IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

NATURAL RESOURCES DEFENSE COUNCIL, INC., et al.,

Plaintiffs,

v.

DONALD EVANS, et al.,

Defendants.
/

No. C-02-3805-EDL

OPINION AND ORDER ON CROSS-MOTIONS FOR SUMMARY JUDGMENT

In this environmental litigation, the parties' cross-motions for summary judgment are currently before the Court. For the reasons set forth below, each parties' motion for summary judgment is granted in part and denied in part.

I. INTRODUCTION

Plaintiffs, various environmental organizations and a concerned individual, seek a permanent injunction against federal officials to prevent the United States Navy's peacetime use of a low frequency sonar system for training, testing and routine operations.[1] This new technology, Surveillance Towed Array Sensor System ("SURTASS") Low Frequency Active Sonar ("LFA"), sends out intense sonar pulses at

[1] Plaintiffs are Natural Resources Defense Council, Inc.; The Humane Society of the United States; Cetacean Society International; League for Coastal Protection; Ocean Futures Society; and Jean-Michel Cousteau. Defendants are Donald L. Evans, Secretary of the United States Department of Commerce; the National Marine Fisheries Service ("NMFS"); William Hogarth, Assistant Administrator for Fisheries of the National Oceanographic & Atmospheric Administration; Conrad C. Lautenbacher, Jr., Vice Admiral, Administrator of the National Oceanographic & Atmospheric Administration; the United States Department of the Navy; Gordon R. England, Secretary of the United States Department of the Navy; and Vern Clark, Admiral, Chief of Naval Operations.

low frequencies that travel hundreds of miles in order to timely detect increasingly quiet enemy submarines. Plaintiffs charge that the National Marine Fisheries Service ("NMFS") improperly approved use of LFA in as much as 75% of the world's oceans in violation of the Marine Mammal Protection Act ("MMPA"), the Endangered Species Act ("ESA"), and the Administrative Procedure Act ("APA"). Plaintiffs also claim that the Navy participated in the ESA violation and issued an inadequate Environmental Impact Statement ("EIS")[2] in violation of the National Environmental Policy Act ("NEPA") and the APA.[3] Plaintiffs claim that these violations will cause irreparable injury by harassing, injuring and killing marine mammals and other sea creatures with sensitive hearing, many of them rare and endangered, including whales, dolphins, seals, sea turtles and salmon. Defendants counter that they have fully complied with the applicable laws. Defendants argue further that enjoining the peacetime use of LFA sonar would harm national security because training and testing is necessary for military readiness.

On October 31, 2002, the Court granted plaintiffs' motion for a preliminary injunction. After ordering the parties to engage in a settlement conference regarding the precise language of the injunction, the Court issued a preliminary injunction on November 15, 2002, based on the resulting agreement.

Both parties filed cross-motions for summary judgment on April 15, 2003. On May 29, 2003, the Pacific Legal Foundation filed a motion to appear as amicus curiae and an amicus brief in support of defendants. On June 16, 2003, this Court granted PLF's motion to appear as amicus curiae. On June 24, 2003, the parties filed supplemental briefing on the admissibility of extra-record documents. On June 30, 2003, the Court heard the parties' cross-motions for summary judgment. The Court now decides these motions.

In summary, NMFS and the Navy undertook valuable research into the potential impact of LFA on whales, and made commendable progress in complying with these statutes. Nonetheless, the Court concludes that their efforts did not comply in certain important respects with these statutes, which are

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[2] The EIS for LFA sonar is both an EIS prepared pursuant to NEPA and an Overseas EIS ("OEIS") prepared pursuant to Presidential Executive Order 12114. An OEIS applies to impacts that may occur outside the United States' territorial seas that are not subject to NEPA. 44 Fed. Reg. 1957.

[3] Procedurally, NMFS issued the Final Rule pursuant to the MMPA, and the biological opinion pursuant to the ESA, although the Navy participated in both, and the Navy issued the EIS pursuant to NEPA. In practice, however, the two agencies coordinated their efforts, and plaintiffs do not specify which agency they charge with each alleged violation.

designed to protect the oceanic environment and safeguard the whales, dolphins and other marine life within it. The Court also concludes that plaintiffs have shown the likelihood of irreparable harm. The Court therefore must balance the competing interests of the parties in deciding whether to issue injunctive relief and what the contours of any injunction should be.

The Court recognizes and respects the very important interests at stake on both sides of this case and, after reviewing the extensive record, believes that both can be safeguarded. On the one hand, there can be no doubt that the public interest in military preparedness and protection against enemy submarine attacks through early detection is of grave importance. It is true that only peacetime use of this new sonar system is at issue; the Navy is free to use the system without restriction in time of war or heightened threat. At the same time, the Court fully accepts and defers to the Navy's assessment that it needs to train and test this new sonar system during peacetime in a variety of oceanic conditions in order to be ready to address threats from modern submarines employed by potentially hostile powers.

On the other hand, there can also be no doubt that the public interest in protecting the world's oceans and the sea creatures that depend upon the oceanic environment to survive is also of the highest importance. The Marine Mammal Protection Act, for example, reflects the public's profound interest in safeguarding whales, dolphins and other magnificent mammals that still live in the ocean. Unfortunately, the populations of many of these creatures, once abundant, have shrunk, and some are on the verge of extinction. Other precious species, like certain salmon and sea turtles, also are in peril of disappearing from the earth forever. The public has a strong interest in minimizing, as much as possible, any disruption or injury to these creatures from exposure to the extremely loud and far-traveling naval sonar system. Public concern has been heightened by incidents where exposure to another kind of Navy sonar has led to lethal strandings of whales on the beach, as in the Bahamas in 2000.

Based on the record in these proceedings, the Court believes that the public interest in *both* military preparedness and protection of marine life can be reconciled through a carefully tailored injunction that allows the Navy to meet its needs for peacetime training and testing, while also providing reasonable safeguards for marine mammals and other sea animals. As explained more fully below, the Court's injunction will permit the Navy to train and test LFA sonar in a wide range of oceanic conditions as needed, while restricting it from operating in certain sensitive areas when marine mammals are particularly abundant

there. In particular, the injunction will extend the coastal buffer zone beyond the current twelve miles to include more of the continental shelf in the great majority of coastlines where the record shows that the Navy need not operate closer to shore. The injunction will also require the Navy to avoid certain areas of the deep ocean during seasons when data on marine mammals and other endangered species such as sea turtles shows that they are migrating, breeding, feeding or otherwise clustering there. The evidence in this case shows that this kind of data is available to enable the Navy to refine its operations in order to afford reasonable protections to marine life, while still meeting its testing and training needs. Indeed, the Court appreciates that, in response to the preliminary injunction issued earlier, NMFS and the Navy have decided to engage in further analysis of this kind of data for potential use in planning routes that minimize sea creatures' exposure to the sonar. Further, where the Navy needs to operate close to shore in areas where sea life tends to be abundant and where conditions may make strandings of whales more likely, whenever feasible the Navy shall use additional measures to check for the presence of marine mammals before activating the sonar. In sum, the Navy and NMFS can fully comply with environmental laws and also meet the need to test and train with this new type of sonar.

II. STANDARD OF REVIEW

The Court reviews challenges under the MMPA, ESA, NEPA, and APA to ensure that the agency has not acted in a manner that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 471 (9th Cir. 2000); 5 U.S.C. § 706. "Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." Motor Vehicle Manufacturers Association of the United States, Inc. v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 43 (1983). The Court's role

is to:

> consider whether the [agency's] decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment. Although this inquiry into the facts is to be searching and careful, the ultimate standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency. The final inquiry is whether the Secretary's action followed the necessary procedural requirements.

Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 416 (1971). Moreover, "[w]hen specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive." Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 378 (1989).

> Where agency action is challenged on the record as arbitrary, capricious, and in violation of the procedures required by law, summary disposition is appropriate. Summary judgment is also appropriate in cases involving the issue of whether an EIS adequately explains environmental consequences of a proposed agency action.

Resources Ltd., Inc. v. Robertson, 789 F. Supp. 1529, 1534 (D. Mont. 1991) (citing Northern Spotted Owl v. Hodel, 716 F. Supp. 479 (W.D.Wash.1988) and Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 815 (9th Cir.1987)).

III. EXTRA-RECORD DOCUMENTS

"Judicial review of an agency decision typically focuses on the administrative record in existence at the time of the decision and does not encompass any part of the record that is made initially in the reviewing court." Southwest Center for Biological Diversity v. U.S. Forest Service, 100 F.3d 1443, 1450 (9th Cir. 1996). The Ninth Circuit

> has only allowed extra-record materials: (1) if necessary to determine "whether the agency has considered all relevant factors and has explained its decision," (2) "when the agency has relied on documents not in the record," or (3) "when supplementing the record is necessary to explain technical terms or complex subject matter." Extra-record documents may also be admitted "when plaintiffs make a showing of agency bad faith."

Id. Each side argues that the other side has improperly sought to supplement the record with material that the Court should not consider. The Court has ruled on the parties' requests to strike extra record material in a separate order also issued today.

IV. RELATIONSHIP BETWEEN NMFS AND THE NAVY

Plaintiffs contend that the administrative record reveals an improperly close collaboration between NMFS and the Navy, instead of the arms-length regulatory relationship needed to enforce federal environmental laws. Plaintiffs point out that the record includes hundreds of communications between the

principal author of the Final Rule[4] at NMFS and employees of the Navy or its consultant, MAI. These communications show that the Navy and its consultant had significant input into the drafting of the Final Rule. (See, e.g., AR 15016, 23897, 24388, 24389; NMFS AR Vol. 18, Doc. 185h at 656-721, 812-881.) In their briefs, plaintiffs appeared to argue that this close cooperation amounted to an improper abdication of NMFS' regulatory duties. The few cases they cited, however, involved the very different situation of undue influence by private parties on government regulators, e.g., Texas Office of Public Utility Counsel v. Federal Communications Commission, 265 F.3d 313, 328 (5th Cir. 2001), not two federal agencies in the same administration. The Court did not find this argument persuasive.

At oral argument, plaintiffs clarified that they do not claim that cooperation between the agencies was itself illegal, but rather view the extent of the Navy's influence on NMFS as the context for violations found in the resulting Final Rule and EIS. The Court declines to draw any overall conclusions from what plaintiffs contend is a pattern of improper influence. Indeed, defendants correctly point out other examples in the record where NMFS differed from the Navy and imposed additional limitations on the use of LFA sonar. (See, e.g., AR 23881; 67 Fed. Reg. 46758, 46784.) Instead, the Court considers each issue on its merits, and only considers comments by NMFS or the Navy contained in the administrative record where they are relevant to explain particular choices or omissions.

V. DISCUSSION

A. Marine Mammal Protection Act

The MMPA was enacted in 1972 to prevent the extinction or depletion of marine mammal stocks as a result of man's activities. 16 U.S.C. § 1361(1). "[S]uch species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population." 16 U.S.C. § 1362(2).

The MMPA generally prohibits the taking of marine mammals, with certain statutory exceptions. 16 U.S.C. § 1371(a)(3). "Take" is defined as "to harass, hunt, capture, collect, or kill, or attempt to

[4] The MMPA requires that NMFS give notice and an opportunity for public comment when processing a small take request. This process culminated in a Final Rule adopting regulations to authorize the unintentional incidental take of marine mammals in connection with LFA operations, under which the Navy may apply for one-year Letters of Authorization for LFA operations. See 67 Fed Reg. 46712 (2002) (Final Rule).

harass, hunt, capture, collect or kill, any marine mammal." 50 C.F.R. § 216.3; 16 U.S.C. § 1362(13). The definition of "take" includes any negligent or intentional act which results in disturbing or molesting a marine mammal. 50 C.F.R. § 216.3.

The MMPA defines "harassment" as "any act of pursuit, torment or annoyance" that:

> (i) has the potential to injure a marine mammal or marine mammal stock in the wild; 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.

16 U.S.C. § 1362 (18)(A). Harassment as defined in subsection (i) is referred to as Level A harassment. 16 U.S.C. § 1362(18)(B). Harassment as defined in subsection (ii) is referred to as Level B harassment. 16 U.S.C. § 1362(18)(C).

Citizens of the United States who engage in a specified activity other than commercial fishing within a specified geographical region may petition the Secretary to authorize the incidental, but not intentional, taking of small numbers of marine mammals within that region. 16 U.S.C. § 1371(a)(5)(A). Such authorization is limited to a period of not more than five consecutive years. Id. The Secretary "shall allow" the incidental taking if the Secretary finds that "the total of such taking during each five-year (or less) period concerned will have a negligible impact on such species or stock and will not have an unmitigable adverse impact on the availability of such species of stock for taking for subsistence uses . . . ." Id. If the Secretary allows the incidental taking, the Secretary also must prescribe regulations setting forth: (i) permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact 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; and (ii) requirements pertaining to the monitoring and reporting of such taking. Id.

Thus, to receive a "small take" authorization, an activity must: (i) be limited to a "specified geographical region," (ii) result in the incidental take of only "small numbers of marine mammals of a species or population stock," and (iii) have no more than a "negligible impact" on species and stocks. In addition, in issuing an authorization, the Secretary must: (iv) provide for the monitoring and reporting of such takings, and (v) prescribe methods and means of effecting the "least practicable adverse impact" on species and stock and their habitat. 16 U.S.C. § 1371(a)(5)(A).

There is no private right of action under the MMPA. Hawaii County Green Party v. Clinton, 124 F. Supp. 2d 1173, 1190 (D.Haw. 2000) (citing Didrickson v. U.S. Dep't of Interior, 982 F.2d 1332, 1338 (9th Cir. 1992)). Citizens challenging actions done under the MMPA must sue under the APA. Id. Therefore, actions challenged under the MMPA are reviewed under the APA "arbitrary and capricious" standard.

Plaintiffs argue that the Final Rule issued by NMFS violates the MMPA in five ways. First, they contend that the Final Rule is not limited to a specified geographical region. Second, they argue that the Final Rule uses an improper definition of "small numbers." Third, they claim that the Final Rule uses an improper definition of "harassment." Finally, plaintiffs argue that the Final Rule will have more than a negligible impact on marine mammals, and fails to set forth sufficient requirements for monitoring and reporting impacts on marine mammals.

1. Specified Geographical Region

The Final Rule authorizes incidental taking by Level A and Level B harassment of mysticete whales (whales without teeth), odontocete whales (whales with teeth), and pinnipeds (seals, sea lions, fur seals, and walruses) in fifteen different biomes, divided into numerous provinces and subprovinces. 67 Fed Reg. 46785-76 (50 C.F.R. § 216.180). Plaintiffs argue that the "provinces" identified by NMFS are gargantuan in scale and far too large to meet the MMPA's requirement of a "specific geographical region." 16 U.S.C. § 1371(a)(5)(A). Defendants argue, on the other hand, that there is no requirement in either the statute or the regulations that the specified geographic regions must be small, as long as they are no larger than necessary to accomplish the specified activity.

In reviewing the NMFS' interpretation of the MMPA, the Court must first determine whether Congress has directly spoken to the precise question at issue. Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 842 (1984). "If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." Id. at 842-43. The Court "must reject administrative constructions which are contrary to clear Congressional intent." Id. at 843 n.9. If Congress has not directly addressed the precise question at issue, the Court may not simply impose its own construction of the statute, but must determine whether the agency's answer is based on a permissible construction of the statute. Id. at 843. "The court need not

conclude that the agency construction was the only one it permissibly could have adopted to uphold the construction, or even the reading the court would have reached if the question initially had arisen in a judicial proceeding." Id. at 843 n.11.

If Congress has expressly delegated authority to elucidate a specific provision of the statute by regulation, those regulations are given controlling weight unless they are arbitrary, capricious, or manifestly contrary to the statute. Id. at 843-44. If the legislative delegation to an agency on a particular question is implicit rather than explicit, a court may not substitute its own construction of a statutory provision for a reasonable interpretation made by the administrator of an agency. Id. at 844.

The only language in the legislative history that addresses the "specified geographic region" requirement provides:

> It is the intention of the Committee that both the specified activity and the specified region referred to in section 101(a)(5) be narrowly identified so that the anticipated effects will be substantially similar. Thus, for example, it would not be appropriate for the Secretary to specify an activity as broad and diverse as outer continental shelf oil and gas development. Rather, the particular elements of that activity should be separately specified as, for example, seismic exploration or core drilling. Similarly, the specified geographical region should not be larger than is necessary to accomplish the specified activity, and should be drawn in such a way that the effects on marine mammals in the region are substantially the same. Thus, for example, it would be inappropriate to identify the entire Pacific Coast of the North American continent as a specified geographical region, but it may be appropriate to identify particular segments of that coast having similar characteristics, both biological and otherwise, as specified geographical regions.

H.R. Rep. No. 97-228 (1981), reprinted in 1981 U.S.C.C.A.N. 1458, 1981 WL 21352 at **1469-70. The Code of Federal Regulations defines "specified geographical region" as "an area within which a specified activity is conducted and which has similar biogeographic characteristics." 50 C.F.R. § 216.103.

Initially, NMFS' proposed rule divided the world's oceans into sixteen regions. 66 Fed. Reg. 15390 (2001) (proposed 50 C.F.R. § 216.180). At that time, NMFS explained that:

> NMFS believes that the regions described in this proposed rule are in keeping with Congress' legislative intent in enacting this provision. Although SURTASS LFA sonar requires fairly large geographic regions because of the Navy's need to deploy the system on a world-wide basis, these areas have been selected so as to retain similar biological characteristics within each region. As a result, NMFS believes that these areas are large enough to accomplish the specified activity without being so large that the effects on marine mammals will not be substantially the same.
>
> It should be noted that the regions described in this proposed rule differ from those contained in the Navy's original application and described in the ANPR. Based on a suggestion made by NMFS in the ANPR, the U.S. Navy revised its original proposal for 10 regions to one that proposes to adopt, with modification, the United Nation

> Food and Agriculture Organization's (FAO) division of the world's oceans into 16 distinct areas . . . .

66 Fed. Reg. 15378.

NMFS then received objections that this division of the world's oceans into sixteen regions did not meet the requirement of the MMPA for a "specified geographical region." 67 Fed. Reg. 46768. NMFS agreed that the use of those sixteen regions violated its own definition of "specified geographical region" as "an area within which a specified activity is conducted and which has certain biogeographic characteristics." Id. (citing 50 C.F.R. § 216.103.) NMFS agreed that "the 16 areas designed in the proposed rule document were not based on biogeographic characteristics as specified in the definition, but were based on other considerations by the U.N. Food and Agricultural Organization." Id.

NMFS then adopted its current approach of dividing the oceans into fifteen biomes, and fifty-four provinces within those biomes, as designed by Longhurst (1998). Id. NMFS stated that it believed that this approach met the statutory definition because "a biome is the most likely geographic region to contain the majority of a specific marine mammal stock, especially those that are migratory." Id.

> While admittedly, the Longhurst schematic was designed for plankton, it is the best scientific application available for designating specified geographic regions because no biogeographic concept has been designed for marine mammals and, in general, the distribution of marine organisms at higher trophic levels resembles the general geographic patterns of primary productivity, with the largest aggregations concentrated in coastal areas and zones of upswelling. (Longhurst, 1998).

Id. at 46768-69. "These provinces and biomes effectively delineate the area wherein discrete population units reside thereby allowing NMFS to analyze impacts from SURTASS LFA sonar on a species and/or stock basis." Id. at 46769.

Plaintiffs object that the biomes and provinces identified by NMFS are still far too large. During briefing on the motion for preliminary injunction, plaintiffs provided a map, attached as Exhibit A to their motion, showing the very large size of some of these provinces. According to plaintiffs, Province sixty is larger than the continental United States and encompasses six million square miles of open ocean. Province sixty-six covers the entire Pacific coast from roughly Cabo San Lucas at the southern tip of Baja California to the Canadian border. Plaintiffs argue that if "it would be inappropriate to identify the entire Pacific coast of the North American Continent as a specified geographical region," H.R. Rep. No. 97-228 (1981), reprinted in 1981 U.S.C.C.A.N. 1458, 1981 WL 21352 at **1469-70, then surely an area twice the size

of the United States violates the MMPA.

