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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

Supplemental Environmental Assessment for Issuance of Amendments to Scientific Research Permit No. 14097-03 to Add Specific Cetacean Research Activities

July 2014

A supplement to the 2010 EA "*Environmental Assessment for Issuance of a Scientific Research Permit [File No. 14097] for Pinniped, Cetacean, and Sea Turtle Studies*"

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Location: Pacific, Southern, Indian, and Arctic Oceans

Abstract: The National Marine Fisheries Service (NMFS) proposes to issue two amendments to Permit No. 14097-03 for takes of marine mammals in the wild, pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*) and the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*). The current permit authorizes research on five species of pinniped, 57 species of cetacean, and five species of sea turtles. The purpose of cetacean research authorized by the permit is to determine the abundance, distribution, movement patterns, and stock structure of cetaceans in U.S. territorial and international waters, and would not change.

NMFS proposes to issue two amendments to the permit. Amendment -04 would authorize the use of an unmanned aerial system to photograph cetaceans and collect breath samples from gray whales (*Eschrichtius robustus*); suction cup tagging of gray whales; and attaching dart/barb tags to 15 bottlenose (*Tursiops truncatus*) and 15 Risso's dolphins (*Grampus griseus*) per year. Except for the requested take of bottlenose and Risso's dolphins, the number of cetaceans that would be taken annually would not change from what is currently authorized. Amendment -05 would authorize collection of multiple biopsy samples of humpback whales (*Megaptera novaeangliae*) in the Southern Ocean to determine if the stable isotope signature is different on different parts of the body. The number of humpback whales that would be taken annually would not change from what

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is currently authorized. Amendment -05 also would extend the expiration date of the permit by 12 months, to June 30, 2016.

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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 DESCRIPTION OF PROPOSED ACTION

In response to receipt of two requests from the National Marine Fisheries Service (NMFS), Southwest Fisheries Science Center (SWFSC; Lisa Ballance, Responsible Party) (File No. 14097), NMFS proposes to amend scientific research Permit No. 14097-03, which authorizes takes[1] by harassment[2] of marine mammals and takes of sea turtles in the wild pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*), the regulations governing the taking and importing of marine mammals (50 CFR Part 216), the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*), and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR Parts 222-226).

1.1.1 Purpose and Need

The primary purpose of the permit is to provide an exemption from the take prohibitions under the MMPA and ESA to allow takes by Level A and B harassment of marine mammals, including endangered species, and takes of endangered and threatened sea turtles, for *bona fide*[3] scientific research. The need for issuance of the permit is related to NMFS' mandates under the MMPA and ESA. Specifically, NMFS has a responsibility to implement the MMPA and the ESA to protect, conserve, and recover marine mammals and threatened and endangered species under its jurisdiction. The MMPA and ESA prohibit takes of marine mammals and threatened and endangered species, respectively, with only a few very specific exceptions, including for scientific research and enhancement purposes. Permit issuance criteria require that research activities are consistent with the purposes and policies of these federal laws and will not have a significant adverse impact on the species or stock.

1.1.2 Need for Proposed Research and Research Objectives

The proposed amendments would not change the original objectives of the permit: to determine the abundance, distribution, movement patterns, dive behavior, demographic parameters, trends in recruitment, and stock structure of cetaceans, pinnipeds, and sea turtles in U.S. territorial and international waters.

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[1] Under the MMPA, "take" is defined as to "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." [16 U.S.C. 1362(18)(A)] The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" is further defined by regulations (50 CFR §222.102) as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including breeding, spawning, rearing, migrating, feeding, or sheltering."

[2] "Harass" is defined by regulation (50 CFR §216.3) as "Any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing a disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B harassment)."

[3] The MMPA defines bona fide research as "scientific research on marine mammals, the results of which – (A) likely would be accepted for publication in a refereed scientific journal; (B) are likely to contribute to the basic knowledge of marine mammal biology or ecology; or (C) are likely to identify, evaluate, or resolve conservation problems."

The proposed amendments are to:

14097-04: Include authorization to use an unmanned aerial system (UAS) to photograph cetaceans and collect breath samples from gray whales (*Eschrichtius robustus*); suction cup tag gray whales; attach dart/barb tags to up to 15 bottlenose (*Tursiops truncatus*) and 15 Risso's dolphins (*Grampus griseus*) per year. Except for the requested take of bottlenose and Risso's dolphins, the number of cetaceans that would be taken annually would not change from what is currently authorized.

