and the revised levels after GOMESA removal. The correct information was concurrently made available to the public via BOEM's 2020 notice to NMFS of its updated scope.

[2]Zones follow the zones depicted in Figure 2.

[3]Deep penetration survey types include 2D, which uses one source vessel with one source array; 3D NAZ, which uses two source vessels using one source array each; 3D WAZ and coil, each of which uses 4 source vessels using one source array each (but with differing survey design); and VSP, which uses one source vessel with one source array. "Deep" refers to survey type, not to water depth. Assumptions related to modeled source and survey types were made by BOEM in its petition for rulemaking.

[4]Shallow penetration/HRG survey types include shallow hazards surveys, assumed to use a single 90-in^3 airgun or boomer, and high-resolution surveys using the multibeam echosounder, side-scan sonar, and CHIRP sub-bottom profiler systems concurrently. "Shallow" refers to survey type, not to water depth.

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The preceding description of the specified activity is a summary of critical information. The interested reader should refer to the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018), as well as BOEM's petition (with addenda) and Programmatic Environmental Impact Statement (PEIS), for additional detail regarding these activities and the region.

Comments and Responses

NMFS published a notice of proposed rulemaking in the **Federal Register** on January 5, 2023 (88 FR 916), beginning a 30-day comment period. In that notice, we requested public input on the proposed rule, including but not limited to NMFS' proposed or preliminary findings, determinations, or conclusions regarding the MMPA standards, and the information NMFS relies on in support of those findings, determinations, or conclusions; and NMFS' preliminary decisions to reaffirm or not make changes to the 2021 final rule, and the information NMFS relies on in support of those preliminary decisions, and requested that interested persons submit relevant information, suggestions, and comments.

During the 30-day comment period, we received 22,832 comment letters. Of this total, we determined that approximately 71 comment letters represented unique submissions, including 6 letters from various organizations (described below) and 65 unique submissions from private citizens. The remaining approximately 22,756 comment letters followed a generic template format in which respondents provided comments that were identical or substantively the same. (For purposes of counting, we considered comments using this template as a single unique submission.)

A letter was submitted jointly by the EnerGeo Alliance (formerly the International Association of Geophysical Contractors), the American Petroleum Institute, the National Ocean Industries Association, and the Offshore Operators Committee (hereafter, the ''Associations''). A separate letter was submitted jointly by the Natural Resources Defense Council (NRDC), Association of Zoos and Aquariums, Center for Biological Diversity, Earthjustice, Healthy Gulf, and Surfrider Foundation (hereafter, ''NRDC''). Additional letters were submitted by the following: Beacon Offshore Energy (Beacon), BOEM, Chevron USA Inc. (Chevron), and the Marine Mammal Commission (MMC). We note that several of these entities refer to, or restate, comments they provided in response to NMFS' 2018 proposed rulemaking—in some cases appending the entirety of the 2018 letters to the current comment letters, and stating that the 2018 comments are incorporated to the current comments. All comments received in response to the 2018 proposed rulemaking were previously responded to by NMFS (86 FR 5322, January 19, 2021). Where new information or context warranted additional response to the prior comments, we provide it here. However, in most cases no new response is required, and we rely on our prior responses in the 2021 final rule.

NMFS has reviewed all public comments received on the 2023 proposed rule. All relevant comments and our responses are described below. All comments received are available online at: *https://www.regulations.gov.* A direct link to these comments is provided at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.*

General Comments

A large majority of commenters, including all of those following the aforementioned generic template, expressed general opposition towards oil and gas industry geophysical survey activity, suggesting that NMFS has decision-making authority regarding whether such surveys occur. Numerous letters also provide commentary regarding climate change and the relative merits of U.S. use of various sources of energy. As these comments are outside the scope of NMFS' authority and NMFS' decision under the MMPA, we do not respond further. NMFS' action here concerns only the authorization of marine mammal take incidental to projected geophysical surveys, provided that the required analyses, findings, and other requirements have been satisfied. Jurisdiction concerning decisions to allow the surveys themselves rests solely with BOEM, pursuant to its authority under the Outer Continental Shelf Lands Act (OCSLA). We also note that this rulemaking addresses only marine mammals (and their habitat). As such, effects of the surveys on other aspects of the marine environment are not relevant to NMFS' analyses and authorities under section 101(a)(5)(A) of the MMPA.

In addition, numerous commenters (including all of those following the aforementioned generic template) make unsupported assertions regarding the potential impacts of oil and gas industry geophysical survey activity, stating that such activity can deafen and cause the death of marine mammals. As the commenters provide no evidence in support of these assertions, and NMFS is not aware of any such evidence, we do not respond further to these comments.

Comment: Beacon states that it appreciates NMFS' efforts to correct previous errors, consider newly available and pertinent information, and acknowledge the impact of those factors on the analyses supporting prior findings in the 2021 final rule and the taking allowable under applicable regulations. Beacon also states that it supports the comments submitted by the Associations.

Response: NMFS appreciates the comments.

Comment: NRDC, noting that the purported projected levels of effort provided in table 2 of NMFS' 2021 final rule were unaccountably low and likely in error, requests confirmation that the activity levels presented in NMFS' 2023 proposed rule are correct and that these levels were used to generate the current estimated take numbers.

Response: NMFS confirms that the projected levels of effort provided in table 1 of its 2023 proposed rule (and in this final rule) are correct, and were used to generate the estimated take numbers provided in table 6. Table 1 corrected table 2 in NMFS' 2021 final rule, which erroneously presented the difference in activity levels between the 2018 proposed ITR and the revised levels after GOMESA removal. The correct projected levels of effort were used in the analyses presented in NMFS' 2018 proposed rule, 2021 final rule, 2023 proposed rule, and this final rule.

Comment: The Associations assert that NMFS has ''declined to provide the model inputs and outputs'' associated with acoustic exposure modeling performed in support of the rule, and state that this precludes the public from conducting a thorough review of the proposed rule. The Associations separately reference the requirements of the Administrative Procedure Act (APA) in asserting that NMFS has failed to ''fully disclose all necessary information about the models it uses (including all inputs and outputs), explain the assumptions and methodology used to prepare the models, allow for public review and feedback on the models and all related supporting information, and respond to public comments and make changes to the models as warranted based on those comments.''

Response: NMFS has provided information regarding all model inputs and outputs, as well as information regarding all other aspects of the

modeling process. In association with its 2018 proposed rulemaking, NMFS made the modeling report (Zeddies *et al.,* 2015, 2017a) available for public review for 60 days. This almost 400-page report includes full detail regarding all model inputs and outputs, assumptions, and methodology. Prior to the 60-day comment period for NMFS' 2018 proposed rulemaking, the report was made available for review and comment during NMFS' 45-day notice of receipt comment period regarding BOEM's petition, as well as during a separate 60-day comment period for BOEM's draft PEIS. Thus, this report was available for public review for a minimum aggregate of 165 days prior to the 30-day comment period for NMFS' 2023 proposed rule. Details regarding the 4,130-in^3 airgun array were provided by the Associations themselves in support of development of their 2017 Gulf of Mexico Acoustic Exposure Model Variable Analysis (Zeddies *et al.,* 2017b), which was also provided for public review during the 60-day comment period for NMFS' 2018 proposed rule (and which also remains available to the public online at *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*). In order to perform this modeling variable analysis, the Associations were granted access to all modeling products and worked directly with the contracted modelers (JASCO Applied Sciences(JASCO)).

NMFS further explained in its 2023 proposed rule that ''all aspects of the modeling (including source, propagation, and animal movement modeling) are the same as described in Zeddies *et al.* (2015, 2017a, 2017b) and discussed in previous **Federal Register** notices associated with the ITR,'' with the exception of the introduction of a new source (the 5,110-in^3 array), details of which were provided in the Weirathmueller *et al.* (2022) memorandum provided for public review during the 30-day comment period for the 2023 proposed rule. (We note that the Associations claim that ''NMFS provides insufficient information. . .to determine whether this specific array size and the configuration analyzed are accurate or representative. . . .'' However, the Associations do not specify what necessary information they believe was omitted from description of the array.)

The Associations do not describe any specific model inputs or outputs or other information that they believe to have been withheld, or specifically describe any assumptions or methodology that they believe has been insufficiently explained. However, during the public comment period, EnerGeo contacted NMFS to request the following:

- Model outputs, specifically the modeled sound pressure levels across depth and range for all modeled radials for modeled seismic arrays and modeling locations/seasons.

Upon receipt of this request, NMFS contacted JASCO to ascertain the availability of the requested products (which are specific output files rather than the descriptions of model outputs that are provided in the modeling report). NMFS then communicated with EnerGeo that JASCO could provide the requested sound field files, but noted that there are several thousand files for each array volume, and that the files are in a proprietary format. Therefore, NMFS explained to EnerGeo that the request would require coordination between EnerGeo and JASCO in order to produce the requested volume of files in a format that might be useful to EnerGeo, and requested EnerGeo's response on how to conduct the necessary coordination. EnerGeo did not respond.

- At each modeling location, the specific geographic location of the centerpoint, the number of radials modeled, and the specific inputs used in the modeling including bathymetry, sound speed profiles, and the geoacoustic parameters of the seabed, as well as the sea surface assumption (sea state or other assumptions).

Regarding this request, NMFS reiterated to EnerGeo the explanation provided in the proposed rule: all of the requested information remains unchanged from the original modeling effort and is described in the original modeling report. However, NMFS noted that if EnerGeo could specify any needed information that it could not find in the modeling report, NMFS would work to provide it. EnerGeo did not respond.

- Summarized metrics on $R_{95\%}$ and R_{max} distances [3] to the 160-dB behavioral threshold, the behavioral step function (for beaked whales and all other species), and the hearing group-specific distances to Level A harassment thresholds for the NMFS-specified sound exposure level (SEL) and peak thresholds and for all modeled seismic arrays and acoustic modeling sites and seasons.

Regarding this request, NMFS explained to EnerGeo that JASCO did not specifically calculate $R_{95\%}$ and R_{max} for every site, because $R_{max}/R_{95\%}$ are not used for animal movement modeling—the entire sound fields are used. Acoustic ranges were calculated for a subset of the modeled sites in order to provide examples in the modeling report.

NMFS reiterates that the Associations provide no specific information regarding any aspect of the modeling that they believe has been inappropriately withheld from the public. Moreover, NMFS made a good faith effort to respond to EnerGeo's request for information during the public comment period, and EnerGeo neither followed up with additional questions nor responded to NMFS' offer to facilitate a working interaction with the modelers to obtain requested data files. NMFS has provided all details regarding model inputs and outputs, as well as modeling assumptions and methods, and has provided the public with a meaningful opportunity for review. NMFS has further responded to all comments, both here and in its 2021 final rule.

Comment: Chevron states that NMFS ignores real-world observations that ''directly contradict'' its model estimates.

Response: Chevron refers to observations, or lack thereof, by protected species observers (PSO) aboard survey vessels, as proof that NMFS' take estimates are overly conservative. However, PSOs are able to conduct observations over only a relatively small fraction of the area in which marine mammals may be impacted by noise from seismic surveys even during daylight hours, and many marine mammals are not observable at the surface. Similarly, many marine mammals may not be detected by acoustic monitoring. Lack of observations does not demonstrate that takes of marine mammals do not occur. Moreover, we incorporated the best available scientific information for our analysis, as evidenced (for example) by

[3] Given a regularly gridded spatial distribution of sound levels, the $R_{95\%}$ for a given sound level was defined as the radius of the circle, centered on the source, encompassing 95 percent of the grid points with sound levels at or above the given value. This definition is meaningful in terms of potential impact to animals because, regardless of the shape of the contour for a given sound level, $R_{95\%}$ is the range from the source beyond which less than 5 percent of a uniformly distributed population would be exposed to sound at or above that level. The R_{max} for a given sound level is simply the distance to the farthest occurrence of the threshold level (equivalent to $R_{100\%}$. It is more conservative than $R_{95\%}$, but may overestimate the effective exposure zone. For cases where the volume ensonified to a specific level is discontinuous and small pockets of higher received levels occur far beyond the main ensonified volume, R_{max} would be much larger than $R_{95\%}$ and could therefore be misleading if not given along with $R_{95\%}$ (Zeddies *et al.,* 2015).

our references to BOEM's synthesis studies of PSO data from 2002–15 (Barkaszi *et al.,* 2012; Barkaszi and Kelly, 2018) (as well as other similar syntheses from other locations).

Comment: The Associations reiterate comments made initially with regard to NMFS' 2018 proposed rule, asserting that NMFS has employed an ''unlawful'' approach to the estimation of incidental take, including analyses of ''unlikely worst-case scenarios,'' resulting in ''significant overestimates of take.'' Chevron echoes these concerns.

Response: The commenters' statements that NMFS has substantially overestimated takes are incorrect. As discussed in our 2021 final rule response to the Associations' 2018 comments on this topic (86 FR 5322, 5347, January 19, 2021), NMFS used current scientific information and state-of-the-art acoustic propagation and animal movement modeling to reasonably estimate potential exposures to noise. With regard to the acoustic exposure modeling, NMFS reiterates part of its 2021 response to the 2018 comments, which remains applicable: the Associations' comments do not specify which of the many data inputs are ''conservative'' or to what degree, nor do they recommend alternatives to the choices that were meticulously documented in developing the modeling.

As in their 2018 public comment letter, the Associations inappropriately characterize statements from NMFS' notice of proposed rulemaking as admissions of purposeful conservativeness. The Associations refer to NMFS' description of the take numbers subject to analysis for purposes of the negligible impact determinations in this rule. In contrast to the 2018 proposed rule, for which NMFS used modeling of one airgun array, for this final rule, NMFS considered acoustic exposure modeling results from three different airgun arrays, and stated simply that, for each species, the maximum take number resulting from analysis of the three different arrays was subject to evaluation as part of NMFS' negligible impact determinations. This approach ensures that the potential takes of each species that could occur from survey effort this final rule is designed to cover—surveys that may involve various airgun arrays—are appropriately analyzed to enable issuance of LOAs for those activities with reasonably accurate take estimates.

The Associations also refer again to the 2017 Acoustic Exposure Model Variable Analysis (Zeddies *et al.,* 2017b) as being supportive of their claims that NMFS' modeling is inappropriately conservative, stating that the results show that ''alterations to only 4 or 5 variables have dramatic consequences that are the result of redundantly applied precaution [. . .].'' The Associations incorrectly characterize the results of the analysis, which investigated five factors:

- Airgun array size (including total volume, number of array elements, element air pressure, array geometry and spacing) used in source and propagation models;
- Acoustic threshold criteria and associated weighting used to calculate exposures;
- Animal densities used for adjusting simulated computer model exposures to potential real-world animal exposures;
- Natural aversive behaviors of marine mammals; and
- The addition of mitigative measures that lessen the potential for animals' exposure to threshold levels of seismic sound.

The primary finding of the Zeddies *et al.* (2017b) analysis is that use of NMFS' acoustic injury criteria (*i.e.,* NMFS, 2016, 2018) decreased predictions of injurious exposure. Thus, NMFS' 2018 proposed rule had already incorporated the change with the most significant impact on estimated take numbers.

We addressed the Associations' investigation of quantitative consideration of animal aversion and mitigation effectiveness in responses to comments provided in the 2021 final rule. In summary, these factors were not quantified in the modeling because there is too much inherent uncertainty regarding the effectiveness of detection-based mitigation for these activities to support any reasonable quantification of its effect in reducing injurious exposure, and there is too little information regarding the likely level of onset and degree of aversion to justify its use in the modeling via precise quantitative control of animat movements (as compared to post-hoc adjustment of the modeling results, as was done in the 2021 final rule and carried forward here). Importantly, while aversion and mitigation implementation are expected to reduce somewhat the modeled levels of injurious exposure, they would not be expected to result in any meaningful reduction in assumed exposures resulting in Level B harassment, nor in total takes by harassment, as any averted injurious (Level A harassment) takes would be appropriately changed to behavioral disturbance (Level B harassment) takes. With regard to marine mammal density information, NMFS has used in both the 2021 final rule and this rule the best available scientific information.

NMFS previously responded to the Associations' comments that the selected array (8,000 in^3) is unrealistically large, resulting in an overestimation of likely source levels and, therefore, size of the sound field with which marine mammals would interact. We noted then our agreement with the premise that use of a smaller airgun array volume with lower source level would likely create a smaller ensonified area resulting in fewer numbers of animals expected to exceed exposure thresholds, but that selection of the representative array to be used in the modeling was directed by the ITR applicant (*i.e.,* BOEM). For the 2023 proposed rule, in reflection of prior comments from the Associations and others, NMFS determined it appropriate to develop full modeling results for analysis that would provide more scalable take numbers suitable for the actual sound sources in use, and introduced the alternative 4,130-in^3 and 5,110-in^3 airgun arrays. This approach directly refutes the Associations' suggestion that NMFS has not appropriately responded to public comments and made changes as warranted.

With regard to the large number of other data inputs and/or choices made in the modeling, the Associations do not specifically identify any issue where they believe a meaningful data or process error was made in the modeling. NMFS reiterates its conclusion that, while the modeling required that a number of assumptions and choices be made by subject matter experts, these are reasonable, scientifically acceptable choices. These choices do not represent a series of ''overly conservative, worst-case assumptions'' that, as the Associations state, result in a ''compounding error yielding unrealistic calculations lacking scientific basis.'' To the extent that the results of the modeling may be conservative, they are the most credible, science-based information available at this time.

NMFS reiterates its conclusion that the modeling effort incorporated representative sound sources and projected survey scenarios (based on the best available information obtained by BOEM, as supplemented by NMFS to address additional airgun sizes that are reasonably likely based on LOA applications to date—which alleviates the primary source of conservativeness about which NMFS and the Associations find agreement), physical and geological oceanographic parameters at multiple locations within the GOM and during different seasons, the best available information regarding marine mammal distribution and

density, and available information regarding known behavioral patterns of the affected species. Current scientific information and state-of-the-art acoustic propagation and animal movement modeling were used to reasonably estimate potential exposures to noise. The 2018 proposed rule described all aspects of the modeling effort in significant detail, including numerous investigations (test scenarios) designed by the agencies to understand various model sensitivities and the effects of certain choices on model results. Additionally, the 2023 proposed rule described in detail all aspects of the modeling that were different, while referring the reader to the 2018 proposed rule and supplementary information for the bulk of the modeling effort, which was unchanged. All relevant information was provided for public review, on multiple occasions.

Because it remains relevant, we quote the MMC's 2018 public comment on this topic: ''Complex sound propagation and animat modeling was used to estimate the numbers of potential takes from various types of geophysical surveys in the Gulf. NMFS received comments from industry operators suggesting that the modeling results were overly conservative [. . .]. However, the Commission has reviewed the modeling approach and parameters used to estimate takes and believes they represent the best available information regarding survey scenarios, sound sources, physical and oceanographic conditions in the Gulf, and marine mammal densities and behavior. As such, the Commission agrees with NMFS and BOEM that the resulting take estimates were conservative but reasonable, thereby minimizing the likelihood that actual takes would be underestimated.''

Comment: The Associations describe potential mistakes in the take numbers evaluated for this rule, noting that the total take numbers for aggregated beaked whales across species and for blackfish across species provided in Weirathmueller *et al.* (2022) exceed the values provided by NMFS in table 6 of the 2023 proposed rule.

Response: NMFS clarifies that Appendix B of Weirathmueller *et al.* (2022) provides essentially duplicate results for species that are represented by the same density value. For example, Garrison *et al.* (2023) [4] provide generic (versus species-specific) density information for beaked whales and blackfish. The results provided in Weirathmueller *et al.* (2022) applied those same density values to multiple species within a particular guild; thereby, duplicating modeling results for, *e.g.,* Cuvier's, Blainville's, and Gervais' beaked whale. One can see that the resulting take numbers are the same for Blainville's and Gervais' beaked whale, as these two species are governed by the same assumed animal movement parameters in the animat modeling. However, the results for Cuvier's beaked whale are slightly different, resulting from the application of slightly different animal movement parameters in the modeling. For purposes of providing an estimate of total takes for the beaked whale guild, NMFS assumed the larger set of values—as necessary to ensure that the potential takes for the species with the largest values (in this case, Cuvier's beaked whales) were appropriately analyzed. A similar situation exists for the four species in the blackfish category, *i.e.,* the four species are represented together by a generic, guild density that encompasses all four species. However, each of the four species were represented in the animal movement modeling component by animats guided by species-specific animal movement parameters. Thus, when the appropriate density value was applied to scale the animat exposure estimates to real-world exposure estimates, slightly different results were found across the four species, but the total take number for the blackfish guild is correctly represented through summing the take values for one of the species. The take numbers provided in table 6 are correct; no error exists.

Comment: Chevron states that the modeling performed in support of the rule qualifies as a ''highly influential scientific assessment.''

Response: NMFS disagrees that the modeling constitutes a highly influential scientific assessment. The Office of Management and Budget's Final Information Quality Bulletin for Peer Review (70 FR 2664, January 14, 2005) defines a highly influential scientific assessment as information whose dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or for which the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest. Our Regulatory Impact Analysis (RIA) for the 2021 final rule, which remains applicable, indicated that annual impacts are less than $500 million. Moreover, similar approaches to acoustic exposure modeling have been performed by numerous disparate entities for multiple applications. In 2014, during a modeling workshop co-sponsored by the American Petroleum Institute and International Association of Geophysical Contractors, at least a half-dozen expert presenters (representing private and governmental entities from both the United States and Europe) discussed various available packages that function much the same way as the modeling supporting this rule. Thus, there is nothing novel, controversial, or precedent-setting about the modeling described here, and the additional peer review requirements associated with HISAs are not applicable.

Comment: The Associations encourage NMFS to consider employing what they refer to as a ''pooled'' approach to authorizing take of species that are rarely encountered in the GOM. The Associations suggest that NMFS may authorize take via the suggested ''pool'' approach generically, versus through an LOA issued to a specific applicant. This authorized ''pool'' of take would then be drawn down as such take occurs.

Response: NMFS appreciates the Associations' suggestion. We note that, on February 17, 2022, the Associations proposed this concept to NMFS as a potential solution to the errors in the rule. Instead, NMFS determined it appropriate to pursue a corrective rulemaking. NMFS does not believe the approach suggested by the Associations is necessary or relevant following completion of this rule.

Comment: The Associations suggest that NMFS should develop an appropriate ''scalar ratio'' for application to surveys of fewer than 20 days in duration.

Response: The scalar ratio employed by NMFS during implementation of the ITR to date was developed in consideration of the relationship between takes estimated for a full simulated 30-day survey, versus those resulting from 24-hour results scaled up to the 30-day duration, and is, therefore, suitable for use in better estimating the number of individuals affected for surveys of longer duration (*e.g.,* 20 days or more). NMFS agrees with the Associations that it would be useful to develop a suitable scalar ratio for surveys of shorter duration. However, the Associations' comments on the topic suggest a misunderstanding of the limitations under the rule on take

[4] At the time of publication of the 2023 proposed rule, no technical reports associated with the updated density models had been released to the public, and we cited the models (and density outputs, which were publicly available online) as Garrison *et al.* (2022) in that proposed rule. Associated reports (Rappucci *et al.,* 2023; Garrison *et al.,* 2023) have since been released to the public. In this final rule, references to the updated density models are cited as Garrison *et al.* (2023).

authorization. As rationale for the comment, they state that failure to develop such a scalar ratio ''is a major problem because it will result in an artificial and mathematically erroneous inflation of estimated individual takes at the LOA level that may ultimately prevent authorization of the amount of take contemplated'' in the rule. However, for all surveys, NMFS authorizes through an LOA the appropriate, unscaled estimated take number. Scaled values are only used in the LOA-specific ''small numbers'' analysis to help inform an assessment of how many individual marine mammals to which the estimated instances of take might appropriately accrue. As such, lack of an applicable scalar ratio for surveys of shorter duration means that NMFS is analyzing overestimates of the numbers of individuals potentially impacted (versus total instances of take) for purposes of the small numbers analysis, but has no other effect on NMFS' ability to authorize take under the rule. NMFS expects to consider development of the recommended scalar ratio in the future, but has not to date undertaken such an effort.

Comment: NRDC states that the density estimates used for Rice's whale ''appear to omit most of the available science'' on Rice's whale habitat, and notes that the density data are based on visual observations made during large vessel surveys without incorporating passive acoustic data.

Response: NMFS disagrees that the new Rice's whale density estimates, which are based on spatial density models, omit most of the available science on Rice's whale. These spatial density models are based upon large vessel surveys conducted by NMFS' Southeast Fisheries Science Center (SEFSC) between 2003 and 2019,[5] including a mix of broadscale line-transect surveys of shelf and oceanic waters, along with directed surveys within the Rice's whale's northeastern GOM core habitat (Rappucci *et al.,* 2023; Garrison *et al.,* 2023). Habitat variables associated with the whale sightings during vessel surveys from 2003–2019 were used to determine which variables are most predictive of whale presence.

Survey effort (kilometers of survey trackline) was partitioned into segments within a grid of cells and matched to physical oceanographic parameter values within each cell. All available oceanographic and physiographic variables were included in the model selection for Rice's whales. The selected model included water depth, chlorophyll-a concentration, geostrophic velocity, bottom temperature, and bottom salinity, and indicated that Rice's whale density was highest in waters between 100–400 meter (m) depth with intermediate bottom temperatures between 10–19 °C and intermediate surface chlorophyll-a concentrations, *i.e.,* in areas along the outer continental shelf break associated with higher productivity and upwelling of cooler bottom water (Garrison *et al.,* 2023). These predictions are consistent with the information referenced by NRDC, *i.e.,* passive acoustic detections on the continental shelf break and current information regarding habitat suitability. The web page for the habitat suitability study referenced by NRDC indicates that the data were incorporated to updated density models (see *https://www.fisheries.noaa.gov/southeast/endangered-species-conservation/trophic-interactions-and-habitat-requirements-gulf-mexico* (''Combining environmental datasets with whale sightings allows us to develop predictive habitat models that explain what environmental features may be driving whale distribution.'')).

We agree that ideally, passive acoustic data could be incorporated to the spatial density models to improve the model predictions. However, incorporation of visual and acoustic data to spatial density models remains cutting edge science, and such models have only rarely been produced. NRDC refers to Roberts *et al.* (2016) as an example of such modeling; however, Roberts *et al.* (2016) did not incorporate any acoustic data to their models. The long-term cetacean density modeling effort represented by reference to Roberts *et al.* (2016) is in fact a good example of the difficulty of doing so. This U.S. Navy-funded effort has been responsible for continually improved iterations of spatial density models for cetaceans along the U.S. East Coast since 2015. However, to date, acoustic data have been incorporated only into models for beaked whales and sperm whales (two species that are most amenable to acoustic surveys and for which acoustic detections are most important to understanding occurrence), and only in the most recently updated model iterations. This required 7 years and a model version 7 for beaked whales and model version 8 for sperm whales (*https://seamap.env.duke.edu/models/Duke/EC/*). Acoustic data have been used to qualitatively verify density model predictions for certain mysticetes, but have not been incorporated to date into any East Coast mysticete density model. Efforts to evaluate the feasibility and utility of combining visual and acoustic survey data in the GOM have only recently been conducted as a pilot study (Frasier *et al.,* 2021).

We note that the same areas in which the acoustic detections were made are predicted by the spatial density model as being suitable Rice's whale habitat (see *https://seamap.env.duke.edu/models/SEFSC/GOM/*) and, in fact, density predictions within areas expected to provide suitable habitat for Rice's whale increased compared with the predictions provided by Roberts *et al.* (2016) (*e.g.,* Rice's whale density value in Zone 5, which includes areas of the central GOM where acoustic detections were made, increased by 71 percent; see Appendix A of Weirathmueller *et al.,* 2022).

Comment: NRDC states that the only resource available to the public regarding the revised density information was the density information itself (available online for download) and that no associated report was available for public review. NRDC goes on to state that marine mammal density estimates ''are typically presented in publicly available technical memoranda or technical reports, which set forth in detail the authors' data sources, methods, quantitative results, and limitations, with discussion of their application to particular species,'' and suggests that failure to provide such a report may be a violation of the APA. The MMC similarly recommends that NMFS provide to the public ''marine mammal densities, associated [coefficients of variation], and supporting documentation regarding how such estimates were derived.'' Both NRDC and the MMC requested an additional 30-day public comment period once the information is provided.