Defendants argue, as they did during briefing on the motion for preliminary injunction, that the specified regions need not be small, but they should not be larger than necessary to accomplish the specified activity. They contend that fairly large areas were needed in order for a LFA sonar mission to remain within one, or at most two specified geographic regions. LFA can be heard at very large distances from the vessel; plaintiffs acknowledge that the LFA sonar has a sound pressure level of approximately 140 dB more than 400 miles from the vessel. In addition, because LFA sonar bounces from the ocean bottom to the surface and back again, with the second and third reflection at upwards of 100 kilometers and 150 kilometers from the vessel, defendants contend that small geographic regions would be functionally inappropriate. 67 Fed. Reg. 46769 (MMPAC 39). Defendants also argue that smaller geographic units are not necessarily geographically stable. Defendants fail to explain how the enormous provinces set forth in the Final Rule have similar biogeographic characteristics, however. Even water temperature will be dramatically different within provinces that stretch for thousands of miles.

Plaintiffs also argue that Congress intended that a "specified geographic region . . . should be drawn in such a way that the effects on marine mammals in the region are substantially the same." H.R. Rep. No. 97-228 (1981), reprinted in 1981 U.S.C.C.A.N. 1458, 1981 WL 21352 at **1469. The Code of Federal Regulations similarly defines "specified geographical region" as "an area within which a specified activity is conducted and which has similar biogeographic characteristics." 50 C.F.R. § 216.103. Plaintiffs interpret this language to require that the abundance and distribution of particular marine mammals must be relatively uniform within any given specific geographical area. At the preliminary injunction stage, the Court rejected this argument, but on further reflection, the Court agrees with the plaintiffs that the effects of an activity on marine mammals cannot be substantially the same throughout a specified geographic region unless the distribution of marine mammals in that region is relatively uniform. For example, if LFA is deployed in a sparsely populated area, the effects are unlikely to be substantially the same as they would be if it were deployed in an area that contained marine mammal breeding grounds.

Plaintiffs' expert Rodney M. Fujita, who has a Ph.D. in marine ecology, attests that the Longhurst biomes are not particularly useful for estimating biological impacts on specific populations of marine mammals or other organisms, and attests to what he believes is an alternative and preferable method. The

Court cannot consider the Fujita declaration, however, for the reasons stated in its Order on Parties' Requests to Strike Extra Record Documents Submitted in Connection with Cross-Motions For Summary Judgment.

NMFS acknowledges in the Final Rule that the biomes and provinces were not chosen because of their specific relevance to marine mammals. 67 Fed. Reg. 46768-69. NMFS stated, however, that "it is the best scientific application available for designating specified geographic regions because no biogeographic concept has been designed for marine mammals . . . ." Id. at 46769. The Court agrees with defendants that the problem with Fujita's belated argument in his declaration is that there is no suggestion of his theory in the administrative record, and no evidence that his theory could have been considered at the time the Final Rule was adopted. The Final Rule itself states that "[n]o comments were received that provided information or data on an alternative approach[.]" 67 Fed. Reg. 46768. Accordingly, plaintiffs' attempt to now articulate an alternative approach has no relevance to whether the adoption of the Final Rule was arbitrary and capricious based on the information available at the time it was adopted.

Plaintiffs are on stronger ground when they assert that because the Final Rule contains no limitation on how many provinces may be involved in any given deployment of the LFA system, the Final Rule in fact imposes no specific geographical limitation on LFA's deployment at all. NMFS has conceded that "no world-wide authorizations have previously been granted." 66 Fed. Reg. 15378. NMFS acknowledges in the Final Rule that "[t]he total area that would be available for SURTASS LFA sonar to operate includes about 70-75% of the world's oceans." 67 Fed. Reg. 46761. NMFS noted, however, that:

> this in no way equates to affecting 70-75 percent of the world's ocean area. The current authorization is for only two SURTASS LFA sonar vessels – normally one in the Atlantic Ocean/Mediterranean Sea and the other in the Pacific/Indian ocean.

Id.[5] The Navy is "required to notify NMFS annually as to which provinces or subprovinces it intends to operate SURTASS LFA sonar system in the upcoming year, and the extent of the take (by harassment) it expects to encounter during the mission." 67 Fed. Reg. 46769; see also id. at 46788 (50 C.F.R. § 216.187). Thus, according to defendants, in practice the Navy will be limited to operating in certain specified geographical regions each year.

[5] The Navy currently intends to deploy both LFA sonar vessels in the Pacific Ocean.

Plaintiffs are correct, however, that there is nothing in the Final Rule that prevents the Navy from applying for authorization to deploy LFA in all fifty-four provinces in a particular year, or that would prevent NMFS from granting such world-wide authorization. The regulations only require the Navy to specify "[t]he date(s), duration, and the specified geographical region where the vessel's activity will occur." Id. at 46788 (50 C.F.R. § 216.187). They do not limit the number of geographical regions in which the Navy may seek to operate under any given Letter of Authorization. Similarly, the regulations require each Letter of Authorization to set forth the "[a]uthorized geographical areas for incidental takings," but do not set forth a limit on the number of geographical areas in which the Navy may be authorized to operate. Id. (50 C.F.R. § 216.188). Thus, the regulations do not prevent the Navy from seeking a worldwide Letter of Authorization, nor do they prevent NMFS from granting world-wide authorization. By limiting small take permits to "specified geographic regions," Congress did not intend that worldwide small take permits could be granted.

Given the enormous scope of the SURFASS LFA system, the geographic areas need to be quite large. It is troublesome that NMFS has chosen large areas that undisputedly do not have homogeneous ecological or biogeographical characteristics. Plaintiffs have not established, however, that NMFS failed to consider any alternative biogeographical scheme that existed at the time the Final Rule was adopted. While plaintiffs argue that defendants should have created its own scheme in the absence of existing ones, defendants have a strong argument that it would have been impractical to do so given the limited scientific knowledge about many areas of the ocean, beyond the better-studied continental shelf, and their lack of stability. Thus, the Court finds that NMFS did not act in an arbitrary and capricious manner in choosing the specified geographical regions identified in the Final Rule, provided that NMFS takes the additional step of carving out locations within those regions, during particular seasons, where known high concentrations of marine mammal activities in those areas would otherwise render the effects on marine mammals throughout the region very disparate.

In particular, the inability of the Longhurst model to ensure that the effects on marine mammals within the regions are substantially the same, as Congress intended, heightens the need for strict compliance with other provisions of the MMPA designed to protect marine mammals. The designation of additional "off-limits" areas within the geographical regions, such as extension of the coastal exclusion zone where

possible, and designating more areas to avoid during seasons when marine mammals are particularly abundant or vulnerable is necessary to ensure more uniformity in effects on marine mammals within the specified geographical regions, as Congress intended.

Plaintiffs have shown, however, that the Final Rule does not preclude the Navy from applying to proceed in all fifty-four provinces in a given year, nor does it preclude the NMFS from authorizing worldwide deployment of LFA. The Navy has not indicated that it intends to operate in all fifty-four provinces simultaneously, and with only two ships, it is not currently capable of doing so. As written, however, the Final Rule does not limit the Navy's operations to a specified geographic region. Thus, plaintiffs have shown that the Final Rule violates the MMPA by failing to limit the take of marine mammals to a "specified geographic region." In order to comply with the MMPA, the Final Rule must authorize the Navy to operate in only a limited number of geographical regions at any given time. Accordingly, plaintiffs' motion for summary judgment on this issue is granted, and defendants' motion for summary judgment on this issue is denied.

2. Small Numbers

Plaintiffs also argue that NMFS is violating the MMPA by using an erroneous definition of "small numbers" that conflicts with the plain language of the MMPA. Under the MMPA, the Secretary can authorize the incidental taking of small numbers of marine mammals if the Secretary finds that the total amount of such taking will have a negligible impact on those species or stock of marine mammals. 16 U.S.C. § 1371(a)(5)(A). The MMPA does not define "small numbers," but NMFS has promulgated a regulation which provides that "[s]mall numbers means a portion of a marine mammal species or stock whose taking would have a negligible impact on that species or stock." 50 C.F.R. § 216.103. Plaintiffs contend that this definition dilutes the stringent protections for marine mammals imposed by Congress by improperly merging two separate statutory requirements. Under the MMPA, the Secretary can only authorize the taking of "small numbers" of marine mammals and must ensure that the total amount of the taking has only a "negligible impact" on any species or stock of marine mammals. In other words, plaintiffs argue that even if a particular species has a large population and thus it would require a fairly large number of takes to have a greater than negligible impact on that species, the Secretary is still limited to authorizing incidental takes of only a small number of such marine mammals.

a. Statute of Limitations

Defendants' first argument is that plaintiffs' challenge to the regulation is time-barred. Civil actions against the United States are subject to a six-year statute of limitations, except in certain circumstances not relevant here. 28 U.S.C. § 2401(a). The regulation at issue, 50 C.F.R. § 216.103, was promulgated in final form on May 18, 1982, more than twenty years ago. 47 Fed. Reg. 21255 (1982).

The Ninth Circuit has held that a challenge to a mere procedural violation in the adoption of a regulation or other agency action must be brought within six years of the decision. Wind River Mining Corp. v. United States, 946 F.2d 710, 715 (9th Cir. 1991). Similarly, policy-based facial challenges to the government's decision must also be brought within six years of the decision. Id.

> If, however, a challenger contests the substance of an agency decision as exceeding constitutional or statutory authority, the challenger may do so later than six years following the decision by filing a complaint for review of the adverse application of the decision to the particular challenger. . . . The government should not be permitted to avoid all challenges to its actions, even if *ultra vires*, simply because the agency took the action long before anyone discovered the true state of affairs. . . . [Thus,] a substantive challenge to an agency decision alleging lack of agency authority may be brought within six years of the agency's application of that decision to the specific challenger.

Id. at 715-16 (emphasis in original).

Here, plaintiffs challenge the definition of "small numbers" that is contained in 50 C.F.R. § 216.103 on the ground that it is ultra vires because its application in this particular situation flatly contradicts the statutory language of the MMPA. Under Wind River, plaintiffs are time-barred from challenging the regulation itself, but are not time-barred from challenging the application of that regulation to them, unless it was first applied to them more than six years ago. Wind River, 946 F.2d at 715-16 (noting in particular the discussion of Oppenheim v. Coleman, 571 F.2d 660 (D.C. Cir. 1978)). Defendants argue that at least two of the plaintiffs challenged NMFS' issuance of a small take authorization to the Navy under the MMPA in 1994, more than six years ago, without raising a challenge to the definition of "small take," citing NRDC v. United States Dept. of the Navy, 857 F. Supp. 734 (C.D. Cal. 1994) (vacated by consent decree). The parties refer to that case as the Shipshock case. The Court need not consider whether those particular plaintiffs are time-barred from challenging the application of the "small numbers" definition here, because defendants make no argument that the remainder of the plaintiffs also filed similar lawsuits more than six years ago without raising the issue. Thus, even if certain plaintiffs are time-barred

from making this argument, the remainder of the plaintiffs are not.

Accordingly, the Court finds that plaintiffs' challenge to the application of the definition of "small numbers" to the Final Rule is not time-barred, and defendants' motion for summary judgment on that issue is denied.

/ /

b. Res Judicata/Collateral Estoppel

Defendants also argue, in a footnote to their motion for summary judgment, that plaintiffs are precluded from challenging defendants' definition of "small numbers" on res judicata and collateral estoppel theories, as a result of the litigation in the Shipshock case. Defendants argue that NRDC and the Humane Society were both plaintiffs in the Shipshock case and could have challenged the "small numbers" definition in that case. Defendants also argue that the remainder of the plaintiffs in this case are also bound by the failure of the NRDC and the Humane Society to challenge the "small numbers" definition, even though they were not parties to that litigation, because they share a sufficient commonality of interests with NRDC and the Humane Society that they should be considered in privity with them.

Plaintiffs first argue that this defense was waived because it was not included in defendants' answer. The Ninth Circuit has held, however, that a defendant's failure to raise an affirmative defense in its answer does not necessarily waive the defense. Owens v. Kaiser Foundation Health Plan, Inc., 244 F.3d 708, 713 (9th Cir. 2001). The defense may be raised later if the delay in raising it does not prejudice the plaintiff. Id. Plaintiffs make no argument that they have been prejudiced by defendants' failure to raise their res judicata/collateral estoppel defense in their answer. Moreover, the Ninth Circuit suggests that failure to raise a res judicata defense in the answer can never prejudice a plaintiff because, if applicable, the defense would have been dispositive at the time the action was filed. Id. Accordingly, the Court finds that defendants did not waive their res judicata/collateral estoppel defense by failing to raise it in their answer.

Plaintiffs also argue that there can be no res judicata/collateral estoppel effect from the Shipshock case on the issue of the "small numbers" definition because that case was resolved by consent decree, rather than by final judgment. The Supreme Court has held that "[i]n most circumstances, it is recognized that consent agreements ordinarily are intended to preclude further litigation on the claim presented but are not intended to preclude further litigation on any of the issues presented[,]" unless it is clear that the parties

intended their agreement to have such an effect. Arizona v. California, 530 U.S. 392, 414 (2000). This conclusion follows from the doctrine that issue preclusion generally applies only where the issue has been actually litigated and determined. Id. Thus, although res judicata (claim preclusion) may apply, collateral estoppel (issue preclusion) does not apply unless the consent decree indicates that the parties intended that it should have such an effect.

Res judicata applies when there is (1) an identity of claims, (2) a final judgment on the merits, and (3) privity between the parties. Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency, 322 F.3d 1064, 1077 (9th Cir. 2003). The doctrine of res judicata "bars relitigation of all grounds of recovery that were asserted, or could have been asserted, in a previous action between the parties, where the previous action was resolved on the merits." Id. at 1078 (quoting United States ex rel. Barajas v. Northrop Corp., 147 F.3d 905, 909 (9th Cir. 1998)). Identity of claims exists when two suits arise from the same transactional nucleus of facts. Id. at 1078. The facts of Shipshock are entirely different from the facts of the present case. Although both cases involve MMPA challenges to Navy programs, the programs and regulations at issue in the two cases are entirely different. Moreover, Wind River permits plaintiffs' current challenge to the "small numbers" definition only on an "as applied" basis, in the context of the Final Rule. As the Final Rule was not issued until after Shipshock was decided, the current challenge could not have been raised in Shipshock. As there is no identity of claims, there can be no res judicata.

Collateral estoppel (issue preclusion) applies only when "an issue of fact or law is actually litigated and determined by a valid and final judgment, and the determination is essential to the judgment." Arizona v. California, 530 U.S. at 414. Defendants acknowledge in their motion that NRDC and the Humane Society did not contest the definition of "small numbers" in the Shipshock case. (Defendants' motion for summary judgment at 27 n. 15.) Thus, they concede that the issue was not actually litigated. Moreover, as Shipshock was resolved by a consent decree, it has no collateral estoppel effect unless the consent decree so indicates. Arizona v. California, 530 U.S. at 414. There is no evidence that the Shipshock consent decree intended to preclude NRDC and the Humane Society, or anyone else, from initiating future litigation over the definition of "small numbers." In fact, in the Shipshock consent decree, "plaintiffs reserve the right to challenge any future regulations . . . under all applicable federal laws." NRDC v. United States Dept. of the Navy, 1994 WL 715704 at *2 (C.D. Cal. 1994). Accordingly, the doctrine of collateral estoppel also

does not bar the plaintiffs from bringing their challenge on the definition of "small numbers."

Defendants' motion for summary adjudication that plaintiffs are barred from challenging the definition of "small numbers," pursuant to the doctrines of res judicata and collateral estoppel, is denied.

c. Whether NMFS Acted Outside the Scope of its Authority

The MMPA specifically authorizes the Secretary to prescribe regulations for the taking of marine mammals "as he deems necessary and appropriate to insure that such taking will not be to the disadvantage of those species and population stocks and will be consistent with the purposes and policies set forth in section 1361 of this title." 16 U.S.C. § 1373. Section 1361 provides, in relevant part:

> The Congress finds that –
>
> (1) certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man's activities;
>
> (2) such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population.
>
> * * *
>
> (6) marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic, and it is the sense of the Congress that they should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be to maintain the health and stability of the marine ecosystem. Whenever consistent with this primary objective, it should be the goal to obtain an optimum sustainable population keeping in mind the carrying capacity of the habitat.

16 U.S.C. § 1361.

Section 1371(a)(5)(A) of the MMPA permits the Secretary to authorize the incidental take of "small numbers of marine mammals of a species or population" if the Secretary finds "that the total of such taking during each five-year (or less) period concerned will have a negligible impact on such species or stock . . . ." 16 U.S.C. § 1371(a)(5)(A). The plain language indicates that "small numbers" is a separate requirement from "negligible impact." To treat them as identical would appear to render the reference to "small numbers" mere surplusage. The Ninth Circuit has held that "statutes should not be construed in a manner which robs specific provisions of independent effect" and noted that it has "consistently invoked this

rule to reject interpretations that would render a statutory provision surplusage or a nullity." County of Santa Cruz v. Cervantes (In re Cervantes), 219 F.3d 955, 961 (9th Cir. 2000). See also Nevada v. Watkins, 939 F.2d 710, 715 (9th Cir. 1991) (quoting Beisler v. Commissioner, 814 F.2d 1304, 1307 (9th Cir.1987)) ("It is a fundamental rule of statutory construction that '[w]e should avoid an interpretation of a statute that renders any part of it superfluous and does not give effect to all of the words used by Congress.'").

Furthermore, Congress made its intent clear when it added this section to the MMPA in 1981. The legislative history demonstrates that Congress intended that "small numbers" and "negligible impact" serve as two separate standards. The legislative history provides:

> The taking authorized under these new provisions is the taking of small numbers of marine mammals. The Committee recognizes the imprecision of the term 'small numbers', but was unable to offer a more precise formulation because the concept is not capable of being expressed in absolute numerical limits. The Committee intends that these provisions be available for persons whose taking of marine mammals is infrequent, unavoidable, or accidental.
>
> It should also be noted that these new provisions of the Act provide an additional and separate safeguard in that the Secretary must determine that the incidental takings of small numbers of marine mammals have a 'negligible' impact upon the species from which such takings occur. This additional test is meant to serve as a separate standard restricting the authority of the Secretary. The term 'negligible' is intended to mean an impact which is able to be disregarded. In this regard, the Committee notes that Webster's dictionary defines the term 'negligible' to mean 'so small or unimportant or of so little consequence as to warrant little or no attention.' Unless a particular activity takes only small numbers of marine mammals, and that taking has a negligible impact on the species, the new provisions of sections 101(a)(4) and (5) are not applicable to that activity.

H.R. Rep. No. 97-228 (1981), reprinted in 1981 U.S.C.C.A.N. 1458, 1981 WL 21352 at **1469 (emphases added). These new standards strengthened the already conservative approach of the statute. When the House Committee on Merchant Marines and Fisheries originally sent the bill that became the MMPA to the House floor in 1971, it noted that:

> In the teeth of . . . the certain knowledge that these animals are almost all threatened in some way, it seems elementary common sense to the Committee that legislation should be adopted to require that we act conservatively -- that no steps be taken regarding these animals that might prove to be adverse or even irreversible in their effects until more is known. As far as could be done, we have endeavored to build such a conservative bias into the legislation here presented.

H.R. Rep. No. 92-707 (1971), reprinted in 1972 U.S.C.C.A.N. 4144, 4148, 1971 WL 11285 at *4148.

Plaintiffs' argument that the "small numbers" and "negligible impact" standards have been improperly conflated was raised by others in the comments to the Final Rule. In response, NMFS stated:

> NMFS does not believe that the term can be expressed as an absolute number or percentage or be defined in any absolute terms. However, NMFS feels that by defining "small numbers" to mean a portion of a marine mammal species or stock whose taking would have a negligible impact, an upper limit is placed on the term, and the phrase effectively implements the Congressional intent . . . .