14097-05: Include authorization to collect multiple biopsy samples of humpback whales (*Megaptera novaeangliae*) in the Southern Ocean to determine if the stable isotope signature is different on different parts of the body. Specifically, the SWFSC requests authorization to biopsy up to 25 humpback whales no more than 5 times each in a 12-month period. No more than three samples would be collected from an individual within 24 hours. The number of humpback whales that would be taken annually would not change from what is currently authorized. The expiration date of the permit would also be extended by 12 months, to June 30, 2016.

1.2 OTHER EA/EIS THAT INFLUENCE SCOPE OF THIS EA

An environmental assessment (EA) was prepared for issuance of the original Permit No. 14097, *Environmental Assessment for Issuance of a Scientific Research Permit [File No. 14097] for Pinniped, Cetacean, and Sea Turtle Studies* (NMFS 2010*a*). Based on that analysis, NMFS determined that issuance of the permit would not result in significant impacts to any portion of the human environment (Finding of No Significant Impact dated July 1, 2010). The original EA is incorporated by reference throughout this document where indicated.

Because the proposed amendments would not change the nature or location of the research activities, the effects on the physical, social, and economic environment are not re-examined in this supplemental EA (SEA). The amendments would authorize additional research activities on (1) gray whales, bottlenose dolphins, and Risso's dolphins and (2) humpback whales; therefore, the scope of this SEA is limited to the potential impacts to the species which are the subject of the permit amendments.

1.3 SCOPING SUMMARY

The purpose of scoping is to identify the issues to be addressed and the significant issues related to the proposed action, as well as identify and eliminate from detailed study the issues that are not significant or that have been covered by prior environmental review. An additional purpose of the scoping process is to identify the concerns of the affected public and Federal agencies, states, and Indian tribes. Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) do not require that a draft EA be made available for public comment as part of the scoping process.

However, the MMPA and its implementing regulations governing issuance of special exception permits for scientific research (50 C.F.R. §216.33) require that, upon receipt of a valid and complete application for a new permit, NMFS publish a notice of receipt in the *Federal Register*. The notice summarizes the purpose of the requested permit and invites interested parties to submit written comments concerning the application. The applications to amend the permit and a draft of

this SEA were made available for public review and comment for 30 days (79 FR 18527; April 2, 2014).

- No public comments were received on the requests or draft SEA.

The application was sent to the Marine Mammal Commission for review at the same time, pursuant to 50 CFR §216.33 (d)(2). Comments received on the application were considered as part of the scoping for this SEA.

1.4 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

This section has not changed from that described in the original EA for Permit No. 14097 and therefore, Ch. 1.4 of the 2010 EA is incorporated by reference here. Applicable laws include: NEPA, the MMPA, and the ESA.

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes the range of potential actions (alternatives) determined reasonable with respect to achieving the stated objective. This chapter also summarizes the expected outputs and any related mitigation of each alternative. One alternative is the "No Action" alternative where no permit amendment would be issued. The No Action alternative is the baseline for rest of the analyses. Alternatives 2 and 3 represent the research proposed in the submitted applications for amendments, with standard permit terms and conditions specified by NMFS.

Alternatives 2 and 3 are not mutually exclusive and together address the purpose and need of the proposed action. Both applications to amend the permit were concurrently made available for public review and comment and it is possible that NMFS would issue both amendments described in Alternatives 2 and 3 below.

2.1 ALTERNATIVE 1 – NO ACTION

Under the No Action alternative, no amendment to the permit would be issued. Permit No. 14097-03 would remain in effect through expiration, allowing research to continue as currently authorized.

2.2 ALTERNATIVE 2 – ISSUANCE OF PERMIT AMENDMENT REQUEST -04 (GRAY WHALES AND DOLPHINS) WITH STANDARD CONDITIONS

Under Alternative 2, an amendment would be issued for activities as proposed by the applicant, with the permit terms and conditions standard to such permits as issued by NMFS. As described in the application, the amendment would add authorization for (1) the use of a UAS to photograph all species of cetaceans with no increase in take numbers; (2) the use of a UAS to collect breath samples from gray whale adults (all ages) females with calves, and calves (greater than 2 months); (3) suction cup tagging of gray whales with no increase in take numbers; (4) attaching dart/barb tags to up to 15 bottlenose and 15 Risso's dolphins per year. Tagging methodologies would remain the same as described in the original EA for Permit No. 14097. All other aspects of the currently permitted activities would remain the same.