Response: The data and analyses supporting this final rule have undergone appropriate pre-dissemination review for utility, integrity, and objectivity, and have been determined to be in compliance with the applicable information quality guidelines implementing the Information Quality Act (section 515 of Pub. L. 106–554).

NMFS acknowledges that supporting technical reports related to the marine mammal density data used in the exposure modeling informing this rule were not publicly available at the time that NMFS' proposed rule was released to the public for review. NMFS did not have discretion over the timeline for release of supporting technical reports,

[5] We note here that the 2023 proposed rule erroneously referred to the period over which survey data were considered as 2003–2018. This range is correct for species other than Rice's whale, for which surveys conducted in 2019 were incorporated.

as BOEM is the primary funding agency for development of the updated marine mammal density data. The reports have since been released (Rappucci *et al.,* 2023; Garrison *et al.,* 2023) and are available online at *https://www.govinfo.gov/collection/boem.*

The NOAA Information Quality guidelines expressly address and allow for the use of supporting information which cannot be disclosed. In this case, the supporting information (*i.e.,* the density data) was publicly available. However, technical description regarding development of that information had not been released, as described above. The ''especially rigorous robustness checks'' called for in the guidelines when proprietary models are used or when supporting information cannot be disclosed had already been conducted by the model authors, as described in the reports, and NMFS has conducted rigorous robustness checks of the data used in support of this rule.

To determine the abundance and spatial distribution of marine mammals in the GOM, NMFS' SEFSC conducts visual line transect surveys aboard NOAA research vessels or aircraft, with survey effort designed to support estimation of abundance for all marine mammals in the GOM. Similar survey efforts and abundance estimation have been ongoing in the GOM since the early 1990s and have been subject to both peer and other public review on numerous occasions.

In addition to abundance, line transect survey data can be used to develop habitat models that map animal density as a function of environmental conditions. Historically, distance sampling methodology (Buckland *et al.,* 2001) has been applied to visual line-transect survey data to estimate abundance within large geographic strata (*e.g.,* Fulling *et al.,* 2003; Mullin and Fulling, 2004; Palka, 2006). Design-based surveys that apply such sampling techniques produce stratified abundance estimates and do not provide information at appropriate spatiotemporal scales for assessing environmental risk of a planned survey. To address this issue of scale, efforts were developed to relate animal observations and environmental correlates such as sea surface temperature in order to develop predictive models used to produce fine-scale maps of habitat suitability (*e.g.,* Waring *et al.,* 2001; Hamazaki, 2002; Best *et al.,* 2012). However, these studies generally produce relative estimates that cannot be directly used to quantify potential exposures of marine mammals to sound, for example. A more recent approach known as density surface modeling, as described in Roberts *et al.* (2016) and used by Garrison *et al.* (2023), couples traditional distance sampling with multivariate regression modeling to produce density maps predicted from fine-scale environmental covariates (*e.g.,* Becker *et al.,* 2014, 2017, 2020; Forney *et al.,* 2015).

In summary, the modeling effort follows accepted, state of the science density modeling procedures (Rappucci *et al.,* 2023; Garrison *et al.,* 2023), and habitat based density modeling in general is not novel, controversial, or precedent-setting, as similar modeling has been performed for various applications for over 10 years. There were no novel assumptions or methodologies employed in development of the models; the models simply make use of updated information regarding marine mammal observations and associated habitat covariates. In addition, ample opportunity was provided for public input and review of the underlying scientific information and modeling efforts contained herein (including by scientists, peer experts at other agencies, and non-governmental organizations). NMFS has not failed to provide information necessary for interested parties to comment meaningfully.

Predictions from the updated density models were publicly released in July 2022, and we note that the authors of the previously best available density models (Roberts *et al.,* 2016), which NMFS used in support of its 2021 final rule, independently determined that the updated models represent the best available scientific data, stating ''As of October 2022, SEFSC and [the Duke Marine Geospatial Ecology Lab] consider the Roberts *et al.,* 2016 models obsolete and recommend the [Garrison *et al.,* 2023] models [. . .] be used instead.'' See *https://seamap.env.duke.edu/models/SEFSC/GOM/.* NMFS similarly determined that the updated density models represented the best available scientific data and, accordingly, should be used in an updated modeling effort.

We also note that it is not unusual for updated density information to be released without supporting technical reports. The latest major update to the Roberts *et al.* east coast cetacean density models (affecting all modeled taxa) was released in June 2022 and, as the best available science, including by virtue of providing increased quality of information regarding the North Atlantic right whale, was used in support of numerous regulatory decisions immediately upon release. However, due to the Navy's priorities as the funding agency, no associated documentation was released until June 2023. Notably, neither NRDC nor the MMC (or any other member of the public) commented on the lack of supporting documentation in any of the numerous regulatory actions under the MMPA that were proposed for public review during that interval.

Further, concerning the MMC's reference to the actual density values and associated CVs used in the take estimation process, this information was provided upon request during the public comment period to both the MMC and NRDC as well as to the Associations. (We note that the specific density values used in the prior modeling effort were included in the comprehensive modeling report. As minimal new information was associated with the current updated effort, the updated values were not included in the brief modeling memorandum, but could be duplicated by the public using available information.) None of the aforementioned entities included any comments regarding the specific density values and associated CVs used in the take estimation process in their comment letters. NMFS does not agree that the recommendations to allow for an additional 30-day comment period for the public to review supplementary technical reports in advance of issuing the final rule are warranted.

Comment: The Associations provide comments critical of NMFS' core distribution area, noting the lack of additional sightings or tagging data to support the expansion of the previously described core habitat area to areas offshore of Mississippi and stating that ''The addition of these buffers and extension of Rice's whale densities into the buffers causes overestimates of the amount of potential Rice's whale take. . . .''.

Response: Neither the core distribution area nor the core habitat area factored into the process for estimating Rice's whale takes in any way. (See the Estimated Take section for explanation of the take estimation process for this rule.) However, NMFS did consider whether additional mitigation was warranted under the LPAI standard in light of the best available information, including information regarding the core distribution area. Based on that evaluation, we concluded the current mitigation meets the LPAI standard. (See the Mitigation section for our LPAI analysis.)

Comment: The MMC recommends that NMFS require a closure to survey

activity of the portion of the Rice's whale core distribution area that overlaps the area covered by the ITR.

Response: As discussed in the 2023 proposed rule, the description of a core distribution area which, relative to the core habitat area described in the 2018 proposed rule and 2021 final rule, expands westward into waters off Mississippi and into the area of the specified activity covered by this final rule, does not reflect new information regarding documented Rice's whale occurrence. The core distribution area reflects a more conservative approach to considering the data, including the application of substantial buffer areas to account for uncertainty. Rice's whales have not been visually observed in the small portion (5 percent) of the core distribution area that overlaps the geographic scope of the specified activity under this rule, and 76 percent of that small portion of the core distribution area that overlaps the geographic scope of the specified activity under this rule is shallower than 100 m water depth or deeper than 400 m. Please see the Mitigation section for more detailed discussion.

In summary, there is no information supporting identification of this area (*i.e.,* the 5 percent of the core distribution area overlapping the geographic scope of this rule) as being of particular importance relative to Rice's whale habitat more broadly (*i.e.,* GOM waters between 100–400 m depth), and only 24 percent of this area contains water depths 100–400 m. As a result of these considerations, NMFS has determined that a restriction on survey activity within the portion of the core distribution area that occurs within the scope of the rule is not warranted, as the available information does not support a conclusion that such a restriction would contribute meaningfully to a reduction in adverse impacts to Rice's whales or their habitat. The MMC offers no additional rationale for closing this area to survey activity, other than that it is now within the geographic scope of the rule (despite the absence of new data supporting this change). As such, NMFS disagrees and does not adopt the MMC's recommendation.

In addition, we note the MMC's statement in support of this recommendation that ''[i]t is not clear from the information presented by NMFS how much the increase in the numbers of takes is attributed to geophysical surveys that are expected to occur in the expanded core distribution area [. . .].'' As described in the 2023 proposed rule, changes in take estimates for all species result from (1) correction of BOEM's errors in calculating updated estimated take following its revision of scope for the 2021 final rule; (2) revisions to species definition files governing animat behavior during animal movement modeling; and (3) new density information for all species other than Fraser's dolphin and rough-toothed dolphin. In addition, for Rice's whale only, propagation modeling of a new array specification produced the greatest values for estimated instances of take.

The process for estimating take numbers did not involve placement of projected survey effort in specific locations, such as the portion of the core distribution area that overlaps the geographic scope of the ITR. Instead, within each modeling zone, acoustic source and propagation modeling was performed using zone-specific environmental parameters, following which animal movement modeling results in zone-specific exposure estimates for animats. These estimates were then scaled to real-world values using zone-specific density estimates, generating 24-hour exposure estimates that were then scaled to totals based on zone-specific level of effort projections (see table 1). No survey effort is specifically assumed to occur within the portion of the core distribution area that overlaps the area within scope of the ITR.

The MMC goes on to state that ''the year-round restriction on geophysical surveys in the Rice's whale core distribution area was the basis of NMFS's negligible impact determination for the final rule.'' This is incorrect. As one consideration in support of our negligible impact determination for Rice's whales, we noted that no survey activity would occur in the northeastern GOM core habitat area (please see discussion provided in the Description of Marine Mammals in the Area of the Specified Activities section regarding the distinction between Rice's whale core habitat and the core distribution area discussed herein). This was not the result of any restriction, but rather, BOEM's removal of the GOMESA area from the scope of the rule.

Comment: BOEM challenges statements made in NMFS' 2023 proposed rule regarding potential Rice's whale habitat contraction relative to the historical range. The Associations echo these concerns. The Associations also claim that NMFS has made erroneous statements with regard to the potential impacts of the *Deepwater Horizon* (DWH) oil spill on Rice's whales.

Response: BOEM acknowledges that it is possible Rice's whales were historically more broadly distributed throughout the GOM, but suggests that currently available information is insufficient to definitively support such a conclusion. Passive acoustic recording devices have detected Rice's whale calls at several sites along the continental shelf break from Florida to Texas, and more recently in Mexican waters (Rice *et al.,* 2014; Soldevilla *et al.,* 2022, 2024). Nonetheless, we agree that the number of Rice's whales and the full extent to which Rice's whales use waters outside of 100–400 meter depths in the GOM remains unclear. Please see the Description of Marine Mammals in the Area of the Specified Activities section of this rule for added discussion regarding Rice's whale occurrence.

The Associations suggest NMFS has claimed that the Rice's whale population has declined. NMFS made no such statement in the 2023 proposed rule. NMFS referenced the low population abundance of the Rice's whale while citing modeling results relating to the quantification of injury from the DWH spill. The Associations are incorrect in stating that NMFS has made erroneous statements regarding the modeling results concerning quantification of injury. NMFS refers the Associations to the detailed discussion provided in the 2018 proposed rule, as well as to DWH NRDA Trustees (2016), which presents the estimates of concern to the Associations (*i.e.,* 48 percent of the Rice's whale population potentially exposed to DWH oil, with 17 percent killed). NMFS has neither mischaracterized nor engaged in speculation about the findings regarding quantified injury due to the DWH spill.

Comment: NRDC comments that NMFS has not prescribed mitigation for Rice's whales sufficient to meet the MMPA's LPAI standard, adding that NMFS has not adequately considered mitigation of impacts to habitat in its decision-making. In support, NRDC refers to new scientific information since the 2021 final rule was published, including investigations of Rice's whale habitat.

Response: NMFS disagrees with NRDC's comments regarding the adequacy of mitigation for Rice's whales and their habitat. NMFS fully considered the new information NRDC references (see the Mitigation section of this final rule). In our view, these investigations (*e.g.,* Kok *et al.,* 2023; Kiszka *et al.,* 2023; Soldevilla *et al.,* 2022) solidify NMFS' previous understanding of the importance of continental slope waters between approximately 100–400 m water depth as Rice's whale habitat. (We note this same area (*i.e.,* continental shelf and slope waters between the 100–400 m

isobaths) was recently included in NMFS' proposed rule to designate Rice's whale critical habitat under the ESA (88 FR 47453, July 24, 2023)). The previously used spatial density model for Rice's whale (Roberts *et al.,* 2016) identified waters of approximately 100–400 m depth on the continental slope throughout the GOM as potential habitat, and the updated density model (which, as discussed previously, incorporates new data on Rice's whale habitat associations) predictions do not markedly differ (Garrison *et al.,* 2023).

Perhaps the most important new information is the acoustic detection of Rice's whales in areas along the shelf break in the central and western GOM, which for the first time demonstrates year-round Rice's whale occurrence in areas outside of the previously identified core habitat. Soldevilla *et al.* (2022) detected Rice's whale calls at 3 of 4 sites in the central GOM south of Louisiana. Year-round detections occurred sporadically at two of the sites, with calls detected on 6 and 16 percent of days when recordings were available, respectively. Calls were detected on 1 percent of days at the 3rd site, in February and April only.

Additional information regarding Rice's whale acoustic detections has become available since publication of the 2023 proposed rule. A subsequent study placed acoustic recorders in shelf break waters in the same central GOM area, and added a location in the western GOM offshore of Texas (Soldevilla *et al.,* 2024). This new information provides additional evidence of the regular occurrence of Rice's whales outside the northeastern GOM, with Rice's whale calls recorded on 33 and 25 percent of days at the central and western GOM sites, respectively. As in the prior study, calls were recorded throughout the year.

The rate of call detections throughout the year is considerably higher in the eastern GOM than at the central GOM sites where calls were most commonly detected, with at least 8.3 calls/hour among 4 eastern GOM sites over 110 deployment days (Rice *et al.,* 2014) compared to 0.3 calls/hour over the 299-day deployment at the central GOM site where calls were detected most frequently during the Soldevilla *et al.* (2022) study. During that study, approximately 2,000 total calls were detected at the central site over 10 months, compared to more than 66,000 total detections at the eastern GOM deployment site over 11 months (approximately 30 times more calls detected at the eastern GOM site) (Soldevilla *et al.,* 2022). Similarly, Soldevilla *et al.* (2024) reported detecting 0.2 calls/hour at the western GOM site off Texas (1,694 detections over 8,547 hours of recording).

Caution should always be used when interpreting passive acoustic detection results because call detection rates are not necessarily correlated with the density or abundance of whales in a given area. Several factors influence call detection rates, including the rate at which whales call (which can vary by demographic group, individual, time of year, etc.) and the range over which calls can be detected (which is affected by auditory masking from competing noise sources, site characteristics and other factors) (Erbe *et al.,* 2016; Gibb *et al.,* 2018). Many of these variables remain undetermined for Rice's whales in the GOM. Those uncertainties notwithstanding, results from passive acoustic recordings, combined with the low number of confirmed and suspected visual sightings of Rice's whales in the central and western GOM (Barkaszi and Kelly, 2019; Rosel *et al.,* 2021; Garrison *et al.,* 2023), suggest that density and abundance of Rice's whales is likely lower in the central and western GOM than in the species' core habitat area in the eastern GOM. More research is needed to answer key questions about Rice's whale abundance, density, habitat use, demography, and stock structure in the central and western GOM.

Regarding the suggestion that NMFS has not adequately considered habitat in its consideration of mitigation, we disagree. Habitat value is informed by marine mammal presence and use, and the available data can support the consideration and discussion of impacts to (and mitigation for) both marine mammals and their habitat simultaneously. The discussion above clearly considers physical features that can drive habitat use (*e.g.,* depth), as well as detailed information related to relative presence in the eastern versus the central and western GOM, which is indicative of preferred habitat in the east. As stated in the 2021 final rule, because habitat value is informed by marine mammal presence and use, in some cases, there may be overlap in measures for the species or stock and for use of habitat. NRDC has not presented any information that would suggest habitat we did not consider for mitigation.

In summary, the newly available data related to marine mammal presence and habitat were considered under the LPAI standard, and we concluded additional mitigation for Rice's whale was not warranted under that standard.

Comment: NRDC finds fault with NMFS' consideration of practicability concerning possible closure of potential Rice's whale habitat in the central and western GOM to future survey activity, suggesting that NMFS' reference to analysis presented in its Regulatory Impact Analysis (RIA) for the 2021 final rule is not relevant. NRDC also suggests that NMFS must consider that OCSLA ''requires a balancing between the development of offshore energy resources and the protection of marine resources'' and that, based on the requirements of Executive Order 13990, NMFS must consider the social cost of carbon in making its determinations regarding practicability of mitigation.

Response: As was acknowledged in the 2023 proposed rule, the RIA did not directly evaluate a potential closure of potentially suitable habitat in the central and western GOM outside of the Rice's whale core distribution area. However, we disagree that the RIA is not relevant to our practicability analysis here. The RIA's assessment of potential restrictions in the northeastern GOM provided a useful framework for considering practicability relating to a broad closure of potential Rice's whale habitat to future survey activity.

To bolster that discussion, we turned to the same sources of data referenced in the RIA in analysis of potential closure areas considered therein (see *https://www.data.boem.gov/Main/Default.aspx*). While areas of Rice's whale habitat (*i.e.,* water depths of 100–400 m on the continental shelf break) contain less oil and gas industry infrastructure than do shallower, more mature waters, and have been subject to less leasing activity than deeper waters with greater expected potential reserves, they nonetheless host significant industry activity. BOEM provides summary information by water depth bin, including water depths of 201–400 m. Omitting information regarding water depths of 100–200 m, the area overlaps 33 active leases, with 17 active platforms and over 1,200 approved applications to drill. In the past 20 years, over 500 wells have been drilled in water depths of 100–400 m. These data confirm that there is substantial oil and gas industry activity in this area and, therefore, the inability to collect new seismic data could affect oil and gas development given that oil companies typically use targeted seismic to refine their geologic analysis before drilling a well. In addition, year-round occurrence of Rice's whales in waters 100–400 m deep precludes the use of seasonal closures to minimize exposure of Rice's whales. Therefore, we analyze the potential for a year-round closure, which exacerbates the potential for effects on oil and gas

productivity in the GOM because operators have no ability to plan around the closure. While the area is not as important to regional oil and gas productivity as the prospective deepwater central GOM closure analyzed in the RIA (as we acknowledged in the 2023 proposed rule), the more area-specific data provided above continue to support NMFS' previous conclusions, which we affirm here: (1) We are unable to delineate specific areas of Rice's whale habitat in the central and western GOM where restrictions on survey activity would be appropriate because there is currently uncertainty about Rice's whale density, abundance, habitat usage patterns and other factors in the central and western GOM; and (2) there is high likelihood that closures or other restrictions on survey activity in all waters of 100–400 m depth in the central and western GOM would have significant economic impacts. Finally, we note that despite NRDC's concerns, it does not recommend any particular closure that it believes NMFS should evaluate.

Regarding NRDC's suggestions concerning OCSLA—a statute administered by BOEM—NMFS' statutory obligations arise under the MMPA (with associated requirements under the Endangered Species Act, National Environmental Policy Act, and Administrative Procedure Act, among others). NMFS has no statutory obligation relative to OCSLA. Similarly, NMFS' obligations under the MMPA require that we prescribe the means of effecting the LPAI on the affected species or stock and their habitat, which we have done here. E.O. 13990 does not require NMFS to consider the social cost of carbon in determining whether potential mitigation requirements are practicable under the MMPA.

Comment: NRDC states that NMFS ''fails to consider mitigation measures'' for Rice's whale, suggesting that NMFS consider: (1) allowing some survey activities in the area, such as surveys undertaken by leaseholders to develop their lease blocks, while prohibiting others; (2) extending geographically vessel strike avoidance measures ''presently in effect for industry in the core habitat area''; and (3) requiring use of ''lowest practicable source levels within the whales' communication frequencies for activities taking place in the vicinity of the whales' habitat.'' In a somewhat similar vein, the MMC recommends that NMFS ''restrict speculative geophysical surveys from occurring in waters in the 100- to 400-m depth range in the Central and Western Planning Areas.''

Response: NRDC does not provide supporting detail regarding its recommended mitigation requirements. As such, NMFS is unable to fully evaluate the suggested measures.

Regarding the suggestion to allow some surveys but prohibit others, section 101(a)(5)(A) of the MMPA requires NMFS to make a determination that the take incidental to a ''specified activity'' will have a negligible impact on the affected species or stocks of marine mammals, and will not result in an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses. NMFS' implementing regulations require applicants to include in their request a detailed description of the specified activity or class of activities that can be expected to result in incidental taking of marine mammals. 50 CFR 216.104(a)(1). Thus, the ''specified activity'' for which incidental take coverage is being sought under section 101(a)(5)(A) is generally defined and described by the applicant. Here, BOEM is the applicant for the ITR in support of industry operators, and we are responding to the specified activity as described in that petition (and making the necessary findings on that basis). BOEM's petition made no distinction between surveys that may be speculative or otherwise fall into a category of surveys that NRDC suggests should be prohibited, and those that are not.

Moreover, NRDC does not describe any useful metric for determining which surveys should be allowed, aside from vague reference to ''surveys undertaken by leaseholders to develop their lease blocks.'' The MMC similarly does not provide any useful definition of the ''speculative'' surveys it believes NMFS should prohibit, aside from stating that it believes these are typically ''2D or similar surveys.'' No 2D surveys have been conducted in the GOM during the period of time since the ITR became effective. During that time, NMFS has issued over 50 LOAs. Less than 10 of these were issued to what are sometimes referred to as ''multi-client operators,'' or companies that conduct surveys in order to acquire data that may be sold to one or more development companies. Regardless of the small proportion of LOAs issued to such companies, the surveys conducted under those LOAs are not necessarily what the commenters may refer to as ''speculative,'' but instead may be designed to cover multiple lease areas and therefore provide data to multiple leaseholders. The suggestions are not sufficiently developed to allow for adequate consideration.

Regarding vessel strike avoidance measures, NRDC does not specify to what measures it is referring. However, the ITR already contains a suite of vessel strike avoidance measures that apply wherever survey activity is occurring.

Finally, NRDC does not describe any useful scheme by which ''lowest practicable source levels within the whales' communication frequencies'' might be defined. Further, NMFS previously responded to a similar, if more detailed, comment in its 2021 final rule (86 FR 5387, January 19, 2021).

Comment: NRDC states that NMFS ''fails to reconsider prescribing quieter alternatives to conventional seismic airguns, despite evidence of the availability of such alternatives,'' and claims that NMFS has not adequately analyzed the practicability of such a requirement.

Response: NMFS acknowledges that there are an increasing number of sources that may reasonably be considered as environmentally preferable to conventional airguns, including sources operating at lower frequencies and without the high peak pressure output associated with airguns. In fact, such sources have been used during certain surveys conducted under NMFS-issued LOAs. However, imposing requirements to use certain technologies, or prescribing the manner in which geophysical survey data must be acquired, would exceed NMFS' authority under the MMPA. Survey funders and operators define survey objectives and methodologies, including which acoustic sources are used, on the basis of data needs that are beyond NMFS' technical expertise to judge. NRDC argues that specific mandates are not required, versus a generic ''best available technology'' requirement, but offers no recommended metrics. NMFS agrees that increased use of environmentally preferable sources is an appropriate goal, but it would be more appropriate to continue working with industry to incentivize use of such sources and techniques rather than require them.

Comment: NRDC states that NMFS uses an ''arbitrary'' method to convert area-specific risk scores into a ''basis for making Gulf-wide negligible impact determinations.'' NRDC takes issue with NMFS' use of the median of zone-specific risk ratings (for those zones including at least 0.05 percent of GOM-wide abundance for a particular species), suggesting that the application of this method inappropriately minimizes findings of ''high'' to ''very high'' risk for certain species in Zone 5, where there is a confluence of relatively

high levels of survey activity and high proportions of GOM-wide abundance for some species, resulting in high take numbers. NRDC expressed concern that using the median does not allow for appropriate consideration of the importance of specific areas to a particular species, *i.e.,* that this approach ''smooths'' away granularity of the risk assessment.

Response: We disagree with NRDC's comments on this topic, and note that NRDC provided no alternative recommendation. On the contrary, this approach explicitly incorporates considerations of the importance of a particular area to a species, or the particular localized threats faced by a species, through the zone-specific vulnerability assessment that contributes to the overall risk rating. In addition, NMFS' approach is specifically designed to retain considerations of zone-specific impacts and vulnerability beyond simply the inclusion of the vulnerability scoring. For example, an alternative approach to generating a GOM-wide risk rating would be to employ a wholly different paradigm in which aggregate GOM-wide vulnerability and severity scores are assessed, versus taking a median value of zone-specific ratings. NMFS retained the median value approach precisely because we believe that evaluating risk for such a large and variable area (*i.e.,* the entire U.S. GOM) with species and activities that are each highly localized would provide only a very general and less informative answer regarding risk. The approach employed by NMFS highlights the fundamental importance of the spatiotemporal intersection of animals and activity as the fundamental driver in evaluating risk, while also allowing us to avoid exactly the effect of concern to NRDC (blurring of localized scoring) by avoiding the influence of areas where a particular species essentially does not occur on the overall risk rating for that species.

NRDC is incorrect that use of the median value is inappropriate or that it has ''no biological basis.'' We note that mean (or average) values can be more heavily skewed by outliers with small sample size than median values. Thus, we chose the median as a better descriptor of central tendency, which is a more appropriate perspective for the risk analysis. (We also rounded up values of .5 (*e.g.,* median score of 3.5 would be rounded to a 4), a mathematically valid approach that builds in a reasonable degree of conservatism.)

As we discussed in response to NRDC's public comment on the 2018 proposed rule (January 19, 2021, 86 FR 5322, 5359), one of the fundamental values of the analytical framework is that it is structured in a spatially explicit way that can be applied at multiple scales, based on the scope of the action and the information available, to inform an assessment of the risk associated with the activity (or suite of activities). This allows one to generate overall risk ratings while also evaluating risk on finer scales. In this case, severity ratings were generated on the basis of seven different GOM zones, allowing an understanding not only of the relative scenario-specific risk across the entire GOM, as is demanded for this analysis, but also to better understand the particular zones where risk may be relatively high (depending on actual future survey effort) and what part of the stock's range may be subject to relatively high risk.

NRDC cites the Expert Working Group (EWG) Report in support of its comment, stating it was ''[telling]'' that ''the [EWG] Report did not contrive a Gulf-wide risk assessment'' and that ''doing so would have belied the very different purpose underlying its design: a relative risk assessment across multiple species and geographies.'' Although the initial EWG report (Southall *et al.,* 2017) made available for public review of the framework concept did not derive GOM-wide risk ratings, the EWG did so in a later draft report that NMFS adopted in producing the risk evaluation presented in its 2021 final rule.

NRDC continues to suggest (as it did in its 2018 comment letter) that the risk ratings are the primary or even sole basis for NMFS' negligible impact determinations, and repeats the assertion that NMFS has erroneously used the relativistic assessment presented in the EWG report as the basis for the negligible impact determination, thereby incorrectly applying the EWG report as though it evaluated absolute risk. These claims are incorrect. We reiterate our 2021 response to NRDC's previous comments on these topics (January 19, 2021, 86 FR 5322, 5359): the EWG analysis is an important component of the negligible impact analysis, but is not the sole basis for our determination. While the EWG analysis comprehensively considered the spatial and temporal overlay of the activities and the marine mammals in the GOM, as well as the number of takes predicted by the described modeling, there are details about the nature of any ''take'' anticipated to result from these activities that were not considered directly in the EWG analysis and which warrant explicit consideration in the negligible impact analysis. Accordingly, NMFS' analysis considers the results of the EWG analysis, the effects of the required mitigation, and the nature and context of the takes that are predicted to occur. NMFS' analysis also explicitly considers the effects of predicted Level A harassment, duration of Level B harassment events, and impacts to marine mammal habitat, which respectively were not integrated into or included in the EWG risk ratings. These components of the full analysis, along with any germane species or stock-specific information, are integrated and summarized for each species or stock in the Species and Stock-specific Negligible Impact Analysis Summaries section of the negligible impact analysis.

While the EWG framework produces relativistic risk ratings, its components consist of absolute concepts, some of which are also absolutely quantified (*e.g.,* whether the specified activity area contains greater than 30 percent of total region-wide estimated population, between 30 and 15 percent, between 15 and 5 percent, or less than 5 percent). Further, NMFS provided substantive input into the scoring used in implementing the EWG framework for the GOM, to ensure that the categories associated with different scores, the scores themselves, and the weight of the scores within the overall risk rating all reflected meaningful biological, activity, or environmental distinctions that would appropriately inform the negligible impact analysis. Accordingly, and as intended, we used our understanding of the EWG framework and applied professional judgment to interpret the relativistic results of the EWG analysis appropriately into the larger negligible impact analysis, with the other factors discussed above, to make the necessary findings specific to the effects of the total taking on the affected species and stocks.