67 Fed. Reg. 46764. By conflating the two terms, however, NMFS has eliminated the ability of the two terms to act, as intended, as separate checks on the Secretary's authority. For example, where populations of marine mammals are large, the number of mammals taken before there is a greater than negligible impact on the population may also be large. The statute, however, expressly requires that the number of marine mammals that may be taken incidentally must be small. NMFS' contention that the "greater than negligible impact" threshold is an upper limit fails to recognize that this definition of "small numbers" improperly permits the Secretary to allow incidental takes that are quite large in number.

For example, in the Final Rule, one comment expressed concern that the takings permitted are not "small" and that more than 16% of the blue whales in the eastern North Atlantic, more than 10% of the beaked whales in the Mediterranean Sea, and more than 12% of the elephant seals in the eastern North Pacific will be affected. 67 Fed. Reg. 46764. In response, NMFS did not deny this possibility. Id. Instead, it noted that this was the worst case scenario, not the situation that will most likely take place, due to the Navy's likely voluntary avoidance of certain areas in certain seasons where marine mammals are likely to be particularly abundant. Id. NMFS noted that 12.4% of the elephant seals will be affected only if LFA sonar operated in both offshore central California for one mission and offshore Washington on another mission. Id. Yet NMFS acknowledged that under another scenario as many as 18.6% of elephant seals could be affected. Id. NMFS also stated that a more realistic estimate is that 1-2% of stocks would be affected during a single twenty-day mission. Id. at 46765.

Later in the Final Rule, NMFS states:

> Short-term incidental harassment levels between 1 and 12 percent and below are considered by NMFS to comply with the MMPA as Level B harassment at this level is unlikely to result in significant effects on any species' or stock's reproduction or survival. Therefore, in order for incidental takings by SURTASS LFA sonar under this regulation to be negligible, takings by SURTASS LFA sonar operations during the effective time period (1 year) of any LOA issued for such Navy operations must not exceed 12 percent of any marine mammal stock.

67 Fed. Reg. 46780. NMFS then went on to say that "this 12 percent level should not be interpreted to mean that the Navy will take up to 12 percent of all affected marine mammal stocks." Id. "In most cases, with carefully planned SURTASS LFA sonar missions (e.g., to avoid certain biogeographic provinces during seasons of increased marine mammal abundance), the total annual Level B takes are expected to be significantly less than this level." Id. Nothing in the Final Rule, however, requires the Navy to ensure that takes of marine mammals are at the low end of this wide range of up to 12%.

In order to obtain a Letter of Authorization, the Navy must provide an estimate of the "percentage of marine mammal species/stocks potentially affected in each specified geographic region for the 12-month period of effectiveness of the Letter of Authorization." 67 Fed. Reg. 46788 (50 C.F.R. § 216.187(c)(4)). The Final Rule provides that issuance of each Letter of Authorization will be based on a determination that the number of marine mammals taken by the activity will be small, and will have no more than a negligible impact on the species of stock of affected marine mammals. 67 Fed. Reg. 46788 (50 C.F.R. § 2161.88(c)). Since these two requirements are improperly defined to mean the same thing, however, there is no independent requirement that the take be small, as mandated by Congress.

The default provision of the MMPA is that "no permit may be issued for the taking of any marine mammal." 16 U.S.C. § 1371(a) (emphases added). The intent of Congress is that the taking of even a single marine mammal is to be avoided. Incidental takes permitted under section 1371(a)(5)(A) must be small and have a negligible impact on the affected species or stock of marine mammals. 16 U.S.C. § 1371(a)(5)(A). A definition of "small number" that permits the potential taking of as much as 12% of the population of a species is plainly against Congress' intent.

Defendants argue that any other definition would contradict Congress' pronouncement in the legislative history that "small numbers" is not a concept that can be "expressed in absolute numerical limits." H.R. Rep. No. 97-228 (1981), reprinted in 1981 U.S.C.C.A.N. 1458, 1981 WL 21352 at **1469. The Court does not require defendants to set an absolute numerical limit. It is clear, however, that defendants' current definition, which completely eliminates the separate requirements that only a "small number" of marine mammals be taken, is arbitrary, capricious, and manifestly contrary to the statute and cannot be upheld. While defendants are free to reasonably interpret the meaning of "small numbers," their decision to write this requirement out of the MMPA is flatly inconsistent with the plain language of the statute and is

entitled to no deference. The Court "must reject administrative constructions which are contrary to clear Congressional intent." Chevron, 467 U.S. at 843 n.9. To effectuate Congress' intent, "small numbers" and "negligible impact" must be defined so that each term has a separate meaning. Accordingly, plaintiffs' motion for summary judgment is granted on this issue, and defendants' motion for summary judgment is denied.

3. The Final Rule's Definition of "Harassment"

Plaintiffs argue that the Final Rule also uses an illegal definition of "harassment." The MMPA generally prohibits the taking of marine mammals, with certain statutory exceptions. 16 U.S.C. § 1371(a)(3). The MMPA and the regulations promulgated thereunder define "take" as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect or kill, any marine mammal." 50 C.F.R. § 216.3;16 U.S.C. § 1362(13). The definition of "take" includes any negligent or intentional act which results in disturbing or molesting a marine mammal. 50 C.F.R. § 216.3. The MMPA defines "harassment" as "any act of pursuit, torment or annoyance" that:

> (i) has the potential to injure a marine mammal or marine mammal stock in the wild; 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.

16 U.S.C. § 1362 (18)(A). Harassment as defined in subsection (i) is referred to as Level A harassment. 16 U.S.C. § 1362(18)(B). Harassment as defined in subsection (ii) is referred to as Level B harassment. 16 U.S.C. § 1362(18)(C).

Plaintiffs complain that the Final Rule uses a different definition for Level B harassment than that set forth in the statute. The Final Rule provides that "[f]or Level B incidental harassment takings, NMFS will determine whether takings by harassment are occurring based on whether there is a significant behavioral change in a biologically important activity, such as feeding, breeding, migration or sheltering." 67 Fed. Reg. 46721-22. The Final Rule also provides that "for small take authorizations (as opposed to intentional takings), a Level B harassment taking occurs if the marine mammal has a significant behavioral response in a biologically important behavior or activity." 67 Fed. Reg. 46740. Plaintiffs argue that this definition changes the statutory definition in two important respects. First, it requires that there be an actual disruption of behavioral patterns, rather than merely a potential for disruption, as required by the statute.

Second, it requires that the disruption be significant, although the statute contains no such limitation. Plaintiffs also complain that defendants have applied this erroneous definition in a way that excludes harassment to individual members of a marine mammal population, in violation of the MMPA's definition of "harassment" to include potential effects on individuals.

a. Potential to Disturb

Plaintiffs argue that, whereas the MMPA defines Level B harassment as any act that has "the potential to disturb" a marine mammal "by causing disruption of behavioral patterns," the Final Rule defines Level B harassment as an action that actually causes a significant behavioral change or significant behavioral response in a biologically important behavior or activity. See 67 Fed. Reg. 46721-22, 46740, 46762-63. Thus plaintiffs argue that NMFS has re-written the definition of "harassment" from an activity that has the potential to disturb to an activity that actually causes such a disturbance.

One of the comments to the Final Rule made this same argument. 67 Fed. Reg. 46762. In response, NMFS cited the actual text of the MMPA's definition of Level B harassment, which it acknowledged defined harassment as "potential to disturb," but nonetheless stated that "NMFS considers a Level B harassment to have occurred if the marine mammal has a significant behavioral response in a biologically important activity." 67 Fed. Reg. 46763. The Final Rule provides no explanation as to why NMFS believes it appropriate to ignore Congress' definition of Level B harassment, which considers an act to be harassing if it "has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns" (16 U.S.C. § 1362 (18)(A)) (emphasis added), even if the disruption does not actually occur.

NMFS did consider potential harassment at length in the Final Rule, however. 67 Fed. Reg. 46780. Thus, although NMFS used an erroneous definition of harassment, it does not appear that this erroneous definition caused any harm. Accordingly, although plaintiffs are correct that NMFS acted arbitrarily and capriciously by ignoring Congress' express definition of harassment in the MMPA, plaintiffs have not shown any injury from NMFS' reading the word "potential" out of the definition of harassment in the Final Rule.

b. Significance Requirement

Plaintiffs also argue, at length, that NMFS has inappropriately inserted the requirement that the

disruption be significant, when the MMPA's definition of "harassment" requires only that there be "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." 16 U.S.C. § 1362 (18)(A). NMFS considers harassment to require a significant behavioral change, or significant behavioral response, in a biologically important behavior or activity.

One of the comments to the Final Rule made this same argument. 67 Fed. Reg. 46762. NMFS responded:

> Under an interpretation of "harassment," as broad as some have suggested the MMPA requires, an incidental taking could be presumed to occur for even a single pinniped lifting or turning its head to look at a passing pedestrian, offshore watercraft, aircraft or dolphins riding a boat's bow wave. For those takings that are clearly incidental to an otherwise lawful activity, NMFS believes that such a strict interpretation was not intended by Congress, when it amended the MMPA in 1994 and added a definition for harassment.
>
> . . . [T]o disrupt a behavioral pattern, the activity would need to disrupt an animal's normal pattern of biological traits or behavior, not just cause a momentary reaction on the part of a marine mammal. Furthermore, if the only reaction to an activity on the part of the marine mammal is within the normal repertoire of actions that are required to carry out the behavioral pattern for that species of marine mammal, NMFS considers the activity not to have caused an incidental disruption of the behavioral pattern, provided the animal's reaction is not otherwise significant enough to be considered disruptive due to length or severity. For example, if there is a short-term change in breathing rates or a somewhat shortened or lengthened diving sequence that is within the animal's normal range of breathing patterns and diving cycles but there is not a disruption to the animal's overall behavioral pattern (i.e., the changes are not biologically significant), then these responses do not rise to a level requiring a small take authorization or, if under a small take authorization, does not constitute an incidental take.

67 Fed. Reg. 46763. It appears to the Court, from this explanation, that NMFS is attempting to distinguish between disruptions of behavioral patterns, and mere incidental reactions by marine mammals.

Plaintiffs argue that NMFS' use of the word "significant" adds an additional restriction that is not present in the statute. Plaintiffs contend that because other sections of the MMPA use the word "significant," its absence in section 1362 (18)(A) is telling. For example, section 1371(a)(4) authorizes the Secretary to prohibit certain methods used to deter marine mammals from interfering with fishing gear, endangering personal safety, or damaging property if the deterrence method has a "significant adverse effect" on marine mammals. 16 U.S.C. § 1371(a)(4). Section 1383a(g)(2) allows the Secretary to issue emergency regulations if the incidental taking of marine mammals in a fishery is having "an immediate and significant adverse impact" on a marine mammal population stock. 16 U.S.C. § 1383a(g)(2).

As plaintiffs point out, it is a general principle of statutory construction that when Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that the omission was intentional and purposeful. Barnhart v. Sigmon Coal Co., Inc., 534 U.S. 438, 452 (2002). The fact that Congress used the term "significant adverse impact" in one section of the Act and "disruption of behavioral patterns" in another part of the same Act does not suggest to the Court, however, that Congress' failure to include the word "significant" in the later portion of the Act, when read in context, was meaningful. The dictionary definition of "disruption" itself suggests a major, or significant, change. See, e.g., Merriam-Webster's Collegiate Dictionary, Tenth Edition (2002) at 335 (defining "disrupt" as "to break apart," "to throw into disorder," and "to interrupt the normal course or unity of.")

NMFS has interpreted the statutory language "disruption of behavior patterns" and paraphrased it as "a significant behavioral change in a biologically important behavior or activity." The Court is not convinced that the two formulations of the standard differ in meaning. Thus, NMFS did not act outside the scope of its discretion by interpreting the statutory language "disruption" to require a significant change.[6]

Similarly, NMFS interprets the statutory language "disruption of behavioral patterns, including but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering" to require a significant change to a biologically important behavior or activity. There can be no question that migration, breathing, nursing, breeding, feeding and sheltering are biologically important behaviors. NMFS' paraphrase of this language is also within its discretion.

Accordingly, the Court agrees with defendants that NMFS' requirement that there be a potential for a significant behavioral change or response in a biologically important behavior or activity is lawful.

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[6] Plaintiffs also argue that defendants are trying to obtain a new definition of Level B harassment through Court action when Congress has already refused to change the definition. The House Report plaintiffs cite does not discuss the substance of the proposed amendment. See H.R. Rep. No. 436, 107th Cong. 2nd Sess. 288, 2002 WL 848335 at *288 (2002). Rather, the Report suggests that the amendment was not considered due to time constraints. Id. In fact, the Report states that "[t]he committee recognizes that modifications to the Marine Mammal Protection Act may be required to address the Navy's concerns and intends to continue its examination of this matter in order to derive the correct legislative solution to this issue." Id. Moreover, Congress is currently considering amending the definition of "harassment," as well as other sections of the MMPA, and thus cannot be said to have finally rejected any attempt to amend the definitions of the MMPA. See, e.g., Marine Mammal Protection Act Amendments of 2003, H.R. 2693, 108th Cong., 1st Sess. 2003, 2003 CONG US HR 2693; National Security Readiness Act of 2003, House Rep. No. 108-99(I), 108th Cong., 1st Sess. 2003, 2003 CONG US HR 1835; National Defense Authorization Act for Fiscal Year 2004, H.R. 1588, 2003 CONG US HR 1588.

NMFS has reasonably attempted to distinguish between mere responses by marine mammals to the specified activity, and the type of disruptions to behavioral patterns that Congress was expressly concerned about in the MMPA's definition of "harassment."

Plaintiffs argue, however, that defendants did not actually apply their "significant change" standard in analyzing potential harassment. In the Final Rule, NMFS relied on the Navy's analysis of potential impacts to marine mammals, as contained in the Navy's EIS. 67 Fed. Reg. 46778. Plaintiffs contend that, in preparing the EIS, the Navy interpreted Level B harassment as "prolonged disruption of biologically important behavior that could lead to reduced productivity/fecundity or survival rate." Plaintiffs cite a document dated November 17, 1999, which appears to be minutes from a November 16 "SURTASS LFA EIS Scientific Advisory Group Meeting at Cornell University Bioacoustics Research Laboratory." (Plaintiffs' App., Tab 2 at 1.) That document cites the MMPA definition of Level B harassment, which is immediately followed by another bullet point: "Prolonged disruption of biologically important behavior that could lead to reduced productivity/fecundity or survival rate[.]" (Id. at 2.) As the document also cites the correct MMPA definition of Level B harassment, it is not clear whether this "prolonged disruption" language was intended to be an example of Level B harassment, or to define it. Moreover, plaintiffs have not submitted any evidence that this "prolonged disruption" standard was actually used to calculate Level B harassment when the Navy prepared the EIS. The Final Rule states:

> To determine the potential impacts that exposure to LF sound from SURTASS LFA sonar operations could have on marine mammals, biological risk standards were defined by the Navy with associated measurement parameters. Based on the MMPA, the potential for biological risk was defined as the probability for injury or behavioral harassment of marine mammals. In this analysis, behavioral harassment is defined as a significant disturbance in a biologically important behavior.

67 Fed. Reg. 46778. As the Final Rule explicitly states that the appropriate standard was applied, and plaintiffs have not submitted evidence that the "prolonged disruption" standard was actually applied in preparing the EIS, there is no material dispute of fact. The evidence is undisputed that the correct standard was applied.

Accordingly, plaintiffs' motion for summary judgment is denied, and defendants' motion for summary judgment is granted, on the issue of whether NMFS applied the wrong standard for Level B harassment in preparing the Final Rule.

c. Impact on Individual Mammals

Plaintiffs' final argument with respect to NMFS' definition of harassment is that NMFS improperly excludes effects on single members of a marine mammal population in violation of the MMPA's definition of "harassment." The MMPA's definition of "harassment" expressly applies to acts that affect "a marine mammal or marine mammal stock in the wild." 16 U.S.C. § 1362 (18)(A).

Plaintiffs complain that at one point in the Final Rule, NMFS states:

> Examples of significantly disrupted behavior would be where pinnipeds flee a haulout beach or rookery en masse due to a disturbance, or animals either leave an area of habitation for a period of time, or diverge significantly from their migratory path to avoid either an acoustic or a visual interference. Non-significant behavioral responses would be when only a few pinnipeds leave the haulout or mill-about, but many pinnipeds are alert to the disruption; or when marine mammals make minor course corrections that are not discernable either to observers or directional plotting, and which requires statistical manipulation in order to determine that a course correction has taken place.

67 Fed. Reg. 46763. It is a reasonable reading of this paragraph to conclude that NMFS does not consider significant disruptions to the behavioral patterns of a single marine mammal to constitute harassment under the MMPA. If NMFS defines disruptions to behavioral patterns as harassment only if they affect an entire stock of marine mammals, then that violates the MMPA. The MMPA is expressly concerned with harassment to "a marine mammal" as well as harassment of a "marine mammal stock." 16 U.S.C. § 1362 (18)(A).

In expressing concern about harassment to "a marine mammal," Congress was concerned about harassment to individual animals. Thus, if an individual marine mammal in a rookery flees that rookery in response to the specified activity, and does not return, or fails to return in the usual period of time, that animal has been harassed within the meaning of the MMPA, even if other animals in the group did not leave in response to the specified activity. Defendants concede that under this example, the animal has been harassed in violation of the MMPA. It may well be, however, that when a marine biologist sees a single marine mammal leave the beach, while others of its type remain undisturbed, it is very difficult, if not impossible, to determine whether the animal is leaving of its own accord, or whether it is a particularly sensitive animal that is fleeing in response to the specified activity. The definition of harassment, however, encompasses potential harassment to single individuals, even if other individuals of that species in the same location do not appear to be harassed by the same activity. In fact, by focusing on potential harassment, the statute appears to consider all of the animals in a population to be harassed if there is the potential for the act to disrupt the behavioral patterns of the most sensitive individual in the group.

Defendants acknowledge that single animals can be harassed under the MMPA. Indeed, the Final Rule was issued on the basis of projections of potential effects on marine mammals. 67 Fed. Reg. 46780. As defendants point out, the Risk Continuum developed in the EIS and used in the Final Rule to assess potential for harassment expressly "acknowledges that individuals may vary in responsiveness." (Final EIS 4.2-24.) Hypersensitive animals are expressed on the risk continuum as a low, but non-zero, probability of harassment risk at low decibel exposure. (Id. at 4.2-20, 24.) As the decibel exposure increases, the probability risk for harassment increases until the value of the function approaches one (or 100% take) at very high decibel exposures. (Id.) As a result, the Risk Continuum provides a more accurate measure of potential effects on individual animals within a population than the use of an "all or nothing" threshold above which all animals are considered taken and below which no animal (even the most susceptible) would be taken.

Thus, the evidence is undisputed that although certain portions of the Final Rule may improperly suggest that effects on individual animals are not considered to be harassment, the actual analysis used to calculate the probability of harassment does take into effect potential effects on individual animals. Accordingly, defendants' motion for summary judgment is granted on this point, and plaintiffs' motion for summary judgment is denied.

4. Negligible Impact

The MMPA restricts small take permits to activities which the agency determines will have only a "negligible impact" on marine mammals. 16 U.S.C. §§ 1371(a)(5)(A), (D). Plaintiffs contend that the Navy's plan to deploy LFA in a vast portion of the Pacific ocean, potentially affecting 12 % or more of any particular species or population stock, cannot constitute a merely negligible impact. Defendants respond that the taking is capped at 12%, and that the likely impact will be far less because they will generally avoid operating in coastal areas, where marine mammals are concentrated, and because they will employ effective mitigation measures. 67 Fed Reg 46764-65. At the same time, however, the Navy continues to stress the need to train in coastal areas. (Vice-Admiral Willard Dec. ¶ 9.) Moreover, now the Navy plans to have two LFA vessels operate simultaneously in certain areas of the Pacific Ocean, rather than deploying one of them in the Atlantic, as previously contemplated. Finally, as addressed below, the planned mitigation is not likely to be as effective as defendants contend.