The UAS is approximately 0.5 m square and weighs 2kg. During aerial surveys, the UAS would be flown at an altitude of 30 to 60 m above sea level (ASL). . The UAS is extraordinarily quiet; at 30 m, sound levels produced by the UAS are equivalent to a whisper (less than 5 dB), resulting in minimal to no disturbance to animals. During breath sampling, the UAS would follow the whales at an altitude of about 2 m. Sound levels at 2 m are expected to be 18dB in air and would be reduced to a lower sound level in water because sound attenuates across the air-sea interface. The operator would track the whale with a live video feed from the aircraft and as the whale surfaces to exhale the aircraft will pass through the exhalation and capture a sample. As part of this alternative, conditions would be added to the permit to limit the altitude at which the UAS can be flown over whales to minimize the potential for disturbance and injury of the target cetaceans. Existing permit conditions that require researchers to monitor animals for signs of disturbance during aerial surveys would remain in force and effect and apply to the use of the UAS.

Suction cup tagging of gray whales would be conducted on adults and juveniles, males and females; one suction cup tag would be attached per animal at a time. Individuals would be re-tagged if attachment of a first tag has failed, but only up to two tags per year would be placed on the same individual. No attempt would be made to attach two suction cup tags simultaneously on the same animal. No tagging attempts would be made on dependent calves. It is possible that mothers accompanying calves would be tagged, although this is not preferred because it is highly likely that the accompanying calf might dislodge the suction cup. The minimum age of gray whales to be tagged would be six months.

Tagging of bottlenose and Risso's dolphins would be conducted on adults and juveniles, males and females; one dart tag would be attached per animal at a time. Individuals would be re-tagged if attachment of a first tag has failed, but only up to two tags per year would be placed on the same individual. No attempt would be made to attach two tags simultaneously on the same animal. No tagging attempts would be made on dependent calves or their mothers. The minimum age of dolphins to be tagged would be one year.

2.3 ALTERNATIVE 3 – ISSUANCE OF PERMIT AMENDMENT REQUEST -05 (HUMPBACK WHALES) WITH STANDARD CONDITIONS

Under Alternative 3, an amendment would be issued for activities as proposed by the applicant, with the permit terms and conditions standard to such permits as issued by NMFS. The amendment would add authorization to collect multiple biopsy samples of humpback whales in the Southern Ocean to determine if the stable isotope signature is different on different parts of the body. Specifically, the SWFSC requests to biopsy up to 25 humpback whales no more than five times each in a 12-month period. No more than three samples would be collected from an individual within 24 hours. The number of humpback whales that would be taken annually would not change from what is currently authorized. All other biopsy methodology would remain the same as described in the original EA for Permit No. 14097. The expiration date of the permit would also be extended by 12 months, to June 30, 2016 as described in Ch.2 of the original EA prepared for the permit. The descriptions for the biopsy activities and the permit extension in the original EA are incorporated by reference here. All other aspects of the currently permitted activities would remain the same.

As required by the current permit:

- Biopsy samples would be collected from adults and juveniles, male and females. No biopsy attempts would be made on calves. No individual animal would be sampled more than 3 times per day.

- Calves in the presence of females are presumed to be six months or older on the Antarctic feeding grounds. Calves would not be sampled; females with calves over six months of age would be sampled.

- All biopsy attempts would be targeted at the lateral flank of the whale. No biopsy attempts would be made forward of the pectoral flipper.

For both Alternatives 2 and 3, and as required by the current permit, the SWFSC would minimize potential disturbance during cetacean research by:

- conducting aerial surveys and photogrammetry at a constant speed and altitude and limiting the number of aerial photographic passes to reduce the potential for harassment of individual animals;
- conducting small boat approaches using crew members with extensive experience handling small boats around cetaceans;
- conducting small boat approaches in a manner that minimizes boat noise, does not involve any sudden changes in speed or course, and approaches an animal from behind while not greatly exceeding the animal's travel speed;
- limiting time spent in the vicinity of target animals and the number of attempts made to collect photographs in order to minimize incidental harassment or disturbance from the presence of the small boat or the activities; and
- not approaching animals exhibiting behaviors that indicate a negative reaction to the vessel, such as aerial behaviors or tail slaps. If at any time during these there is a negative reaction (rapidly diving, tail slapping, or rapidly swimming away), all efforts to approach the animals would cease.