Comment: NRDC describes the risk assessment results for Rice's whale over time (*i.e.,* across NMFS' 2018 proposed rule, 2021 final rule, and 2023 proposed rule) as inconsistent, particularly in Zone 5, suggesting that there could be some unexplained error at play.

Response: NMFS acknowledges that the risk ratings for the Rice's whale/Bryde's whale in Zone 5 have changed compared with the original analysis presented in NMFS' 2018 proposed rule. In that analysis, Zone 5 risk was assessed as ''very high'' for the then-named Bryde's whale across all evaluated scenarios. Assessed risk was reduced to ''low'' for the species in Zone 5 in NMFS' 2021 final rule, and this rating remained consistent in NMFS' 2023 proposed rule. This change is explained by the accompanying take

estimates in each of the three analyses: in the 2018 proposed rule, the mean annual take number across scenarios for the species was 462, with Zone 5 severity rankings ranging from high to very high. Following revision of the analysis reflecting the erroneous take numbers estimated by BOEM due to its removal of the GOMESA area, the mean annual take number declined to 8. It is no surprise, then, that the associated risk ratings changed from ''very high'' to ''low.'' In NMFS' 2023 proposed rule, following correction of the estimated take numbers, but inclusive of BOEM's removal of the GOMESA area, the mean annual take number increased to 26 and, accordingly, the risk ratings remained low. The risk ratings assessed for Rice's whale across these analyses simply reflect the underlying take estimates and, therefore, the associated severity scoring. No error has been made.

Comment: The MMC recommends that NMFS provide an update on progress by LOA-holders or their representative(s) toward completing and making publicly available the synthesis report of all activities that were conducted by LOA-holders during the first year of the reporting period for the final rule.

Response: The report is complete and available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.*

Comment: The MMC reiterates its previous recommendation that NMFS and BOEM establish a GOM scientific advisory group, composed of agency and industry representatives and independent scientists, to assist in the review of data collected to date and to identify and prioritize monitoring needs and hypothesis-driven research projects to better understand the short- and long-term effects of geophysical surveys on marine mammals in GOM.

Response: NMFS reiterates its previous response to this recommendation. NMFS would be willing to explore with the MMC the appropriate mechanisms for convening such a group, including consideration of the MMC's authorities under the MMPA. However, NMFS disagrees that responsibility to establish such a group is either a requirement of the MMPA, or warranted as a condition of promulgating this rule.

Description of Marine Mammals in the Area of the Specified Activities

Table 2 lists all species with expected potential for occurrence in the GOM and summarizes information related to the population or stock, including potential biological removal (PBR). PBR, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population, is considered in concert with known sources of ongoing anthropogenic mortality (as described in NMFS' stock assessment reports (SAR)). For status of species, we provide information regarding U.S. regulatory status under the MMPA and Endangered Species Act (ESA). The affected species and stocks have not changed from those described in the notice of issuance of the 2021 rule. We incorporate information newly available since that rule, including updated information from NMFS' SARs, but do not otherwise repeat discussion provided in this section of the 2018 proposed rule and 2021 final rule.

In some cases, species are treated as guilds (as was the case for the analysis conducted in support of the 2021 ITR). In general ecological terms, a guild is a group of species that have similar requirements and play a similar role within a community. However, for purposes of stock assessment or abundance prediction, certain species may be treated together as a guild because they are difficult to distinguish visually and many observations are ambiguous. For example, NMFS' GOM SARs assess stocks of *Mesoplodon* spp. and *Kogia* spp. as guilds. As was the case for the 2021 final rule, we consider beaked whales and *Kogia* spp. as guilds. In this rule, reference to ''beaked whales'' includes the Cuvier's, Blainville's, and Gervais beaked whales, and reference to ''*Kogia* spp.'' includes both the dwarf and pygmy sperm whale.

The use of guilds in the 2021 final rule followed the best available density information at the time (*i.e.,* Roberts *et al.,* 2016). Subsequently, updated density information became available for all species except for Fraser's dolphin and rough-toothed dolphin (Garrison *et al.,* 2023). The updated density models retain the treatment of beaked whales and *Kogia* spp. as guilds and have additionally consolidated 4 species into an undifferentiated blackfish guild. These species include the melon-headed whale, false killer whale, pygmy killer whale, and killer whale. The model authors determined that, for this group of species, there were insufficient sightings of any individual species to generate a species-specific model (Garrison *et al.,* 2023). Therefore, reference to blackfish hereafter includes the melon-headed whale, false killer whale, pygmy killer whale, and killer whale.[6]

Twenty-one species (with 24 managed stocks) have the potential to co-occur with the prospective survey activities. For detailed discussion of these species, please see the 2018 proposed rule. In addition, the West Indian manatee (*Trichechus manatus latirostris*) may be found in coastal waters of the GOM. However, manatees are managed by the U.S. Fish and Wildlife Service and are not considered further in this document. All managed stocks in this region are assessed in NMFS' U.S. Atlantic SARs.

All values presented in table 2 are the most recent available at the time the analyses for this notice were completed, including information presented in NMFS' 2022 SARs (the most recent SARs available at the time of publication) (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports*).

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[6] NMFS' 2021 final rule provided take estimates separately for the melon-headed whale, false killer whale, pygmy killer whale, and killer whale. This rule provides a single take estimate for those four species grouped together as the ''blackfish.'' This change in approach reflects the best available scientific information, *i.e.,* updated density information (Garrison *et al.,* 2023). These species are encountered only occasionally during any given vessel survey, and these relatively infrequent encounters make it difficult to fit species-specific detection and habitat models. Roberts *et al.* (2016) fit species-specific models based on survey data from 1992–2009, including 29, 19, 27, and 16 sightings, respectively, of these species. For each of these models, the authors detail analyses and decisions relevant to model development, as well as notes of caution regarding use of the models given the associated uncertainty resulting from development of a model based on few sightings. The Garrison *et al.* (2023) models are based on survey data from 2003–2019. Notably, surveys conducted after 2009 were conducted in ''passing'' mode, where the ship did not deviate from the trackline to approach and verify species identifications for detected marine mammal groups, resulting in an increase in observed marine mammal groups that could not be identified to species. As a result of these factors, the model authors determined it appropriate to develop a single spatial model based on sightings of unidentified blackfish, in addition to the relatively few sightings where species identification could be confirmed.

Table 2 -- Marine Mammals Potentially Present in the Specified Geographical Region

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	NMFS stock abundance (CV, N_{min}, most recent abundance survey)[2]	Predicted mean (CV)/ maximum abundance[3]	PBR	Annual M/SI[4]
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)							
Family Balaenopteridae (rorquals)							
Rice's whale[5]	*Balaenoptera ricei*	Gulf of Mexico	E/D; Y	51 (0.50; 34; 2017-18)	37 (0.52)	0.1	0.5
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)							
Family Physeteridae							
Sperm whale	*Physeter macrocephalus*	GOM	E/D; Y	1,180 (0.22; 983; 2017-18)	3,007 (0.15)	2.0	9.6
Family Kogiidae							
Pygmy sperm whale	*Kogia breviceps*	GOM	-; N	336 (0.35; 253; 2017-18)[6,7]	980 (0.16)	2.5	31
Dwarf sperm whale	*K. sima*	GOM	-; N				
Family Ziphiidae (beaked whales)							
Cuvier's beaked whale	*Ziphius cavirostris*	GOM	-; N	See Footnotes 7-8	803 (0.18)	0.1	5.2
Gervais beaked whale	*Mesoplodon europaeus*	GOM	-; N			0.7	
Blainville's beaked whale	*M. densirostris*	GOM	-; N				
Family Delphinidae							
Rough-toothed dolphin	*Steno bredanensis*	GOM	-; N	3,509 (0.67; Unk.; 2009)	4,853 (0.19)	Und et.	39
Common bottlenose dolphin[7]	*Tursiops truncatus truncatus*	GOM Oceanic	-; N	7,462 (0.31; 5,769; 2017-18)	155,453 (0.13) (Shelf) 9,672 (0.15) (Oceanic)	58	32
		GOM Continental Shelf	-; N	63,280 (0.11; 57,917; 2017-18)		556	65
		GOM Coastal, Northern	-; N	11,543 (0.19; 9,881; 2017-18)		89	28
		GOM Coastal, Western	-; N	20,759 (0.13; 18,585; 2017-18)		167	36

Clymene dolphin	*Stenella clymene*	GOM	-; N	513 (1.03; 250; 2017-18)	4,619 (0.35)	2.5	8.4
Atlantic spotted dolphin	*S. frontalis*	GOM	-; N	21,506 (0.26; 17,339; 2017-18)	6,187 (0.33) (Shelf) 1,782 (0.19) (Oceanic)	166	36
Pantropical spotted dolphin	*S. attenuata attenuata*	GOM	-; N	37,195 (0.24; 30,377; 2017-18)	67,225 (0.27)	304	241
Spinner dolphin	*S. longirostris longirostris*	GOM	-; N	2,991 (0.54; 1,954; 2017-18)	5,548 (0.40)	20	113
Striped dolphin	*S. coeruleoalba*	GOM	-; N	1,817 (0.56; 1,172; 2017-18)	5,634 (0.18)	12	13
Fraser's dolphin	*Lagenodelphis hosei*	GOM	-; N	213 (1.03; 104; 2017-18)	1,665 (0.73)	1	Unk.
Risso's dolphin	*Grampus griseus*	GOM	-; N	1,974 (0.46; 1,368; 2017-18)	1,501 (0.27)	14	5.3
Melon-headed whale	*Peponocephala electra*	GOM	-; N	1,749 (0.68; 1,039; 2017-18)	6,113 (0.20)	10	9.5
Pygmy killer whale	*Feresa attenuata*	GOM	-; N	613 (1.15; 283; 2017-18)		2.8	1.6
False killer whale	*Pseudorca crassidens*	GOM	-; N	494 (0.79; 276; 2017-18)		2.8	2.2
Killer whale	*Orcinus orca*	GOM	-; N	267 (0.75; 152; 2017-18)		1.5	Unk.
Short-finned pilot whale	*Globicephala macrorhynchus*	GOM	-; N	1,321 (0.43; 934; 2017-18)	2,741 (0.18)	7.5	3.9

[1]ESA status: Endangered (E)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*. CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance.

[3]This information represents species- or guild-specific abundance predicted by habitat-based cetacean density models (Roberts *et al.*, 2016; Garrison *et al.*, 2023). These models provide the best available scientific information regarding predicted density patterns of cetaceans in the U.S. Gulf of Mexico, and we provide the corresponding abundance predictions as a point of reference. Total abundance estimates were produced by computing the mean density of all pixels in the modeled area and multiplying by its area. Abundance predictions for Fraser's dolphin and rough-toothed dolphin from Roberts *et al.* (2016); abundance predictions for other taxa represent the maximum predicted abundance from Garrison *et al.* (2023).

[4]These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). These values are generally considered minimums because, among other reasons, not all fisheries that could interact with a particular stock are observed and/or observer coverage is very low, and, for some stocks (such as the Atlantic spotted dolphin and continental shelf stock of bottlenose dolphin), no estimate for injury due to the *Deepwater Horizon* oil spill has been included. See SARs for further discussion.

[5]The 2021 final rule refers to the GOM Bryde's whale (*Balaenoptera edeni*). These whales were subsequently described as a new species, Rice's whale (*Balaenoptera ricei*) (Rosel *et al.*, 2021).

[6]NMFS' 2020 SARs state that the abundance estimate provided for *Kogia* spp. is likely a severe underestimate because it was not corrected for the probability of detection on the trackline, and because *Kogia* spp. are often difficult to see, present little of themselves at the surface, do not fluke when they dive, and have long dive times. In addition, they

exhibit avoidance behavior towards ships and changes in behavior towards approaching survey aircraft. See Hayes *et al.* (2021).

[7]Abundance estimates are in some cases reported for a guild or group of species when those species are difficult to differentiate at sea. Similarly, habitat-based cetacean density models are based in part on available observational data which, in some cases, is limited to genus or guild in terms of taxonomic definition. NMFS' SARs present pooled abundance estimates for *Kogia* spp. and *Mesoplodon* spp., while Garrison *et al.* (2023) produced density models to genus level for *Kogia* spp. and as a guild for beaked whales (*Ziphius cavirostris* and *Mesoplodon* spp.) and blackfish (pygmy killer whale, false killer whale, melon-headed whale, and killer whale). Finally, Garrison *et al.* (2023) produced density models for bottlenose dolphins that do not differentiate between stocks, but between oceanic and shelf dolphins.

[8]NMFS' 2020 SARs provide various abundance estimates for beaked whales: Cuvier's beaked whale, 18 (CV=0.75); Gervais' beaked whale, 20 (CV=0.98); unidentified Mesoplodont species, 98 (CV=0.46); and unidentified Ziphiids, 181 (CV=0.31). The SARs state that these estimates likely represent severe underestimates, as they were not corrected for the probability of detection on the trackline, and due to the long dive times of these species. See Hayes *et al.* (2021).

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In table 2 above, we report two sets of abundance estimates: those from NMFS' SARs and those predicted by habitat-based cetacean density models. Please see footnote 3 of table 2 for more detail. NMFS' SAR estimates are typically generated from the most recent shipboard and/or aerial surveys conducted. GOM oceanography is dynamic, and the spatial scale of the GOM is small relative to the ability of most cetacean species to travel. U.S. waters only comprise about 40 percent of the entire GOM, and 65 percent of GOM oceanic waters are south of the U.S. EEZ. Studies based on abundance and distribution surveys restricted to U.S. waters are unable to detect temporal shifts in distribution beyond U.S. waters that might account for any changes in abundance within U.S. waters. NMFS' SAR estimates also in some cases do not incorporate correction for detection bias. Therefore, for cryptic or long-diving species (*e.g.,* beaked whales, *Kogia* spp., sperm whales), they should generally be considered underestimates (see footnotes 6 and 8 of table 2).

The model-based abundance estimates represent the output of predictive models derived from multi-year observations and associated environmental parameters and which incorporate corrections for detection bias (the same models and data from which the density estimates are derived). Incorporating more data over multiple years of observation can yield different results in either direction, as the result is not as readily influenced by fine-scale shifts in species habitat preferences or by the absence of a species in the study area during a given year. NMFS' SAR abundance estimates show substantial year-to-year variability in some cases. Incorporation of correction for detection bias should systematically result in greater abundance predictions. For these reasons, the model-based estimates are generally more realistic and, for the purposes of assessing estimated exposures relative to abundance—used in this case to understand the scale of the predicted takes compared to the population—NMFS generally believes that the model-based abundance predictions are the best available information and most appropriate because they were used to generate the exposure estimates and therefore, provide the most relevant comparison.

NMFS' 2021 final rule provided take estimates separately for the melon-headed whale, false killer whale, pygmy killer whale, and killer whale. This rule provides a single take estimate for those four species grouped together as the blackfish. This approach was dictated by the best available science. The model authors determined it necessary to aggregate the few sightings data available for each of the four species with sightings data that could not be resolved to the species level in order to develop a density model, as there were not sufficient confirmed sightings of individual species to create individual spatial models (Garrison *et al.,* 2023). Further, the model authors advised that any attempt to parse the results to species would be fraught with complicated assumptions and limited data, and that there is no readily available way to do so in a scientifically defensible manner. Previous estimates (Roberts *et al.,* 2016) were based on older data (data range 1992–2009 versus 2003–2019), and the updated models notably include post-DWH oil spill survey data and, for the first time, winter survey data. Nonetheless, interested members of the public may review NMFS' 2018 proposed rule and supporting documentation, which assumed slightly greater activity levels and larger take numbers before the GOMESA area was removed and still preliminarily determined a negligible impact on all 4 species comprising the blackfish group.

NMFS does not have sufficient information to support apportioning the blackfish takes to the constituent species, but we note that the sum of annual average evaluated take for the 4 species in the 2021 final rule is 64,742, while the new annual average take estimate for blackfish (using the updated density information) is 55,441.

NMFS' ability to issue LOAs under the 2021 rule to date has been limited specifically with regard to killer whales, because BOEM's error most severely affected killer whale take numbers. (Evaluated Rice's whale takes were similarly affected, but were generally not implicated in LOA requests based on the location of planned surveys.) Effects to killer whales from the specified activity have not presented particular concern in a negligible impact context, even considering the original take numbers evaluated in NMFS' 2018 proposed rule (annual average take of 1,160), which produced overall scenario-specific risk ratings of low to moderate. Evaluated risk is similar across the 2018 proposed rule and this rule.

Further, we note that we make a conservative assumption in this rule in the application of the risk assessment framework to blackfish. Risk is a product of severity and vulnerability. While severity is based on density and abundance and is, therefore, reflective of the new density information, vulnerability is based on species-specific factors and is different for the four species. We applied the highest vulnerability score of the four to combine with the severity to get the overall risk rating for the group. Please see Negligible Impact Analysis and Determinations for additional discussion.

As part of our analyses for incidental take rules, we consider any known areas of importance as marine mammal habitat. We also consider other relevant information, such as unusual mortality events (UME) and the 2010 DWH oil

spill. The 2018 proposed rule provided detailed discussion of important marine mammal habitat, relevant UMEs, and of the DWH oil spill. The 2021 final rule updated those discussions as necessary. That information is part of the baseline for our analyses for this final rule. There have been no new UMEs, or new information regarding the UMEs discussed in the prior notices. Similarly, there is no new information regarding the DWH oil spill. However, estimates of annual mortality for many stocks over the period 2014–2018 now include mortality attributed to the effects of the DWH oil spill (see table 2) (Hayes *et al.,* 2021), and these mortality estimates are considered as part of the environmental baseline.

Habitat. Important habitat areas may include areas of known importance for reproduction, feeding, or migration, or areas where small and resident populations are known to occur. They may have independent regulatory status such as designated critical habitat for ESA-listed species (as defined by section 3 of the ESA) or be identified through other means (*e.g.,* recognized Biologically Important Areas (BIA)).

As noted above in table 2, the former GOM Bryde's whale has been described as a new species, Rice's whale (Rosel *et al.,* 2021). No critical habitat has yet been designated for the species, though a proposed rule was published (88 FR 47453, July 24, 2023). The proposal references the same supporting information discussed herein, and draws similar conclusions in suggesting that GOM continental slope waters between 100–400 m water depth be designated as critical habitat. In addition, a BIA has been recognized since 2015 (LaBrecque *et al.,* 2015). This year-round BIA was discussed in the 2018 proposed rule and 2021 final rule, and we do not repeat the description of the 2015 BIA.

NOAA's ESA status review of the former GOM Bryde's whale (Rosel *et al.,* 2016) expanded the 2015 BIA description by stating that, due to the depth of some sightings, the area is appropriately defined to the 400-m isobath and westward to Mobile Bay, Alabama, in order to provide some buffer around the deeper sightings and to include all sightings in the northeastern GOM. Based on the description provided by the status review (Rosel *et al.,* 2016), our 2018 proposed rule considered a Rice's whale ''core habitat area'' between the 100- and 400-m isobaths, from 87.5° W to 27.5° N (83 FR 29212, August 21, 2018), in order to appropriately encompass Rice's whale sightings at the time. In addition, the area largely covered the home range (*i.e.,* 95 percent of predicted abundance) predicted by Roberts *et al.* (2016).

NMFS SEFSC subsequently developed a description of what is referred to as a Rice's whale ''core distribution area'' [7] (*https://www.fisheries.noaa.gov/resource/map/rices-whale-core-distribution-area-map-gis-data*) (see Figures 3 and 4) (Rosel and Garrison, 2022). The authors state that the core distribution area description is based on visual sightings and tag data, and does not imply knowledge of habitat preferences (Rosel and Garrison, 2022). A description of the core distribution area and associated methodology was provided in the 2023 proposed rule (88 FR 916, 924–925, January 5, 2023). In summary, that process involved the addition of buffers meant to address uncertainty regarding whale locations and possible movements from those locations to a polygon encompassing all confirmed Rice's whale visual observations and location data from two tagged whales. The incorporation of this approach to address uncertainty is what differentiates the ''core habitat area'' discussed in the previous paragraph, considered in the 2018 proposed rule and 2021 final rule, from the ''core distribution area.'' The core distribution area does not reflect new sightings data or other information relative to the basis for the core habitat area. However, whereas the ''core habitat area'' was located entirely within the GOMESA area removed from the geographic scope of the specified activity for the 2021 final rule (and therefore no longer relevant for consideration in prescribing mitigation), the buffer portion of the ''core distribution area'' results in a small overlap with the geographic scope of the specified activity (5 percent) and is therefore appropriate for consideration.

Our knowledge of Rice's whale distribution is based on a combination of historic and contemporary sightings, passive acoustic detections, and spatial modeling. The evidence collected from these methods indicates that Rice's whales occupy waters along the continental shelf and slope and adjacent waters throughout the U.S. GOM, and in particular, waters between 100 and 400 m deep. The widest swath of habitat occurs in the species' core distribution area in the northeastern GOM, south and west of Alabama and Florida. However, a contiguous strip of habitat also extends south of the core distribution area toward the Florida Keys, and westward along the continental shelf and slope offshore of Mississippi, Louisiana, and Texas (Garrison *et al.,* 2023). PAM recordings have been especially valuable for confirming the species' year-round presence in the central and western GOM (Soldevilla *et al.,* 2022, 2024), helping to offset the limited visual survey effort in those locations. The shallowest and deepest waters where Rice's whales have been confirmed visually to date are 117 m and 408 m, respectively, but Rice's whales may use waters that are deeper or shallower than those values at times. Historic whaling records indicate Rice's whales occurred more broadly throughout the GOM historically (Reeves *et al.,* 2011), and unconfirmed sightings from protected species observers have occurred at a wider range of locations and depths (Barkaszi and Kelley, 2018, 2024).

[7] The 2023 proposed rule retained the ''core habitat area'' terminology when describing the core distribution area, for continuity with the 2021 rule, but this final rule reverts to preserving the different terminologies associated for each.

Potential Effects of the Specified Activities on Marine Mammals and Their Habitat

In NMFS' 2018 proposed rule (83 FR 29212, June 22, 2018), this section included a comprehensive summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat, including general background information on sound and specific discussion of potential effects to marine mammals from noise produced through use of airgun arrays. NMFS provided a description of the ways marine mammals may be affected by the same activities considered herein, including sensory impairment (permanent and temporary threshold shifts and acoustic masking), physiological responses (particularly stress responses), behavioral disturbance, or habitat effects, as well as of the potential for serious injury or mortality. The 2021 final rule (86 FR 5322, January 19, 2021) provided updates to the discussion of potential impacts, as well as significantly expanded discussion of certain issues (*e.g.,* potential effects to habitat, including prey, and the potential for stranding events to occur) in the ''Comments and Responses'' section of that notice. These prior notices also provided discussion of marine mammal hearing and detailed background discussion of active acoustic sources and related acoustic terminology used herein. We have reviewed new information available since the 2021 final rule was issued. Having considered this information, we have determined that there is no new information that substantively affects

our analysis of potential impacts on marine mammals and their habitat that appeared in the 2018 proposed and 2021 final rules, all of which remains applicable and valid for our assessment of the effects of the specified activities during the original 5-year period that is the subject of this rule. We incorporate by reference that information and do not repeat the information here, instead referring the reader to the 2018 proposed rule and 2021 final rule.

The Estimated Take section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by the specified activity. The Negligible Impact Analysis and Determinations section includes an analysis of how these activities will impact marine mammals and considers the content of this section, the Estimated Take section, and the Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and from that on the affected marine mammal populations.

Estimated Take

This section provides an estimate of the numbers and type of incidental takes that may be expected to occur under the specified activity, which informs NMFS' negligible impact determinations. Realized incidental takes would be determined by the actual levels of activity at specific times and places that occur under any issued LOAs and by the actual acoustic source used. While the methodology and modeling for estimating take remains identical to that originally described in the 2018 proposed and 2021 final rules, updated species density values have been used, and take estimates are available for three different airgun array configurations. The highest modeled estimated take (annual and 5-year total) for each species is analyzed for the negligible impact analysis.

Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines ''harassment'' as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment). As with the 2021 final rule, harassment is the only type of take expected to result from these activities. It is unlikely that lethal takes would occur even in the absence of the mitigation and monitoring measures, and no such takes are anticipated or will be authorized.

Anticipated takes would primarily be by Level B harassment, as use of the described acoustic sources, particularly airgun arrays, is likely to disrupt behavioral patterns of marine mammals upon exposure to sound at certain levels. There is also some potential for auditory injury (Level A harassment) to result for low- and high-frequency species due to the size of the predicted auditory injury zones for those species, though none is predicted to occur for Rice's whales (the only low-frequency cetacean in the GOM). NMFS does not expect auditory injury to occur for mid-frequency species. See discussion provided in the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018) and in responses to public comments provided in the notice of issuance for the 2021 final rule (86 FR 5322, January 19, 2021).

Below, we summarize how the take that may be authorized was estimated using acoustic thresholds, sound field modeling, and marine mammal density data. Detailed discussion of all facets of the take estimation process was provided in the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018), which is incorporated by reference here, as it was into the 2021 final rule, as most aspects of the modeling have not changed; any aspects of the modeling that have changed are noted below and in Weirathmueller *et al.* (2022). Please see that 2018 proposed rule notice, and associated companion documents available on NMFS' website, for additional detail. A summary overview of the take estimation process, as well as full discussion of new information related to the development of estimated take numbers, is provided below.

Acoustic Thresholds

NMFS uses acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals generally would be reasonably expected to exhibit disruption of behavioral patterns (Level B harassment) or to incur permanent threshold shift (PTS) of some degree (Level A harassment). Acoustic criteria used herein were described in detail in the preceding notices associated with the 2018 proposed rule and 2021 final rule; that discussion is not repeated as no changes have been made to the relevant acoustic criteria. See tables 3 and 4.

Table 3 -- Behavioral Exposure Criteria

Group	Probability of response to frequency-weighted rms SPL			
	120	140	160	180
Beaked whales	50%	90%	n/a	n/a
All other species	n/a	10%	50%	90%

Table 4 -- Exposure Criteria for Auditory Injury

Hearing Group	Peak pressure[1]	Cumulative sound exposure level[2]	
		Impulsive	Non-impulsive
Low-frequency cetaceans	219 dB	183 dB	199 dB
Mid-frequency cetaceans	230 dB	185 dB	198 dB
High-frequency cetaceans	202 dB	155 dB	173 dB

[1]Referenced to 1 μPa; unweighted within generalized hearing range
[2]Referenced to 1 μPa^2-s; weighted according to appropriate auditory weighting function. Airguns and the boomer are treated as impulsive sources; other HRG sources are treated as non-impulsive.

Acoustic Exposure Modeling

Zeddies *et al.* (2015, 2017a) provided estimates of the annual marine mammal acoustic exposures exceeding the aforementioned criteria caused by sounds from geophysical survey activity in the GOM for 10 years of notional activity levels, using 8,000-in^3 airguns and other sources, as well as full detail regarding the original acoustic exposure modeling conducted in support of BOEM's 2016 petition and NMFS' subsequent analysis in support of the 2021 final ITR. Zeddies *et al.* (2017b) provided information regarding source and propagation modeling related to the 4,130-in^3 airgun array, and Weirathmueller *et al.* (2022) provide detail regarding the new modeling performed for the 5,110-in^3 airgun array. Detailed discussion of the original modeling effort was provided in the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018), and in responses to public comments provided in the notice of issuance for the final rule (86 FR 5322, January 19, 2021). For full details of the modeling effort, see the reports (available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*) and review discussion provided in those prior **Federal Register** notices.

All acoustic exposure modeling, including source and propagation modeling, was redone in support of this final rule to address the additional airgun array configurations and the new data on marine mammal density and species definition files, as described below in this section. However, all aspects of the modeling (including source, propagation, and animal movement modeling) are the same as described in Zeddies *et al.* (2015, 2017a, 2017b) and discussed in previous **Federal Register** notices associated with the ITR. We do not repeat discussion of those aspects of the modeling, but refer the reader to those documents.