If the standard for determining negligible impact were the traditional dictionary definition of "inconsequential" or "not worthy of attention," as plaintiffs contended at the preliminary injunction stage, plaintiffs would prevail on this issue. Even the Navy's own liaison to NMFS expressed concern that:

> [i]f I look at the percentages and numbers of takes, is that really negligible? . . . I don't feel that the result can be considered negligible under the law.

(AR 12285.)

Defendants persuasively argue, however, that they reasonably interpreted Congressional intent in amending the statute in 1986 as clarifying "negligible impact" to mean "an impact that cannot reasonably be expected to, and is not likely to affect adversely the overall population through effects on annual rates of recruitment or survival." 54 Fed. Reg. 40340; 50 C.F.R. § 216.103. In 1989, the U.S. Fish and Wildlife Service explained that,

> while sympathetic with the concerns expressed by the commenters, [the Service] believes that the clear congressional intent behind the 1986 Amendments was to alter the standard for determining negligible impact. . . . To capture the intent of the amendment, the Service has adopted, substantially without change, the definition of negligible impact set out in the Senate's 'Section-by-Section Analysis.'

54 Fed. Reg. 40340 (citing 132 Cong. Rec. 16305 (Oct. 15, 1986)). The Senate explained in their Section-by-Section Analysis that Section 411:

> amends the [MMPA] and makes conforming amendments to the [ESA] to allow incidental taking of depleted as well as non-depleted species of marine mammals under certain conditions. . . . The term 'negligible impact' as applied to populations means an impact that cannot reasonably be expected to, and is not reasonably likely to affect adversely the overall population through effects on annual rates of recruitment or survival.

132 Cong. Rec. 16305 (Oct. 15, 1986.) Thus, the Senate apparently clarified the definition of negligible impact without formally amending it. Plaintiffs do not respond to this argument, and thus have not shown that the agency's definition of "negligible impact" is arbitrary and capricious or contrary to law.

Yet the Court remains concerned that, without more restrictions on deploying LFA in sensitive areas and during sensitive periods, there will be occasions where the impact on particular populations is not merely negligible. As plaintiffs point out, harassment of 12% of a very small population, such as the 100 endangered gray whales near Sakhalin Island, could have a serious impact, affecting their reproduction and survival. Therefore, strengthening the required mitigation measures is necessary to ensure negligible impact, as set forth below. And if it turns out that the annual take authorized by each year's LOA is exceeded and

is not limited to harassment but involves actual injury and death, the negligible impact finding must be revisited.

5. Mitigation and Monitoring

When NMFS issues a small take permit, the MMPA requires the Secretary to provide for the monitoring and reporting of the takes, and to prescribe methods and means of effecting the "least practicable adverse impact" on species and stock in their habitat. 16 U.S.C. § 1371(a)(5)(A). The purpose is to assure that the take allowed under the permit is, in fact, small, and also has only a negligible impact on affected species. H. Rpt. No. 228, 97th Cong., 1st Sess. 18-20 (1981).

In requiring the agency to adopt measures to ensure the "least practicable adverse impact" on marine mammals, Congress imposed a stringent standard. Although the agency has some discretion to choose among possible mitigation measures, it cannot exercise that discretion to vitiate this stringent standard.

In the Final Rule, NMFS adopted certain measures to limit harm to marine mammals. First, it adopted a two kilometer (1.2 nautical miles) exclusion zone around the LFA source, within which operations would be shutdown if marine mammals or sea turtles are detected. To detect the animals within this area, NMFS required use of a high frequency active sonar system ("HF/M3"), visual observation from the deck of the source ship, and passive acoustic monitoring. 67 Fed. Reg. 46787. In addition, NMFS excluded as "off limits" coastal areas within twelve nautical miles of the shoreline, as well as a few "Offshore Biologically Important Areas" ("OBIAs") outside the coastal areas, and limited received levels of LFA sonar to 145 dB at known human dive sites. LFA will also not be deployed in the Arctic or the Antarctic, although defendants explained at oral argument that this exclusion was for LFA operational reasons. Plaintiffs argue that these measures are insufficient to achieve the least practicable adverse impact, and that NMFS arbitrarily failed to adopt additional, more stringent measures. NMFS responds that the measures chosen are within its discretion and additional measures are unnecessary or impractical.

a. Monitoring and shutdown near the LFA vessels

The two kilometer exclusion zone around the ship includes two concentric rings around the ship: the area within one kilometer of the LFA source, which transmits the signal at 215 dB but which falls to 180 dB at a distance of one kilometer from the ship; and an additional buffer zone required by NMFS extending

an additional kilometer from the ship, where the sound level falls to about 173 dB. NMFS chose this distance in large part because HF/M3, the active sonar used to detect marine mammals near the ship, is capable of detecting at least large animals up to that distance.

Plaintiffs argue that this two kilometer exclusion zone is too small and that the active sonar and other monitoring will not be as effective in detecting animals within the zone as defendants contend. As it did in the Preliminary Injunction Order, the Court commends defendants' measures as far as they go, but concludes that realistically they will not detect all marine mammals and endangered species within the two kilometer zone. Visual monitoring, particularly for smaller animals who spend long periods under water, is not very effective even in the best of conditions, much less in rough seas or in the dark. Passive sonar also misses quieter animals. While the active sonar is fairly effective in detecting large whales, it is much less effective in detecting smaller animals, such as fast moving dolphins and certain sea turtles. For example, in a test of bottlenose dolphins, only 55% were detected. (EIS at 2-20 - 2-21.) Smaller animals such as sea turtles are even more likely to escape detection.

Furthermore, none of these measures are designed to detect marine mammals beyond two kilometers from the LFA source. Defendants claim that by collecting data, including ship position, marine mammal observations, and times of transmission, NMFS and the Navy will be able to compile information about the effects of LFA beyond the two kilometer safety zone. Yet, by definition, animals that go undetected, even injured ones, will not be counted. Further, plaintiffs point out that this after-the-fact information, resulting in a report on the effects of current operations five years from now, is too little too late.

NMFS acknowledges that behavioral modifications in marine mammals can be expected outside this zone, but disputes plaintiffs' contention that monitoring of a larger zone is feasible. 66 Fed. Reg. 15,380-81. At the preliminary injunction stage, plaintiffs did not convince the Court that extending the zone was likely to be practicable. Now, plaintiffs urge three additional measures to detect marine mammals at greater distances. The first involves passive monitoring through the use of a computer aid called "Popeye" that helps detect large whales when they vocalize at distances of up to three to five miles from the vessel. This system, however, cannot determine the location of most of the whales it detects. Moreover, the NRDC itself called passive acoustic detection "another notoriously ineffective method of surveillance"

(NMFS Doc. 70 at 24), and no comments on the Final Rule or the EIS suggested the use of Popeye. Plaintiffs also contend that the Navy should have been required to use its Sound Surveillance System (SOSUS), a network of passive sonar listening stations located on the ocean floor that cover much of the world's oceans and range hundreds of miles. (AR 6276.) However, SOSUS is similarly unable to pinpoint the locations of animals. Defendants' decision not to use the less effective Popeye or SOSUS technologies is not arbitrary or capricious.

Plaintiff also argue that the pre-operation visual surveys by helicopters or small crafts of local areas of operations should be used. The Final Rule rejected such surveys as impractical because the LFA vessels normally operate in the deep ocean, far from the fleet and from shore. 67 Fed. Reg. 46750. This decision was not arbitrary as to normal operations in deep waters.

Aerial or small craft surveys are practicable, however, when the LFA vessels are operating close to shore. In fact, the Navy has stressed to the Court its need and intent to train with and evaluate LFA in littoral and coastal waters. (Willard Dec. ¶ 9.) Thus, the rationale given by the Navy for not conducting such surveys -- their difficulty when the LFA vessel is far out at sea -- does not apply to coastal operations and runs counter to the evidence before the agency. Further, the need for precautionary measures to avoid harm to marine mammals is heightened when operating near the coast where marine mammals tend to be most abundant. Also, coastal areas may present special conditions like those that defendants' scientists concluded contributed to the marine mammal strandings in the Bahamas -- constricted channels with limited egress. 67 Fed. Reg. 48152. Indeed, the Navy has recognized the potential danger of coastal operations to beaked whales, who were the primary victims in the mass stranding in the Bahamas as well as other strandings associated with mid-frequency sonar, as reflected in this comment by a Navy official on potential research on beaked whales: "If the animals are indeed very spooky around sound and likely to bolt and injure or beach themselves I don't want to work in bays or nearshore areas where animals might be more at risk than in an open ocean scenario." Sabey Dec. Ex. 9 (e-mail from Robert Gisiner to Marsha Green dated March 1, 2000). The EIS Technical Report notes that aerial surveys used during research on the impact of LFA were effective in spotting and tracking whales. (AR 23456, 23491.) Thus, for close to shore operations, pre-operation surveys by air or small craft are practicable and necessary to ensure that only small numbers of marine mammals are taken. They should be used when LFA is deployed during

daylight and when weather permits, in order to ensure the least practicable adverse impact. The decision not to do so was arbitrary and capricious.

b. Exclusion zones

Defendants established geographic exclusion zones that prevent LFA sonar from exposing marine mammals to signals at 180 dB or above in: coastal waters within a twelve nautical mile zone from shore (as well as 145 dB within known human dive sites); the Arctic and Antarctic; and three "Offshore Biologically Important Areas (OBIAs)." These OBIAs are the 200 meter isobath of the North American Eastern Coast, year round; the Costa Rico Dome, year round; and the Atlantic Convergence Zone, October through March. (Navarro Dec. Ex. 14 at 2-12 - 2-13.)

The parties agree that coastal waters support especially rich concentrations of marine mammals. Studies show that sea life generally flourishes from the shore to the continental shelf, which roughly parallels the shore line but generally extends well over twelve nautical miles from the shore. LFA sonar is effective in detecting submarines in most (but not all) conditions at distances of 40 to 200 miles. Indeed, Roger Gentry from NMFS explained to the Navy that "[t]o account for vast variations in the width of the continental shelf, [he] would suggest that the EIS have a dual criterion, such as '12 nmi from the shore, OR the distance to the 300 m isobath, whichever is farther.'" NMFS 121. While defendants do not act arbitrarily in refusing to bar operations closer to shore in the relatively few parts of the world where conditions make that necessary for effective detection, the record confirms that an exclusion zone broader than twelve nautical miles is practicable in most areas of the world's coastlines. In the EIS, in response to a comment seeking the rationale for the twenty-two kilometer (twelve nautical mile) restriction, the Navy responded that "[r]estricting operations to outside of 80 to 370 km *(43 to 200 nm)* of the coast would severely limit the effectiveness of the sonar to detect submarines at long enough ranges to allow proper responses." (AR 23239) (emphasis added). Conspicuously absent in this response is any explanation of why the zone could not be extended more than twelve nautical miles but less than 43 to 200 nautical miles.

Indeed, defendants argue that they can and do extend greater protection de facto to most coastal areas through the requirement that known human dive sites receive only 145 dB. According to defendants, this requirement effectively extends the coastal exclusion zone to forty kilometers in most areas. (J. Johnson SJ Dec. ¶ 10; 67 Fed. Reg. 46746 (MIC1); EIS at 10-149-10-152.) This argument cuts the

other way, however, because it confirms the feasibility of actually extending the coastal exclusion zone in all but those few coastal areas where conditions require the Navy to test and train close to shore.

Coastal waters are not the only areas of rich concentrations of marine mammals, as defendants recognized in creating the three OBIAs. Marine mammals (and other endangered species) migrate and feed in areas far from shore. Yet, NMFS postponed adding other OBIAs indefinitely, despite their own experts' recognition that other areas probably should be designated. Instead, NMFS set up a process by which members of the public bear the burden of proving that additional exclusion zones are warranted:

> While some of the areas mentioned in the comment would qualify for nomination as an OBIA, a delay in the rulemaking process to implement additional OBIAs is not warranted, especially considering the high level of effectiveness of the tripartite monitoring system. . . . NMFS considers a public review and comment period a necessary step in establishing new OBIAs. Once this final rule is implemented, NMFS will accept petitions for OBIAs in accordance with 50 CFR 216.191 promulgated in this final rule. However, as stated in the preamble to the proposed rule, petitions will not affect authorizations for taking marine mammals within those areas until an OBIA is final (if that is the determination). It should be recognized that NMFS may also nominate areas as OBIAs, but does not believe that it should be the sole proponent for nominating areas and that was the reason for allowing it to be a public process following standard rulemaking practice.

67 Fed. Reg. 46747-48. See also 50 C.F.R. § 216.191.

In the Preliminary Injunction Order, the Court noted that both Plaintiff's expert Fujita and defendant's expert Hollingshead agreed that the Oyashio/Kuroshio area off Kamchatka is an example of an area that qualifies for future nomination as an OBIA. Plaintiffs now point out that defendants also overlooked other potential OBIAs. For example, in an e-mail dated December 9, 1999, one NMFS official reported to another that:

> another sensitive offshore area has just been revealed by Watkins' use of SOSUS. There is a major concentration of blue whale calls where the Emperor Seamount Chain intersects the Aleutian rise. The map coordinates that would box this area are from 45 to 55 degrees N. lat., and from 170 to 60 degrees W long. This is a large area, but it is only seasonally sensitive. It should be avoided in August, September and October – mainly September.

(NMFS Doc. 121.) Moreover, defendants had initially considered including more OBIAs in the EIS. (AR 7421 ("Ecologically Sensitive Exclusion Zones consist mainly of . . . internationally recognized Particularly Sensitive Sea Areas, UN Biosphere Reserves, etc.").)

NMFS has the ability to identify which areas and which seasons to avoid based on its own data.

(AR 1294 ("Use of LMRIS as a planning tool to avoid potentially high impact areas will probably be sufficient to address the general issue of accessing the best and latest distribution data for decision making").) However, NMFS chose not to do so. In response to a proposal by environmental groups, NMFS official Hollingshead commented in an e-mail to the Navy's consultant, Clay Spikes:

> Clay, [f]irst it's Marine-Protected Areas and now they are proposing to establish Special Ocean Sites. If the Navy does not formally raise objections the enviros may succeed in locking up a lot of offshore territory. We will need to ensure that [Special Ocean Sites] and [Marine Protected Areas] do not ipso facto become OBIAs.

(NMFS Vol. 17 at 362.) Another e-mail from the Navy consultant to the NMFS official recapped their prior discussion about the need to divert public attention from the fact that the agencies knew of gray whale migratory paths outside the Olympic national marine sanctuary, but had nonetheless chosen not to mitigate for those paths. (AR 24633) ("It is true that the dates related to gray whale migration, but at some point we discussed the fact that we did not want to emphasis [sic] this fact because we were not 'mitigating' for gray migratory paths outside of the Olympic NMS"). Thus, despite NMFS' and the Navy's awareness of specific areas and seasons that are potentially sensitive, NMFS arbitrarily and capriciously refused to designate more OBIAs. Instead, NMFS delayed doing so and shifted the burden to members of the public to prove that additional exclusion zones are warranted.

Defendants point out that the Navy must submit quarterly mission reports and unclassified annual reports to assist NMFS in assessing whether taking occurred within the mitigation and buffer zones, estimating the percentage of marine mammal stocks affected, and determining whether operations under a current LOA should be discontinued and whether future LOAs should issue. 67 Fed. Reg. 46782. In year five, the Navy must prepare a public report of all monitoring and research conducted during the five year period of the regulations and review the state-of-the-art in passive sonar technologies to determine if an acceptable substitute for LFA exists. 67 Fed. Reg. 46782; 50 C.F.R. § 216.186. Defendants maintain that this process adequately protects sensitive marine areas. However, the mere prospect that future LOAs will consider additional information on marine mammal distribution and the Navy may choose to avoid sensitive areas does not relieve NMFS of its specific statutory responsibility in the present to "prescribe regulations setting forth . . . means of effecting the least practicable adverse impact on such species or stock and its habitat." 16 U.S.C. § 1371(a)(5)(A)(ii)(I). This responsibility is central to ensuring that NMFS does not authorize more than small numbers of takes, and that the impact is negligible, as required by the

MMPA.

The Court concludes that defendants acted arbitrarily and capriciously in failing to (1) extend the coastal exclusion zone in all areas except for those few coastal areas where close to shore training is necessary, (2) use aerial surveys or observational vessels for LFA sonar missions operated close to shore, and (3) designate additional off-limit areas or seasons and OBIAs. Thus, plaintiffs' motion for summary judgment is granted and defendants' motion for summary judgment is denied with respect to the adequacy of defendants' mitigation and monitoring under the MMPA.

B. National Environmental Policy Act

Plaintiffs argue that defendants violated NEPA by failing to prepare an adequate Environmental Impact Statement ("EIS"). The Court must determine whether the EIS was "arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law." Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 471 (9th Cir. 2000); City of Carmel-By-The-Sea v. U.S. Dep't of Transportation, 123 F.3d 1142, 1150 (9th Cir. 1997); Western Radio Servs. Co., Inc. v. Espy, 79 F.3d 896, 900 (9th Cir. 1996).

Courts apply a "rule of reason" standard, which assesses "whether an EIS contains a reasonably thorough discussion of the significant aspects of the probable environmental consequences." Churchill County v. Norton, 276 F.3d 1060, 1071 (9th Cir. 2001) (quoting Trout Unlimited v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974)); see also City of Carmel, 123 F.3d at 1150-51 ("the National Environmental Policy Act requires a 'reasonably thorough' discussion of the environmental consequences in question, not unanimity of opinion, expert or otherwise.") In making this determination, a court must make a "'pragmatic judgment whether the EIS's form, content, and preparation foster both informed decision-making and informed public participation.'" Churchill County, 276 F.3d at 1071; City of Carmel, 123 F.3d at 1150-51. "'Once satisfied that a proposing agency has taken a "hard look" at a decision's environmental consequences, [our] review is at an end.'" City of Carmel, 123 F.3d at 1151 (quoting Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992)).

1. Reasonable Alternatives Analysis

An EIS must discuss "reasonable alternatives" to the proposed action. 42 U.S.C. § 4332(2)(C)(iii), City of Carmel, 123 F.3d at 1155. Agencies must "[r]igorously explore and objectively

evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14(a). The Navy's EIS set forth three alternatives: (1) a No Action alternative; (2) full deployment with no mitigation or monitoring; (3) and the Navy's preferred alternative. In the Preliminary Injunction Order, the Court concluded that defendants' second alternative, full deployment with no mitigation or monitoring, is *per se* illegal under the MMPA and is therefore a phantom option. The "small take" exception to the MPA provides that the Secretary shall allow such a take if the Secretary prescribes regulations setting forth requirements pertaining to the monitoring and reporting of such taking. 16 U.S.C. § 1371(a)(5)(A). While defendants correctly pointed out that NMFS may make authorizations under the MMPA even where there is no practical mitigation, the Court explained that this was not the case here, as the chosen alternative includes mitigation measures.

Defendants now argue that the Court incorrectly superimposed the ultimate conclusion of the EIS and Final Rule processes regarding mitigation upon the initial selection of alternatives. Defendants argue that the fact that a reasonable course of action later turns out to be inconsistent with another federal law is not grounds for disqualifying it from the alternatives analysis. 46 Fed. Reg. 18027. Here, however, the Navy knew well before it prepared the EIS that mitigation measures were available. For example, in the October 1996 Environmental Assessment analyzing deployment of LFA on the Cory Choeust, the Commander in Chief of the U.S. Pacific Fleet stated that

> [t]he full range of mitigation measures . . . will be employed in connection with the proposed exercise. These measures include visual and acoustic monitoring, prior Sound Pressure Modeling to ascertain where high concentrations of sound are likely to be generated, a gradual ramp-up in power to allow marine creatures to depart the vicinity should the sound level become uncomfortable, termination of system operation should a marine mammal approach within one nautical mile, and limitation of the duty cycle, with each 'on' period being 10% or less of the subsequent 'off' period.

(AR 3405.)

In the Preliminary Injunction Order, the Court noted that plaintiffs' argument that the Navy should have considered the alternative of training only in areas of low marine mammal abundance and biological productivity was not practicable because the Navy needs to operate in areas with different water characteristics. Plaintiffs now argue, persuasively, that instead the Navy should have considered the alternative of restricting more, but not all, of the exercises to areas or seasons of low marine mammal

abundance.