CHAPTER 3 AFFECTED ENVIRONMENT

The affected physical environment would remain as previously described in the original EA prepared for Permit No. 14097. The amendments proposed in this SEA are not expected to impact the physical environment in ways that have not previously been analyzed. The affected biological environment has not changed since the writing of the original EA, which is incorporated by reference.

Proposed research activities would continue to occur in U.S. territorial waters and the high seas, primarily the Pacific and Southern Oceans and occasionally the Arctic and Indian Oceans, year-round.

3.1 SOCIAL AND ECONOMIC ENVIRONMENT

The social and economic effects of Alternatives 2 and 3 are the same as those described in the original EA for Permit No. 14097 and, therefore, Ch. 3.1 is incorporated by reference here. Those

effects mainly involve the effects on the people involved in the research, as well as any industries that support the research, such as charter vessels, and suppliers of equipment needed to accomplish the research. There are no significant social or economic impacts of Alternative 2 or 3 related to significant natural or physical environmental effects, so no further analyses were completed.

3.2 PHYSICAL ENVIRONMENT

The physical environment has not changed from that described in the original EA for Permit No. 14097 , and, therefore, Ch. 3.2 is incorporate by reference here.

- If research is conducted within a National Marine Sanctuary, the SWFSC would continue to be required to obtain appropriate authorizations from and coordinate the timing and location of their research with NOAA's National Marine Sanctuaries Program (NMSP) to ensure that the research would not adversely impact marine mammals, birds, or other Sanctuary resources. If permits are required from the Sanctuaries to conduct research, it is the applicant's responsibility to obtain them.

- As described in the original EA, none of the research activities are directed at or likely to have any impact on designated Essential Fish Habitat, so no further analyses were required.

- Designated critical habitat under the ESA has not changed from that described in the original EA except as described here.

3.2.1 Designated Critical Habitat

The ESA provides for designation of "critical habitat" for listed species and includes physical or biological features essential to the conservation of the species. Critical habitats may require special management considerations or protection. Critical habitat designations affect only federal agency actions or federally funded or permitted activities; therefore if the proposed activities may adversely modify designated critical habitat, they would be considered during our consultation with NMFS Endangered Species Act Interagency Cooperation Division under section 7 of the ESA.

Steller Sea Lion – Eastern DPS

The original EA for Permit No. 14097 included a discussion of critical habitat for the Steller sea lion – Eastern Distinct Population Segment (DPS). The Eastern DPS was removed from the list of threatened species under the ESA on November 4, 2013; therefore critical habitat for this DPS no longer applies.

Leatherback Sea Turtle

In January 2012, NMFS designated critical habitat for leatherback sea turtles along the U.S. Pacific coast. This designation includes approximately 43,798 square km stretching along the California coast from Point Arena to Point Arguello east of the 3,000 meter depth contour; and 64,760 square km stretching from Cape Flattery, Washington to Cape Blanco, Oregon east of the 2,000 meter depth contour. The designated areas comprise approximately 108,558 square km of marine habitat and include waters from the ocean surface down to a maximum depth of 80 m. One primary constituent element (PCE) was identified: the occurrence of prey species, primarily scyphomedusae of sufficient condition, distribution, diversity, abundance and density necessary to

support individual as well as population growth, reproduction, and development of leatherbacks. Scientific research is not identified as an activity that may threaten or adversely impact the PCE. Alternatives 2 and 3 do not involve gear or equipment that would result in physical damage of habitat or introduce any chemicals or known toxins into the environment that would alter or damage habitat. Therefore, neither Alternative 2 nor 3 would adversely impact the PCE or the critical habitat.

The SWFSC would not conduct research in any other designated Critical Habitat.