Differences from the modeling and modeling products described in previous notices associated with this ITR are limited to source and propagation modeling of the new 5,110-in^3 array configuration, which was performed using the same procedures as were used for the previous 8,000- and 4,130-in^3 array configurations, and two new data inputs: (1) updated marine mammal density information (Garrison *et al.,* 2023) and (2) revised species definition files. The latter information consists of behavioral parameters (*e.g.,* depth, travel rate, dive profile) for each species that govern simulated animal (animat) movement within the movement model (Weirathmueller *et al.,* 2022). These files are reviewed at the start of all new and reopened modeling efforts, and are updated as necessary according to the most recent literature. NMFS previously evaluated full acoustic exposure modeling results only for the 8,000-in^3 airgun array (only demonstration results for 6 species were provided in Zeddies *et al.* (2017b) for the 4,130-in^3 array configuration), but is now able to evaluate full results for all three array configurations; thereby, providing for greater flexibility and utility in representing actual acoustic sources planned for use during consideration of LOA requests.

Marine Mammal Density Information—Since the 2021 final rule went into effect, new habitat-based cetacean density models have been produced by NMFS' Southeast Fisheries Science Center (Garrison *et al.,* 2023). These models incorporate newer survey data from 2017–18 including, notably, data from survey effort conducted during winter. Inclusion of winter data allows for increased temporal resolution of model predictions. These are the first density models that incorporate survey data collected after the DWH oil spill. New models were produced for all taxa other than Fraser's dolphin and rough-toothed dolphin, as the model authors determined that there were too few detections of these species to support model development. Therefore, we continue to rely on the Roberts *et al.* (2016) models for these two species.

For species occurring in oceanic waters, the updated density models are based upon data collected during vessel surveys conducted in 2003–04, 2009, and 2017–18 (and including surveys conducted in 2019 for Rice's whale). Survey effort was generally conducted in a survey region bounded by the shelf break (approximately the 200-m isobath) to the north and the boundary of the U.S. EEZ to the south. Separate models were created for species occurring in shelf waters (Atlantic spotted dolphin and bottlenose dolphin) based on seasonal aerial surveys conducted in 2011–12 and 2017–18. Based on water depth, the shelf models were used to predict acoustic exposures for these two species in Zones 2 and 3, and the oceanic models were used to predict exposures in Zones 4–7.

As discussed above, the updated density modeling effort retains the previous approach of treating beaked whales and *Kogia* spp. as guilds, as sightings of these species are typically difficult to resolve to the species level. In addition, the model authors determined there to be too few sightings and/or too few sightings resolved to species level for the melon-headed whale, false killer whale, pygmy killer whale, and killer whale to produce individual species models. Instead, a single blackfish model was developed to produce guild-level predictions for these species (Garrison *et al.,* 2023).

Take Estimates

Exposure estimates above Level A and Level B harassment criteria, originally developed by Zeddies *et al.* (2015, 2017a, 2017b) and updated by Weirathmueller *et al.* (2022) in association with the activity projections for the various annual effort scenarios, were generated based on the specific modeling scenarios (including source and survey geometry), *i.e.,* 2D survey (1 × source array), 3D NAZ survey (2 × source array), 3D WAZ survey (4 × source array), coil survey (4 × source array).

Level A Harassment—Here, we summarize acoustic exposure modeling results related to Level A harassment. For more detailed discussion, please see the 2018 **Federal Register** notice for the proposed rule and responses to public comment provided in the 2021 **Federal Register** notice for the final rule. Overall, there is a low likelihood of take by Level A harassment for any species, though the degree of this low likelihood is primarily influenced by the specific hearing group. For mid- and high-frequency cetaceans, potential auditory injury would be expected to occur on the basis of instantaneous exposure to peak pressure output from an airgun array while for low-frequency cetaceans, potential auditory injury would occur on the basis of the accumulation of energy output over time by an airgun array. For additional discussion, please see NMFS (2018) and discussion provided in the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018) and in the notice of issuance for the 2021 final rule (86 FR 5322; January 19, 2021), *e.g.,* 83 FR 29262; 86 FR 5354; 86 FR 5397. Importantly, the modeled exposure estimates do not account for either aversion or the beneficial impacts of the required mitigation measures.

Of even greater import for mid-frequency cetaceans is that the small calculated Level A harassment zone size in conjunction with the properties of sound fields produced by arrays in the near field versus far field leads to a logical conclusion that Level A harassment is so unlikely for species in this hearing group as to be discountable. For all mid-frequency cetaceans, following evaluation of the available scientific literature regarding the auditory sensitivity of mid-frequency cetaceans and the properties of airgun array sound fields, NMFS does not expect any reasonable potential for Level A harassment to occur. This issue was addressed in detail in the response to public comments provided in NMFS' 2021 notice of issuance for the rule (86 FR 5322, January 19, 2021; see 86 FR 5354). NMFS expects the potential for Level A harassment of mid-frequency cetaceans to be discountable, even before the likely moderating effects of aversion and mitigation are considered, and NMFS does not believe that Level A harassment is a likely outcome for any mid-frequency cetacean. Therefore, the updated modeling results provided by Weirathmueller *et al.* (2022) account for this by assuming that any estimated exposures above Level A harassment thresholds for mid-frequency cetaceans resulted instead in Level B harassment (as reflected in table 6).

As discussed in greater detail in the 2018 notice of proposed rulemaking (83 FR 29212, June 22, 2018), NMFS considered the possibility of incorporating quantitative adjustments within the modeling process to account for the effects of mitigation and/or aversion, as these factors would lead to a reduction in likely injurious exposure. However, these factors were ultimately not quantified in the modeling. In summary, there is too much inherent uncertainty regarding the effectiveness of detection-based mitigation to support any reasonable quantification of its effect in reducing injurious exposure, and there is too little information regarding the likely level of onset and degree of aversion to quantify this behavior in the modeling process. This does not mean that mitigation is not effective (to some degree) in avoiding incidents of Level A harassment, nor does it mean that aversion is not a meaningful real-world effect of noise exposure that should be expected to reduce the number of incidents of Level A harassment. As discussed in greater detail in responses to public comments provided in the 2021 notice of issuance for the final rule (86 FR 5322, January 19, 2021; see 86 FR 5353), there is ample evidence in the literature that aversion is one of the most common responses to noise exposure across varied species, though the onset and degree may be expected to vary across individuals and in different contexts. Therefore, NMFS incorporated a reasonable adjustment to modeled Level A harassment exposure estimates to account for aversion for low- and high-frequency species. That approach, which is retained here, assumes that an 80 percent reduction in modeled exposure estimates for Level A harassment for low- and high-frequency cetaceans is reasonable (Ellison *et al.,* 2016) and likely conservative in terms of the overall numbers of actual incidents of Level A harassment for these species, as the adjustment does not explicitly account for the effects of mitigation. This adjustment was incorporated into the updated modeling results provided by Weirathmueller *et al.* (2022) and reflected in table 6.

Take Estimation Error—As discussed previously, in 2020 BOEM provided an update to the scope of their proposed action through removal of the area subject to leasing moratorium under GOMESA from consideration in the rule. In support of this revision, BOEM provided revised 5-year level of effort predictions and associated acoustic exposure estimates. BOEM's process for developing this information, described in detail in ''Revised Modeled Exposure Estimates'' (available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*), was straightforward. Rather than using the PEIS's 10-year period, BOEM provided revised levels of effort for a 5-year period, using years 1–5 of the original level of effort projections. BOEM stated that the first 5 years were selected to be carried forward ''because they were contiguous, they included the three years with the most activity, and they were the best understood in relation to the historical data upon which they are based.'' Levels of effort, shown in table 1, were revised based on the basic assumption that if portions of areas are removed from consideration, then the corresponding effort previously presumed to occur in those areas also is removed from consideration. Projected levels of effort were reduced in each zone by the same proportion as was removed from each zone when BOEM reduced the scope of its proposed action, *i.e.,* the levels of effort were reduced by the same zone-specific proportions shown in table 1 in the notice of issuance for the final rule (86 FR 5322, January 19, 2021). Associated revised take estimates were provided by BOEM and evaluated in the final rule.

While processing requests for individual LOAs in 2021 under the rule using the methodology for developing LOA-specific take numbers presented in the rule, NMFS discovered discrepancies between the revised total take numbers provided by BOEM when addressing its revision to the scope of activity through removal of the GOMESA area and the underlying modeling results. (Note that the underlying modeling results are in the form of 24-hour exposure estimates, specific to each species, zone, survey type, and season. These 24-hour exposure estimates can then be scaled to generate take numbers appropriate to the specific activity or, in the case of BOEM's petition for rulemaking, to the

total levels of activity projected to occur across a number of years.)

NMFS contacted BOEM regarding the issue in June 2021. Following an initial discussion, BOEM determined that when it reduced its scope of specified activity by removing the GOMESA moratorium area from the proposed action, it underestimated the level of take by inadvertently factoring species density estimates into its revised exposure estimates twice. Generally, this miscalculation caused BOEM to underestimate the total predicted exposures of species from all survey activities in its revision to the incidental take rule application, most pronouncedly for those species with the lowest densities. The practical effect of this miscalculation is that the full amount of activity for which BOEM sought incidental take coverage in its application cannot be authorized under the existing incidental take rule.

In September 2021, BOEM provided corrected exposure estimates. These are available in BOEM's September 2021 ''Corrected Exposure Estimates'' letter, available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.* Following receipt of BOEM's letter containing corrected exposure estimates, NMFS requested additional information from BOEM, including a detailed written description of the process involved in producing the revised take numbers submitted in 2020, the error(s) in that process, and the process involved in correcting those numbers. BOEM provided the requested information in October 2021. A detailed description of this explanation was provided in the notice of proposed rulemaking (88 FR 916, January 5, 2023). Please see that notice and BOEM's letter for additional detail.

The result of BOEM's process was that errors of varying degrees were introduced to the BOEM-derived take numbers evaluated in the final rule. Although NMFS was unable to replicate the derivation of the species-specific scaling factors, or to adequately compare the erroneous BOEM-derived values to the values evaluated in NMFS' 2018 proposed rule or to other published values, it remained clear that the take estimates were significantly underestimated for multiple species. Because of this, recalculation of appropriate take numbers was necessary.

New Modeling—Once it became clear that NMFS would need to recalculate the take numbers in order to support the necessary correction and reanalysis under the rule, we recognized that two other primary pieces of new information should be considered.

As discussed previously, through NMFS' experience implementing the 2021 final rule, it has become evident that operators are not currently using airgun arrays as large as the proxy array specified by BOEM for the original exposure modeling effort, and that the use of that 72-element, 8,000-in^3 array as the proxy for generating LOA-specific take estimates is overly conservative. As a result, operators applying 8,000-in^3 modeled results to operations conducted with smaller airgun arrays have been inappropriately limited in the number of planned days of data acquisition when NMFS' small numbers limit has been reached. Therefore, independently of and prior to the above-described discovery and evaluation of BOEM's error, NMFS had already determined that it would be useful and appropriate to produce new modeling results associated with a more representative airgun array. In consultation with industry operators, NMFS identified specifications associated with a 32-element, 5,110 in^3 array and contracted with the same modelers that produced the original acoustic exposure modeling (JASCO Applied Sciences) to conduct new modeling following the same approach and methodologies described in detail in Zeddies *et al.* (2015, 2017a). This information was reflected in NMFS' proposed rule and available for public review and comment (83 FR 29212, June 22, 2018). Specifically, JASCO has now produced new comprehensive modeling results for all evaluated survey types for the three different arrays described previously: (1) 4,130-in^3 array, described in detail in Zeddies *et al.* (2017b) (acoustic exposure results were provided for only 6 species in Zeddies *et al.* (2017b); full results are now available); (2) 5,110-in^3 array specified by NMFS and described in Weirathmueller *et al.* (2022); and (3) 8,000-in^3 array described in detail by Zeddies *et al.* (2015, 2017a).

Since the time of the original acoustic exposure modeling, JASCO has reviewed all species definition files and applied extensive updates for many species. These files define the species-specific parameters that control animat behavior during animal movement modeling. In particular, changes in the minimum and maximum depth preferences affected the coverage area for several species, which resulted in significant changes to some estimated exposures for some species.

In addition, at the time NMFS determined it would conduct a rulemaking to address the corrected take estimates, new cetacean density modeling (including incorporation of new Rice's whale data) was nearing completion, in association with the BOEM-funded GoMMAPPS effort (see: *https://www.boem.gov/gommapps*). NMFS determined that this new information (updated acoustic exposure modeling and new cetacean density models) should be used as the best available information for this rulemaking, and as such it is the basis for our analyses. For purposes of the negligible impact analyses, NMFS uses the maximum of the species-specific exposure modeling results from the three airgun array configurations/sizes. Specifically, for all species other than Rice's whale, these results are associated with the 8,000-in^3 array. For the Rice's whale, modeling associated with the 5,110-in^3 array produced larger exposure estimates (discussed below).

Estimated instances of take, *i.e.,* scenario-specific acoustic exposure estimates incorporating the adjustments to Level A harassment exposure estimates discussed here, are shown in table 6. For comparison, table 5 shows the estimated instances of take evaluated in the 2021 final rule. This information regarding total number of takes (with Level A harassment takes based on assumptions relating to mid-frequency cetaceans in general as well as aversion), on an annual basis for 5 years, provides the bounds within which incidental take authorizations—LOAs—may be issued in association with this regulatory framework. Importantly, modeled results showed increases in total take estimates for 4 species, while the others decreased from those analyzed in the 2021 final rule.[8]

Typically, and especially in cases where PTS is predicted, NMFS anticipates that some number of individuals may incur temporary threshold shift (TTS). However, it is not necessary to separately quantify those takes, as it is unlikely that an individual marine mammal would be exposed at the levels and duration necessary to incur TTS without also being exposed to the levels associated with potential disruption of behavioral patterns (*i.e.,* Level B harassment). As such, NMFS expects any potential TTS takes to be captured by the estimated Level B harassment takes associated with behavioral disturbance (discussed below).

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[8] Note that because of the new category of blackfish, there is uncertainty on any change in the take numbers for the individual species that comprise that category, though collectively the take numbers for all the blackfish remain within the levels previously analyzed.

Table 5 -- Scenario-specific Instances of Take (by Level A and Level B Harassment) and Mean Annual Take Levels Evaluated in the 2021 Final Rule[1]

Species	Year 1		Year 2		Year 3		Year 4		Year 5		Mean annual take	
	A	B	A	B	A	B	A	B	A	B	A	B
Rice's whale	0	10	0	8	0	8	0	6	0	7	0	8
Sperm whale	0	16,405	0	14,205	0	13,603	0	9,496	0	12,388	0	13,219
Kogia spp.[2]	371	10,383	337	9,313	310	8,542	209	6,238	314	8,318	308	8,559
Beaked whale[2]	0	191,566	0	162,301	0	158,328	0	111,415	0	142,929	0	153,308
Rough-toothed dolphin	0	30,640	0	27,024	0	25,880	0	19,620	0	23,219	0	25,277
Bottlenose dolphin	0	603,649	0	973,371	0	567,962	0	1,001,256	0	567,446	0	742,737
Clymene dolphin	0	85,828	0	67,915	0	73,522	0	47,332	0	60,379	0	66,995
Atlantic spotted dolphin	0	128,299	0	183,717	0	112,120	0	191,495	0	111,305	0	145,387
Pantropical spotted dolphin	0	478,490	0	436,047	0	391,363	0	311,316	0	395,987	0	402,641
Spinner dolphin	0	75,953	0	71,873	0	61,098	0	48,775	0	64,357	0	64,411
Striped dolphin	0	33,573	0	29,275	0	27,837	0	20,136	0	26,056	0	27,375
Fraser's dolphin	0	4,522	0	3,843	0	3,792	0	2,726	0	3,455	0	3,668
Risso's dolphin	0	21,859	0	18,767	0	18,218	0	12,738	0	16,634	0	17,643
Melon-headed whale (Blackfish)	0	55,813	0	47,784	0	46,584	0	32,581	0	42,224	0	44,997
Pygmy killer whale (Blackfish)	0	8,079	0	6,964	0	6,764	0	4,970	0	6,277	0	6,611
False killer whale (Blackfish)	0	16,165	0	13,710	0	13,604	0	9,664	0	12,269	0	13,082
Killer whale (Blackfish)	0	60	0	56	0	50	0	42	0	52	0	52
Blackfish totals	0	80,117	0	68,514	0	67,002	0	47,257	0	60,822	0	64,742
Short-finned pilot whale	0	15,045	0	9,824	0	13,645	0	7,459	0	8,959	0	10,986

[1]A and B refer to expected instances of take by Level A and Level B harassment, respectively, for Years 1-5. For *Kogia* spp., expected takes by Level A harassment represent modeled exposures adjusted to account for aversion. For the Rice's whale, no takes by Level A harassment were predicted to occur. Therefore, no adjustment to modeled exposures to account for aversion was necessary. For *Kogia* spp., exposures above Level A harassment criteria were predicted by the peak sound pressure level (SPL) metric. For the Rice's whale, the cumulative sound exposure level (SEL) metric is used to evaluate the potential for Level A harassment.

[2]*Kogia* spp. includes dwarf and pygmy sperm whales. Beaked whales include Blainville's, Gervais', and Cuvier's beaked whales.

Table 6 -- Updated Scenario-specific Instances of Take (by Level A and Level B Harassment) and Mean Annual Take Levels[1]

Species	Year 1		Year 2		Year 3		Year 4		Year 5		Mean annual take	
	A	B	A	B	A	B	A	B	A	B	A	B
Rice's whale	0	27	0	26	0	23	0	25	0	30	0	26
Sperm whale	0	13,198	0	11,208	0	11,063	0	8,126	0	10,127	0	10,744
Kogia spp.[2]	192	7,272	172	6,301	165	6,104	118	4,581	164	5,776	162	6,007
Beaked whale[2]	0	29,415	0	26,955	0	23,551	0	17,307	0	23,060	0	24,058
Rough-toothed dolphin	0	38,535	0	33,878	0	32,241	0	25,290	0	29,373	0	31,863
Bottlenose dolphin	0	284,366	0	418,676	0	251,807	0	439,366	0	248,863	0	328,616
Clymene dolphin	0	29,919	0	23,248	0	25,893	0	17,378	0	21,209	0	23,529
Atlantic spotted dolphin	0	37,080	0	34,140	0	33,126	0	34,343	0	23,906	0	32,519
Pantropical spotted dolphin	0	293,390	0	259,831	0	243,888	0	189,147	0	236,651	0	244,581
Spinner dolphin	0	4,618	0	4,456	0	3,704	0	3,147	0	4,101	0	4,006
Striped dolphin	0	56,797	0	51,623	0	46,820	0	37,449	0	47,084	0	47,955
Fraser's dolphin	0	14,499	0	12,343	0	12,181	0	8,833	0	11,118	0	11,795
Risso's dolphin	0	8,146	0	6,939	0	6,787	0	4,834	0	6,176	0	6,576
Blackfish[2]	0	67,509	0	57,010	0	56,860	0	40,787	0	51,138	0	54,661
Short-finned pilot whale	0	14,330	0	9,694	0	12,836	0	7,232	0	8,734	0	10,565

[1]A and B refer to expected instances of take by Level A and Level B harassment, respectively, for Years 1-5. Expected takes by Level A harassment represent modeled exposures adjusted to account for aversion. For the Rice's whale, this adjustment means that no takes by Level A harassment are predicted to occur. For *Kogia* spp., exposures above Level A harassment criteria were predicted by the peak SPL metric. For the Rice's whale, the cumulative SEL metric is used to evaluate the potential for Level A harassment.

[2]*Kogia* spp. includes dwarf and pygmy sperm whales. Beaked whales include Blainville's, Gervais', and Cuvier's beaked whales. Blackfish includes melon-headed whale, false killer whale, pygmy killer whale, and killer whale.

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Discussion of Estimated Take

Differences between the estimated instances of take evaluated in the 2021 final rule (table 5) and those evaluated herein (table 6) may be attributed to multiple factors. Due to the confounding nature of these factors, it is challenging to attribute species-specific differences by degree to any particular factor. These factors include: (1) BOEM errors in calculating estimated take in support of its revision of scope for the 2021 final rule, which are related to species-specific density values by zone, as well as to species-specific ''correction factors'' developed by BOEM; (2) JASCO revisions to species definition files governing animat behavior during animal movement modeling; and (3) new density information for all species other than Fraser's dolphin and rough-toothed dolphin. In addition, for the Rice's whale, propagation modeling of a new array specification produced the greatest values for estimated instances of take. While it is difficult to attribute species-specific changes to specific factors, we do know that the correction of the BOEM error could only result in take number increases from the 2021 final rule, while density changes and species definition file changes could result in either increases or decreases in take estimates. (However, most density values decreased, in many cases significantly.) NMFS has addressed BOEM's error to the extent possible in the discussion provided previously (see *Take Estimation Error*).

Regarding the species characteristics used in the new modeling, as discussed above, all species behavior files were reviewed by JASCO prior to the new

modeling, and many had extensive updates, based on the availability of new information regarding relevant behavioral parameters in the scientific literature. In particular, changes in the minimum and maximum depth preferences affected the coverage area for several species, which resulted in changes to some species exposures.

New modeling for the smaller, 5,110-in^3 array illustrated that the larger array is not necessarily always more impactful. Free-field beam patterns are different for the arrays as are the tow depths. The 5,110-in^3 array was specified as being towed at 12 m depth (following typical usage observed by NMFS through review of LOA applications), while the other arrays are assumed to use an 8-m tow depth (assumptions regarding source specifications were made by BOEM as part of its original petition for rulemaking). The depth at which a source is placed influences the interference pattern caused by the direct and sea-surface reflected paths (the ''Lloyd's mirror'' effect). The destructive interference from the sea-surface reflection is generally greater for shallow tow depths compared to deeper tow depths. In addition, interactions between source depth, beam pattern geometry, source frequency content, the environment (*e.g.,* bathymetry and sound velocity profile), and different animat seeding depths and behaviors can give unexpected results. For example, while the larger array may have the longest range for a particular isopleth (sound contour), the overall sound field coverage area was found to have greater asymmetry as a result of the above-mentioned interactions.

While the larger array did produce greater predicted exposures for all species, with the exception of Rice's whales, the differences between predicted exposure estimates for the two larger arrays were not as great as may have been expected on the basis of total array volume alone. The 5,110- and 8,000-in^3 arrays were often similar in terms of predicted exposures, although the beam patterns were quite different. For arrays of airgun sources, the chamber volume or the total array volume is not the only meaningful variable. Although it is true that a source with a larger volume is generally louder, in practice this only applies largely to single sources or small arrays of sources and was not the case for the considered arrays. As discussed above, array configuration, tow depth, and bathymetry were significant factors. For example, the 8,000-in^3 array generally had a more directional beam pattern than the 4,130- or 5,110-in^3 arrays. The vertical structure of the sound field combined with different species' dive depth and surface intervals was important as well. Differences in estimated take numbers for the 2021 final rule and this rule, *i.e.,* differences between tables 5 and 6, are shown in table 7.

Table 7 -- Differences in Estimated Take Numbers, 2021 Final Rule to 2023 Final Rule[1]

Species	Year 1	Year 2	Year 3	Year 4	Year 5	Mean annual take
Rice's whale	17	18	15	19	23	18
Sperm whale	(3,207)	(2,997)	(2,540)	(1,370)	(2,261)	(2,475)
Kogia spp.[2] (Level A)	(179)	(165)	(145)	(91)	(150)	(146)
Kogia spp. (Level B)	(3,111)	(3,012)	(2,438)	(1,657)	(2,542)	(2,552)
Beaked whale	(162,151)	(135,346)	(134,777)	(94,108)	(119,869)	(129,250)
Rough-toothed dolphin	7,895	6,854	6,361	5,670	6,154	6,586
Bottlenose dolphin	(319,283)	(554,695)	(316,155)	(561,890)	(318,583)	(414,121)
Clymene dolphin	(55,909)	(44,667)	(47,629)	(29,954)	(39,170)	(43,466)
Atlantic spotted dolphin	(91,219)	(149,577)	(78,994)	(157,152)	(87,399)	(112,868)
Pantropical spotted dolphin	(185,100)	(176,216)	(147,475)	(122,169)	(159,336)	(158,060)
Spinner dolphin	(71,335)	(67,417)	(57,394)	(45,628)	(60,256)	(60,405)
Striped dolphin	23,224	22,348	18,983	17,313	21,028	20,580
Fraser's dolphin	9,977	8,500	8,389	6,107	7,663	8,127
Risso's dolphin	(13,713)	(11,828)	(11,431)	(7,904)	(10,458)	(11,067)
Blackfish[3]	(12,608)	(11,504)	(10,142)	(6,470)	(9,684)	(10,081)
Short-finned pilot whale	(715)	(130)	(809)	(227)	(225)	(421

[1]Parentheses indicate negative values.

[2]Level A harassment is not predicted to occur for any species other than the *Kogia* spp.

[3]Values presented for blackfish represent the difference between the estimated take number presented in this rule for this group generically and the sum of the species-specific values evaluated in the 2021 final rule.

NMFS cautions against interpretation of the changes presented in table 7 at face value for a variety of reasons. First, reasons for the differences in the take estimates are difficult to interpret due to the confounding nature of the different factors discussed in this section. Second, the meaning of the differences in terms of impacts to the affected

species or stocks is similarly not as straightforward as the magnitude and direction of the differences may imply. Differences in estimated take are, in part, the result of the introduction of new density data, which also provides new model-predicted abundance estimates. Our evaluation under the MMPA of the expected impacts of the predicted take events is substantially reliant on comparisons of the expected take to the predicted abundance. See discussion of our evaluation of severity of impact (one prong of analysis) in Negligible Impact Analysis and Determinations. The severity of the predicted taking is understood through the estimates' relationship to predicted zone-specific abundance values, and so the absolute differences presented in table 7 are not, alone, informative in that regard.

Overall, NMFS has determined, to the extent possible, that aside from the confounding effect of BOEM's calculation errors, differences between the current and prior results for the 8,000-in^3 array are primarily attributable to differences in species density along with changes in the species behavior files, in particular minimum and maximum animat seeding depths.

Level B Harassment

NMFS has determined the values shown in table 6 are a reasonable estimate of the maximum potential instances of take that may occur in each year of the regulations based on projected effort (more specifically, each of these ''takes'' represents a day in which one individual is exposed above the Level B harassment criteria, even if only for minutes). However, these take numbers do not represent the number of individuals expected to be taken, as they do not consider the fact that certain individuals may be exposed above harassment thresholds on multiple days. Accordingly, as described in the 2018 notice of proposed rulemaking, NMFS developed a ''scalar ratio'' approach to inform two important parts of the analyses: understanding a closer approximation of the number of individuals of each species or stock that may be taken within a survey, and understanding the degree to which individuals of each species or stock may be more likely to be repeatedly taken across multiple days within a year.

In summary, comparing the results of modeling simulations that more closely match longer survey durations (30 days) to the results of 24-hour take estimates scaled up to 30 days (as the instances of take in table 6 were calculated) provides the comparative ratios of the numbers of individuals taken/calculated (within a 30-day survey) to instances of take, in order to better understand the comparative distribution of exposures across individuals of different species. These products are used to inform a better understanding of the nature in which individuals are taken across the multiple days of a longer duration survey given the different behaviors that are represented in the animat modeling and may appropriately be used in combination with the calculated instances of take to predict the number of individuals taken for surveys of similar duration, in order to support evaluation of take estimates in requests for LOAs under the ''small numbers'' standard, which is based on the number of individuals taken. A detailed discussion of this approach was provided in the 2018 notice of proposed rulemaking. As NMFS retains without change this ''scalar ratio'' approach to approximating the number of individuals taken, both here (see Negligible Impact Analysis and Determinations) and in support of the necessary small numbers determination on an LOA-specific basis, we do not repeat the discussion but refer the reader to previous **Federal Register** notices. Application of the scaling method reduced the overall magnitude of modeled takes for all species by a range of slightly more than double up to tenfold (table 8).

These adjusted take numbers, representing a closer approximation of the number of individuals taken (shown in table 8), provide a more realistic basis upon which to evaluate severity of the expected taking. Please see the Negligible Impact Analysis and Determinations section later in this document for additional detail. It is important to recognize that while these scaled numbers better reflect the number of individuals likely to be taken within a single 30-day survey than the number of instances in table 6, they will still overestimate the number of individuals taken across the aggregated GOM activities, because they do not correct for (*i.e.,* further reduce take to account for) individuals exposed to multiple surveys or fully correct for individuals exposed to surveys significantly longer than 30 days.