Plaintiffs also argue that the Navy should shorten the duration of its LFA broadcasts. The EIS states that the

> [a]verage duty cycle (ratio of sound 'on' time to total time) is less than 20 percent, even for 'worst case' missions. The typical duty cycle is between 10 and 20 percent (20 percent is the maximum physical limit of the LFA system at maximum power). The system will not be operated at duty cycles higher than 20 percent.

(EIS at 10-52.) The Navy considered reductions in the duty cycles, but decided that a duty cycle of up to 20% would "optimize the system's ability to meet its operational requirements." (EIS at 10-51.) This conclusion is within the Navy's expertise and is not arbitrary.

Plaintiffs also argue that the Navy never analyzed an alternative that included measures to mitigate possible injury to fish by requiring suspension of LFA operations when schools of fish are detected within the LFA buffer zone.[7] HF/M3 sonar is capable of detecting schools of fish. (AR 24392). Yet shut-down procedures are limited to instances where marine mammals or sea turtles enter the 180 dB zone (AR 22863; AR 24632.) Plaintiffs cite 40 C.F.R. § 102.14(a), which requires the agency to "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." Defendants respond that the Navy determined that the HF/M3 mitigation measure was not necessary for schools of fish because expected impacts would be insignificant due to the distribution of fish in the water column, the likelihood of fish being exposed to the signal, and the known science with respect to potential impacts on fish. (EIS 4.1 and 4.3.)

Earlier, however, when NMFS raised the issue of shut-down protocols for schools of fish detected by HF/M3 sonar, the Navy responded:

> If we say this in the FR, we start down that slippery slope where we will end up having shut-down protocols for fish, which is a non-starter for many reasons, not the least of

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[7] Defendants argued for the first time at the hearing that plaintiffs lack standing with respect to fish. See Lujan v. Defenders of Wildlife, 504 U.S. 555, 562-63 (1992). The declarations that plaintiffs provided in conjunction with their preliminary injunction motion supported standing with respect to whales and dolphins, but not fish. Since the defendants raised the issue belatedly, the Court permitted plaintiffs to file four supplemental declarations, to which defendants do not object. (Annie Notthoff Dec., Steve Simmons Supp. Dec., Mark Spalding Supp. Dec., Edward Cassano Supp. Dec. filed on August 6, 2003.) These declarations establish plaintiffs' standing regarding marine fish. See Biodiversity Legal Foundation v. Badgley, 309 F.3d 1166, 1172 (9th Cir. 2002).

> which is that it is a very dangerous precedent to set that Navy operational systems will shut down because of fish, whether detected by HF/M3 or visual obs.

(AR 24632.) This flat refusal to even consider extending shutdown procedures beyond marine mammals and sea turtles to schools of fish which are similarly detectable by HF/M3 sonar does not explain why this is not a reasonable alternative – it simply rejects it as "bad precedent" without further explanation. Yet worldwide stocks of fish are in peril, and some fish belong to endangered species. Also, as discussed below, the Navy did not properly disclose and consider scientific data indicating a much greater risk of injury to fish from LFA than defendants acknowledged. It may be that this mitigation measure would not be feasible because it would require too frequent shutdowns to allow effective training. The EIS does not explain why this is not a reasonable alternative, however. Instead, the EIS asserts that only "a negligible portion of any fish stock would be present within the 180 dB sound field at any given time." (EIS at 4.8.) If true, then shutdowns for fish might not be frequent. Also, if fish stocks have already been drastically reduced by degradation of the marine environment and overfishing, as recent news reports suggest,[8] it is questionable whether a further impact can simply be assumed to be negligible. This concern is highlighted by the failure of the EIS to consider scientific studies showing that fish could be severely injured by low frequency sonar, discussed below.

The Court concludes that defendants' second alternative, full deployment with no mitigation or monitoring, is a phantom option. Moreover, plaintiffs have demonstrated that defendants should have considered training in areas that present a reduced risk of harm to marine life and the marine environment when practicable, and should have considered extending shutdown procedures beyond marine mammals and sea turtles to schools of fish. Defendants' alternatives analysis is arbitrary and capricious. Plaintiffs' motion for summary judgment is granted and defendants' motion for summary judgment is denied with respect to the adequacy of defendants' alternatives analysis.

2. Lack of disclosure and analysis of relevant studies on harm to fish

Plaintiffs contend that the Navy failed to take a hard look at the potential impact of the LFA system on fish species, instead suppressing and ignoring crucial scientific information indicating that low frequency

[8] See, e.g., Andrew C. Revkin, *Commercial Fleets Reduced Big Fish by 90%, Study Says*, N.Y. TIMES, May 15, 2003, at A16.

sonar could seriously harm fish. Accordingly, plaintiffs argue that the EIS fails to foster "informed decision-making and informed public participation." Churchill County v. Norton, 276 F.3d 1060, 1071 (9th Cir. 2001).

The EIS examined three principal effects of the LFA signal on fish: (1) the potential for LFA to cause "non-auditory" injury through resonance with a fish's swimbladder; (2) the potential for LFA to cause either permanent or temporary deafness; and (3) the potential for LFA to affect fish behavior or mask the sound of a fish's predator or prey. (AR 22977-22982.) As noted above, the Navy decided not to provide mitigation for fish, even though HF/M3 sonar (like the sonar used in large commercial fishing operations) is capable of detecting schools of fish at roughly the same distances as it detects marine mammals. (AR 22859-67.)

In 1994, Great Britain's Defense Research Agency commissioned a study by lead author Dr. Turnpenny, entitled "The Effects on Fish and Other Marine Mammals of High-Level Underwater Sound" ("Defense Research Agency Study"). The study was designed to "assess[] the possible risks to marine fish of low frequency (50-2,000 Hz) sonar sources" by exposing a variety of caged fish to short bursts of low frequency tones (AR 2122), including at some of the same frequencies and for the same duration as the LFA system. The results were dramatic. The fish exposed to low frequency sonar suffered internal injuries at 160 dB, eye damage at 170 dB, auditory damage at 180 dB, and transient stunning at 190 dB. (AR 2186 at Figure C1.) The study also reported that the "[m]ost affected [fish species] were trout" with "[m]ortality rates of up to 57% after 24-h . . . recorded for exposure levels of > 170 dB at frequencies of < 500 Hz." (AR 2123.)

The EIS does not mention the Defense Research Agency Study, even though the Navy knew of it. Instead, the EIS states that "[t]he primary potential for non-auditory impact to fishes would be resonance of fish swim bladders [and] . . . . [m]ost fish that have swim bladders would be subject to resonance at higher frequencies only" (AR 22980), based on the opinion of its expert, Dr. Popper. (AR 13724.) Dr. Popper noted that "for most species other than hearing specialists (e.g. salmonids), the swim bladder is far enough from the ear that it is not likely that any signals impinging upon the structure (no matter how intense) would have any impact on the ear itself." (AR 13728.) In stark contrast, the Defense Research Agency Study found extensive non-auditory physical injuries to fish from low frequency tones, often at levels below 180

dB. (AR 2178). However, when Dr. Popper drafted the fish section of the EIS, he was not aware of the unpublished Defense Research Agency Study, and the Navy did not tell him about it.

The EIS further states that "[t]he *only relevant study* [on behavioral change] is one by Klimely and Beavers (1998)," in which "no significant response was observed in rockfish at received levels up to 153 dB." (AR 22982) (emphasis added). However, the Defense Research Agency Study recorded avoidance behavior in bass at received levels as low as 128-135 dB and reactions in whiting to signals at 150 dB. (AR 2184 (Table B2).) The Defense Research Agency Study researchers adopted a "safe limit" recommendation for exposure to fish of no more than 150 dB. (AR 2188.) Yet, Dr. Popper, unaware of this research, concurred with defendants that fish had to be exposed to 180 dB to be at risk. (AR 11304.)[9] Again, the Navy relied on Dr. Popper's opinion without alerting Dr. Popper to the contradictory data in the Defense Research Agency Study.

On October 14, 1998, the Navy's EIS Team received an e-mail from Janet Schempf, an official with the Alaska Department of Fish and Game, asking whether the Navy had "any information – or even guesses – about the risks to fish swim bladder from the LFA sonar?" (AR 13687.) Navy consultant Clay Spikes referred Ms. Schempf to its DEIS statement on fish, which does not mention the Defense Research Agency Study and concludes that "[a]lthough some fish species with swimbladders may encounter SURTASS LFA sonar, the statistical probability of a harmful resonance is negligible." (AR 13692.) Later that day, another consultant, John Mayer, reminded Mr. Spikes that the "Brits did some very near-field sound studies that damaged fish." (AR 13696.) A week later, Mr. Spikes sent another e-mail to Ms. Schempf summarizing his conversations with Dr. Popper on the subject, but again failed to disclose, either to Dr. Popper or to Ms. Schempf, the existence of the Defense Research Agency Study. (AR 13728-29; 13818-19; AR 13859-60.)

Plaintiffs argue that the Navy violated its regulatory duty by failing to address the Defense Research Agency Study. Defendants respond by attacking the study's methodology. However, it was done by reputable scientists for an ally's defense research agency and represents the *only* research that attempted to directly study the impact on fish of low frequency sonar similar to LFA. Defendants' reliance on flaws in

[9] Plaintiffs point out that Dr. Myrberg, a Navy expert on fish, told the Navy that he felt that 160 dB "approaches more reasonably that which I feel is reasonable than 180 dB" as a safe limit for fish. (AR 15707.)

the study as justification for ignoring it altogether deprives the public of the "reasonably thorough discussion" of this significant issue that NEPA requires. Churchill County, 276 F.2d at 1071.

Moreover, when the Navy asked its own expert consultant Dr. Ellison to comment on the study in 1996, although he was critical of its methodology, he concluded that

> [t]he results reported in the UK study are *too damaging to ignore*. It is important that their experimental approach be examined in critical detail, and not just condemned for poor experimental procedure. I personally feel that such studies can only be conducted in a free field environment. One way to discredit these shallow tank studies is to perform the computer modeling study I suggest.

(AR 3084) (emphasis added). The Navy did not act on Dr. Ellison's recommendations to address the Defense Research Agency Study in the EIS and to conduct further research by computer modeling.

On May 23, 2003, *after* the plaintiffs raised the omission of the Defense Research Agency Study in their opening briefs on summary judgment, the Navy provided Dr. Popper and Dr. Myrberg with a copy of the Defense Research Agency Study report, as well as Dr. Ellison's January 24, 1996 comments thereto, and asked them to comment on the study. Both criticized the report in declarations submitted to the Court, agreeing with Dr. Ellison's earlier comments. As discussed in the separate order on extra-record documents, these belated declarations are not proper supplementation of the record, and the Court will therefore not consider them. However, even if the Court were to consider them, the Court's conclusion would remain the same. The Navy did not engage in a reasoned analysis of the evidence that it had, nor make it available to the public, as required. Friends of Endangered Species, Inc. v. Jantzen, 760 F.2d 976, 986 (9th Cir. 1985). Furthermore, if the Court considered the declarations of Dr. Popper and Dr. Myrberg criticizing the study, it would also consider the declaration by the study's lead author, Dr. Turnpenny, which plaintiffs proffer in rebuttal. His declaration provides an impressive defense of the study's methodology and unique contribution in addressing the impact of low frequency sonar on fish, an area in which there has been a dearth of research, before or since. (Turnpenny Dec., dated June 27, 2003.) Because defendants ignored Dr. Ellison's prescient warning that "[t]he results reported in the UK study are too damaging to ignore" as well as his recommendation that "their experimental approach be examined in critical detail," plaintiffs have shown that defendants acted arbitrarily and capriciously by simply ignoring the Defense Research Agency Study, rather than addressing its contrary findings. (AR 3084.)

As noted above, the EIS states that, in the area of behavioral change, "[t]he *only relevant study* is

one by Klimely and Beavers (1998)," the results of which "suggest that rockfish could be unaffected by noise at this frequency and level." (AR 22982-83) (emphasis added). The EIS then very briefly notes that other studies -- that it has implied are irrelevant -- "strongly suggest that the LF noise produced by fishing vessels and their associated gear results in fish avoiding the vessels (Maniwa, 1971; Suzuki et al. 1979; Konigaya, 1980), and similar results have been found for incoherent, impulsive air gun sound (Engas et al. 1995, McCauley et al. 2000)." (AR 22983). Plaintiffs argue that this brief reference to the Engas and McCauley studies is misleading and does not constitute a reasoned analysis that fairly makes the studies available to the public.

The Engas study was conducted by a team of scientists at Norway's Institute of Marine Research and entitled "Effects of Seismic Shooting on Local Abundance and Catch Rates of Cod and Haddock." The study measured catch rates of haddock and cod exposed to low frequency air guns. (Stafford Dec. Ex. 16.) Researchers fired seismic air guns continuously every ten seconds (or every twenty-five meters) during the five days of the experiment, at a level of 253 dB and a frequency of 10-150 Hz. (Id. at 2239.) The researchers observed:

> The acoustic survey and the fishing trials showed that seismic shooting with air guns affected fish distribution and caused trawl and longline catch rates of cod and haddock to fall. This effect of seismic activity was demonstrated within the region in which shooting occurred and also in surrounding areas, and the effect appeared immediately after seismic shooting started and continued after it ended.

(Id. at 2245.) The researchers explained that "the results are . . . most likely explained by the hypothesis that fish are scared by sound generated by the air guns and migrate out of the area." (Id. at 2246.)

The McCauley study, entitled "Marine Seismic Surveys," was prepared for the Australian Petroleum Production Exploration Association by a team of scientists from Curtin University's Center for Marine Science and Technology ("McCauley study"). They attempted to measure both behavioral and physiological damage to fish, marine mammals, sea turtles, and squid by exposing them in captivity to a series of loud low frequency air gun blasts. (Stafford Dec. Ex. 6.) The fish exhibited an "alarm" response and damaged hearing structures. (Stafford Dec. Ex. 6 at ii.)[10]

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[10] Plaintiffs point out that an October 2002 air gun study entitled, "High Intensity Anthropogenic Sound Damage to Fish Ears," ("McCauley 2002 study") conducted by McCauley, Fewtrell, and Popper verified results suggested by McCauley's original data. (Sabey Dec. Ex. 7 at 638, 641.) However, as discussed in a separate order, the McCauley 2002 study was published after the decisionmaking reflected in the EIS, ROD,

> By contrast, the EIS relies primarily on the Hastings et al. (1996) study and states:
>
> the assessment of potential risk should be centered on what RL could possibly cause hearing damage within three one-minute 180-dB exposure times (60-second normal ping duration). Based on the limited geographic extent of SURTASS LFA sonar operations, the risk of [permanent deafness] to fish must be considered minimal.

(EIS at 4.1-6.) However, the McCauley study concludes that low-frequency sound is capable of damaging ears in some fish species at intensity levels beginning at 160 dB after only a short term of exposure (a few short blasts). (Stafford Dec. Ex. 6 at 161.) Defendants point out that the pathological results mainly concern pink snapper, for which the received level was higher (Stafford Dec. Ex. 6 at 146, 149), and that the damage to hearing resulted from close exposure. (Stafford Dec. Ex. 6 at 4.) Defendants argue further that the study could not address after how many blasts or at what noise level damage to the hearing organ occurred. (Stafford Dec. Ex. 6 at 12-13, 136 (Table 25); Stafford Dec. Ex. 6 at 2 (Table 1), 4, 12 (Table 4), 149.)

While the Navy now disputes the relevance of the Engas and McCauley studies to LFA sonar, its own expert, Dr. Popper, informed the Navy of their relevance more than once. Dr. Popper first brought the Engas and McCauley studies to the Navy's attention when he submitted comments on a "preliminary final" of the EIS. (AR 15660.) Dr Popper informed the Navy:

> There are some interesting data on seismic blasts that may be relevant to all of this. I'd not seen these data earlier, but became aware of it a few weeks ago. It may be very relevant since some show potentially significant movement, and effects on fisheries, by just a few blasts. . . . I have also become aware of some other data on the effects of seismic blasts on fish ears that are *quite relevant* since they show the potential of damage from just a few seismic shocks which are likely to be on the same order of magnitude as the LFA in level. This might be something that should be incorporated into the final document since it is likely that by the time the EIS is released anyone who wants to oppose the EIS will know of these data.

(AR 15660) (emphasis added). The Navy made a marginal note next to Popper's comment that "Seismic blasts ≠ LFA." (AR 15660.) In June 2000, Dr. Popper submitted comments on another iteration of the EIS, noting that he had more information on the Engas and McCauley studies. (AR 17083.) In reviewing the statement in the EIS that "higher levels than those potentially affecting the ear would be needed to affect the swim bladder and eyes (and whatever else)," Dr. Popper told the Navy to:

Final Rule, biological opinions, and LOA had been completed. Therefore, the Court disregards the study as improper extra-record evidence.

> Be cautious here. I mentioned above the work of Engas et al. that I just learned about. Using air-guns (different from LFA, but still sound) they found a sharp drop in catch of commercially important fish almost as soon as the sound was initiated, and the catch had only returned to 50% of normal (my numbers may be a bit off since I am working from memory) after 5 days. I am not sure how to finesse an answer to this comment, but were I your "opponent" and knew of the Engas study, I could hit your logic here pretty hard.

(AR 17087-88.) Contrary to the EIS, Dr. Popper suggested that fish avoided intense sound sources in the Engas study for a long period of time and possibly as a result of an injury: "[w]hile it is not known if the sound altered the behavior of the fish and they would not take a line, or if they moved out of the area, or were killed (the 2nd alternative is the most likely I suspect), the effect was dramatic." (AR 17083.) As to the McCauley study, Popper noted that:

> the fish part provided *dramatic* results. . . . *I think it is safe to say that the effects may have been much more dramatic than in the Hastings et al. study* [on which the EIS relies]. At the same time, the conclusions in the LFA report probably would not change much. You, however, have to make the call as to whether to cite this or not.

(AR 17083-84) (emphasis added).

In his final comments on the EIS on July 22, 2000, Dr. Popper suggested inclusion of the following two paragraphs on the Engas and McCauley studies:

> While not directly relevant to LFA, it is worth noting two other studies that may ultimately give some guidance in predicting the effects of intense sounds on fishes. Both used seismic air guns at very high levels (over 200 dB for very short intervals). In a study on fish stock assessment as a result of firing air guns multiple times, Engas et al (1995) showed an immediate decrease in fish catch and this decrease continued for up to five days. This decrease was apparent up to 18 km from the region where the air guns was fired.
>
> The second study by McCauley et al. (2000) examined the effects of air guns that were towed past a group of caged fish. The fish received multiple exposures to the air gun, with signal levels again being as high as 200 dB in some exposures. While data are still being analyzed, there is compelling evidence that there was significant damage to sensory hair cells in the ear of at least one species of fish.

(AR 17269.) These paragraphs were not included in the EIS.

The Navy contends that because seismic blasts are not identical to LFA, it was reasonable for defendants to omit an extensive discussion of these studies from the EIS. (EIS at 4.4-3 (comparing air guns and LFA sonar).) Its own expert did not agree. Furthermore, the EIS' reference to these studies was not only very brief, it was also misleading.

While the Court's role under NEPA is limited, the Court must ensure "that the procedure followed by the Service resulted in a reasoned analysis of the evidence before it, and that the Service made the evidence available to all concerned." Friends of Endangered Species, 760 F.2d at 986. The Court

concludes that defendants arbitrarily and capriciously failed to engage in a reasoned analysis of the Engas and McCauley studies and make that evidence available to the public.

3. Analysis of Recreational Divers

Plaintiffs contend that the EIS fails to address all reasonably foreseeable effects of the proposed action on recreational divers. Known recreational and commercial dive sites may be exposed to up to 145 dB. (EIS at 4.3-5; NMFS Vol. 5 Doc.64.) Most recreational dive sites are located near the coast, but some may be further from shore. (EIS at 5-2.)

The Navy based the 145 dB limit primarily on a study by a University of Texas laboratory on "Effects of Low Frequency Waterborne Sound on Divers."[11] (AR 3156.) During that study, after fifteen minutes of continuous exposure to 160 dB, one of the eighty-seven divers in the study experienced lightheadedness, dizziness, difficulty hearing, vibration in his arms, hands, and distal lower extremities, and shaking. (AR 1586; see also AR 4415 ("The only diver exposed to 160 dB for 15 minutes at 60 ft became a casualty").) After this incident, the Navy modified the study to reduce exposure. (AR 1625-1626.) The Navy contends that divers are now protected by the 145 dB limit, as well as the short (under two minutes) duration of any particular ping. (EIS at 4.3-4.) The EIS explains that:

> there was only a two percent very severe aversion reaction by divers at a level of 148 dB. [The Naval Submarines Medical Research Laboratory], therefore, determined that scaling back the intensity by 3 dB (3 dB reduction equals a 50 percent reduction in signal strength) would provide a suitable margin of safety for divers. Thus, a prudent approach was applied in the selection of this 145-dB criterion.

(EIS at 4.3-5.)

Plaintiffs argue nonetheless that the Navy failed to consider the reasonably foreseeable dangers of aversive or panicked behavior in unalerted recreational divers exposed to the LFA signal. They point out that the Navy's Environmental Diving Unit recommended that the military's own divers be notified of

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[11] The study was triggered by two 1993 diver incidents. First, during an LFA sonar operation, a French diver reported annoying sounds and attributed it to U.S. Navy LFA sonar operations. (EIS at 4.3-4.) Then, in a February 1993 LFA field trial in the Mediterranean Sea, a diver voluntarily left the water after forty-five seconds of exposure to approximately 150 dB of sonar eighty-one nautical miles from the source. (AR 267; AR 810.) Plaintiffs point out that during the February 1993 exercise, "divers off Corsica and Marseille approximately 200 nm away, complained of being forced to surface by an abnormal repetitive acoustic phenomenon . . . . [and] a diver was reported to have died near Marseille at the time tests were being conducted." (AR 267.) As defendants note, however, there is no evidence that the operation of LFA sonar had anything to do with the death.

upcoming LFA exercises because "[t]he surprise aspect of unexpected sound exposure could result in panicked divers and negatively impact the mission accomplishment." (AR 2423.) Similarly, the head of the Navy Environmental Health Center acknowledged that "[t]here is a certain probability that [the LFA signal] is likely to induce a high anxiety panic response [in unalerted divers], which may result in some probability of a casualty, regardless of their physical condition." (AR 2673.) However, the Navy considered the potential for panicked behavior in unalerted divers by establishing a maximum received level that is 50% lower than the received level at which 2% of the study subjects reported strongly aversive reactions.

Plaintiffs further argue that the Navy will most likely not provide alerts to the recreational diver community. There is certainly a serious danger that unalerted divers will panic and be injured if exposed unknowingly to LFA sonar. The EIS addresses this issue as follows:

> For recreational dive sites the Navy will notify [the Diver Alert Network], and other diving organizations, concerning operations on a case-by-case basis. In addition, when the Navy files a Notice to Mariners for major naval exercises it would include notification of SURTASS LFA sonar participation.

(EIS 10-152.) At the hearing, the Court expressed concern that the EIS only states that the Navy will notify divers "on a case by case basis," which could be interpreted as an intent only to warn potentially exposed divers in some cases, not others. Defense counsel assured the Court that this statement was not intended to be read that way, but instead only meant that if the Navy was operating in areas of the deep ocean far away from divers, it would not issue notification. The Court emphasizes the importance of warning to protect the safety of divers. In fact, the Navy has already engaged in briefing divers in the area of Guam, where LFA could be deployed. (Cudahy Dec. ¶ 11.)

Plaintiffs also contend that the Navy should have considered the effects of LFA exposure on divers with compromised health. A 1997 memorandum from the Navy Environmental Health Center expressed concern about potential impacts on recreational divers with asthma. (SNAVY 289, AR 25946.) However, the Navy did consider the potential impacts of low frequency sound on asthmatics and concluded that asthma would lessen, not magnify, the impact of LFA sonar. (Cudahy Dec. ¶ 7; AR 11155.)

Plaintiffs point out that the Navy decided not to make special provisions for individuals with impaired health conditions that would normally preclude them from diving safely. However, the Navy only

"excluded people who, because of their physical condition, shouldn't be diving in the first place," such as those with epilepsy, diabetes, or pacemakers. (Cudahy Dec. ¶ 6; AR 5071.) This choice was reasonable. Further, it would have been unethical to include them in any experiment. (Cudahy Dec. ¶ 6.) Thus, plaintiffs have failed to demonstrate that the Navy's discussion in the EIS of the reasonably foreseeable effects of LFA on human divers was arbitrary.

/ /

4. Analysis of Marine Mammals

Plaintiffs contend that the analysis in the EIS of marine mammal impacts is arbitrary and capricious, primarily because it failed to take into account the Bahamas strandings of beaked whales in 2000. Plaintiffs argue that the Navy could not reasonably rely on the Special Research Program to justify its view that harm is unlikely at exposures below 180 dB, because the program studied baleen whales, not beaked whales, and only exposed them to levels of 155 dB or lower, not the 160 dB or more implicated in the Bahamas incident.

While the strandings are disturbing, defendants are entitled to rely on their own experts' views that because the Bahamas strandings involved mid-frequency sonar and certain geographical conditions, they do not show that LFA will have a similar impact. Plaintiffs point out that this distinction is in tension with defendants' reliance elsewhere on a 1997 study by Ridgeway that involved mid-frequency sonar. (NMFS Doc. 69.) However, the Navy relied on qualified experts for their conclusion regarding the Bahamas stranding. The Navy also points to other rational grounds for believing that the effects of man-made mid-frequency sound on marine mammals would be different, such as the centuries of evolution during which marine mammals were not exposed to mid- frequency sounds, but were exposed to loud low frequency sounds from volcanic eruptions, earthquakes and lightning strikes. Plaintiffs do not overcome this distinction by pointing out that additional strandings have occurred that also involve mid-frequency sonar.

Further, the Navy's Special Research Program was reasonably designed by reputable scientists to extrapolate from baleen whales, presumed to be the most sensitive, to other whales, and resulted in a risk continuum projecting the impact of levels up to 180 dB. (AR 23452.) While no single research project, however well-designed, could fill all the gaps in scientific knowledge about the impact of low frequency sonar on marine mammals, the Navy's sponsorship of the Special Research Program by independent

scientists was commendable. The Navy has also properly acknowledged that further research is needed on beaked whales, consistent with the applicable regulation. 40 C.F.R. § 1502.22.

At the preliminary injunction stage, the Court noted that both plaintiffs' and defendants' experts made reasonable points about the possible implications of the strandings, but that both sets of experts had, of necessity, to engage in some speculation, given the current state of scientific uncertainty. The possibility that the stranding in the Bahamas, and other strandings associated with military sonar, could foretell similar injuries from LFA is troubling. It would be more protective of marine mammals to adopt the plaintiffs' more conservative approach to uncertainty and not deploy LFA sonar unless and until further scientific research rules out a similar impact from LFA sonar. The law is clear, however, that when qualified experts on both sides reach carefully reasoned but different conclusions, the Court must defer to the agency's experts: "When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive." Marsh, 490 U.S. at 378 (quoting Citizens to Preserve Oregon Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971)).

5. Supplementation of the EIS Regarding Strandings

Plaintiffs also argue that the Bahamas strandings and the Joint Interim Report assessing those strandings qualify as significant new information that necessitates the preparation of an SEIS.

> [I]n the context of reviewing a decision not to supplement an EIS, courts should not automatically defer to the agency's express reliance on an interest in finality without carefully reviewing the record and satisfying themselves that the agency has made a reasoned decision based on its evaluation of the significance--or lack of significance--of the new information.

Marsh, 490 U.S. at 378. However, the question of whether information rises to the level of requiring a SEIS "is a classic example of a factual dispute the resolution of which implicates substantial agency expertise." Id. at 376.

Plaintiffs repeat the same arguments addressed above regarding the Bahamas strandings and the Scientific Research Program. Plaintiffs also point out that Joseph Johnson, the LFA sonar program manager, commented that: "[i]f this looks like exposures below 180 dB were likely, the EIS is going to have some major problems." (SNAVY 1760.) The evidence shows that such exposures probably did occur. In response to Johnson's concerns, however, the Navy conducted additional review of the basis for

the 180 dB threshold in the Cudahy and Ellison white paper. Still, in a June 12, 2001 e-mail to the Navy's consultants, Ken Hollingshead from NMFS stated: "I hope the Navy will give serious consideration to issuing a supplemental FEIS as recommended by NRDC." (NMFS Doc. 557 (P's Appendix Tab 9).)

NEPA requires consideration of "reasonably foreseeable" impacts, and not resolution of all unresolved scientific issues. Jicarilla Apache Tribe v. Morton, 471 F.2d 1275, 1280 (9th Cir. 1973) ("If we were to impose a requirement that an impact statement can never be prepared until all relevant environmental effects were known, it is doubtful that any project could ever be initiated"). Further, because the question of the need for a SEIS involves "substantial agency expertise" (Marsh, 490 U.S. at 376), the Court is inclined to defer to the Navy on this factual issue. The Court notes, however, that defendants have commendably already decided to commence a Supplemental Environmental Impact Statement to consider any available additional information regarding marine mammal populations that could inform potential additional mitigation in areas in which the Navy plans to operation. (J. Johnson SJ Dec. ¶¶ 8-10.) It would appear that the more prudent course would be to simultaneously undertake a supplemental analysis of the strandings in the Bahamas and elsewhere.

6. Reliance on Unpublished White Paper not Subject to Public Comment

The parties make the same arguments regarding the unpublished white paper as they did at the preliminary injunction stage. In the Preliminary Injunction Order, the Court held that, as the white paper merely supplemented existing data, defendants' failure to publish the white paper for comment was neither arbitrary nor capricious. As the parties' arguments are the same on the issue, plaintiffs' motion for summary judgment on this issue is denied and defendants' motion for summary judgment on this issue is granted.

7. Unaddressed Allegations

Defendants move for summary judgment on plaintiffs' allegations of failure to adequately consider cumulative impacts and failure to address scientific uncertainty. Plaintiffs neither moved for summary judgement nor opposed defendant's motion on these allegations. Therefore, plaintiffs waived these issues. See Marinette Marine v. U.S. Coast Guard, 973 F. Supp. 1, 4 n.7 (D.D.C. 1997). Accordingly, defendants' motion for summary judgment on these issues is granted.

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C. Endangered Species Act

The ESA prohibits any person from "taking" species listed as endangered and requires the United States Fish and Wildlife Service ("FWS") and NMFS to promulgate regulations prohibiting the taking of any species listed as threatened. 16 U.S.C. §§ 1533, 1538(a)(1)(A)-(B), (G). The Court reviews actions challenged under the ESA under the "arbitrary and capricious" standard of the APA. Village of False Pass v. Clark, 733 F.2d 605, 609-10 (9th Cir. 1984). Section 7 of the ESA requires each federal agency, through consultation with NMFS or FWS, to:

> insure that any action authorized, funded, or carried out by [the] agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary [of the Interior or of Commerce] . . . to be critical.

16 U.S.C. § 1536(a)(2).

To ensure compliance with this requirement, the ESA sets out a three-step consultation process in which the agency with jurisdiction over the species – here, NMFS – evaluates the nature and extent of jeopardy to the threatened or endangered species. Under this process, the agency proposing to take an action – here, the Navy – first must ask NMFS whether any such species are present in the area of the proposed action. Thomas v. Peterson, 753 F.2d 754, 763 (9th Cir. 1985); 16 U.S.C. § 1536(c)(1). If there are, the Navy then prepares a biological assessment to determine whether those species are likely to be affected by the action. Thomas, 753 F.2d at 763; 16 U.S.C. § 1536(c)(1). Third, if NMFS determines, based on the biological assessment, that the action that the Navy proposes taking is likely to affect a threatened or endangered species, the two agencies must engage in formal consultation. Alternatively, if NMFS determines that the action that the Navy proposes taking is not likely to adversely affect a protected species, NMFS could attempt informal consultation.

Formal consultation results in a biological opinion from NMFS which states a conclusion as to whether the proposed action is likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of critical habitat. 50 C.F.R. § 402.14. If the biological opinion concludes that the proposed action would jeopardize the species or adversely affect critical habitat, then the proposed action may not go forward unless NMFS can suggest an alternative to avoid the adverse impact. Id; 16 U.S.C. § 1536(b)(3)(A). If the biological opinion concludes that the proposed action will not violate

the Act, NMFS may still require reasonable and prudent measures to minimize the impacts. Thomas, 753 F.2d at 763; 16 U.S.C. § 1536(b)(4)(ii)-(iii); 50 C.F.R. § 402.14(i)(1)(ii).

Here, in view of the broad scope of the proposed activity and the number of species potentially affected, the Navy and NMFS agreed upon the need for formal consultation on both the deployment of LFA and NMFS' issuance of the Final Rule authorizing take. Accordingly, NMFS issued a biological opinion, dated May 30, 2002, that addressed the effects on threatened and endangered species globally over the next five years. NMFS subsequently issued a supplemental biological opinion, dated August 16, 2002, which addressed the effects within specified regions of the Pacific Ocean where the Navy proposed to operate during the first year.

Plaintiffs argue that the biological opinions violate the ESA in three respects: (1) the first biological opinion concludes, based on an illegal regulation, that the LFA system will not cause the destruction or adverse modification of critical habitat; (2) the first biological opinion concludes that the use of the LFA system will not jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat, contrary to the best available scientific evidence; and (3) the first biological opinion fails to estimate the amount or extent of endangered and threatened species that will be taken by the deployment of the LFA, contrary to NMFS' own regulations, while the supplemental biological opinion does so only for some of the affected species, while still failing to do so for others.

1. Regulatory Definition of Adverse Modification

The ESA does not expressly define either "jeopardy" or "adverse modification." By regulation, defendants define the phrase "to jeopardize the continued existence of" any species as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and the recovery of a listed species." 50 C.F.R. § 402.02 (emphasis added). The regulation defines "destruction or adverse modification" of critical habitat as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." 50 C.F.R. § 402.02 (emphasis added).

The Fifth Circuit has carefully examined the statute and determined that this regulatory definition of adverse modification violates the ESA by "requiring consultation only where an action affects the value of

critical habitat to both the recovery *and* survival of a species." Sierra Club v. FSW, 245 F.3d 434, 442 (5th Cir. 2001) (emphasis in original). Instead, the ESA requires consultation even where an action affects only the species' recovery and not its survival through alteration of critical habitat. Id. at 441.

The Sierra Club court reasoned that conflating the two separate requirements of the effect on survival and the effect on recovery diluted the protections that Congress set forth in the statute, because a decline in critical habitat that might not threaten the survival of a species could nonetheless threaten the species' ability to recover to healthy population levels. Id. While this out-of-circuit decision is not binding, this Court finds its reasoning cogent and persuasive. Other courts have also found it persuasive. See Natural Resources Defense Council v. U.S. Dept. of the Interior, CV-99-5246 SVW (Ctx) (C.D. Cal. July 12, 2002) (reproduced in Stafford Dec. Ex. 31) (following Sierra Club); New Mexico Cattle Growers Ass'n v. FWS, 248 F.3d 1277, 1283 (10th Cir. 2001) (citing Sierra Club favorably).

The Service is required, during formal consultation, to "[f]ormulate its biological opinion as to whether the action, taken together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat." 50 C.F.R. § 402.14(g)(4). Plaintiffs argue that NMFS necessarily relied on its illegal regulatory definition of adverse modification in concluding in its supplemental biological opinion that the LFA would not result in the adverse modification of any critical habitat. However, because the Navy and NMFS concurred that the deployment of the LFA was unlikely to adversely affect Mediterranean monk seals or the critical habitat for the Stellar sea lion, Hawaiian monk seal, and northern right whale, it did not need to and did not reach a decision on whether the action would adversely modify critical habitat.

The applicable regulation provides that: "If during any stage of consultation a Federal agency determines, with the concurrence of the Director, that its proposed action is not likely to adversely affect any listed species or critical habitat, the consultation is terminated." 50 C.F.R. § 402.14(l)(3). Here, the Navy prepared a biological assessment which concluded that operation of LFA was not likely to adversely affect the Mediterranean monk seal and the six designated habitats reviewed (habitats of the green, hawksbill, and leatherback sea turtles, the Hawaiian monk seal, the northern right whale, and the Stellar sea

lion).[12] (AR 10583; NMFS AR Vol. 20, p. 342.) In the May 30, 2002 biological opinion, NMFS concurred with the Navy's findings that deployment of LFA was not likely to adversely affect Mediterranean monk seals or the critical habitat for the Stellar sea lion, northern right whale, and Hawaiian monk seal. (NMFS AR Vol. 25, Doc. 216, p. 14-17). Thus, consultation properly terminated at that point with regard to those species and critical habitats, and NMFS was no longer required to consider whether LFA was likely to jeopardize the continued existence of Mediterranean monk seals or result in the destruction or adverse modification of the critical habitats for the Stellar sea lion, northern right whale, and Hawaiian monk seal.[13]

Plaintiffs argue that NMFS' "not likely to adversely affect" conclusion was inappropriate. The Final ESA Section 7 Consultation Handbook explains that a finding of "not likely to adversely affect . . . can be made only if ALL of the reasonably expected effects of the proposed action will be beneficial, insignificant, or discountable." *Consultation Handbook: Procedures For Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act* (March 1998), *available at* http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm.

> Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

(Id. at xvi.) Plaintiffs argue that, because LFA is likely to cause the take of endangered species that have designated critical habitat, it was inappropriate for the biological opinion to make a "not likely to adversely affect" finding.

NMFS used a two-step approach to determine whether the operation of LFA was likely to

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[12] The biological assessment further concluded that operation of LFA was likely to adversely affect northern and southern right whales, blue whales, fin whales, sei whales, humpback whales, gray whales, sperm whales, Stellar sea lions, Guadalupe fur seals, Hawaiian monk seals, Hawksbill sea turtles, green sea turtles, olive ridley sea turtles, Kemp's ridley, leatherback, and loggerhead sea turtles. (AR 10583; NMFS AR Vol. 20, p. 341.)

[13] Defendants further note that in the August 16, 2002 supplemental biological opinion, NMFS again determined that the proposed action was not likely to adversely affect critical habitat for Stellar sea lions and Hawaiian monk seals, and, again, consultation properly terminated at that point with regard to those species and critical habitats. However, if consultation had already terminated with the May 30, 2002 biological opinion, it is unclear why consultation terminated again in August, 2002.

adversely affect species or critical habitat. (Navaro Dec. Ex. 3 at 15.**)**

> The first step in our approach assessed the likelihood of a species or critical habitat being exposed to sound pressure levels associated with SURTASS LFA sonar, including an assessment of the intensity, duration, and frequency of any exposure. For species or critical habitat that were likely to be exposed to SURTASS LFA sonar, the second step of our approach assessed the probable ecological responses of listed species to SURTASS LFA sonar or, alternatively, the potential effects of differing levels of low-frequency sound on listed species based on their susceptibility to sound pressure levels and frequencies associated with the SURTASS LFA sound source and their potential responses to those levels.

(Navaro Dec. Ex. 3 at 15.) If a listed species or critical habitat was not likely to be exposed to LFA sonar at received levels above ambient sound conditions, or the listed species or critical habitat was not susceptible upon exposure, NMFS concluded that LFA sonar was not likely to adversely affect the species or designated critical habitat, and the analysis ended with respect to that species or critical habitat. (C. Johnson SJ Dec. ¶ 6.) Using this approach, the May 30, 2002 biological opinion found that "Mediterranean monk seals are not likely to be exposed to sound pressure levels from SURTASS LFA sonar and, therefore, are not likely to be adversely affected by the sonar." (Navaro Dec. Ex. 3 at 15.) As to the critical habitats, the May 30, 2002 biological opinion found that:

> [b]ased on the best scientific and commercial data available, SURTASS LFA sonar transmissions may affect, but are not likely to adversely affect, critical habitat for right whales, Stellar sea lions, and Hawaiian monk seals because the SURTASS LFA sonar will remain far enough from shore to limit sound levels to below 180 dB within 12 nm (22 km) of land and the 200-m (656-ft) isobath of the North American east coast. Critical habitat for Stellar sea lions and right whales consists of coastal waters where received levels will be below 180 dB. Further, the Navy has included the critical habitat for right whales in its areas of biological importance, which provides that critical habitat with additional buffers.