As noted in the beginning of this section and in the Small Numbers section, using modeled instances of take (table 6) and the method used here to scale those numbers allows one to more accurately predict the number of individuals that will be taken as a result of exposure to one survey and, therefore, these scaled predictions are more appropriate to consider in requests for LOAs to assess whether a resulting LOA would meet the small numbers standard. However, for the purposes of ensuring that the total taking authorized pursuant to all issued LOAs is within the scope of the analysis conducted to support the negligible impact finding in this rule, authorized instances of take (which are the building blocks of the analysis) also must be assessed. Specifically, reflecting table 6 and what has been analyzed, the total instances of take that may be authorized for any given species or stock over the course of the 5 years covered under these regulations must not, and is not expected to, exceed the sum of the 5 years of take indicated for the 5 years in that table. Additionally, in any given year, the instances of take of any species must not, and are not expected to, exceed the highest annual take listed in table 6 for any of the 5 years for a given species.

Table 8 -- Expected Total Take Numbers, Scaled[1]

Species	Year 1	Year 2	Year 3	Year 4	Year 5
Rice's whale	5	5	4	5	6
Sperm whale	5,583	4,741	4,679	3,437	4,284
Kogia spp.	2,334	2,022	1,959	1,470	1,854
Beaked whale	2,971	2,722	2,379	1,748	2,329
Rough-toothed dolphin	11,060	9,723	9,253	7,258	8,430
Bottlenose dolphin	81,613	120,160	72,269	126,098	71,424
Clymene dolphin	8,587	6,672	7,431	4,987	6,087
Atlantic spotted dolphin	10,642	9,798	9,507	9,856	6,861
Pantropical spotted dolphin	84,203	74,571	69,996	54,285	67,919
Spinner dolphin	1,325	1,279	1,063	903	1,177
Striped dolphin	16,301	14,816	13,437	10,748	13,513
Fraser's dolphin	4,161	3,543	3,496	2,535	3,191
Risso's dolphin	2,403	2,047	2,002	1,426	1,822
Blackfish	19,915	16,818	16,774	12,032	15,086
Short-finned pilot whale	4,227	2,860	3,787	2,134	2,576

[1]Scalar ratios were applied to values in table 6 as described in the 2018 notice of proposed rulemaking to derive scaled take numbers shown here.

Mitigation

''Least Practicable Adverse Impact'' Standard

Under section 101(a)(5)(A) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the LPAI on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for subsistence uses, often referred to in shorthand as ''mitigation.'' NMFS does not have a regulatory definition for LPAI. However, NMFS' implementing regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the LPAI upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)). In the Mitigation section of the 2021 final rule, NMFS included a detailed description of our interpretation of the LPAI standard (including its relationship to the negligible impact standard) and how the LPAI standard is implemented (86 FR 5322, 5407, January 19, 2021). We refer readers to the full LPAI discussion in the 2021 final rule, but repeat the discussion on implementation here to facilitate understanding of the analyses that follow.

NMFS' evaluation of potential mitigation measures includes consideration of two primary factors:

(1) The manner in which, and the degree to which, implementation of the potential measure(s) is expected to reduce adverse impacts to marine mammal species or stocks, their habitat, and their availability for subsistence uses (where relevant). This analysis considers such things as the nature of the potential adverse impact (such as likelihood, scope, and range), the likelihood that the measure will be effective if implemented, and the likelihood of successful implementation; and

(2) The practicability of the measures for applicant implementation. Practicability of implementation may consider such things as cost, impact on activities, personnel safety, and practicality of implementation.

While the language of the LPAI standard calls for minimizing impacts to affected species or stocks and their habitat, NMFS recognizes that the reduction of impacts to those species or stocks accrues through the application of mitigation measures that limit impacts to individual animals. Accordingly, NMFS' analysis focuses on measures that are designed to avoid or minimize impacts on individual marine mammals that are likely to increase the probability or severity of population-level effects.

While direct evidence of impacts to species or stocks from a specified activity is rarely available, and additional study is still needed to understand how specific disturbance events affect the fitness of individuals of certain species, there have been improvements in understanding the process by which disturbance effects are translated to the population. With recent scientific advancements (both marine mammal energetic research and the development of energetic frameworks), the relative likelihood or degree of impacts on species or stocks may often be inferred given a detailed understanding of the activity, the environment, and the affected species or stocks. This same information is used in the development of mitigation measures and helps us understand how mitigation measures contribute to lessening effects (or the risk thereof) to species or stocks. NMFS also acknowledges that there is always the potential that new information, or a new recommendation that had not previously been considered, becomes available and necessitates re-evaluation of mitigation measures (which may be addressed through adaptive management) to see if further reductions of population impacts are possible and practicable.

In the evaluation of specific measures, the details of the specified activity will necessarily inform each of the two primary factors discussed above (expected reduction of impacts and practicability) and are carefully considered to determine the types of mitigation that are appropriate under the LPAI standard. Analysis of how a potential mitigation measure may

reduce adverse impacts on a marine mammal stock or species and practicability of implementation are not issues that can be meaningfully evaluated through a yes/no lens. The manner in which, and the degree to which, implementation of a measure is expected to reduce impacts, as well as its practicability, can vary widely. For example, a time-area restriction could be of very high value for reducing the potential for, or severity of, population-level impacts (*e.g.,* avoiding disturbance of feeding females in an area of established biological importance) or it could be of lower value (*e.g.,* decreased disturbance in an area of high productivity but of less firmly established biological importance). Regarding practicability, a measure might involve restrictions in an area or time that impede the operator's ability to acquire necessary data (higher impact), or it could mean incremental delays that increase operational costs but still allow the activity to be conducted (lower impact). A responsible evaluation of LPAI will consider the factors along these realistic scales. Expected effects of the activity and of the mitigation as well as status of the stock all weigh into these considerations. Accordingly, the greater the likelihood that a measure will contribute to reducing the probability or severity of adverse impacts to the species or stock or their habitat, the greater the weight that measure is given when considered in combination with practicability to determine the appropriateness of the mitigation measure, and vice versa. Consideration of these factors is discussed in greater detail below.

1. *Reduction of adverse impacts to marine mammal species or stocks and their habitat.*[9]

The emphasis given to a measure's ability to reduce the impacts on a species or stock considers the degree, likelihood, and context of the anticipated reduction of impacts to individuals (and how many individuals) as well as the status of the species or stock.

The ultimate impact on any individual from a disturbance event (which informs the likelihood of adverse species- or stock-level effects) is dependent on the circumstances and associated contextual factors, such as duration of exposure to stressors. Though any proposed mitigation needs to be evaluated in the context of the specific activity and the species or stocks affected, measures with the following types of effects have greater value in reducing the likelihood or severity of adverse species- or stock-level impacts: avoiding or minimizing injury or mortality; limiting interruption of known feeding, breeding, mother/young, or resting behaviors; minimizing the abandonment of important habitat (temporally and spatially); minimizing the number of individuals subjected to these types of disruptions; and limiting degradation of habitat. Mitigating these types of effects is intended to reduce the likelihood that the activity will result in energetic or other types of impacts that are more likely to result in reduced reproductive success or survivorship. It is also important to consider the degree of impacts that are expected in the absence of mitigation in order to assess the added value of any potential measures. Finally, because the LPAI standard gives NMFS discretion to weigh a variety of factors when determining appropriate mitigation measures and because the focus of the standard is on reducing impacts at the species or stock level, the LPAI standard does not compel mitigation for every kind of take, or every individual taken, if that mitigation is unlikely to meaningfully contribute to the reduction of adverse impacts on the species or stock and its habitat, even when practicable for implementation by the applicant.

The status of the species or stock is also relevant in evaluating the appropriateness of potential mitigation measures in the context of LPAI. The following are examples of factors that may (either alone, or in combination) result in greater emphasis on the importance of a mitigation measure in reducing impacts on a species or stock: the stock is known to be decreasing or status is unknown, but believed to be declining; the known annual mortality (from any source) is approaching or exceeding the PBR level; the affected species or stock is a small, resident population; or the stock is involved in a UME or has other known vulnerabilities, such as recovering from an oil spill.

Habitat mitigation, particularly as it relates to rookeries, mating grounds, and areas of similar significance, is also relevant to achieving the standard and can include measures such as reducing impacts of the activity on known prey utilized in the activity area or reducing impacts on physical habitat. As with species- or stock-related mitigation, the emphasis given to a measure's ability to reduce impacts on a species or stock's habitat considers the degree, likelihood, and context of the anticipated reduction of impacts to habitat. Because habitat value is informed by marine mammal presence and use, in some cases there may be overlap in measures for the species or stock and for use of habitat.

NMFS considers available information indicating the likelihood of any measure to accomplish its objective. If evidence shows that a measure has not typically been effective nor successful, then either that measure should be modified or the potential value of the measure to reduce effects should be lowered.

2. *Practicability.*

Factors considered may include those costs, impact on activities, personnel safety, and practicality of implementation.

Application of the LPAI Standard in this Action

In carrying out the MMPA's mandate for this action, NMFS applies the context-specific balance between the manner in which and the degree to which measures are expected to reduce impacts to the affected species or stocks and their habitat and practicability for operators. See NMFS' notice of issuance for the 2021 final rule (January 19, 2021, 86 FR 5322, 5405). The effects of concern (*i.e.,* those with the potential to adversely impact species or stocks and their habitat) include auditory injury, severe behavioral reactions, disruptions of critical behaviors, and to a lesser degree, masking and impacts on acoustic habitat. These effects were addressed previously in the Potential Effects of the Specified Activity on Marine Mammals and Their Habitat and Anticipated Effects on Marine Mammal Habitat sections of the 2018 notice of proposed rulemaking (June 22, 2018, 83 FR 29212, 29233, 29241).

Our rulemaking for the 2021 final rule focused on measures with proven or reasonably presumed ability to avoid or reduce the intensity of acute exposures that have potential to result in these anticipated effects. To the extent of the information available to NMFS, we considered practicability concerns, as well as potential undesired consequences of the measures, *e.g.,* extended periods using the acoustic source due to the need to reshoot lines. NMFS recognized that instantaneous protocols, such as shutdown requirements, are not capable of avoiding all acute effects, are not

[9] NMFS recognizes the LPAI standard requires consideration of measures that will address minimizing impacts on the availability of the species or stocks for subsistence uses where relevant. Because subsistence uses are not implicated for this action, we do not discuss them. However, a similar framework would apply for evaluating those measures, taking into account both the MMPA's directive that we make a finding of no unmitigable adverse impact on the availability of the species or stocks for taking for subsistence, and the relevant implementing regulations.

suitable for avoiding many cumulative or chronic effects, and do not provide targeted protection in areas of greatest importance for marine mammals. Therefore, in addition to a basic suite of seismic mitigation protocols, we also evaluated time-area restrictions that would avoid or reduce both acute and chronic impacts of surveys, including potential restrictions that were removed from consideration in the final rule as a result of BOEM's change to the scope of the action.

NMFS' 2021 rule included a suite of basic mitigation protocols that are required regardless of the status of a stock. Additional or enhanced protections were required for species whose stocks are in particularly poor health and/or are subject to some significant additional stressor that lessens that stock's ability to weather the effects of the specified activities without worsening its status. NMFS' evaluation process was described in detail in the 2018 proposed rule (83 FR 29212, June 22, 2018), and mitigation requirements included in the incidental take regulations at 50 CFR 217.180 *et seq.* were fully described in the notice of issuance for the final rule (86 FR 5322, 5411, January 19, 2021).

For this current rulemaking, NMFS' evaluation built off the existing mitigation requirements from the 2021 final rule, which will remain in effect, and considered additional mitigation under the LPAI standard as it relates to Rice's whales, in light of the species' status, increase in take estimates relative to the 2021 final rule, and other new information. In addition to other potential changes to mitigation requirements suggested by public commenters and addressed in the Comments and Responses section of this rule, we evaluated (1) a potential restriction on survey activities within the small portion of the Rice's whale ''core distribution area'' that overlaps the geographic scope of the specified activity covered by this rule (see discussion of the core distribution area earlier in Description of Marine Mammals in the Area of the Specified Activities) and (2) the potential for a restriction on survey activity in other areas between 100–400 m in depth throughout the geographic area covered by the rule,[10] also for Rice's whales. As described below, we determined that the requirements in the current regulations promulgated under the 2021 final rule satisfy the LPAI standard and therefore make no changes to those regulations. Because the mitigation requirements for this action are the same as those described in the final rule (86 FR 5322, 5409, January 19, 2021), we do not repeat the description of the required mitigation.

For all other species, although there are slight increases in estimated take (for three species) and increases in evaluated risk (for other species) relative to the 2021 final rule (see Negligible Impact Analysis and Determinations), there are no known specific areas of particular importance to consider for time-area restrictions, and no changes to our prior analysis for the sufficiency of the existing standard operational mitigation requirements to effect the LPAI on the affected species or stocks and their habitat. (We also note that NMFS' 2018 proposed rule made this determination even in the context of significantly higher takes, as well as evaluated risk.)

Rice's Whale—We first provide a summary of baseline information relevant to our consideration of mitigation for Rice's whales. Rice's whales have a small population size, are restricted to the GOM, and were determined by the status review team to be ''at or below the near-extinction population level'' (Rosel *et al.,* 2016). While various population abundance estimates are available (*e.g.,* Garrison *et al.,* 2020, 2023; Hayes *et al.,* 2020; Roberts *et al.,* 2016; Dias and Garrison, 2016), all are highly uncertain because targeted surveys have not been conducted throughout the Rice's whale's range. The most recent statistically-derived abundance estimate, from 2017–2018 surveys in the northeastern GOM, is 51 individuals (20–130 95% Confidence Interval (CI)) (Garrison *et al.,* 2020). There may be fewer than 100 individuals throughout the GOM (Rosel *et al.,* 2016). In addition, the population exhibits very low levels of genetic diversity (Rosel and Wilcox, 2014; Rosel *et al.,* 2021). The small population size, restricted range, and low genetic diversity alone place these whales at significant risk of extinction (IWC, 2017). This risk has been exacerbated by the effects of the DWH oil spill, which was estimated to have exposed up to half the population to oil (DWH NRDA Trustees, 2016; DWH MMIQT, 2015). In addition, Rice's whales face a significant suite of anthropogenic threats, including noise produced by airgun surveys (Rosel *et al.,* 2016). Additionally, Rice's whale dive and foraging behavior places them at heightened risk of being struck by vessels and/or entangled in fishing gear (Soldevilla *et al.,* 2017).

Of relevance here, the reduced geographic scope of the specified activity for this rule (and the 2021 final rule) in relation to the 2018 proposed rule excludes the eastern GOM through removal of the GOMESA area (see Figure 2). This reduced scope effectively minimizes potential impacts to Rice's whales and their core habitat (as recognized by the 2016 status review team) relative to the impacts considered through NMFS' 2018 proposed rule. Thus, although potential takes considered herein are higher relative to those analyzed in the 2021 final rule (maximum of 30 annual incidents of take (Level B harassment only) compared with 10, respectively), they remain significantly under the take numbers evaluated in the 2018 proposed rule (maximum of 572 annual incidents of take by Level B harassment with additional take by Level A harassment).

It is in the aforementioned context that our 2023 proposed rule evaluated two potential measures for additional Rice's whale mitigation: (1) restriction of survey activity within the 5 percent of the core distribution area (*i.e.,* the expanded area around northeastern GOM Rice's whale sightings and tagged whale locations created through application of a 30 km buffer) that is within the geographic scope of the specified activity; and (2) restriction of survey activity over a broad (but undefined) area of the central and/or western GOM within Rice's whale habitat in waters between the 100–400 m isobaths. There is no scientific information supporting a temporal component for either potential restriction nor any specific spatial definition for a central and/or western GOM restriction. Following the LPAI analysis produced in the 2023 proposed rule, the MMC recommended implementing restriction (1) above. Both the MMC and NRDC commented that some surveys should be restricted within habitat of the central and/or western GOM, but neither commenter provided recommendations regarding specific recommended spatial definition of such a restriction or specific metrics for defining which surveys should be restricted. All comments and recommendations were evaluated and responses are provided earlier. See Comments and Responses.

We reiterate that the amount of anticipated take of Rice's whales over the 5-year duration of the incidental take regulation is relatively low and

[10] Subsequent to publication of the 2023 proposed rule, NMFS proposed to designate the area in the GOM, between the U.S. EEZ off Texas east to the boundary between the South Atlantic Fishery Management Council and the Gulf of Mexico Fishery Management Council off of Florida, that consists of waters from the 100 m isobaths to the 400 m isobaths, as critical habitat for the Rice's whale (88 FR 47453, July 24, 2023).

limited to Level B harassment. The anticipated magnitude of impacts from any of these anticipated takes is considered to be relatively low, as we concluded that none of these takes are expected to impact the fitness of any individuals. See Negligible Impact Analysis and Determinations. We also note the robust shutdown measures required that utilize highly effective visual and passive acoustic detection methods to avoid marine mammal injury as well as minimize TTS and more severe behavioral responses.

For this rulemaking, NMFS independently examined each of the two area-based restrictions in the context of the LPAI standard to determine whether either restriction is warranted to minimize the impacts from seismic survey activities on the affected marine mammal species or stocks. This analysis is consistent with the consideration of the LPAI criteria described above when determining appropriateness of mitigation measures. These potential requirements were evaluated (see below) in the context of the proposed seismic survey activities (including the geographic scope of the rule) and the existing mitigation measures that would be implemented to minimize impacts on the affected marine mammal species or stocks from these activities.

To reiterate, the scope of the rule does not cover Rice's whale core habitat in the northeastern GOM, which is the area (absent buffering) that contains the highest known densities of Rice's whale and which has defined the movements of previously tagged Rice's whales. Thus, even though individual Rice's whales occurring outside of the core habitat area may experience harassment, this geographic scope likely precludes significant impacts to Rice's whales at the species level by avoiding takes of the majority of individuals and by avoiding impacts to the habitat that supports the highest densities of the species. This important context generally lessens the total number of takes, and means that the takes that do occur are expected to have lower potential to have negative energetic effects or deleterious effects on reproduction that could reduce the likelihood of survival or reproductive success. In addition, NMFS has required mitigation measures that would minimize or alleviate the likelihood of injury (PTS), TTS, and more severe behavioral responses (the 1,500-m shutdown zone). In addition, exposures to airgun noise would occur in open water areas where animals can more readily avoid the source and find alternate habitat relatively easily. The existing mitigation requirements are expected to be effective in ensuring that impacts are limited to lower-level responses with limited potential to significantly alter natural behavior patterns in ways that would affect the fitness of individuals and by extension the affected species.

As noted previously, in evaluating mitigation for species or stocks and their habitat, we consider the expected benefits of the mitigation measures for the species or stocks and their habitats against the practicability of implementation. This consideration includes assessing the manner in which, and the degree to which, the implementation of the measure(s) is expected to reduce impacts to marine mammal species or stocks (including through consideration of expected reduced impacts on individuals), their habitat, and their availability for subsistence uses (where relevant). This analysis considers such things as the nature of the proposed activity's adverse impact (likelihood, scope, range); the likelihood that the measure will be effective if implemented; the likelihood of successful implementation. Practicability of implementing the measure is also assessed and may involve consideration of such things as cost and impact on operations (16 U.S.C. 1371(a)(5)(A)(iii)).

Taking into account the above considerations, NMFS' evaluation of the two potential survey restrictions is described below:

Core Distribution Area. NMFS' 2018 notice of proposed rulemaking considered restrictions on activity in a Rice's whale ''core habitat area'' in the eastern GOM identified between the 100- and 400-m isobaths from 87.5° W to 27.5° N, based on Rosel *et al.* (2016) (Figure 3). As discussed in the 2018 proposed rule, and above, a restriction on (or absence of) survey activity in the core habitat area would be expected to protect Rice's whales through the alleviation or minimization of a range of airgun effects, both acute and chronic, that could otherwise accrue to impact the reproduction or survival of individuals in the area considered to be of greatest importance to the species. The absence of survey activity in the species' core habitat area not only minimizes Level B harassment of Rice's whales, but also importantly minimizes other effects such as loss of communication space.

The significant concern that led NMFS to consider restrictions on survey activity in the core habitat area was largely alleviated through removal of GOMESA and the associated reduction in predicted take and impacts in a known area of important habitat. (Although predicted take numbers for this final rule are higher relative to the 2021 final rule (annual average Level B harassment events of 26 versus 8, respectively), they remain significantly lower than the annual average of 462 Level B harassment events considered in that 2018 analysis (plus some potential for Level A harassment to occur)—an almost 18-fold reduction.) Moreover, the functional absence of survey activity in the eastern GOM, and particularly within Rice's whale core habitat area, means that the anticipated protection afforded by the previously considered restriction was functionally achieved by virtue of the reduced scope for the 2021 final rule (which is unchanged for this action). Regardless, because the core habitat area was entirely located in the GOMESA moratorium area removed from the scope of the 2021 final rule, it was no longer relevant for consideration as mitigation.

More recently, Rosel and Garrison (2022) described a Rice's whale ''core distribution area'' (Figure 3). This core distribution area description included a precautionary 30-km buffer around the core habitat area to account for uncertainty associated with both the location of observed whales and the possible movement whales could make in any direction from an observed sighting. It is not the result of new information warranting an expansion of the previously considered core habitat area, but rather is the result of additional precaution in defining the area within which existing Rice's whale sightings and tag locations suggest that whales could occur. As a result of this buffer, approximately 5 percent of the polygon for the core distribution area described in Rosel and Garrison (2022) overlaps with the current geographic scope of the rule, which led us to consider whether additional mitigation is warranted under the LPAI standard.

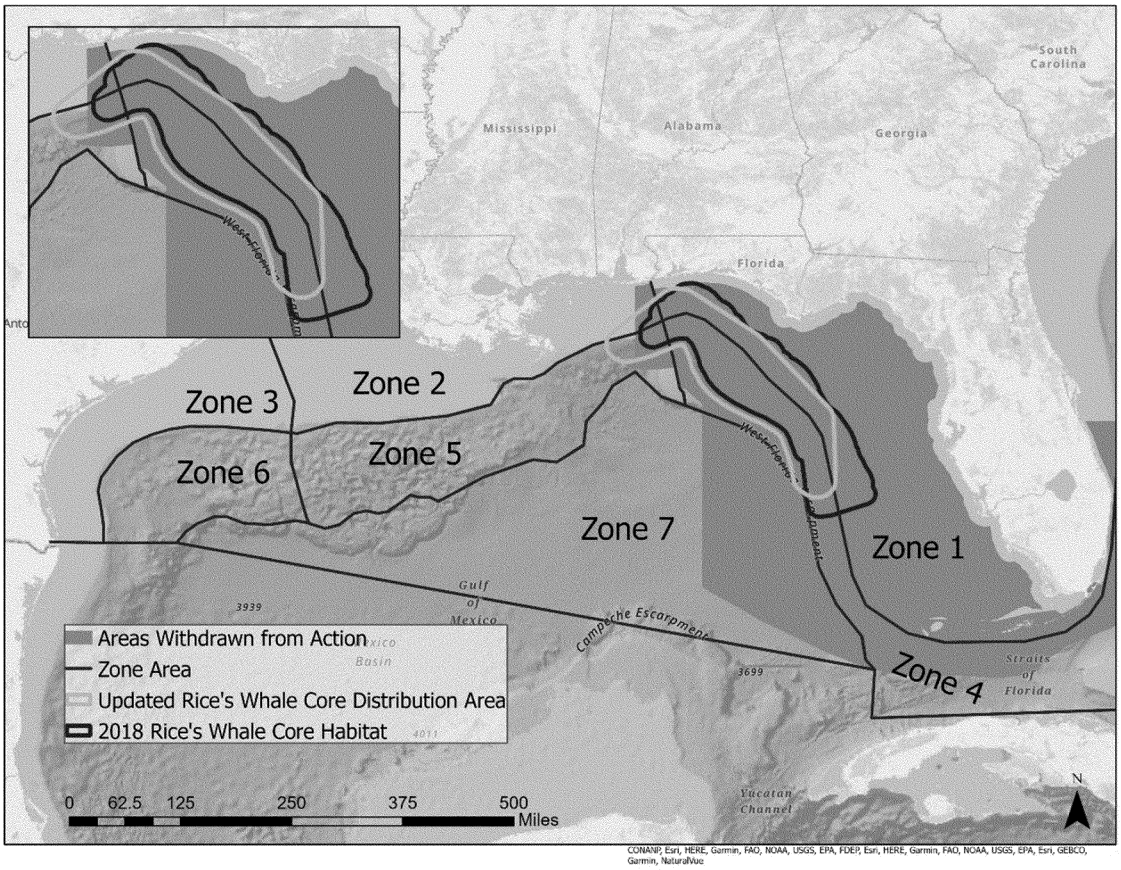

Figure 3 -- Rice's Whale Areas

The result of this precautionary approach is that areas shallower than 100 m and deeper than 400 m (*i.e.,* areas that are not known to support all of the Rice's whale life history stages; NMFS, 2023) are included in the core distribution area, most notably in the small portion overlapping with the scope of this rule, given the steep bathymetry there. Of the small portion of the core distribution area that overlaps the scope of this rule, 76 percent covers waters shallower than 100 m (36 percent) or deeper than 400 m (40 percent), *i.e.,* three-quarters of the area considered as a potential restriction area covers waters considered outside of most suitable Rice's whale habitat. We note that (1) NMFS' 2023 proposed designation of critical habitat (which is based on the same information we have considered) includes only waters between 100–400 m as the area containing physical or biological features essential for conservation and (2) no confirmed Rice's whale sightings have occurred in waters shallower than 100 m or waters deeper than 408 m.

Thus, we evaluate the potential mitigative benefits of a restriction on survey activity in the remaining approximately one-quarter of the considered area that is preferred habitat for Rice's whales. The absence of survey activity would avoid likely Level B harassment of any individuals that may occur in the area, but there is no information suggesting that the area is of particular importance relative to the remainder of GOM waters between 100–400 m that are outside the northeastern GOM core habitat, and Level B harassment that occurs to whales present outside the core habitat area may be expected to carry less potential for disruption of important behavior or significance to the affected individual. The amount of anticipated take is already low, and the existing mitigation requirements are expected with a high degree of confidence to minimize the duration and intensity of any instances of take that do occur. Therefore, we have low confidence that this potential restriction would meaningfully reduce impacts at the species or stock level. Regarding practicability, although the considered area is relatively small, it would have outsize impacts should any operator need to conduct new survey activity on existing interests in the area or inform developers' understanding of potential reserves in the area.

In summary, there is no information supporting identification of this area (*i.e.,* the 5 percent of the core distribution area overlapping the scope of this rule) as being of particular importance relative to Rice's whale habitat more broadly (*i.e.,* GOM waters between 100–400 m depth), and only 24 percent of the overlapping area actually covers Rice's whale habitat. The available information does not support a conclusion that such a restriction would contribute meaningfully to a reduction in adverse impacts to the Rice's whale or its habitat and, therefore, there is no rationale for incurring the associated practicability impacts. Because of these considerations, NMFS has determined that a restriction on survey activity within the portion of the core distribution area that occurs within scope of the rule is not warranted.

Central and Western GOM. New information regarding Rice's whale occurrence in the central and western GOM, largely based on passive acoustic detections (Soldevilla *et al.,* 2022;

2024), is now available. We acknowledge that some whales are likely to be present at locations outside the northeastern GOM core habitat area, and we considered whether other closure areas may be warranted, including central and western GOM areas within the same general 100–400 m depth range known to be occupied by Rice's whales in the northeastern GOM, and which have been proposed as designated critical habitat for the species (88 FR 47453, July 24, 2023). We provide discussion of this information and an evaluation of a potential broader restriction on survey effort in the following paragraphs.