(Navaro Dec. Ex. 3 at 17.) Thus, as Mediterranean monk seals are not likely to be exposed to LFA sonar, and the critical habitats for right whales, Stellar sea lions, and Hawaiian monk seals are not susceptible to LFA sonar upon exposure, LFA is not likely to cause the take of this species or to harm these critical habitats. Therefore, consultation was properly terminated with respect to that species and those critical habitats. NMFS was no longer required to consider whether LFA was likely to jeopardize the continued existence of that species or result in the destruction or adverse modification of those critical habitats.

The May 30, 2002 biological opinion also included the critical habitats for green sea turtles, hawksbill sea turtles, and leatherback sea turtles in the list of critical habitats that LFA "may affect." (Navaro Dec. Ex. 3 at 14.) According to Craig Johnson, all three of these critical habitat designations

could be exposed to LFA sound transmissions, but were not susceptible to them. Thus, defendants contend that the failure of the May 30, 2002 biological opinion to include a conclusion that LFA sonar transmissions may affect, but are not likely to adversely affect, these critical habitats was merely an oversight. On April 14, 2003, NMFS amended the May 30, 2002 biological opinion to reflect that determination. (C. Johnson SJ Dec., Ex. 1 at 1.)

As discussed in the Court's separate order on the parties' extra-record submissions, Craig Johnson's declaration constitutes extra-record evidence that cannot be considered on the merits. Moreover, even if the Court were to consider Craig Johnson's declaration, because the May 30, 2002 biological opinion did not making a finding of no likely adverse impact on critical habitat for green sea turtles, hawksbill sea turtles, and leatherback sea turtles, NMFS was required to state a conclusion in the biological opinion "as to whether the action, taken together with cumulative effects, [was] likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat." 50 C.F.R. § 402.14(g)(4). It is undisputed that NMFS used the regulatory definition of "adverse modification" that was struck down by Sierra Club and which this Court concurs was illegal. Therefore, NMFS arbitrarily and capriciously terminated consideration of the critical habitats for green sea turtles, hawksbill sea turtles, and leatherback sea turtles prematurely. However, as defendants have remedied this violation, the issue is moot. Therefore, plaintiffs' motion for summary judgment on this issue is denied as moot.

2. Best Available Science

The ESA provides that "each agency shall use the best scientific and commercial data available." 16 U.S.C. § 1536(a)(2). The ESA's implementing regulations require that "[a] written request to initiate formal consultation shall be submitted to the Director and shall include: . . . (6) Any . . . relevant available information on the action, the affected listed species, or critical habitat . . . [and] any [f]ederal agency requesting formal consultation shall provide the Service with the best scientific and commercial data available or which can be obtained during the consultation for an adequate review of the effects that an action may have upon listed species or critical habitat." 50 C.F.R. § 402.14(c)(6), (d). As there is scientific uncertainty and limited information on the potential impact of LFA on endangered marine species, these regulations required the Navy to provide NMFS with all the best *available* relevant scientific data.

The Navy was not, of course, required to provide unreliable "junk" science that amounts to mere speculation. But it could not refuse to provide the most relevant scientific data available from reputable scientists on the ground that it was not perfect. See Conner v. Burford, 848 F.2d 1441, 1454 (9th Cir. 1988) ("In light of the ESA requirement that the agencies use the best scientific and commercial data available to insure that protected species are not jeopardized, 16 U.S.C. § 1536(a)(2), the FWS cannot ignore available biological information").

As discussed above, plaintiffs contend that the Navy withheld the highly relevant Defense Research Agency Study from NMFS. Plaintiffs argue that if the Navy had disclosed this scientific data to NMFS when it initiated formal consultation, NMFS might have altered its conclusions or at least included protective measures for fish in its biological opinions. Defendants respond that Dr. Ellison, the only expert to whom the Navy disclosed the Defense Research Agency Study, criticized its use of small tanks of fish for experimental observation. (AR 3079; AR 3081.) However, as explained above, the Defense Research Agency Study is directly relevant and is not "junk science" that can simply be ignored. Indeed, Dr. Ellison himself told the Navy in no uncertain terms that "[t]he results reported in the UK study are too damaging to ignore." (AR 3084.) Defendants' interpretation of the requirement to provide "the best scientific data available" to exclude highly relevant research because its methodology -- like most studies -- can be criticized effectively eviscerates the requirement to use the best *available* science and rewrites the standard to perfect science. Therefore, the Navy acted arbitrarily and capriciously in failing to provide NMFS with this highly relevant data.

Plaintiffs further argue that the April 2003 biological opinion renewed defendants' legal obligation to consider the best available scientific information in its biological opinion, including new or previously undisclosed evidence concerning (1) the impacts of high intensity sound on endangered fish, and (2) the widespread strandings of marine mammals exposed to military sonar or other intense sound, as evidenced by incidents in Greece in 1996, the Bahamas in March 2000, the Canary Islands and the Sea of Cortez in September 2002, and the Haro Strait in May 2003. NMFS' revised biological opinion, however, does not reflect any reinitiation of consultation, but only correction of a technical error. Reinitiation of formal consultation is only required in limited circumstances not applicable here. 50 C.F.R. § 402.16. Thus, the duty to consider the best available data was not renewed by the April 2003 biological opinion.

Accordingly, both parties' motions for summary judgment on this issue are granted in part and denied in part.

3. Biological Opinion's Conclusion Regarding Endangered Species of Fish

Plaintiffs contend that NMFS relied on three incorrect assumptions in its assessment of impacts on salmon: (1) that salmon and steelhead are unlikely to be exposed to the LFA signal because most species of salmonids swim near the surface; (2) that exposure of endangered fish to sound in excess of 180 dB will be reduced by the use of the HF/M3 sonar, which would detect schooling species and limit their exposure to LFA over 180 dB; and (3) that salmon and steelhead are not particularly vulnerable to LFA because they are relatively insensitive to low frequency sound. Plaintiffs argue that the first assumption ignores the fact that sound tends to get trapped in surface layers and travel long distances, a phenomenon known as surface ducting. Surface ducting "is usually found in cold-water regions" (AR 22990), where most species of steelhead and salmon live. (C. Groot and L. Margolis, eds., *Pacific Salmon Life Histories* (UBC Press, 1991)). Defendants respond that the biological opinions took surface ducting into account, as well as the possibility that certain types of salmon sometimes swim at greater depths. (Amended biological opinion at 111, 126.) They concluded that the odds of a listed salmon encountering LFA's relatively narrow sonar path are extremely low, and note that most fish concentrations occur coastally. This argument reinforces the need to extend the coastal buffer zone where possible.

Neither the EIS nor the biological opinions require the Navy to shut down the LFA system if fish are detected within the buffer zone or the 180 dB sound field. The biological opinion incorrectly assumes that HF/M3's ability to detect schools of fish like Pacific salmon would minimize their likelihood of exposure to levels above 180 dB. (NMFS AR Vol. 23, Ex. 220 at 39.) The biological opinion did go on to also rely on the low probability of any exposure to Pacific salmon. Id. The incorrect assumption that the LFA vessel would necessarily shut down on detection of schools of fish is troubling, and may have prevented NMFS from requiring reasonable and prudent measures to minimize impact. On the other hand, NMFS may not recommend measures that "alter the basic design, location, scope, duration or timing of the action." 50 CRF 402.14(i)(1)(ii).

The Defense Research Agency Study, which defendants did not consider, concluded that low-frequency sound can induce severe injury and mortality in salmonids at levels well below 180 dB. (AR

2118-2195). Defendants respond that two other studies by Knudsen, et al. (1992, 1994) did not show similar results and indicated that salmon responded only when very close to the sonar source. (NMFS Vol. 15, Doc. 185(g): Technical Report for LFA EIS, Croll).) Because the biological opinion did not consider the best available science, it was flawed. Whether its conclusion about salmon was arbitrary and capricious is a close question, and would be better answered after the agency complies with its duty to consider the best available science. The Court therefore denies summary judgment on this issue at this time.

4. Incidental Take Statements

The regulations promulgated under the ESA provide that:

> In those cases where [NMFS] concludes that an action (or the implementation of any reasonable and prudent alternatives) and the resultant incidental take of listed species will not violate section 7(a)(2), and, in the case of marine mammals, where the taking is authorized pursuant to section 101(a)(5) of the Marine Mammal Protection Act of 1972, [NMFS] will provide with the biological opinion a statement concerning incidental take that:
>
> (i) Specifies the impact, i.e., the amount or extent, of such incidental taking on the species[.]

50 C.F.R. § 402.14(i); see also 16 U.S.C. § 1536(b)(4). Any taking that is subject to this incidental take statement ("ITS") and which is in compliance with the terms and conditions of that statement is not a prohibited taking under the ESA, and no other authorization or permit under the ESA is required. 50 C.F.R. § 402.14(i)(5). Thus, the ITS "functions as a safe harbor provision immunizing persons from Section 9 liability and penalties for takings committed during activities that are otherwise lawful and in compliance with its terms and conditions." Arizona Cattle Growers' Ass'n, v. United States Fish and Wildlife Service, 273 F.3d 1229, 1239 (9th Cir. 2001).

Contrary to the arguments of defendants and amicus Pacific Legal Foundation, however, the creation of a safe harbor is not the sole purpose of the ITS. If the amount or extent of taking specified in the ITS is exceeded, reinitiation of formal consultation is required. 50 C.F.R. § 402.16; Arizona Cattle Growers, 273 F.3d at 1249 ("In general, Incidental Take Statements set forth a 'trigger' that, when reached, results in an unacceptable level of incidental take, invalidating the safe harbor provision, and requiring the parties to reinitiate consultation."). If reinitiation of formal consultation is required, NMFS would have to issue a new biological opinion before deployment of LFA could continue. Environmental Protection Information Center v. The Simpson Timber Co., 255 F.3d 1073, 1076 (9th Cir. 2001) (citing Mt. Graham Red Squirrel v. Madigan, 954 F.2d 1441, 1451 (9th Cir. 1992)). Thus, the ITS serves as a

check on the agency's original decision that the incidental take of listed species resulting from the proposed action will not violate section 7(a)(2) of the ESA. Plaintiffs argue that defendants are in violation of the ESA because the May 30, 2002 biological opinion and the August 16, 2002 supplemental biological opinion do not include an ITS that specifies the amount or extent of the incidental take of endangered and threatened species, and thus reinitiation of formal consultation can never be triggered.

Defendants now argue, for the first time, that the May 30, 2002 biological opinion did not require an incidental take statement because the taking of endangered or threatened marine species had not yet been authorized under the MMPA. Defendants suggest that taking is only authorized after (1) promulgation of the Final Rule, and (2) issuance of letters of authorization for the specific missions requested by the Navy. The language of the statute and regulation do suggest that where an endangered or threatened species of marine mammal is involved, an incidental take statement is required only where the taking of marine mammals is authorized under section 1371(a)(5) of the MMPA. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i). At most, however, this would excuse defendants only from preparing an incidental take statement with respect to the endangered or threatened marine mammals that are involved. The statutory language does not excuse the preparation of an incidental take statement specifying the impact on endangered fish species, for example, just because endangered marine mammals also might be affected by the proposed action.

Moreover, by referencing section 1371(a)(5) of the MMPA, the ESA clearly contemplates the promulgation of a Final Rule, not letters of authorization for specific missions. Section 1371(a)(5) addresses the small take authorizations for small numbers of marine mammals in a specified geographical region after notice in the Federal Register and opportunity for public comment. 16 U.S.C. § 1371(a)(5). The small take authorization under section 1371(a)(5) must include (1) a finding that "the total of such taking during each five-year (or less) period concerned will have a negligible impact on such species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses," and (2) regulations setting forth permissible methods of taking and other means of effecting the least practicable impact on the affected species or stock and its habitat. Id. These requirements describe the Final Rule, not any subsequent letters of authorization. Contrary to defendants' arguments, the Final Rule, by its terms, expressly "authorize[s] the unintentional incidental take of marine

mammals in connection with this activity and prescribe[s] methods of taking and other means of effecting the least practicable adverse impact on marine mammal species and their habitat, and on the availability of the species for subsistence uses." 67 Fed. Reg. 46712.

The Final Rule was first published for public comment on March 19, 2001 (67 Fed. Reg. 46716 (citing 66 Fed. Reg. 15375)), well before the May 20, 2002 biological opinion. Although the Final Rule was not issued until July 16, 2002, after the biological opinion was prepared, the publication of the draft Final Rule clearly gave notice that a small take authorization under the MMPA was likely to be issued. In fact, the May 30, 2002 letter accompanying the biological opinion states that "[t]his opinion also considers the effects of NMFS' proposed regulations that would authorize the Navy to take threatened or endangered marine mammals incidental to the employment of the SURTASS LFA sonar system." (NMFS AR Vol. 22, Ex. 216.) Thus, NMFS prepared the biological opinion with the expectation that authorization for incidental taking of marine mammals under the MMPA was being approved.[14] Accordingly, the Court finds that the biological opinion was required to contain an incidental take statement.

a. The May 30, 2002 Biological Opinion

Indeed, the cover letter accompanying the May 30, 2002 biological opinion does not contend that a lack of a small take authorization under the MMPA rendered an incidental take statement unnecessary. Instead, the letter states:

> Please note that this biological opinion does not include an incidental take statement because the programmatic nature of the proposed actions would not allow NMFS to estimate the amount or extent of threatened or endangered species that would be "taken" incidental to the employment of SURTASS LFA sonar.
>
> For example, the species that could be taken incidental to the SURTASS LFA sonar system will vary from ocean to ocean, the particular region of an ocean, and timing. Consequently, NMFS will amend this biological opinion to include incidental take statements when NMFS' Marine Mammal Conservation Division prepares letters of authorization for the SURTASS LFA sonar systems that identify more specific employment schedules. The information in those letters of authorization would allow us to estimate the amount or extent of incidental take for particular threatened or endangered species.

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[14] The Court also notes that NMFS' "Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act" provides specific language that NMFS uses if it has not prepared an ITS because the incidental take of marine mammals has not been authorized under the MMPA. See http://endangered.fws.gov/consultations/ s7hndbk/s7hndbk.htm at 4-57.) The absence of that language in the May 30, 2002 biological opinion and the August 16, 2002 supplemental biological opinion belies defendants' new argument that NFMS failed to prepare an adequate ITS based on a belief that there was no authorization under the MMPA.

(Id.) The "Incidental Take Statement" included in the May 30, 2002 biological opinion similarly states:

> Because of the geographic scope and scale of this programmatic biological opinion NMFS cannot estimate the amount or extent of incidental take of threatened or endangered species by the proposed employment of SURTASS LFA sonar. Consequently, NMFS will identify the amount or extent of take that would be associated with the employment of SURTASS LFA when we review the annual letters of authorization for compliance with section 7 of the Endangered Species Act of 1973, as amended.

(Id. at 148.) The biological opinion also recognizes, however, that reinitiation of formal consultation is required if the amount or extent of incidental take is exceeded. (Id. at 150.) Plaintiffs complain that reinitiation can never be triggered because the biological opinion contains no attempt to estimate the amount or extent of the take.

As explained above, one of the purposes of the ITS is to "set forth a 'trigger' that, when reached, results in an unacceptable level of incidental take, invalidating the safe harbor provision, and requiring the parties to reinitiate consultation." Arizona Cattle Growers, 273 F.3d at 1249. "Ideally, this 'trigger' should be a specific number." Id. A numerical limit is not required where infeasible, however, and a combination of numbers and estimates may be used instead. Id. Congress itself, in the legislative history, only required that "[t]here possible, the impact should be specified in terms of a numerical limitation." Id. at 1250 (quoting H.R. Rep. No. 97-567 at 27 (1982), reprinted in 1982 U.S.C.C.A.N. at 2827)). In the absence of a specific numerical value, however, the defendant must establish that no such numerical value could be practically obtained. Id. Where no numerical value can be obtained, the agency must at least set forth some surrogate for defining the amount or extent of incidental take. Id.

> The terms of an Incidental Take Statement do not operate in a vacuum. To the contrary, they are integral parts of the statutory scheme, determining, among other things, when consultation must be reinitiated.

Id. at 1251. The biological opinion is required to contain an ITS that "[specifics the impact, i.e., the amount or extent, of such incidental taking on the species." 50 C.F.R. § 402.14(i)(1).

The May 30, 2002 biological opinion makes no attempt at all to estimate the incidental take of threatened or endangered species, and seeks to defer estimating the incidental take until it reviews the annual letters of authorization. Defendants concede that the May 30, 2002 biological opinion does not include an ITS.

Defendants argue that it would have been arbitrary and capricious for them to include an ITS in the May 30, 2002 biological opinion because, given the "geographic scope and scale of this programmatic

biological opinion," it could not estimate the amount or extent of incidental take of threatened or endangered species because "the species that could be taken incidental to the SURTASS LFA sonar system will vary from ocean to ocean, the particular region of an ocean, and timing." (NMFS AR, Vol. 22, Ex. 216 at 148, and cover letter.) Defendants must establish, however, that no numerical value could be practically obtained. Arizona Cattle Growers' Ass'n, 273 F.3d at 1250. Defendants have not cited any evidence in the administrative record showing that it would have been impractical to have included an ITS specifying the amount or the extent of the incidental take. Moreover, even where numerical values are improper, the ITS still must contain some surrogate for defining the amount or extent of incidental take. Id. As the May 30, 2002 biological opinion does not contain an ITS, it violates the ESA.

b. The August 16, 2002 Supplemental Biological Opinion

On August 16, 2002, defendants issued a supplemental biological opinion addressing the proposed letter of authorization for the period August 16, 2002 through August 15, 2003. (NMFS AR Vol. 23, Ex. 220.) During that period of time, the Navy planned to operate one ship in provinces fifty-two, fifty-three, fifty-six, sixty, and sixty-four, which cover large areas of the Pacific Ocean. (Id. at 3, 5.) NMFS determined that the Navy's action in these provinces may affect the Steller sea lion, Hawaiian monk seal, seven types of endangered whales, six types of endangered or threatened sea turtles, and numerous populations of endangered or threatened chinook salmon, chum salmon, coho salmon, and steelhead. (Id. at 5-6.)

The supplemental biological opinion does include an ITS. This ITS arguably might have cured the deficiency of the original biological opinion, except that it is incomplete. The supplemental biological opinion estimates the numbers of Steller sea lions, blue whales, fin whales, humpback whales, right whales, sei whales, and sperm whales, but does not attempt to estimate the numbers of Hawaiian monk seals, Pacific gray whales, sea turtles or salmon that might be taken. (Id. at 41-42.) For these species, the supplemental biological opinion provides that:

> The extent of take will be limited to the LFA mitigation zone and the additional buffer zone required by the letter of authorization. Take will have been exceeded if (i) individual members of these species are harmed, injured, or killed within this area as result of exposure to LFA sonar transmissions, (ii) individual members of these species exhibit biologically-significant responses to LFA sonar transmissions within the buffer zone, or (iii) individual members of these species enter the LFA mitigation zone during an LFA sonar transmission and exhibit biologically-significant responses following a transmission.

(Id. at 42.) The supplemental biological opinion also provides:

> NMFS does not have an estimate of the number of threatened or endangered species that would be "taken" (through harassment) by the proposed action. However, the numbers are expected to consist of a small number of individual animals.

(Id. at 46.)[15]

The only explanation given for failing to provide estimates for these species is that the Navy "did not conduct Acoustic Integration Model simulations for these species[.]" Id. at 42. Plaintiffs complain that this statement is unsupported by any evidence that the Navy was asked to estimate the take of these species, but could not do so. See Arizona Cattle Growers Ass'n, 273 F.3d at 1250 ("In the absence of a specific numerical value, . . . [defendants] must establish that no such numerical value could be practically obtained.") Plaintiffs are correct. Defendants have cited no evidence in the administrative record that it was impractical to obtain estimates of the incidental take for Hawaiian monk seals, Pacific gray whales, sea turtles or salmon, which collectively represent some twenty endangered species.

Craig Johnson now attests, however, that he could not provide numerical estimates of the number of listed Pacific salmon that were likely to be exposed to LFA because available information on their ocean distribution and abundance is too limited and variable. (C. Johnson Decl. ¶ 13.) As for sea turtles, he attests that "we know how many interact with specific fisheries based on observer reports and log-books kept by fishers, but information on the number of turtles that interact with fishing gear is not an estimator of the number of turtles in a particular area of the ocean itself[.]" (Id. ¶ 13.) Thus, according to Johnson, "using the Acoustic Integration Model to simulate the number of probable interactions between SURTASS LFA sonar missions and Pacific Salmon or sea turtles would have produced numbers that would have been virtually meaningless."[16] (Id.) As already explained above, this declaration is inadmissible extra-record

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[15] The Court agrees with plaintiffs that defendants' failure or inability to provide an estimate of the incidental take makes it difficult to understand how defendants have any basis for quantifying the take as "small." In addition, defendants' failure to provide any estimate of the incidental take of Hawaiian monk seals and Pacific gray whales, which are marine mammals, casts doubt on their assertion in the Final Rule that only "small numbers" of marine mammals are likely to be taken.

[16] Plaintiffs note that this explanation is inconsistent with defendants' repeated use of similar data of observed interactions between sea turtles and fishing gear as a proxy for sea turtle distribution data. See e.g., 67 Fed. Reg. 40232, 40234 (2002) (discussing number of interactions between sea turtles and fishing gear in deciding whether to limit a certain type of fishing in specific areas); 66 Fed. Reg. 44549, 44550 (2001) (discussing observer data of entanglements between leatherback turtles and fishing gear in determining where and when to limit a certain type of fishing).

evidence. Even if the Court were to defer to Johnson's expertise on this point, however, NMFS was still required to provide an adequate surrogate for the missing numerical estimate of the incidental take of salmon and sea turtles. It did not do so, as explained below.

Johnson admits that there was no attempt to estimate the number of Pacific gray whales and Hawaiian monk seals that would be affected by LFA. (C. Johnson Decl. ¶ 14.) He argues, however, that the Court's preliminary injunction has narrowed the letter of authorization in such a way that Pacific gray whales and Hawaiian monk seals are no longer likely to be exposed to LFA. (Id.) The issue before the Court, however, is whether the ITS in the August 16, 2002 supplemental biological opinion was adequate under the law, in determining whether a permanent injunction should issue, not whether a preliminary injunction may have temporarily offset some of the defects of the ITS. Defendants does not attest that numerical estimates of the incidental take of Pacific gray whales and Hawaiian monk seals cannot be made. Thus, defendants have not established that no such numerical value could be practically obtained.

Defendants instead skip to the next step, and argue that they provided an adequate surrogate for estimating the incidental take for those species. "[T]he use of ecological conditions as a surrogate for defining the amount or extent of incidental take is reasonable so long as these conditions are linked to the take of the protected species." Id. at 1250. Arizona Cattle Growers Ass'n explained:

> Take can be expressed also as a change in habitat characteristics affecting the species (e.g., for an aquatic species, changes in water temperature or chemistry, flows, or sediment loads) where data or information exists which links such changes to the take of the listed species. . . . [I]f a sufficient causal link is demonstrated (i.e., the number of burrows affected or a quantitative loss of cover, food, water quality, or symbionts), then this can establish a measure of the impact on the species of its habitat and provide the yardstick for reinitiation.

Id. (quoting Final ESA Section 7 Consultation Handbook, March 1998 at 4-47 to 4-48).

The Ninth Circuit nonetheless rejected the following ITS language as inadequate:

> The service concludes that incidental take of loach minnow from the proposed action will be considered to be exceeded if any of the following conditions are met:
>
> [Condition 1] Ecological conditions do not improve under the proposed livestock management. Improving conditions can be defined through improvements in watershed, soil condition, trend and condition of rangelands (e.g., vegetative litter, plant vigor, and native species diversity), riparian conditions (e.g., vegetative and geomorphologic: bank, terrace, and flood plain conditions (e.g., channel profile, embeddedness, water temperature, and base flow) within the natural capabilities of the landscape in all pastures on the allotment within the Blue River watershed.

Id. at 1249. The Ninth Circuit held that this ITS language did not sufficiently discuss the causal connection between Condition 1 and the taking of the species at issue: "Based upon the lack of an articulated, rational connection between Condition 1 and the taking of species, as well as the vagueness of the condition itself, we hold that its implementation was arbitrary and capricious." Id. at 1250.

Here, unlike in the Ninth Circuit case just cited, defendants do not attempt to link changes in environmental conditions to the taking of endangered species. Instead of estimating the incidental take, defendants essentially state that a taking of any individual of that species within the LFA mitigation zone and buffer zone will be considered to be too much. (NMFS AR Vol. 26, Ex. 220 at 42.) The purpose of the ITS is to provide a "'trigger,' that when reached, results in an unacceptable level of incidental take, invalidating the safe harbor provision, and requiring the parties to reinitiate consultation." Arizona Cattle Growers Ass'n, 273 F.3d at 1249.

At first blush, it may appear that by setting that trigger at one animal, defendants satisfied the purpose of the ITS, even without attempting to provide an actual estimate of the likely amount of the incidental take. On closer inspection, however, there are several insurmountable problems. It is not at all clear that defendants will even be able to detect takings of the smaller endangered creatures, such as salmon and sea turtles. Many takings may occur before the defendants notice an individual sea turtle exhibiting unusual behavior, for instance. It is arbitrary and capricious to set the trigger at one animal unless defendants can adequately detect the taking of a single animal.

In addition, defendants' limitation of the trigger to an animal taken within the two kilometer mitigation and buffer zone defeats the purpose of the ITS and lacks a rational causal connection because it excludes most of the takes that will occur. Just the other side of the two kilometer border, the received level of LFA sonar is 173 dB, at which about 70-75% of exposed animals would be taken. And at forty miles away, the received level is still as high as 165 dB, at which 50% of exposed animals would be taken.[17] Yet the causal connection to these takes is ignored under defendants' ITS for these species.

[17] Defendants argue that turtles have relatively poor hearing, with a hearing threshold of 132-140db. The supplemental biological opinion states, however, that turtles avoid passing through a sound barrier where received levels are 141-150 db. (NFMS AR Vol. 26, Ex. 220 at 39.) Since the received level of LFA outside the mitigation zone reaches even higher levels than 150 db, Craig Johnson's statement that exposure outside the mitigation zone will not result in the taking of turtles is contrary to the scientific evidence and arbitrary and capricious. (C. Johnson Decl. ¶ 13.) It is also inadmissible, for the reasons already stated.

Instead, defendants' approach focuses solely on where the take occurs, not whether it was caused by LFA sonar. For example, if Pacific gray whales are exposed to LFA and beach outside the mitigation zone and buffer zone, the issue *should* be "were they injured by LFA?" Under this standard, the issue will instead become "*where* were they injured?" Accordingly, the Court concludes that defendants' surrogate for providing a numerical estimate of the incidental take for Hawaiian monk seals, Pacific gray whales, sea turtles or salmon is arbitrary and capricious. Plaintiffs' motion for summary is granted, and defendants' motion is denied, on this issue.

VI. PERMANENT INJUNCTION

The traditional test for a permanent injunction is actual success on the merits, irreparable injury, and inadequacy of legal remedies. Amoco Production Co. v. Village of Gambell, AK, 480 U.S. 531, 546 n.12 (1987). Pursuant to equitable principles, the Court must balance the competing claims of injury. See Weinberger v. Romero-Barcelo , 456 U.S. 305, 312 (1982); National Parks and Conservation Ass'n v. Babbitt, 241 F.3d 722, 737 (9th Cir. 2001). "'The essence of equity jurisdiction [is] the power of the Chancellor to do equity and to mold each decree to the necessities of the particular case.'" Romelo-Barcelo , 456 U.S. at 312 (quoting Hecht Co. v. Bowles, 321 U.S. 321, 329 (1944)).

"Environmental injury, by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, i.e., irreparable." Amoco Production Co., 480 U.S. 531 at 545; Sierra Club v. United States Forest Serv., 843 F.2d 1190, 1995 (9th Cir. 1988). "If such injury is sufficiently likely, therefore, the balance of the harms will usually favor the issuance of an injunction to protect the environment." Amoco, 480 U.S. at 545; see also Sierra Club, 843 F.2d at 1195; National Parks & Conservation Ass'n, 241 F.3d at 73 n.8 (issuance of a preliminary injunction for a NEPA violation was justified under both the traditional balancing test and under then-circuit Judge Breyer's explanation in Sierra Club v. Marsh, 872 F.2d 497, 500 (1st Cir. 1989) that the harm under NEPA is uninformed decisionmaking which increases the risk to the environment). Nonetheless, in "'unusual circumstances' an injunction may be withheld, or, more likely, limited in scope." National Parks & Conservation Ass'n, 241 F.3d at 737 n.18.

Here, the certain harassment and possible injury of marine mammals and other sea creatures, many of them endangered, plainly cannot be remedied by money, and is likely to be long lasting. It is undisputed

that marine mammals, many of whom depend on sensitive hearing for essential activities like finding food and mates and avoiding predators, and some of whom are endangered species, will at a minimum be harassed by the extremely loud and far traveling LFA sonar. For example, the important reproductive behavior of singing by the endangered humpback whale is affected at levels well below 180 dB, although how significantly it is affected is debated. While defendants argue that harassment cannot be presumed to constitute irreparable injury because it is permissible under the MMPA subject to appropriate conditions, these conditions have not been met, as the Court found above. In enacting the MMPA, Congress clearly expressed its concern about the harm caused by harassment of marine mammals.

Further, endangered species, including whales, listed salmon and sea turtles, will be in LFA sonar's path. There is little margin for error without threatening their survival. For example, if even a few endangered gray whales of the mere 100 which remain near Sakhalin Island are disturbed by LFA and fail to mate or give birth, that population might well disappear permanently. Similarly, some populations of endangered sea turtles are so precarious that even the loss of a small number would be catastrophic to their survival. Yet their size makes them difficult to detect, and therefore almost impossible to avoid, if LFA sonar is operated in areas that they frequent. Absent an injunction, the marine environment that supports the existence of these species will be irreparably harmed. For example, as the Ninth Circuit recognized in holding that a preliminary injunction should issue, "acoustic environment appears to be very important to humpback whales." National Parks & Conservation Ass'n, 241 F.3d at 727, 737.

Also weighing in favor of an injunction are the violations of the ESA, which are not subject to the traditional approach of balancing the equities because Congress itself struck the balance "in favor of affording endangered species the highest of priorities, thereby adopting a policy which it described as 'institutionalized caution.'" TVA v. Hill, 437 U.S. 153, 194 (1978); see also Amoco, 480 U.S. at 543 n.9. As the Ninth Circuit explained:

> In cases involving the ESA, Congress removed from the courts their traditional equitable discretion in injunction proceedings of balancing the parties' competing interests. The language, history, and structure of the ESA demonstrates Congress' determination that the balance of hardships and the public interest tips heavily in favor of protected species.
>
> Nevertheless, these cases do not stand for the proposition that courts no longer must look at the likelihood of future harm before deciding whether to grant an injunction under the ESA. Federal courts are not obligated to grant an injunction for every violation of the law. The plaintiff must make a showing that a violation of the ESA is at least likely in the future.

National Wildlife Federation v. Burlington Northern Railroad, 23 F.3d 1508, 1511 (9th Cir. 1994) (citations omitted). Here, the inadequacies of the biological opinion constitute an ongoing violation of the ESA, and endangered species are in harm's way.

There is a very narrow exception to the general rule that courts must issue an injunction when a procedural violation of ESA occurs. Southwest Center for Biological Diversity v. United States Forest Service, 307 F.3d 964, 973 (9th Cir. 2002). The exception only applies to insubstantial procedural violations that do not jeopardize endangered species, under circumstances where the government has mitigating measures in place to ensure little, if any, impact, and conditions are actually improving due to those protective measures. Id. The Southwest Center court stressed that its holding was limited to the facts of that case. Id. Defendants note that LFA has been used on past missions, with no known injury to endangered species (AR 7356, 24333), and while the preliminary injunction has been in place visual and active sonar monitoring have not detected any marine mammals or sea turtles. This begs the question, however, because operations have been restricted by the preliminary injunction to less populated areas. In addition, it may well be that any marine life fled the area after being harassed. Alternatively, defendants may have failed to detect endangered species that were injured, especially smaller ones. Defendants have not shown that they come within the narrow exception to the requirement to enjoin violations of the ESA.

In determining whether to issue an injunction, courts also consider the public interest. See Amoco, 480 U.S. at 542. "'[W]here an injunction is asked which will adversely affect a public interest for whose impairment, even temporarily, an injunction bond cannot compensate, the court may in the public interest withhold relief until a final determination of the rights of the parties, though postponement may be burdensome to the plaintiff.'" Weinberger v. Romero-Barcelo , 456 U.S. 305, 312-13 (1982) (quoting Yakus v. United States, 321 U.S. 414, 440 (1944)). In Weinberger, the Supreme Court upheld the denial of a preliminary injunction because the merely technical violations at issue were not harming the environment, whereas granting injunctive relief would seriously harm not only the Navy, but also the general welfare. Id. at 310. Here, the violations are not merely technical, and injunctive relief may be crafted to allow the Navy to meet its testing and training needs.

The Court has balanced the hardships and considered the public interest. On one hand, the interest of the plaintiffs and the public in the survival and flourishing of marine mammals and endangered

species, as well as a healthy marine environment, is extremely strong. Indeed, Congress enacted the MMPA and the ESA in recognition of this compelling public interest, not only to the American public but to the international community, and not only to present generations but to future generations to come. For example, Congress found that "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic . . . ." 16 U.S.C. § 1361. Stewardship of the world's precious oceans and the marine life within them is undoubtedly of utmost importance.

On the other hand, the total ban on use of LFA sonar for training and testing sought by plaintiffs would pose a hardship to the Navy. More broadly, the public has a compelling interest in protecting national security by ensuring military preparedness and the safety of those serving in the military from attacks by hostile submarines. Defendants have shown that use of LFA sonar is likely to significantly increase the ability to timely detect very quiet submarines. For example, Vice-Admiral Robert F. Willard, the Commander of the U.S. Seventh Fleet to which both LFA-equipped ships are or will be assigned, confirms the conclusions of other Navy officials that there is a critical need to train and test with LFA in a variety of realistic situations to ensure that it will be ready to use in times of peril, especially in light of the course of world events. (Willard Dec. ¶ 4.) He attests that potential enemies who operate in the East China Sea, Sea of Japan, South China Sea, and regions of the Pacific Ocean south of the current operating area possess a significant number of powerful diesel submarines. (Willard Dec. ¶ 9; see also Congressional Testimony, Military Environmental Legislative Proposals, 2003 WL 11716368.)

Plaintiffs offer the declaration of Theodore Postol, a Professor of Science, Technology and National Security Policy at the Massachusetts Institute of Technology. (Postol Dec. ¶ 2.) He opines that North Korea only has outmoded submarines that do not pose a threat. (Postol Dec. ¶ 18.) Dr. Postol does not have access to classified information on the subject. Defendants have provided classified information to the Court in camera regarding the reality of the threat. But even if they had not done so, the Court will not second guess the Navy's determination within its expertise that it needs to test and train with LFA sonar in a variety of oceanic conditions. See North Dakota v. U.S., 495 U.S. 423, 443 (1990) ("When the Court is confronted with questions relating to military discipline and military operations, we properly defer to the judgment of those who must lead our Armed Forces in battle.").

Plaintiffs also point to the Government Accounting Office's June 2002 report on the LFA system, which states that "the system may not be effective in littoral waters." (Sabey Dec. Ex. 2 at 6, 9.) However, in at-sea tests, LFA has proven effective in detecting and tracking submarines in littoral areas. (Vaughn Dec. ¶ 8-10.) Moreover, the difficulties of operating LFA in littoral areas bolsters the Navy's need to test and train there to ameliorate any deficiencies. (Willard Dec. ¶ 9.)

Finally, plaintiffs note that defendants' and the public's interest in peacetime use of LFA sonar is not as compelling as it would be in wartime or in a time of a declared heightened threat. A permanent injunction will not interfere with the Navy's ability to use LFA sonar during war or in response to imminent threat:

> War, combat, and heightened threat conditions are determined by the Congress or the National Command Authorities (NCA), not the U.S. Navy. . . . Since these determinations are not made by the Navy, both the small take application and the Navy's Draft and Final EISs are specifically limited to employment of the SURTASS LFA sonar during training, testing, and routine military operations and will not cover use of the SURTASS LFA system in self-defense, in times of war, combat or heightened threat conditions.

67 Fed. Reg. 46717. Nevertheless, the complexity of how sound travels through the ocean under varying conditions makes it important to train personnel to operate the system in advance, before the sonar's reliable use becomes critical. Moreover, practice with LFA is necessary to maintain skills in its operation. (Willard Dec. ¶ 8.)

Balancing the harms and weighing the public interest, the Court concludes that it should issue a permanent injunction, but that it should not impose the complete ban on peacetime use of LFA sonar that is requested by plaintiffs. Rather, the permanent injunction should be carefully tailored to reduce the risk to marine mammals and endangered species by restricting the sonar's use in areas that are particularly rich in marine life, while still allowing the Navy to use this technology for testing and training in a variety of oceanic conditions. Cf. National Parks & Conservation Ass'n v. Babbitt, 241 F.3d at 737 n. 18 (even in environmental cases where unusual circumstances are present, an injunction most likely should be limited in scope, rather than withheld altogether). The injunction will only be in place until defendants correct the violations identified in this opinion. The Navy has already delayed deployment by its own failure originally to timely initiate the required environmental processes of an EIS and consultation as early as possible to ensure that decisions reflect environmental values, to avoid later delay, and to head off potential conflicts. 40 C.F.R. § 1501.2.

A tailored injunction reconciles the very compelling interests on both sides of this case, by enabling the Navy to continue to train with and test LFA sonar as it needs to do, while taking some additional measures to better protect against harm to marine life. In particular, the permanent injunction will extend the coastal buffer zone beyond twelve nautical miles in the vast majority of the coastal areas where LFA sonar can effectively operate at a greater distance and where training closer to shore is not necessary. Where the Navy does need to train close to shore, it will conduct pre-operation surveys by air or small craft where weather conditions permit. These protections should reduce the likelihood of irreparable injury to the abundant marine life that flourishes in coastal areas, and help protect marine mammals like beaked whales from the risk of stranding. In addition, the injunction should provide that the Navy will not operate LFA sonar in other areas of the deep ocean which have special features that support concentrations of marine mammals and endangered species, such as reasonable candidates for designation as additional Offshore Biologically Important Areas. Defendants have acknowledged in the administrative record and in declarations to the Court that they can restrict operations in certain parts of the ocean, during particular seasons, where LFA-equipped vessels are more likely to encounter marine mammals and endangered species. Indeed, they have now undertaken further analysis of avoiding such areas in a supplemental environmental impact statement. A tailored injunction will help ensure that they do so in compliance with the statutory mandates, including the requirement that LFA sonar have only a negligible impact on small numbers of marine mammals.

VII. CONCLUSION

For the reasons set forth above, and for good cause shown,

1. Plaintiffs' motion for summary judgement is GRANTED in part and DENIED in part.

2. Defendants' motion for summary judgment is GRANTED in part and DENIED in part.

3. The parties are ordered to meet and confer forthwith on the precise terms of a permanent injunction consistent with this opinion. The Court will hold a case management conference on October 7, 2003 at 1:30 p.m. The parties shall file an updated joint case management conference statement regarding the permanent injunction on September 30, 2003.

IT IS SO ORDERED.

Dated: August 26, 2003

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ELIZABETH D. LAPORTE
United States Magistrate Judge