As background, a NOAA survey reported observation of a Rice's whale in the western GOM in 2017 (NMFS, 2018). Genetic analysis of a skin biopsy that was collected from the whale confirmed it to be a Rice's whale. There had not previously been a genetically verified sighting of a Rice's whale in the western GOM, and given the importance of this observation, additional survey effort was conducted in an attempt to increase effort in the area. However, no additional sightings were recorded. (Note that there were two sightings of unidentified large baleen whales in 1992 in the western GOM, recorded as *Balaenoptera* sp. or Bryde's/sei whale (Rosel *et al.,* 2021).) Subsequently, during recent 2023 survey effort in the western GOM, a sighting of what has been described as a group of two probable Rice's whales was recorded (*https://www.fisheries.noaa.gov/science-blog/successful-final-leg-gulf-mexico-marine-mammal-and-seabird-vessel-survey*). In addition, there are occasional sightings by PSOs of baleen whales in the GOM that may be Rice's whales. Rosel *et al.* (2021) reviewed 13 whale sightings reported by PSOs in the GOM from 2010–2014 that were recorded as baleen whales. No sightings were close enough for the PSOs to see the diagnostic three lateral ridges on the whales' rostrums required to confirm them as Rice's whales. Rosel *et al.* ruled out five of the sightings as more likely being sperm whales based on water depth and descriptions of the whales' behavior. The remaining eight sightings may have been Rice's whales based on one or more lines of evidence (*i.e.,* photographs, behavioral description, and/or water depth consistent with Rice's whales). Of these sightings, three occurred in the northeastern GOM core habitat area, while the remaining five occurred along the GOM shelf break south of Louisiana. See Figure 4 for the location of confirmed Rice's whale sightings.

The acoustic detections provide significant evidence of year-round Rice's whale presence outside of the northeastern GOM core habitat area. Soldevilla *et al.* (2022) deployed autonomous passive acoustic recorders at 5 sites along the GOM shelf break in predicted Rice's whale habitat (Roberts *et al.,* 2016) for 1 year (2016–2017) to (1) determine if Rice's whales occur in waters beyond the northeastern GOM and, if so, (2) evaluate their seasonal occurrence and site fidelity at the 5 sites. Over the course of the 1-year study, sporadic, year-round recordings of calls assessed as belonging to Rice's whales were made south of Louisiana within approximately the same depth range (200–400 m), indicating that some Rice's whales occurred regularly in waters beyond the northeastern GOM core habitat area during the study period. Based on the detection range of the sonobuoys and acoustic monitors used in the study, actual occurrence could be in water depths up to 500 m (M. Soldevilla, pers. comm.), though the deepest confirmed Rice's whale sighting is at 408 m water depth. Data were successfully collected at four of the five sites; of those four sites, Rice's whale calls were detected at three. Detection of calls ranged from 1 to 16 percent of total days at the three sites. Calls were present in all seasons at two sites, with no obvious seasonality. It remains unknown whether animals are moving between the northwestern and the northeastern GOM or whether these represent different groups of animals (Soldevilla *et al.,* 2022).

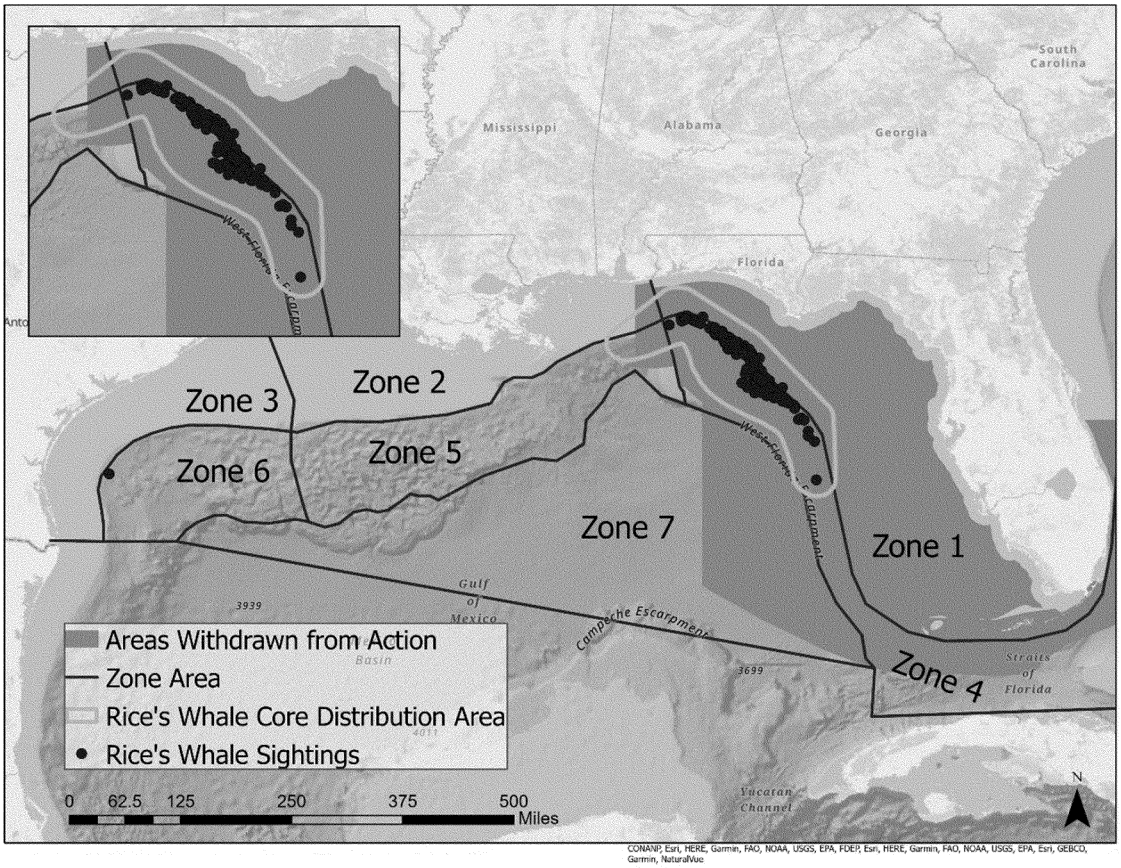

Figure 4 -- Confirmed Rice's Whale Sightings

A subsequent follow-up study (Soldevilla *et al.,* 2024) similarly involved deployment of autonomous passive acoustic recorders for approximately one year (2019–2020) at two shelf break sites, including one central GOM site included in the previous study and one new site further west, offshore Corpus Christi, Texas. (Recorders were also deployed at a site in Mexican waters for almost 2 years (2020–2022).) The study objectives were to (1) determine if Rice's whales occur in Mexican waters and to (2) evaluate how frequently they occur at all three sites. Rice's whale calls were detected on 33 and 25 percent of days at the central and western GOM sites, respectively, with calls recorded throughout the year, though no distinct seasonality was detected. These findings reflect an increase in the frequency and number of detections at the central GOM site compared with the 2016–2017 study. The authors note that these findings highlight persistence of Rice's whale detections at this site over multiple years, as well as variability among years (Soldevilla *et al.,* 2024). Rice's whale calls were also detected at the site in Mexican waters. See Soldevilla *et al.* (2024) for additional discussion. The authors also describe differences in Rice's whale call types recorded in the eastern GOM compared with those recorded in the western GOM, suggesting that whales may indeed have a broader distribution than the northeastern GOM (Soldevilla *et al.,* 2024).

The rate of call detections throughout the year is considerably higher in the eastern GOM than at the central/western GOM site where calls were most commonly detected, with at least 8.3 calls/hour among four eastern GOM sites within the core habitat area over 110 deployment days (Rice *et al.,* 2014) compared to 0.27 calls/hour over the 299-day deployment at the central/western GOM site where calls were detected most frequently in the 2016–2017 study. Approximately 2,000 total calls were detected at the central/western GOM site over 10 months in 2016–2017, compared to more than 66,000 total detections at the eastern GOM deployment site over 11 months (*i.e.,* approximately 30 times more calls were detected at the eastern GOM site) (Soldevilla *et al.,* 2022). Although ambient noise conditions were higher at the central/western GOM site, thus influencing maximum detection range, accounting for this difference in conditions would be expected to result in only 4–8 times as many call detections if all other factors (including presence and number of whales) were consistent (versus 30 times as many detections). Overall, Soldevilla *et al.* (2022) assessed that there seem to be fewer whales or more sparsely spaced whales in the central/western GOM compared to the eastern GOM, with calls present on fewer days, lower call detection rates, and far fewer call detections in the central/western GOM.

The passive acoustic data discussed above provide evidence that waters 100–400 m deep in the central and western GOM are Rice's whale habitat and are being used by Rice's whales in all seasons. This could imply that the population size is larger than previously estimated, or it could indicate that some individual Rice's whales have a broader distribution in the GOM than previously understood (Soldevilla *et al.,* 2024). Either way, the acoustic findings,

combined with the low numbers of visual sightings in the central and western GOM, suggest that density and abundance of Rice's whales in the central and western GOM are less than in the core habitat in the northeastern GOM. Therefore, while we expect that some individual Rice's whales occur outside the core habitat area and/or that whales from the northeastern GOM core habitat area occasionally travel outside the area, the currently available data are not sufficient to make inferences about Rice's whale density and abundance in the central and western GOM. More research is needed to answer key questions about Rice's whale density, abundance, habitat use, demography, and stock structure in the central and western GOM.

While these acoustic data and few confirmed sightings support the presence of Rice's whales in western and central GOM waters (within the 100–400 m water depth), the information is consistent with the predictions of Rice's whale density modeling, on which basis NMFS already anticipated and evaluated the potential for and effects of takes of Rice's whale in western and central GOM waters, even without these new data. Little is known about the number of whales that may be present, the nature of these individuals' use of the habitat, or the timing, duration, or frequency of occurrence for individual whales. Conversely, the importance of northeastern GOM waters to Rice's whale recovery is very clear (Rosel *et al.,* 2016). Ongoing efforts to target and manage human impacts in the northeastern core habitat are justified, accordingly. A comparison of acoustic and sightings data from the central/western and eastern GOM, even acknowledging the limitations of those data, suggests that occurrence of whales in the northeastern GOM core habitat is significantly greater and that the area provides the habitat of greatest importance to the species.

Restricting survey activity in central/western GOM waters from 100–400 m depth would avoid likely Level B harassment of any individuals that may occur in the area, but aside from the very large area within the 100–400 m isobaths throughout the GOM generally, there is no information supporting further delineation of any specific area within which a restriction on survey activity might be expected to provide targeted reductions in adverse impacts to Rice's whales or their habitat, and no such information was provided through public comment. Further, Level B harassment that may occur in the central/western GOM may be expected to have lower potential for meaningful consequences relative to Level B harassment events that occur in the northeastern GOM core habitat area, where important behavior may be more likely disrupted, and where greater numbers of Rice's whale are expected to occur. The relatively low level of take predicted for Rice's whales in the geographic scope for the specified activity under this final rule, as well as the existing mitigation measures (including expanded shutdowns for Rice's whales), which are expected with a high degree of confidence to minimize the duration and intensity of any instances of take that do occur, factor into NMFS' consideration of the potential benefits of any restriction on survey effort in central and western GOM waters 100–400 m depth.

Practicability—NMFS produced a draft RIA in support of the 2018 proposed rule, which evaluated potential costs associated with a range of area-based activity restrictions (available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*). Although that analysis did not directly evaluate the impacts of area-based restrictions for Rice's whales in the central and western GOM, it did consider the impacts of other potential area-based restrictions, including seasonal and year-round restrictions in the northeastern GOM core habitat area for Rice's whales, and in so doing provided a useful framework for considering practicability of area-based restrictions considered in this current rulemaking. The analysis suggested that the analyzed seasonal and year-round area closures would have the potential to generate reductions in leasing, exploration, and subsequent development activity. Although the 2018 draft RIA cautioned that its conclusions were subject to substantial uncertainty, it provided several factors that the likelihood of ultimate impacts to oil and gas production as a result of delays in data collection could be expected to depend upon: (1) oil and gas market conditions; (2) the relative importance of the closure area to oil and gas production; (3) the state of existing data covering the area; and (4) the duration of the closure. For this current rulemaking, NMFS cannot predict factor (1) and does not have complete information regarding factor (3) (though the 2018 draft RIA provides that new surveys are expected to be required to facilitate efficient exploration and development decisions). We can, however, more adequately predict the effects of factors (2) and (4) on the impact of any closure.

Habitat that supports all of the Rice's whale life-history states is generally considered to consist of the aforementioned strip of continental shelf waters within the 100–400 m isobaths throughout the U.S. GOM (Roberts *et al.,* 2016; Garrison *et al.* 2023; NMFS, 2023). Salinity and surface water velocity are likely predictive of potential Rice's whale occurrence (Garrison *et al.,* 2023), but these more dynamic variables are less useful in delineating a potential area of importance than the static depth variable. Within this GOM-wide depth range, we focus on the area where Soldevilla *et al.* (2022; 2024) recorded Rice's whale calls as being of interest for a potential restriction. This area lies within the central GOM, where the vast majority of seismic survey effort during NMFS' experience implementing the 2021 rule has occurred. The 2018 proposed rule draft RIA considered the economic impacts of a prospective closure area in deeper waters of the central GOM. The evaluated area was designed to benefit sperm whales and beaked whales, which are found in deep water, and more activity is projected to occur in deep water than in the shelf-break waters where Rice's whale habitat occurs. As such, the 2018 draft RIA analysis likely overestimates the potential impacts of a central or western GOM closure within a portion of the shelf waters considered to be Rice's whale habitat. However, the draft RIA analysis of deep-water closures in the central GOM suggests that a central GOM closure for Rice's whales could cause significant economic impacts. A key consideration in this finding relates to factor (4), as the analyzed closure for sperm whales and beaked whales was year-round. Similarly, there is no information to support a temporal component to design of a potential Rice's whale restriction and, therefore, a restriction would appropriately be year-round. As operators have no ability to plan around a year-round restriction, this aspect exacerbates the potential for effects on oil and gas production in the GOM.

We also considered data available specifically for the area under consideration (Rice's whale habitat in the central and western GOM). While Rice's whale habitat (*i.e.,* water depths of 100–400 m on the continental shelf break) contains less oil and gas industry infrastructure than do shallower, more mature waters, and have been subject to less leasing activity than deeper waters with greater expected potential reserves, central and western GOM waters 100–

400 m nevertheless host significant industry activity. BOEM provides summary information by water depth bin, including water depths of 201–400 m (see *https://www.data.boem.gov/Main/Default.aspx*). The area covering those depths overlaps 33 active leases, with 17 active platforms and over 1,200 approved applications to drill. In the past 20 years, over 500 wells have been drilled in water depths of 100–400 m. These data confirm that there is substantial oil and gas industry activity in this area and, therefore, the inability to collect new seismic data could affect oil and gas development given that the oil and gas industry typically uses targeted seismic to refine geologic analyses before drilling a well. During implementation of the existing rule, NMFS has issued (at the time of writing) 5 LOAs in association with surveys that partially overlapped the central GOM 100–400 m depth band (88 FR 68106, September 29, 2023; 88 FR 23403, April 17, 2023; 87 FR 55790, October 1, 2022; 87 FR 43243, July 20, 2022; 87 FR 42999, July 19, 2022). These surveys support a conclusion that a year-round closure would likely substantially affect future GOM oil and gas activity.

In summary, the foregoing supports that (1) we are unable to delineate specific areas of Rice's whale habitat in the central and western GOM where restrictions on survey activity would be appropriate because there is currently uncertainty about Rice's whale density, abundance, habitat usage patterns and other factors in the central and western GOM; and (2) there is high likelihood that closures or other restrictions on survey activity in all waters of 100–400 m depth in the central and western GOM would have significant economic impacts. Therefore, while new information regarding Rice's whale presence in areas of the GOM outside of the northeastern core habitat suggests that a restriction on survey effort may be expected to reduce adverse impacts to the species, there is a lack of information supporting the importance of or appropriately specific timing or location of such a restriction and an unclear understanding of the importance of particular areas to individual whales or the population as a whole. On the other hand, information regarding the potential for economic impacts resulting from a year-round restriction broadly in the 100–400 m area supports our conclusion that there are significant practicability concerns. As a result, NMFS has determined that no additional mitigation is warranted to effect the LPAI on the species.

NMFS has reevaluated the suite of mitigation measures required through the 2021 final regulations and considered other measures in light of the new information considered in this rule. Based on our evaluation of these measures, we have affirmed that the required mitigation measures contained in the current regulations provide the means of effecting the LPAI on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an incidental take authorization for an activity, section 101(a)(5)(A) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of the authorized taking. NMFS' MMPA implementing regulations further describe the information that an applicant should provide when requesting an authorization (50 CFR 216.104 (a)(13)), including the means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and the level of taking or impacts on populations of marine mammals. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

We have made no changes to the current LOA reporting requirements, which have been sufficient to date. Accordingly, the monitoring and reporting requirements for this rule remain identical to the 2021 final rule and ITR, and we refer readers back to that document (86 FR 5322, January 19, 2021) for the discussion.

Negligible Impact Analysis and Determinations

NMFS' implementing regulations define negligible impact as 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). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes alone is not enough information on which to base a negligible impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' by mortality, serious injury, and Level A or Level B harassment, we consider other factors, such as the type of take, the likely nature of any behavioral responses (*e.g.,* intensity, duration), the context of any such responses (*e.g.,* critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into these analyses via their impacts on the baseline (*e.g.,* as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality).

For each potential activity-related stressor, NMFS considers the potential effects to marine mammals and the likely significance of those effects to the species or stock as a whole. Potential risk due to vessel collision in view of the related mitigation measures, as well as potential risk due to entanglement and contaminant spills, were addressed in the Proposed Mitigation and Potential Effects of the Specified Activity on Marine Mammals sections of the 2018 and 2021 notices of proposed and final rulemaking and are not discussed further, as there are minimal risks expected from these potential stressors.

The ''specified activity'' for this rule continues to be a broad program of geophysical survey activity that could occur at any time of year in U.S. waters of the GOM, within the same specified geographical region as the 2021 final rule (*i.e.,* updated from the 2018 proposed rule to exclude the former GOMESA leasing moratorium area) and for the same 5-year period. The acoustic exposure modeling used for the 2021 rulemaking and for this rule provides marine mammal noise exposure estimates based on BOEM-provided projections of future survey effort and best available modeling of sound propagation, animal distribution, and animal movement. This information provides a best estimate of potential acute noise exposure events that may result from the described suite of activities.

Systematic Risk Assessment Framework—In recognition of the broad geographic and temporal scale of this activity, in support of the issuance of the 2021 rule, we applied an explicit, systematic risk assessment framework to evaluate potential effects of aggregated discrete acoustic exposure events (*i.e.,* geophysical survey activities) on marine mammals, which is in turn used in the negligible impact analysis. This risk assessment framework was described by Southall *et al.* (2017) (available online at: *https://www.fisheries.noaa.gov/*

national/marine-mammal-protection/incidental-take-authorizations-oil-and-gas) and discussed in detail in the 2018 notice of proposed rulemaking. That risk assessment framework, as refined in our 2021 final rule in response to public comment on the 2018 proposed rule and in consideration of the updated scope of the activity, was utilized for this rulemaking.

In summary, the systematic risk assessment framework uses the modeling results to put into biologically-relevant context the level of potential risk of injury and/or disturbance to marine mammals. The framework considers both the aggregation of acute effects and the broad temporal and spatial scales over which chronic effects may occur. Generally, this approach is a relativistic risk assessment that provides an interpretation of the exposure estimates within the context of key biological and population parameters (*e.g.,* population size, life history factors, compensatory ability of the species, animal behavioral state, aversion), as well as other biological, environmental, and anthropogenic factors. This analysis was performed on a species-specific basis within each modeling zone (Figure 2), and the end result provides an indication of the biological significance of the evaluated exposure numbers for each affected marine mammal stock (*i.e.,* yielding the severity of impact and vulnerability of stock/population information), and forecasts the likelihood of any such impact. This result is expressed as relative impact ratings of overall risk that couple (1) potential severity of effect on a stock, and (2) likely vulnerability of the population to the consequences of those effects, given biologically relevant information (*e.g.,* compensatory ability).

Spectral, temporal, and spatial overlaps between survey activities and animal distribution are the primary factors that drive the type, magnitude, and severity of potential effects on marine mammals, and these considerations are integrated into both the severity and vulnerability assessments. The risk assessment framework utilizes a strategic approach to balance the weight of these considerations between the two assessments, specifying and clarifying where and how the interactions between potential disturbance and species within these dimensions are evaluated.

This risk assessment framework is one component of the negligible impact analysis. As we explain more below, overall risk ratings from that assessment are then considered in conjunction with the required mitigation (and any additional relevant contextual information) to ultimately inform our negligible impact determinations. Elements of this approach are subjective and relative within the context of this program of projected survey activity and, overall, the analysis necessarily requires the application of professional judgment. Please review the 2018 proposed and 2021 final rule notices, as well as Southall *et al.* (2017), for further detail.

As shown in tables 5 and 6, estimated take numbers for most species have decreased relative to those evaluated in the notice of issuance for the 2021 final rule. We note that this includes the blackfish guild (consisting of the false killer whale, pygmy killer whale, melon-headed whale, and killer whale), for which species-specific take information is not available. Both the annual maximum and 5-year total take numbers for the group have decreased relative to the sum of the previous species-specific values (annual maxima and 5-year totals) evaluated in the 2021 final rule.

As elements of the risk assessment framework are dependent on information related to stock abundance, we revisited the risk assessment methodology for all species and present updated information below. Specifically, as discussed below, severity ratings are the product of comparison between estimated take numbers and modeled population abundance, on a zone-specific basis. As the zone-specific modeled population abundance values have been updated through new density modeling (Garrison *et al.,* 2023), we re-examined all severity ratings. The vulnerability assessment component is less directly dependent on population abundance information, but does incorporate certain species population information, including a trend rating and population size, as well as a factor related to species habitat use. With publication of new SARs information for all species, we revisited the former components of the vulnerability assessment, whereas the aforementioned updated density modeling effort provides new zone-specific abundance values that inform the assessment of habitat use in each zone (*i.e.,* proportion of GOM-wide estimated population in each zone).

Estimated take numbers increased (relative to the 2021 final rule) for only 4 species: Rice's whale, Fraser's dolphin, rough-toothed dolphin, and striped dolphin (we note that overall relative risk ratings remained static for Rice's whale and Fraser's dolphin). The change in estimated take numbers for each of the 4 species within the blackfish category relative to the take estimates for those 4 species in the 2021 final rule is unknown under NMFS' approach to estimating take numbers. However, overall relative risk ratings increased slightly for most species. Of the species for which estimated take decreased, relative risk ratings remained static (or declined) for the sperm whale, beaked whales, bottlenose dolphins, and spinner dolphin. No new information is available for these four taxa that would suggest that the existing negligible impact analyses should be revisited. Therefore, we rely on the previous negligible impact analyses for the sperm whale, all beaked whale species, all bottlenose dolphin stocks, and the spinner dolphin. Please see the notice of issuance for the 2021 final rule (86 FR 5322, January 19, 2021) for analysis related to these species and stocks, which we incorporate here by reference.

For those species for which evaluated take numbers increased and/or for which the assessed relative risk rating increased, our negligible impact analyses begin with the risk assessment framework, which comprehensively considers the aggregate impacts to marine mammal populations from the specified activities in the context of both the severity of the impacts and the vulnerability of the affected species. However, it does not consider the effects of the mitigation required through the regulations in identifying risk ratings for the affected species. In addition, while the risk assessment framework comprehensively considers the spatial and temporal overlay of the activities and the marine mammals in the GOM, as well as the number of predicted takes, there are details about the nature of any ''take'' anticipated to result from these activities that were not considered directly in the framework analysis that warrant explicit consideration in the negligible impact determination.

Accordingly, following the description of the framework analysis presented below, NMFS highlights a few factors regarding the nature of the predicted ''takes,'' then synthesizes the results of implementation of the framework, the additional factors regarding the nature of the predicted takes, and the anticipated effects of the mitigation to consider the negligible impact determination for each of the species considered here. The risk assessment analysis below is performed for 2 representative years, one representing a relatively high-effort scenario (Year 1 of the effective period of rule) and the other representing a moderate-effort scenario (Year 4 of the rule). Please see table 1 for details

regarding BOEM's level of effort projections.

Severity of Effect

Severity ratings consider the scaled Level B harassment takes relative to zone-specific population abundance to evaluate the severity of effect. As described above in Estimated Take, a significant model assumption was that populations of animals were reset for each 24-hour period. Exposure estimates for the 24-hour period were then aggregated across all assumed survey days as completely independent events, assuming populations turn over completely within each large zone on a daily basis. In order to evaluate modeled daily exposures and determine more realistic exposure probabilities for individuals across multiple days, we used information on species-typical movement behavior to determine a species-typical offset of modeled daily exposures, summarized under Estimated Take (and discussed in further detail in the 2021 notice of issuance for the final rule). Given that many of the evaluated survey activities occur for 30-day or longer periods, particularly some of the larger surveys for which the majority of the modeled exposures occur, this scaling process is appropriate to evaluate the likely severity of the predicted exposures. (For consideration of LOA applications, scaling is appropriate to estimate take and estimate the numbers of individual marine mammals likely to be taken (although, for surveys significantly longer than 30 days, the take numbers with this scaling applied would still be expected to overestimate the number of individuals, given the greater degree of repeat exposures that would be expected the longer the survey goes on)). This scaling output was used in a severity assessment. This approach is also discussed in more detail in the Southall *et al.* (2017) report.

The scaled Level B harassment takes were then rated through a population-dependent binning system used to evaluate risk associated with behavioral disruption across species—a simple, logical means of evaluating relative risk across species and areas. See the notice of issuance for the 2021 final rule for more detail regarding the definition of relative risk ratings. Results of the reassessed severity ratings are shown in table 9.

Level A harassment (including PTS) is not expected to occur for any of the species evaluated here, with the exception of *Kogia* spp. Estimated takes by Level A harassment for *Kogia* spp., which are discussed in further detail below, declined relative to what was evaluated in the 2021 final rule. See tables 5 and 6.

Table 9 -- Severity Assessment Rating

Species	Zone 1[1]		Zone 2		Zone 3		Zone 4[1]		Zone 5		Zone 6		Zone 7	
	H	M	H	M	H	M	H	M	H	M	H	M	H	M
Rice's whale	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	n/a	n/a
Sperm whale	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	L
Kogia spp.	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	M	M	L	L	VL
Beaked whales	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	VH	VH	VL	VL	VL	VL
Rough-toothed dolphin	VL	VL	L	M	VL	VL	VL	VL	H	H	M	L	L	L
Bottlenose dolphin	VL	VL	L	M	VL	VL	VL	VL	M	M	L	VL	n/a	n/a
Clymene dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	VL
Atlantic spotted dolphin	VL	VL	M	H	VL	VL	VL	VL	H	M	M	L	n/a	n/a
Pantropical spotted dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	VL
Spinner dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	n/a	n/a	VL	VL
Striped dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	VL
Fraser's dolphin	VL	VL	VL	VL	VL	VL	VL	VL	H	H	M	L	L	L
Risso's dolphin	n/a	n/a	VL	VL	n/a	n/a	VL	VL	H	M	M	L	L	VL
Short-finned pilot whale	n/a	n/a	VL	VL	VL	VL	VL	VL	H	M	M	L	VL	VL
Blackfish	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	L

H = Year 1 (representative high effort scenario); M = Year 4 (representative moderate effort scenario)
n/a = less than 0.05 percent of GOM-wide population predicted in zone
VL = very low; L = low; M = moderate; H = high; VH = very high
[1]No activity would occur in Zone 1, and no activity is projected in Zone 4 under the high effort scenario. With no activity in a zone, severity is assumed to be very low.

Vulnerability of Affected Population

Vulnerability rating seeks to evaluate the relative risk of a predicted effect given species-typical and population-specific parameters (*e.g.,* species-specific life history, population factors) and other relevant interacting factors (*e.g.,* human or other environmental stressors). The assessment includes consideration of four categories within two overarching risk factors (species-specific biological and environmental risk factors). These values were selected to capture key aspects of the importance of spatial (geographic), spectral (frequency content of noise in relation to species-typical hearing and sound communications), and temporal relationships between sound and receivers. Explicit numerical criteria for identifying scores were specified where possible, but in some cases qualitative judgments, based on a reasonable interpretation of given aspects of the

specified activity and how it relates to the species in question and the environment within the specified area, were required. The vulnerability assessment includes factors related to population status, habitat use and compensatory ability, masking, and other stressors. These factors were detailed in Southall *et al.* (2017) and discussed in further detail in the notice of issuance for the 2021 final rule. Please see that notice for further detail regarding these aspects of the framework and for definitions of vulnerability ratings. Note that the effects of the DWH oil spill are accounted for through a non-noise chronic anthropogenic risk factor, while the effects to acoustic habitat and on individual animal behavior via masking are accounted for through the masking and chronic anthropogenic noise risk factors. The results of reassessed species-specific vulnerability scoring are shown in table 10. Note that, as there are certain species-specific elements of the vulnerability assessment, we evaluated each of the four species contained within the blackfish group. For purposes of evaluating relative risk, we assume that the greatest vulnerability (assessed for melon-headed whale) applies to each species in the blackfish group.

Table 10 -- Vulnerability Assessment Ratings

Species	Zone						
	1	2	3	4	5	6	7
Rice's whale	H	H	M	H	H	H	n/a
Sperm whale	n/a	n/a	n/a	M	H	M	M
Kogia spp.	n/a	n/a	n/a	L	L	L	L
Beaked whale	n/a	n/a	n/a	L	L	L	L
Rough-toothed dolphin	L	L	L	L	L	L	L
Bottlenose dolphin	L	L	L	VL	L	VL	n/a
Clymene dolphin	n/a	n/a	n/a	L	L	L	L
Atlantic spotted dolphin	M	M	L	L	L	L	n/a
Pantropical spotted dolphin	n/a	n/a	n/a	L	L	L	L
Spinner dolphin	n/a	n/a	n/a	L	L	n/a	L
Striped dolphin	n/a	n/a	n/a	L	L	L	L
Fraser's dolphin	L	L	VL	L	L	L	L
Risso's dolphin	n/a	L	n/a	M	M	M	L
Melon-headed whale	n/a	n/a	n/a	L	M	L	L
Pygmy killer whale	n/a	n/a	n/a	L	L	L	L
False killer whale	n/a	n/a	n/a	L	L	L	L
Killer whale	n/a	n/a	n/a	L	L	L	L
Short-finned pilot whale	n/a	M	L	M	M	M	L

n/a = less than 0.05% of GOM-wide population predicted in zone
VL = very low; L = low; M = moderate; H = high; VH = very high

Risk Ratings

In the final step of the framework, severity and vulnerability ratings are integrated to provide relative impact ratings of overall risk, *i.e.,* relative risk ratings. Severity and vulnerability assessments each produce a numerical rating (1–5) corresponding with the qualitative rating (*i.e.,* very low, low, moderate, high, very high). A matrix is then used to integrate these two scores to provide an overall risk assessment rating for each species. The matrix is shown in table 2 of Southall *et al.* (2017).

Table 11 provides relative impact ratings for overall risk by zone and activity effort scenario (high and moderate), and table 12 provides GOM-wide relative impact ratings for overall risk for representative high and moderate effort scenarios.

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Table 11 -- Overall Evaluated Risk by Zone and Activity Scenario

Species	Zone 1[1]		Zone 2		Zone 3		Zone 4[1]		Zone 5		Zone 6		Zone 7	
	H	M	H	M	H	M	H	M	H	M	H	M	H	M
Rice's whale	L	L	L	L	L	L	L	L	L	L	L	L	n/a	n/a
Sperm whale	n/a	n/a	n/a	n/a	n/a	n/a	L	L	VH	VH	M	L	L	L
Kogia spp.	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	M	M	L	L	VL
Beaked whale	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	VH	VH	VL	VL	VL	VL
Rough-toothed dolphin	VL	VL	L	M	VL	VL	VL	VL	H	H	M	L	L	L
Bottlenose dolphin	VL	VL	L	M	VL	VL	VL	VL	H	M	M	VL	n/a	n/a
Clymene dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	VL
Atlantic spotted dolphin	L	L	M	H	VL	VL	VL	VL	H	M	M	L	n/a	n/a
Pantropical spotted dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	VL
Spinner dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	n/a	n/a	VL	VL
Striped dolphin	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	L
Fraser's dolphin	VL	VL	VL	VL	VL	VL	VL	VL	H	H	M	L	L	L
Risso's dolphin	n/a	n/a	VL	VL	n/a	n/a	L	L	H	H	M	L	L	VL
Short-finned pilot whale	n/a	n/a	L	L	VL	VL	L	L	H	M	M	L	VL	VL
Blackfish	n/a	n/a	n/a	n/a	n/a	n/a	VL	VL	H	H	M	L	L	L

H = Year 1 (representative high effort scenario); M = Year 4 (representative moderate effort scenario)
n/a = less than 0.05 percent of GOM-wide population predicted in zone
VL = very low; L = low; M = moderate; H = high; VH = very high
[1]No activity would occur in Zone 1, and no activity is projected in Zone 4 under the high effort scenario. With no activity in a zone, severity is assumed to be very low.

Table 12 -- Overall Evaluated Risk by Projected Activity Scenario, GOM-wide[1]

Species	High effort scenario (Year 1)	Moderate effort scenario (Year 4)
Rice's whale	Low (0)	Low (0)
Sperm whale	Low/Moderate[2] (0)	Low (0)
Kogia spp.	Low/Moderate[2] (+0.5)	Very Low/Low[2] (+0.5)
Beaked whales	Very Low (-2.5)	Very Low (-1.5)
Rough-toothed dolphin	Low (+1)	Low (+1)
Bottlenose dolphin (shelf/coastal)	Very low (0)	Very low (0)
Bottlenose dolphin (oceanic)	Very low (0)	Very low (0)
Clymene dolphin	Low/Moderate[2] (+0.5)	Very Low/Low[2] (0)
Atlantic spotted dolphin	Low/Moderate[2] (+0.5)	Low (0)
Pantropical spotted dolphin	Low/Moderate[2] (+0.5)	Very Low/Low[2] (+0.5)
Spinner dolphin	Very low (0)	Very low (0)
Striped dolphin	Low/Moderate[2] (+0.5)	Low (+1)
Fraser's dolphin	Very low (0)	Very low (0)
Risso's dolphin	Low (+1)	Low (+1)
Short-finned pilot whale	Low (0)	Low (+0.5)
Blackfish[3]	Low/Moderate (+1.5)	Low (+1)

[1]Changes from 2021 final rule (in numerical terms) are indicated in parentheses for each scenario.
[2]For these ratings, the median value across zones for the scenario fell between two ratings.
[3]In the 2021 final rule, the 4 blackfish species were each independently evaluated as having "very low" relative risk.

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In order to characterize the relative risk for each species across their entire range in the GOM, we used the median of the seven zone-specific risk ratings for each activity scenario (high and moderate effort), not counting those in which less than 0.05 percent of the GOM-wide abundance occurred (''n/a'' in table 11), to describe a GOM-wide risk rating for each of the representative activity scenarios (table 12).

As noted above, for sperm whale, beaked whales, bottlenose dolphins, and spinner dolphin, estimated take numbers decreased and relative risk ratings remained static (or decreased) compared with the 2021 final rule. Therefore, we rely on the analysis provided in the notice of issuance for the 2021 final rule for those species and stocks, which are not discussed further here.

Overall, the results of the risk assessment show that (as expected) risk is highly correlated with effort and density. Areas where little or no survey activity is predicted to occur or areas within which few or no animals of a particular species are believed to occur generally have very low or no potential risk of negatively affecting marine mammals, as seen across activity scenarios in Zones 1–4 (no activity will occur in Zone 1, which was entirely removed from scope of the rule, and less than 2 percent of Zone 4 remains within scope of the rule). Fewer species are expected to be present in Zones 1–3, where only bottlenose and Atlantic spotted dolphins occur in meaningful numbers. Areas with consistently high projected levels of effort (Zones 5–7) are generally predicted to have higher overall evaluated risk across all species. In Zone 7, animals are expected to be subject to less other chronic noise and non-noise stressors, which is reflected in the vulnerability scoring for that zone. Therefore, despite consistently high levels of projected effort, overall rankings for Zone 7 are lower than for Zones 5 and 6.

A ''high'' level of relative risk due to behavioral disturbance was identified in Zone 5 under both scenarios for most of the species evaluated further below (excepting Rice's whale (both scenarios) and *Kogia* spp., Atlantic spotted dolphin, and short-finned pilot whale (moderate effort scenario only)). ''High'' relative risk was not identified under either scenario in any other zone for any

species (and ''very high'' relative risk was not identified under either scenario in any zone for any of the species evaluated further below). Overall, the greatest relative risk across species is generally seen in Zone 5 (both scenarios) and in Zone 6 (under the high effort scenario).

Changes to relative risk ratings may be seen by comparing table 12 above with table 15 from the 2021 final rule, and changes (in numerical terms) are indicated in parentheses for each scenario. All increases to assessed relative risk represent minor changes, *i.e.,* if considered as a numerical scale (with ''very low'' = 1 and ''very high'' = 5), with one exception, there was no risk rating increase greater than one point. As noted above, despite increases in estimated take numbers, relative risk ratings for Rice's whale and Fraser's dolphin remained static. In the 2021 final rule, all 4 species comprising the blackfish group were individually assessed as having ''very low'' relative risk under both scenarios. In this analysis, the blackfish as a group are assessed as having relative risk between ''low'' and ''moderate'' under the high effort scenario (representing the lone example of a 1.5 point increase) and ''low'' under the moderate effort scenario.

Although the scores generated by the risk assessment framework and further aggregated across zones (as described above) are species-specific, additional stock-specific information is also considered in our analysis, where appropriate, as indicated in the Description of Marine Mammals in the Area of the Specified Activity, Potential Effects of the Specified Activity on Marine Mammals and Their Habitat, and Mitigation sections of the 2018 notice of proposed rulemaking, 2021 final rule, 2023 notice of proposed rulemaking, and this action.

Duration of Level B Harassment Exposures

In order to more fully place the predicted amount of take into meaningful context, it is useful to understand the duration of exposure at or above a given level of received sound, as well as the likely number of repeated exposures across days. While any exposure above the criteria for Level B harassment counts as an instance of take, that accounting does not make any distinction between fleeting exposures and more severe encounters in which an animal may be exposed to that received level of sound for a longer period of time. Yet, this information is meaningful to an understanding of the likely severity of the exposure, which is relevant to the negligible impact evaluation and not directly incorporated into the risk assessment framework. Each animat modeled has a record or time history of received levels of sound over the course of the modeled 24-hour period. For example, for the 4 blackfish species exposed to noise from 3D WAZ surveys, the 50th percentile of the cumulative distribution function indicates that the time spent exposed to levels of sound above 160 dB rms SPL (*i.e.,* the 50 percent midpoint for Level B harassment) would range from only 1.4 to 3.3 minutes—a minimal amount of exposure carrying little potential for significant disruption of behavioral activity. We provide summary information for the species evaluated here regarding the total average time in a 24-hour period that an animal would spend with received levels above 160 dB (the threshold at which 50 percent of the exposed population is considered taken) and between 140 and 160 dB (where 10 percent of the exposed population is considered taken) in table 13. This information considered is unchanged from the 2021 final rule.

Additionally, as we discussed in the Estimated Take section of the 2018 notice of proposed rulemaking for Test Scenario 1 (and summarized above), by comparing exposure estimates generated by multiplying 24-hour exposure estimates by the total number of survey days versus modeling for a full 30-day survey duration for 6 representative species, we were able to refine the exposure estimates to better reflect the number of individuals exposed above threshold within a single survey. Using this same comparison and scalar ratios described above, we are able to predict an average number of days each of the representative species modeled in the test scenario were exposed above the Level B harassment thresholds within a single survey. As with the duration of exposures discussed above, the number of repeated exposures is important to an understanding of the severity of effects. For example, the ratio for dolphins indicates that the 30-day modeling showed that approximately 29 percent as many individual dolphins (compared to the results produced by multiplying average 24-hour exposure results by the 30-day survey duration) could be expected to be exposed above harassment thresholds. However, the approach of scaling up the 24-hour exposure estimates appropriately reflects the instances of exposure above threshold (which cannot be more than 1 in 24 hours), so the inverse of the scalar ratio suggests the average number of days in the 30-day modeling period that dolphins are exposed above threshold is approximately 3.5. It is important to remember that this is an average within a given survey, and that it is more likely some individuals would be exposed on fewer days and some on more. table 13 reflects the average days exposed above threshold for the indicated species after the scalar ratios were applied.

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Table 13 -- Time in Minutes (Per Day) Spent Above Thresholds (50th Percentile) and Average Number of Days Individuals Taken During 30-day Survey

Species	Survey type and time (min/day) above 160 dB rms (50% take)				Survey type and time (min/day) above 140 dB rms (10% take)				Average number of days "taken" during 30-day survey
	2D	3D NAZ	3D WAZ	Coil	2D	3D NAZ	3D WAZ	Coil	
Rice's whale	7.6	18.2	6.8	21.4	61.7	163.5	55.4	401.1	5.3
Sperm whale	5.2	10.3	4.0	20.7	12.0	31.8	10.7	25.2	2.4
Kogia spp.	3.2	7.9	2.8	15.3	7.6	19.0	6.7	13.9	3.1
Beaked whale	6.0	12.4	4.4	24.0	16.2	39.7	14.1	31.1	9.9
Rough-toothed dolphin	3.0	6.3	2.5	11.4	11.2	27.6	10.2	20.9	3.5
Bottlenose dolphin	4.5	11.7	4.0	16.8	22.0	54.6	19.7	53.2	3.5
Clymene dolphin	1.8	3.9	1.6	8.7	8.0	21.1	7.2	20.4	3.5
Atlantic spotted dolphin	7.0	16.0	6.5	25.7	23.4	58.1	20.9	49.3	3.5
Pantropical spotted dolphin	1.8	4.1	1.6	8.7	8.1	21.0	7.1	22.2	3.5
Spinner dolphin	3.2	8.5	2.7	16.4	12.4	31.0	10.8	22.8	3.5
Striped dolphin	1.8	4.0	1.6	8.5	8.0	21.0	7.2	21.3	3.5
Fraser's dolphin	2.8	6.4	2.4	13.8	9.4	24.2	8.4	24.0	3.5
Risso's dolphin	3.4	8.4	2.9	15.3	13.8	37.7	12.2	31.5	3.5
Melon-headed whale	2.6	5.9	2.2	13.1	9.3	24.2	8.3	24.0	3.4
Pygmy killer whale	1.8	3.6	1.4	7.1	7.3	18.5	6.6	17.3	3.4
False killer whale	2.4	4.9	1.9	9.3	8.8	22.0	8.0	17.8	3.4
Killer whale	2.7	6.1	3.3	12.0	16.8	46.1	14.9	73.6	3.4
Short-finned pilot whale	3.3	8.1	2.9	17.5	10.9	27.4	9.8	20.8	3.4

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Loss of Hearing Sensitivity

In general, NMFS expects that noise-induced hearing loss as a result of airgun survey activity, whether temporary (temporary threshold shift, equivalent to Level B harassment) or permanent (PTS, equivalent to Level A harassment), is only possible for low-frequency and high-frequency cetaceans. The best available scientific information indicates that low-frequency cetacean species (*i.e.,* mysticete whales, including the Rice's whale) have heightened sensitivity to frequencies in the range output by airguns, as shown by their auditory weighting function, whereas high-frequency cetacean species (including *Kogia* spp.) have heightened sensitivity to noise in general (as shown by their lower threshold for the onset of PTS) (NMFS, 2018). However, no instances of Level A harassment are predicted to occur for Rice's whales, and none may be authorized in any LOAs issued under this rule.

Level A harassment is predicted to occur for *Kogia* spp. (as indicated in table 6). However, the degree of injury (hearing impairment) is expected to be mild. If permanent hearing impairment occurs, it is most likely that the affected animal would lose a few dB in its hearing sensitivity, which in most cases would not be expected to affect its ability to survive and reproduce. Hearing impairment that occurs for these individual animals would be limited to at or slightly above the dominant frequency of the noise sources. In particular, the predicted PTS resulting from airgun exposure is not likely to affect their echolocation performance or communication, as *Kogia* spp. likely produce acoustic signals at frequencies above 100 kHz (Merkens *et al.,* 2018), well above the frequency range of airgun noise. Further, modeled exceedance of Level A harassment criteria typically resulted from being near an individual source once, rather than accumulating energy from multiple sources. Overall, the modeling indicated that exceeding the SEL threshold for PTS is a rare event, and having 4 vessels close to each other (350 m between tracks) did not cause appreciable accumulation of energy at the ranges relevant for injury exposures. Accumulation of energy from independent surveys is expected to be negligible. This is relevant for *Kogia* spp. because based on their expected sensitivity, we expect that aversion may play a stronger role in avoiding exposures above the peak pressure PTS threshold than we have accounted for.

Some subset of the individual marine mammals predicted to be taken by Level B harassment may incur some TTS. For Rice's whales, TTS may occur at frequencies important for communication. However, any TTS incurred would be expected to be of a relatively small degree and short duration. This is due to the low likelihood of sound source approaches of the proximity or duration necessary to cause more severe TTS, given the fact that both sound source and marine mammals are continuously moving, the anticipated effectiveness of shutdowns, and general avoidance by marine mammals of louder sources.

For these reasons, and in conjunction with the required mitigation, NMFS does not believe that Level A harassment (here, PTS) or Level B harassment in the form of TTS will play a meaningful role in the overall degree

of impact experienced by marine mammal populations as a result of the projected survey activity. Further, the impacts of any TTS incurred are addressed through the broader analysis of Level B harassment.

Impacts to Habitat

Potential impacts to marine mammal habitat, including to marine mammal prey, were discussed in detail in the 2018 notice of proposed rulemaking as well as in the 2021 notice of issuance for the final rule, including in responses to comments concerning these issues (83 FR 29212, 29241, June 22, 2018; 86 FR 5322, 5335, January 19, 2021). There is no new information that changes that assessment, and we rely on the assessment provided in those documents and reiterated below.

Regarding impacts to prey species such as fish and invertebrates, NMFS' review of the available information leads to a conclusion that the most likely impact of survey activity would be temporary avoidance of an area, with a rapid return to pre-survey distribution and behavior, and minimal impacts to recruitment or survival anticipated. Therefore, the specified activities are not likely to have more than short-term adverse effects on any prey habitat or populations of prey species. Further, any impacts to prey species are not expected to result in significant or long-term consequences for individual marine mammals, or to contribute to adverse impacts on their populations.

Regarding potential impacts to acoustic habitat, NMFS provided a detailed analysis of potential cumulative and chronic effects to marine mammals (found in the Cumulative and Chronic Effects report, available online at *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*). See also 83 FR 29212, 29242 (June 22, 2018) for detailed discussion of acoustic habitat. That analysis focused on potential effects to the acoustic habitat of sperm whales and Rice's whales via an assessment of listening and communication space. The analysis performed for sperm whales (which provides a useful proxy for other mid- and high-frequency cetaceans evaluated here) shows that the survey activities do not significantly contribute to the soundscape in the frequency band relevant for their lower-frequency slow-clicks and that there will be no significant change in communication space for sperm whales. Similar conclusions may be assumed for other mid- and high-frequency cetacean species.

Implications for acoustic masking and reduced communication space resulting from noise produced by airgun surveys in the GOM are expected to be particularly heightened for animals that actively produce low-frequency sounds or whose hearing is attuned to lower frequencies (*i.e.,* Rice's whales). The strength of the communication space approach used here is that it evaluates potential contractions in the availability of a signal of documented importance. In this case, losses of communication space for Rice's whales were estimated to be higher in western and central GOM canyons and shelf break areas. In contrast, relative maintenance of listening area and communication space was seen within the Rice's whale core habitat area in the northeastern GOM. The result was heavily influenced by the projected lack of survey activity in that region, which underscores the importance of maintaining the acoustic soundscape of this important habitat for the Rice's whale. In light of BOEM's 2020 update to the scope of the specified activity, no survey activity will occur under this rule within the Rice's whale core habitat area or within the broader eastern GOM. See Figures 3–4. In deepwater areas where larger amounts of survey activity were projected, significant loss of low-frequency listening area and communication space was predicted by the model, but this finding was discounted because Rice's whales are less likely to occur in deeper waters of the central and western GOM.

Species-Specific Negligible Impact Analysis Summaries

In this section, for the species evaluated herein (*i.e.,* all but sperm whale, beaked whales, bottlenose dolphin, and spinner dolphin, for which, as described previously, we incorporate by reference the analysis conducted in the 2018 rule), we consider the relative impact ratings described above in conjunction with the required mitigation and other relevant contextual information in order to produce a final assessment of impact to the species or stocks, *i.e.,* the negligible impact determinations. The effects of the DWH oil spill are accounted for through the vulnerability scoring (table 10).

Although Rice's whale core habitat in the northeastern GOM is not the subject of restrictions on survey activity, as the scope of the specified activity does not include the area (see Figures 3–4), the beneficial effect for the species remains the same. The absence of survey activity in the eastern GOM (see Figure 2) benefits GOM marine mammals by reducing the portion of a stock likely exposed to survey noise and avoiding impacts to certain species in areas of importance for them. Habitat areas of importance in the eastern GOM are discussed in detail in the Proposed Mitigation section of the 2018 notice of proposed rulemaking.

Rice's Whale

The risk assessment analysis, which evaluated the relative significance of the aggregated impacts of the survey activities across seven GOM zones in the context of the vulnerability of each species, concluded that the GOM-wide risk ratings for Rice's whales are low, regardless of activity scenario. We note that, although the evaluated severity of take for Rice's whales is very low in all zones where take could occur, vulnerability for the species is assessed as high in 5 of the 6 zones where the species occurs (vulnerability is assessed as moderate in Zone 3, where less than 1 percent of GOM-wide abundance is predicted to occur). When integrated through the risk framework described above, overall risk for the species is therefore assessed as low for both the high and moderate effort scenarios. The evaluated risk rating is the same as what was considered in the 2021 notice of issuance of the final rule, despite increased take numbers (see tables 5–6). In the context of what remain relatively low predicted take numbers, the relative risk ratings for the species remain driven by the assessed vulnerability.

We further consider the likely severity of any predicted behavioral disruption of Rice's whales in the context of the likely duration of exposure above Level B harassment thresholds. Specifically, the average modeled time per day spent at received levels above 160 dB rms (the threshold at which 50 percent of the exposed population is considered taken) ranges from 6.8–21.4 minutes for deep penetration survey types. The average time spent exposed to received levels between 140 and 160 dB rms (where 10 percent of the exposed population is considered taken) ranges from 55–164 minutes for 2D, 3D NAZ, and 3D WAZ surveys, and 401 minutes for coil surveys (which comprise approximately 10 percent of the total activity days).

Importantly, no survey activity will occur within the eastern GOM pursuant to this rule. Although there is new evidence of Rice's whale occurrence in the central and western GOM from passive acoustic detections (Soldevilla *et al.,* 2022; 2024), the highest densities of Rice's whales remain confined to the northeastern GOM core habitat (see

Figures 3–4). Moreover, the number of individuals that occur in the central and western GOM and nature of their use of this area is poorly understood. Soldevilla *et al.* (2022) suggest that more than one individual was present on at least one occasion, as overlapping calls of different call subtypes were recorded in that instance, but also state that call detection rates suggest that either multiple individuals are typically calling or that individual whales are producing calls at higher rates in the central/western GOM. Soldevilla *et al.* (2024) provide further evidence that Rice's whale habitat encompasses all 100–400 m depth waters encircling the entire GOM (including Mexican waters), but they also note that further research is needed to understand the density of whales in these areas, seasonal changes in whale density, and other aspects of habitat usage.

This new information does not affect the prior conclusion that the absence of survey activity in the eastern GOM benefits Rice's whales and their habitat by minimizing a range of potential effects of airgun noise, both acute and chronic, that could otherwise accrue to impact the reproduction or survival of individuals in this area, and that the absence of survey activity in the eastern GOM will minimize disturbance of the species in the place most important to them for critical behaviors such as foraging and socialization. The absence of survey activity in this area and significant reduction in associated exposures of Rice's whales to seismic airgun noise is expected to eliminate the likelihood of auditory injury of Rice's whales. Finally, the absence of survey activity in the eastern GOM will reduce chronic exposure of Rice's whales to higher levels of anthropogenic sound and the associated effects including masking, disruption of acoustic habitat, long-term changes in behavior such as vocalization, and stress.

As described in the preceding *Loss of Hearing Sensitivity* section, we have analyzed the likely impacts of potential temporary hearing impairment and do not expect that they would result in impacts on reproduction or survival of any individuals. The extended shutdown zone for Rice's whales (1,500 m)—to be implemented in the unlikely event that a Rice's whale is encountered—is expected to further minimize the severity of any hearing impairment incurred as well as reduce the likelihood of more severe behavioral responses.

The estimated take numbers for Rice's whale in this final rule are higher than those considered in the 2021 final rule (see tables 5–6). Accordingly, NMFS re-evaluated the relative risk rating for Rice's whale (tables 11–12), and considered other relevant information for the species. As discussed above, the risk ratings did not change from those assessed in the 2021 final rule, and new information considered herein does not affect the determinations previously made in that analysis. No mortality of Rice's whales is anticipated or authorized. It is possible that Rice's whale individuals, if encountered, will be taken briefly on one or more days during a year of activity by one type of survey or another and some subset of those exposures above thresholds may be of comparatively long duration within a day. However, the amount of take remains low (annual average of 26, with a maximum in any year of 30), and the significant and critical functional protection afforded through the absence of survey activity in the species' northeastern GOM core habitat and the extended shutdown requirement means that the impacts of the expected takes from these activities are not likely to impact the reproduction or survival of any individual Rice's whales, much less adversely affect the species through impacts on annual rates of recruitment or survival. Accordingly, we conclude the taking from the specified activity will have a negligible impact on Rice's whales as a species.

Kogia spp.

The risk assessment analysis, which evaluated the relative significance of the aggregated impacts of the survey activities across seven GOM zones in the context of the vulnerability of each species, concluded that the GOM-wide risk ratings for *Kogia* spp. were between low and moderate (for the high effort scenario) and between very low and low (for the moderate effort scenario). Evaluated risk is slightly increased from the 2021 final rule, with modeled decreases in zone-specific population abundance offsetting decreases in estimated take. We further consider the likely severity of any predicted behavioral disruption of *Kogia* spp. in the context of the likely duration of exposure above Level B harassment thresholds. Specifically, the average modeled time per day spent at received levels above 160 dB rms (where 50 percent of the exposed population is considered taken) ranges from 2.8–7.9 minutes for 2D, 3D NAZ, and 3D WAZ surveys and up to 15.3 minutes for coil surveys (which comprise less than 10 percent of the total projected activity days), and the average time spent between 140 and 160 dB rms (where 10 percent of the exposed population is considered taken) is 6.7–19 minutes.

Odontocetes echolocate to find prey, and while there are many different strategies for hunting, one common pattern, especially for deeper diving species, is to conduct multiple repeated deep dives within a feeding bout, and multiple bouts within a day, to find and catch prey. While exposures of the short durations noted above could potentially interrupt a dive or cause an individual to relocate to feed, such a short-duration interruption would be unlikely to have significant impacts on an individual's energy budget and, further, for these species and this open-ocean area, there are no specific known reasons (*i.e.,* these species range GOM-wide beyond the continental slope and there are no known biologically important areas) to expect that there would not be adequate alternate feeding areas relatively nearby, especially considering the anticipated absence of survey activity in the eastern GOM. Importantly, the absence of survey activity in the eastern GOM will reduce disturbance of *Kogia* spp. in places of importance to them for critical behaviors such as foraging and socialization and, overall, help to reduce impacts to the species as a whole.

NMFS has analyzed the likely impacts of potential hearing impairment, including the estimated upper bounds of permanent threshold shift (Level A harassment) that could be authorized under the rule and do not expect that they would result in impacts on reproduction or survival of any individuals. As described in the previous section, the degree of injury for individuals would be expected to be mild, and the predicted PTS resulting from airgun exposure is not likely to affect echolocation performance or communication for *Kogia* spp. Additionally, the extended distance shutdown zone for *Kogia* spp. (1,500 m) is expected to further minimize the severity of any hearing impairment incurred and also to further reduce the likelihood of, and minimize the severity of, more severe behavioral responses.

Of note, due to their pelagic distribution, small size, and cryptic behavior, pygmy sperm whales and dwarf sperm whales are rarely sighted during at-sea surveys and difficult to distinguish when visually observed in the field. Accordingly, abundance estimates in NMFS SARs are recorded for *Kogia* spp. only, density and take estimates in this rule are similarly lumped for the two species, and there is no additional information by which NMFS could appropriately apportion impacts other than equally/proportionally across the two species.

No mortality of *Kogia* spp. is anticipated or authorized. While it is likely that the majority of the individuals of these two species will be impacted briefly on one or more days during a year of activity by one type of survey or another, based on the nature of the individual exposures and takes, as well as the aggregated scale of the impacts across the GOM, and in consideration of the mitigation discussed here, the impacts of the expected takes from these activities are not likely to impact the reproduction or survival of any individuals, much less adversely affect the GOM stocks of dwarf or pygmy sperm whales through impacts on annual rates of recruitment or survival. Accordingly, we conclude the taking from the specified activity will have a negligible impact on GOM stocks of dwarf or pygmy sperm whales.

Other Stocks

In consideration of the similarities in the nature and scale of impacts, we consider the GOM stocks of the following species together in this section: rough-toothed dolphin, Clymene dolphin, Atlantic spotted dolphin, pantropical spotted dolphin, striped dolphin, Fraser's dolphin, Risso's dolphin, melon-headed whale, pygmy killer whale, false killer whale, killer whale, and short-finned pilot whale. With the exception of Fraser's dolphin, rough-toothed dolphin, and striped dolphin, estimated (and allowable) take of these stocks (including both the maximum annual take and the total take over 5 years) is lower as compared to the 2021 final rule.

The risk assessment analysis, which evaluated the relative significance of the aggregated impacts of the survey activities across seven GOM zones in the context of the vulnerability of each species, concluded that the GOM-wide risk ratings for high and moderate effort scenarios ranged from very low to between low and moderate for these species. For the Fraser's dolphin, evaluated risk is the same as what was considered in the 2021 final rule, despite increased take numbers (see tables 5–6).

We further considered the likely severity of any predicted behavioral disruption of the individuals of these species in the context of the likely duration of exposure above Level B harassment thresholds. Specifically, the average modeled time per day spent at received levels above 160 dB rms (where 50 percent of the exposed population is considered taken) ranges from 1.4–11.7 minutes for 2D, 3D NAZ, and 3D WAZ surveys and up to 25.7 minutes for coil surveys (which comprise less than 10 percent of the total projected activity days). The average time per day spent between 140 and 160 dB rms for individuals that are taken is from 8–58.1 minutes, with the one exception of killer whales exposed to noise from coil surveys, which average 73.6 minutes (though we note that the overall risk rating for the blackfish group, including killer whales, is low).

Odontocetes echolocate to find prey, and there are many different strategies for hunting. One common pattern for deeper-diving species is to conduct multiple repeated deep dives within a feeding bout, and multiple bouts within a day, to find and catch prey. While exposures of the shorter durations noted above could potentially interrupt a dive or cause an individual to relocate to feed, such a short-duration interruption would be unlikely to have significant impacts on an individual's energy budget and, further, for these species and this open-ocean area, there are no specific known reasons (*i.e.,* these species range GOM-wide beyond the continental slope and there are no known biologically important areas) to expect that there would not be adequate alternate feeding areas relatively nearby, especially considering the anticipated absence of survey activity in the eastern GOM. For those species that are more shallow feeding species, it is likely that the noise exposure considered herein would result in minimal significant disruption of foraging behavior and, therefore, the corresponding energetic effects would similarly be minimal.

Of note, the Atlantic spotted dolphin is expected to benefit (via lessening of both number and severity of takes) from the coastal waters time-area restriction developed to benefit bottlenose dolphins, and several additional species can be expected to benefit from the absence of survey activity in important eastern GOM habitat.

No mortality or Level A harassment of these species is anticipated or authorized. It is likely that the majority of the individuals of these species will be impacted briefly on one or more days during a year of activity by one type of survey or another. Based on the nature of the individual exposures and takes, as well as the very low to low aggregated scale of the impacts across the GOM and considering the mitigation discussed here, the impacts of the expected takes from these activities are not likely to impact the reproduction or survival of any individuals, much less adversely affect the GOM stocks of any of these 12 species through impacts on annual rates of recruitment or survival. Accordingly, we conclude the taking from the specified activity will have a negligible impact on GOM stocks of these 12 species.

Determination

Based on the analysis contained herein, and the analysis presented in the 2021 final rule for the other species and stocks for which take is authorized (table 6), of the likely effects of the specified activities on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and related monitoring measures, NMFS finds that the total marine mammal take from the specified activities for the 5-year period of the regulations will have a negligible impact on all affected marine mammal species and stocks.

Small Numbers

For reference, we summarize how NMFS interprets and applies the small numbers standard, which is substantively unchanged from the full discussion provided in the 2018 notice of proposed rulemaking. Additional discussion was provided in the Comments and Responses section of the notice of issuance for the 2021 final rule to address specific comments, questions, or recommendations received from the public.

In summary, when quantitative take estimates of individual marine mammals are available or inferable through consideration of additional factors, and the number of animals taken is one-third or less of the best available abundance estimate for the species or stock, NMFS considers it to be of small numbers. For additional discussion, please see NMFS' notice of issuance for the 2021 final rule (86 FR 5322, January 19, 2021; see 86 FR 5363, 86 FR 5438). NMFS may also appropriately find that one or two predicted group encounters will result in small numbers of take relative to the range and distribution of a species, regardless of the estimated proportion of the abundance.

Our 2021 final rule also concluded that NMFS may appropriately elect to make a ''small numbers'' finding based on the estimated annual take in individual LOAs issued under the rule. This approach does not affect the negligible impact analysis for a rule, which is the biologically relevant inquiry and based on the total annual estimated taking for all activities the regulations will govern over the 5-year period. NMFS determined this approach is a permissible interpretation of the relevant MMPA provisions.

For this rule, as in the 2021 final rule, up-to-date species information is available, and sophisticated models have been used to estimate take in a manner that will allow for quantitative comparison of the take of individuals versus the best available abundance estimates for the species or guilds. Specifically, while the modeling effort utilized for this rule enumerates the estimated instances of takes that will occur across days as the result of the operation of certain survey types in certain areas, the modeling report also includes the evaluation of a test scenario that allows for a reasonable modification of those generalized take estimates to better estimate the number of individuals that will be taken within one survey (as discussed under Estimated Take). Use of modeling results from the rule allows one to reasonably approximate the number of marine mammal individuals taken in association with survey activities. The estimated take of marine mammals for each species or guild will then be compared against the best available abundance estimate as determined, and estimates that do not exceed one-third of that estimate will be considered small numbers.

Our 2021 final rule contained a fuller explanation of this interpretation and application of ''small numbers'' and explained how small numbers would be evaluated under the rule. We make no changes to our treatment of the small numbers standard in this rule, as the new information considered herein has no bearing on those discussions. See the Small Numbers section of the 2021 final rule at 86 FR 5438–5440 and responses to comments on small numbers at 86 FR 5363–5368 (January 19, 2021).

Adaptive Management

The regulations governing the take of marine mammals incidental to geophysical survey activities contain an adaptive management component. We make no changes here. The comprehensive reporting requirements (described in detail in the Monitoring and Reporting section of NMFS' notice of issuance for the 2021 final rule (86 FR 5322, January 19, 2021)) are designed to provide NMFS with monitoring data from the previous year to allow consideration of whether any changes are appropriate. The use of adaptive management allows NMFS to consider new information from different sources to determine (with input from the LOA-holders regarding practicability) on a regular (*e.g.,* annual or biennial) basis if mitigation or monitoring measures should be modified (including additions or deletions). Mitigation measures could be modified if new data suggest that such modifications would have a reasonable likelihood of reducing adverse effects to marine mammal species or stocks or their habitat and if the measures are practicable. The adaptive management process and associated reporting requirements would serve as the basis for evaluating performance and compliance. As no changes to the existing adaptive management process have been made, we do not repeat discussion provided in the notice of issuance of the final rule. Please see that document for further detail.

Under this rule, NMFS plans to continue to implement an annual adaptive management process including BOEM, the Bureau of Safety and Environmental Enforcement (BSEE), industry operators (including geophysical companies as well as exploration and production companies), and others as appropriate. Industry operators may elect to be represented in this process by their respective trade associations. NMFS, BOEM, and BSEE (*i.e.,* the regulatory agencies) and industry operators who have conducted or contracted for survey operations in the GOM in the prior year (or their representatives) will provide an agreed-upon description of roles and responsibilities, as well as points of contact, in advance of each year's adaptive management process. The foundation of the adaptive management process is the annual comprehensive reports produced by LOA-holders (or their representatives), as well as the results of any relevant research activities, including research supported voluntarily by the oil and gas industry and research supported by the Federal government.

All reporting requirements have been complied with under the rule to date. NMFS has received two annual reports compiled by industry trade associations in order to comply with the comprehensive reporting requirements. These reports, which consider LOA-specific reports received during the first and second years of implementation of the rule, are available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico*.

Monitoring Contribution Through Other Research

NMFS' MMPA implementing regulations require that applicants for incidental take authorizations describe the suggested means of coordinating research opportunities, plans, and activities relating to reducing incidental taking and evaluating its effects (50 CFR 216.104 (a)(14)). Such coordination can serve as an effective supplement to the monitoring and reporting required pursuant to issued LOAs and/or incidental take regulations. NMFS expects that relevant research efforts will inform the annual adaptive management process described above, and that levels and types of research efforts will change from year to year in response to identified needs and evolutions in knowledge, emerging trends in the economy and available funding, and available scientific and technological resources. In the 2018 notice of proposed rulemaking, NMFS described examples of relevant research efforts (83 FR 29300–29301, June 22, 2018). We do not repeat that information here, but refer the reader to that notice for more information. The described efforts may not be predictive of any future levels and types of research efforts. Research occurring in locations other than the GOM may be relevant to understanding the effects of geophysical surveys on marine mammals or marine mammal populations or the effectiveness of mitigation. NMFS also refers the reader to the industry Joint Industry Program (JIP) website (*https://www.soundandmarinelife.org*), which hosts a database of available products funded partially or fully through the JIP, and to BOEM's Environmental Studies Program (ESP), which develops, funds, and manages scientific research to inform policy decisions regarding outer continental shelf resource development (*https://www.boem.gov/studies*).

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by these actions. Therefore, as with the 2021 final rule, NMFS has determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Section 7 of the ESA requires Federal agencies to insure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitat. Federal agencies must consult with NMFS for actions that may affect such species under NMFS' jurisdiction or critical habitat designated for such species. At the conclusion of consultation, the consulting agency provides an opinion stating whether the Federal agency's

action is likely to jeopardize the continued existence of ESA-listed species or destroy or adversely modify designated critical habitat.

On March 13, 2020, NMFS' Office of Protected Resources, ESA Interagency Cooperation Division, issued a Biological Opinion (BiOp) on federally regulated oil and gas program activities in the Gulf of Mexico, including NMFS' issuance of the ITR and subsequent LOAs (as well as all BOEM and Bureau of Safety and Environmental Enforcement approvals of activities associated with the OCS oil and gas program in the GOM). The 2020 BiOp concluded that NMFS' proposed action was not likely to jeopardize the continued existence of sperm whales or Rice's whales. Of note, that BiOp evaluated the larger scope of survey activity originally contemplated for the rule, before BOEM revised the scope of its activity to remove the GOMESA area in the eastern GOM. The take estimates evaluated for this rule are, therefore, within the scope of take considered in the BiOp and do not reveal effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered. Thus, for this rule to consider corrected take estimates and other newly available information, NMFS has determined that re-initiation of consultation is not triggered under 50 CFR 402.16, although NMFS does anticipate amending the incidental take statement to reflect the corrected take estimates.

National Environmental Policy Act

In 2017, BOEM produced a final PEIS to evaluate the direct, indirect, and cumulative impacts of geological and geophysical survey activities in the GOM, pursuant to requirements of the National Environmental Policy Act. These activities include geophysical surveys, as are described in the MMPA petition submitted by BOEM to NMFS. The PEIS is available online at: *https://www.boem.gov/Gulf-of-Mexico-Geological-and-Geophysical-Activities-Programmatic-EIS/.* NOAA, through NMFS, participated in preparation of the PEIS as a cooperating agency due to its legal jurisdiction and special expertise in conservation and management of marine mammals, including its responsibility to authorize incidental take of marine mammals under the MMPA.

In 2020, NMFS prepared a Record of Decision (ROD): (1) to adopt BOEM's Final PEIS to support NMFS' analysis associated with issuance of incidental take authorizations pursuant to section 101(a)(5)(A) or (D) of the MMPA and the regulations governing the taking and importing of marine mammals (50 CFR part 216); and (2) in accordance with 40 CFR 1505.2, to announce and explain the basis for NMFS' decision to review and potentially issue incidental take authorizations under the MMPA on a case-by-case basis, if appropriate.

The Council on Environmental Quality (CEQ) regulations state that agencies shall prepare supplements to either draft or final environmental impact statements if: (i) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. (40 CFR 1502.09(c)). NMFS has considered CEQ's ''significance'' criteria at 40 CFR 1508.27 and the criteria relied upon for the 2020 ROD to determine whether any new circumstances or information are ''significant,'' thereby requiring supplementation of the 2017 PEIS.

NMFS has not made any changes to the proposed action relevant to environmental concerns. For this rulemaking, NMFS reevaluated its findings related to the MMPA negligible impact standard and the LPAI standard governing its regulations in light of the corrected take estimates and other relevant new information. Based on that evaluation, NMFS reaffirms its negligible impact determinations and determined that the existing regulations prescribe the means of effecting the LPAI on the affected species or stocks and their habitat, and therefore made no changes to the regulations.

NMFS also considered whether there are any significant new circumstances or information that are relevant to environmental concerns and have a bearing on this action or its impacts. Our rulemaking was conducted specifically to address errors in the take estimates that provided a basis for our 2021 final rule. We considered updated take estimates that corrected the errors and incorporated other new information, *e.g.,* modeling of a more representative airgun array, updated marine mammal density information. We also consulted scientific publications from 2021–24, data that were collected by the agency and other entities after the PEIS was completed, field reports, and other sources (*e.g.,* updated NMFS Stock Assessment Reports (SAR), reports produced under the BOEM-funded Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) project (see *https://www.boem.gov/gommapps*)). The new circumstances and information are related to updated information on Rice's whales in the action area (population abundance, mortality and sources of mortality, distribution and occurrence) and any new data, analysis, or information on the effects of geophysical survey activity on marine mammals and relating to the effectiveness and practicability of measures to reduce the risk associated with impacts of such survey activity. Based on our review applying those criteria, NMFS has determined that supplementation of the 2017 PEIS is not warranted.

Letters of Authorization

Under the incidental take regulations in effect for this specified activity, industry operators may apply for LOAs (50 CFR 217.186). We have made no changes to the regulations for obtaining an LOA. LOAs may be issued for any time period that does not exceed the effective period of the regulations, provided that NMFS is able to make the relevant determinations (50 CFR 217.183). Because the specified activity does not provide actual specifics of the timing, location, and survey design for activities that would be the subject of issued LOAs, such requests must include, at minimum, the information described at 50 CFR 216.104(a)(1) and (2), and should include an affirmation of intent to adhere to the mitigation, monitoring, and reporting requirements described in the regulations. The level of effort proposed by an operator will be used to develop an LOA-specific take estimate based on the results of Weirathmueller *et al.* (2022). These results will be based on the appropriate source proxy (*i.e.,* either 90-in^3 single airgun or 4,130-, 5,110-, or 8,000-in^3 airgun array).

If applicants do not use the modeling provided by the rule, NMFS may publish a notice in the **Federal Register** soliciting public comment, if the model or inputs differ substantively from those that have been reviewed by NMFS and the public previously. Additional public review is not needed unless the model or inputs differ substantively from those that have been reviewed by NMFS and the public previously.

Technologies continue to evolve to meet the technical, environmental, and economic challenges of oil and gas development. The use of technologies other than those described herein will be evaluated on a case-by-case basis and may require public review. Some seemingly new technologies proposed for use by operators are often extended applications of existing technologies and interface with the environment in essentially the same way as well-known or conventional technologies. NMFS

will evaluate such technologies accordingly and as described in the notice of issuance for the 2021 final rule. Please see that document for further detail.

Classification

Introduction

Due to errors in the estimated take numbers provided by BOEM in support of its petition for the 2021 rule, the allowable amount of incidental take of marine mammals in the GOM is generally lower than the amount expected based on BOEM's projected activity levels. As a result, NMFS' ability to issue LOAs for take of marine mammals incidental to surveys related to oil and gas activities in the GOM has been limited, relative to what was intended under the rule for the specified activities. This rule corrects the estimated take numbers, allowing for the issuance of LOAs as intended under the 2021 rule. In addition, NMFS has incorporated newly available scientific data regarding marine mammal density in the GOM, and introduced new acoustic source configurations that provide more flexibility to applicants in terms of more accurately reflecting the anticipated effects of actual survey effort. The adjustments to allowable take under this final rule, relative to the 2021 final rule, have potential implications for oil and gas industry survey activity, associated oil and gas exploration and development, and marine mammals.

Surveys and Oil and Gas Exploration and Development

If applicants cannot receive LOAs, either within the requested year or at all, due to the annual maximum or five-year maximum take allowable under the 2021 final rule for certain species, surveys may be delayed. To date, NMFS has issued approximately 70 LOAs, which is fewer than expected based on BOEM's projected levels of activity. Some of this discrepancy may be attributed to the aforementioned limitations on NMFS' ability to authorize take of certain species under the 2021 final rule and/or to generally increased regulatory uncertainty stemming from those limitations. In the absence of this rule, NMFS would anticipate continuing limitations on its ability to issue LOAs over the remaining period of effectiveness for the 2021 rule, though specific impacts would be dependent on demand and difficult to predict with precision. Delays could result in reductions in exploration and development activities in the GOM. This correction removes these unintended restrictions, averting the potential economic losses from delay.

Marine Mammals

If NMFS is unable to issue some LOAs for the specified activities as a result of the erroneous take estimates analyzed for the 2021 rule, restrictions on incidental take may result in fewer incidences of harassment of marine mammals relative to those initially anticipated in 2021. This final rule, which is based on corrected take estimates and other updated information for the same specified activities, may allow for more take of four species than would occur without this rule, though the updated take estimates (and thus allowable take) for all other species has decreased in reflection of updated density information. The corrections to allowable take may result in more actual take of some marine mammal species than has occurred under the rule to date, as a result of increased ability to issue requested LOAs. This final rule allows for the authorization of marine mammal take incidental to the same level of survey activities intended in the 2021 rule and is issued in accordance with the same applicable negligible impact standard.

To the extent that some number of surveys that would not have been able to move forward in compliance with the MMPA under the 2021 rule might now occur under this corrected rule, there may be effects on tourism, ecosystem services, and non-use valuations. NMFS describes each of these values below.

Tourism

Marine mammal populations generate economic activity in the GOM and, more broadly, in the U.S. For example, the U.S. leads the world in whale watcher participation, with an estimated 4.9 million trips taken in 2008, or 38 percent of global whale watching trips. In 2013, the tourism and recreation sector of ocean-related activities in the GOM region (inclusive of all counties bordering the GOM) generated nearly $6.2 billion in wages and employed 310,000 individuals at 17,300 establishments, for a total GDP contribution of approximately $13 billion. Much of that ocean-related tourism is reliant on the diverse and abundant marine mammal and other marine wildlife populations.

The presence of marine mammals generates regional income and employment opportunities most directly through businesses that conduct marine mammal watching tours and other marine wildlife-related operations, such as educational and environmental organizations. Whale watching activities alone support hundreds of jobs and tens of millions in regional income in the GOM. In addition, tourists drawn to the region to participate in these tours and activities spend money on goods and services in the regional economy, for example for meals, accommodations, or transportation to and from the whale watching destination. According to a 2009 report, the number of whale watchers in the GOM states increased to over 550,000 in 2008, nearly an order of magnitude increase over a ten year time period (Exhibit 5–1). Direct revenues from sales of whale watching tickets was $14.1 million that year, and the overall regional spending related to whale watching was nearly $45 million. An estimated 625 full-time equivalent jobs were directly involved in marine mammal recreation across all GOM states in 2008.

Table 14 -- Whale Watching Statistics in GOM States

Year	Number of Whale Watchers	Direct Expenditure[1] (Millions 2016$)	Total Expenditure[2] (Millions 2016$)
1998	61,000	Not reported	Not reported
2008	550,653	$14.10	$44.70

[1]Direct expenditure is defined here as expenditure on tickets and items directly related to the whale watching trip itself. It excludes costs such as accommodation, transport, and food not included in the trip ticket price.

[2]Total expenditure includes both direct and indirect expenditures.
Source: O'Connor *et al.*, 2009. Whale Watching Worldwide: Tourism numbers, expenditures and expanding economic benefits, a special report from the International Fund for Animal Welfare, Yarmouth, MA, USA, prepared by Economists at Large.

Florida is the leading state for cetacean-based tourism in the country. Bottlenose dolphin viewing constitutes the majority of Florida's marine mammal-related tourism with average ticket prices of approximately $43 for boat-based trips and $95 for swim-with tours. Elsewhere in the GOM, in Alabama and Texas, average ticket prices are $11 to $22. Commercial whale watching activity is minimal in Mississippi and Louisiana.

Ecosystem Services

Large whales provide ecosystem services, which are benefits that society receives from the environment. The services whales provide include contributing to sense of place, education, research, and they play an important role in the ecosystem. Large whales are considered ecosystem engineers, given their potential for trophic influence on their ecosystems. Their presence can reduce the risk of trophic cascades, which have previously affected smaller species when whale populations suffered historic declines. As large consumers, whales heavily impact food-web interactions and can promote primary productivity. Large whales may contribute to enhanced ocean productivity via a concept commonly known as the ''whale-pump.'' The ''whale-pump'' refers to whales' contribution to vertical mixing, horizontal transfer, and the recycling of limiting nutrients in the ocean as they dive, migrate, and release fecal plumes and urine (Roman *et al.,* 2014). Whales also play an important role in carbon cycling in the oceans. They accumulate carbon in their bodies over a lifetime and following death, can sequester tons of carbon in the deep sea (Pershing *et al.,* 2010; Roman *et al.,* 2014). Carbon stored in the deep sea reduces carbon in the atmosphere, which, in turn, can help fight against climate change. Chami *et al.* (2020) estimated that for the southern right whales, the average annual services value could be $2.2 million.

Non-Use Benefits

The protection and restoration of populations of endangered whales may also generate non-use benefits. Economic research has demonstrated that society places economic value on environmental assets, whether or not those assets are ever directly exploited. For example, society places real (and potentially measurable) economic value on simply knowing that large whale populations are flourishing in their natural environment (often referred to as ''existence value'') and will be preserved for the enjoyment of future generations. Using survey research methods, economists have developed several studies of non-use values associated with protection of whales or other marine mammals (table 15).

In each study in table 15, researchers surveyed individuals on their willingness to pay (WTP) for programs that would maintain or increase marine mammal populations. One of the studies (Wallmo and Lew, 2012) employed a stated preference method to estimate the value of recovering or down-listing eight ESA-listed marine species, including the North Atlantic right whale. Through a survey of 8,476 households, the authors estimated an average WTP (per household per year, for a 10-year period) of $71.62 for recovery of the species which, if extrapolated nationwide, suggests Americans are willing to pay approximately $4.38 billion for right whale recovery. While the other studies noted do not focus specifically on the North Atlantic right whale, they do demonstrate that individuals derive significant economic value from the protection of marine mammals. As noted, the value of whales might not be adequately captured by non-use values of this kind. Death or suffering of whales might be believed to be intrinsically bad, because it is a welfare loss in itself.

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Table 15 -- Studies of Non-use Value Associated with Marine Mammals

Author	Title	Findings
Lew, D. K. (2023)	Aggregating social benefits of endangered species protection: the case of the Cook Inlet beluga whale	This study surveyed responses from 1,747 Alaska households. It estimated that the mean household WTP values for Cook Inlet beluga whale recovery ranged from $221 to $409. The preferred model estimate was $395.
Schwarzmann *et al*. (2021)	Whale Watching in Channel Islands National Marine Sanctuary: A Stated Preference Study of Passengers' Willingness to Pay for Marine Life Improvements	Respondents' WTP values for large baleen whales ranged from $181 to $121 per household, depending on the amount of marine life improvements.
Lew (2015)	Willingness to Pay for Threatened and Endangered Marine Species: A Review of the Literature and Prospects for Policy Use	Comprehensive literature review on the methods and case studies on WTP for threatened and endangered marine species.
Wallmo and Lew (2012)	Public Willingness to Pay for Recovering and Downlisting Threatened and Endangered Marine Species	Per-household mean WTP annually over 10 years for increase in North Atlantic right whale populations estimated to be $71.62 (for recovery) and $38.79 (for down-listing to threatened status) (2010 dollars).
Giraud *et al*. (2002)	Economic Benefit of the Protection of the Steller Sea Lion	Estimated WTP for an expanded Steller sea lion protection program. The average WTP for the entire nation amounted to roughly $61 per person.
Loomis and Larson (1994)	Total Economic Values of Increasing Gray Whale Populations: Results from a Contingent Valuation Survey of Visitors and Households	Mean WTP of U.S. households for an increase in gray whale populations estimated to be $16.18 for a 50 percent increase and $18.14 for a 100 percent increase.
Samples and Hollyer (1990)	Contingent Valuation of Wildlife Resources in the Presence of Substitutes and Complements	Respondents' average WTP (lump sum payment) to protect humpback whales in Hawaii ranged from $125 to $142 (1986 dollars).
Samples *et al*. (1986)	Information Disclosure and Endangered Species Valuation	Estimated individual WTP for protection of humpback whales of $39.62 per year.
Day (1985), cited in Rumage (1990)	The Economic Value of Whalewatching at Stellwagen Bank. The Resources and Uses of Stellwagen Bank	Non-use value of the presence of whales in the Massachusetts Bays system estimated to be $24 million.
Hageman (1985)	Valuing Marine Mammal Populations: Benefit Valuations in a Multi-Species Ecosystem	Per-household WTP for gray and blue whales, bottlenose dolphins, California sea otters, and northern elephant seals estimated to be $23.95, $17.73, $20.75, and $18.29 per year, respectively (1984 dollars).

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Regulatory Flexibility Act

Pursuant to section 605(b) of the Regulatory Flexibility Act, the Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration at the proposed rule stage that this rule would not have a significant economic impact on a substantial number of small entities. This rule makes no changes to the existing regulations. Upon receiving updated information following the discovery that the estimates of incidental take of marine mammals anticipated from the activities analyzed for the January 19, 2021, final rule were erroneous, NMFS undertook this action to analyze the updated information and underlying take estimates and decide whether revisions to the January 19, 2021, final rule were warranted. NMFS has found that revisions to the regulations are not warranted. There are no changes to the specified activities, the specified geographical region in

which those activities would be conducted, the original 5-year period of effectiveness, or to the current mitigation and monitoring requirements implemented by the January 19, 2021, final rule. Because there have been no changes to the existing regulations, there are no economic impacts on small entities. A regulatory flexibility analysis therefore is not required, and none has been prepared. No comments were received that would change this determination.

Note that NMFS prepared a final regulatory flexibility analysis (FRFA), as required by Section 603 of the Regulatory Flexibility Act, for the regulations issued under the January 19, 2021, final rule. That FRFA described the economic effects on small entities. A copy of the FRFA is available as Appendix B to the RIA that accompanied the January 19, 2021, final rule. No changes have been made to the 2021 regulations that would affect the findings of that FRFA, which were summarized in the notice of issuance for the 2021 final rule (86 FR 5443, January 19, 2021).

This rule does not contain a change to a collection of information requirement for purposes of the Paperwork Reduction Act of 1995. The existing collection of information requirements continue to apply under the following OMB Control Number(s): 0648–0151.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

List of Subjects in 50 CFR Part 217

Exports, Fish, Imports, Indians, Labeling, Marine mammals, Penalties, Reporting and recordkeeping requirements, Seafood, Transportation.

Dated: April 12, 2024.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

As described above, because NMFS does not find that new mitigation measures are required, this rule does not amend the current applicable regulations at 50 CFR part 217 Subpart S (§§ 217.180 through 217.189). Thus, no amendatory instructions are necessary.

[FR Doc. 2024–08257 Filed 4–23–24; 8:45 am]

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