3.3 BIOLOGICAL ENVIRONMENT

3.3.1 Targeted Species

Alternatives 2 and 3 involve takes of marine species, including ESA-listed or MMPA-depleted species. NMFS is responsible for the conservation and recovery of most endangered and threatened marine mammals, and the SWFSC is responsible for conducting scientific research to conserve and recover the species found in the action area. A brief description of the species and stocks targeted for research under the proposed amendments is below, summarized from NMFS Stock Assessment Reports (SARS); additional information on the status of these species can be found in the SARS and in the NMFS Recovery Plans for these species. All marine mammals stocks/species listed under the ESA are also considered depleted under the MMPA.

The cetacean species targeted for research under the proposed amendments are: gray and humpback whales and bottlenose and Risso's dolphins. There has been no change to the ESA or MMPA status of any of the cetacean species targeted for research.

NMFS publishes annual SARs for the marine mammals under its jurisdiction. The original EA for Permit No. 14097 used the 2008 and 2009 Stock Assessment Reports (SARS; Pacific: Carretta et al. 2008, 2009; Alaska: Angliss and Allen 2009, Allen and Angliss 2010) to describe the distribution, abundance, productivity, and annual human-caused mortality for the targeted marine mammal species. Some of these SARs have been updated since the original EA was completed, but there has been no change to their ESA or MMPA status. For a summary of the SAR information for the relevant stocks, see Table 1. The SARs are available in PDF format at www.nmfs.noaa.gov.

Table 1. SAR summary information for stocks relevant to this SEA.

Species	**Stock Area**	**Population Estimate**	**Population Minimum**	**Potential Biological Removal (PBR)**	**SAR last revised**
Bottlenose dolphin	CA Coastal	323	290	2.4	2008
Bottlenose dolphin	CA/OR/WA Offshore	1,006	684	5.5	2010[4]
Risso's dolphin	CA/OR/WA	6,272	4,913	39	2010[4]
Gray whale	Eastern North	19,126	18,017	558	2012[5]

4 Carretta et. al. 2011

	Pacific				
Humpback whale	CA/OR/WA	2,043	1,878	11.3	2010[4]
Humpback whale	Central North Pacific	7,469	5,833	61.2	2012[6]
Humpback whale	Western North Pacific	938	732	2.6/2.0	2012[6]

3.3.2 Non-target species

In addition to the target species, a wide variety of non-target species could be found within the action area, including marine mammals under U.S. Fish and Wildlife Service (USFWS) jurisdiction, invertebrates, fish, and sea birds. Merely being present within the action area does not necessarily mean a marine organism would be affected. Research is not directed at these species and any impacts would be considered incidental to the activities in both Alternatives 2 and 3.

Although other species may be present within the action area, none would be targeted during the proposed research. The presence of the vessel or aircraft would cause no greater effects than that of any other vessel or aircraft in the area.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter represents the scientific and analytic basis for comparison of the direct, indirect, and cumulative effects of the alternatives. Regulations for implementing the provisions of NEPA require consideration of both the context and intensity of a proposed action (40 CFR Parts 1500-1508).

4.1 EFFECTS OF ALTERNATIVES

4.1.1 Effects common to all Alternatives:

Impacts resulting from all alternatives would be limited to the species targeted for research activities and would not affect the physical or socioeconomic environment or pose a risk to public health and safety in any way, as described in the EA (NMFS 2010*a*) prepared for issuance of Permit No. 14097. The following discussion assesses the effects of directed take activities on the target species.

The research activities resulting in take of cetaceans authorized by Permit No. 14097 and analyzed in the 2010 EA would continue under all alternatives. As described in that EA:

- Research activities may result in short-term behavioral responses by individuals, but would not be expected to result in stock- or species-level effects.

5 Carretta et al. 2013
6 Allen and Angliss 2013

- Although tags used in the research would be shed into the ocean and are unlikely to be recovered, given the very small amount of debris they would represent and the fact that they do not contain any highly dangerous or radioactive materials, NMFS does not expect them to have any significant effect on the environment.

The issue most relevant to the analysis of all alternatives is the potential for negative impacts on the target species. It is important to recognize that an adverse effect on a single individual or a small group of animals does not translate into an adverse effect on the population or species unless it results in reduced reproduction or survival of the individual(s) that causes an appreciable reduction in the likelihood of survival or recovery for the species. In order for Alternative 2 or 3 to have an adverse effect on a species, the exposure of individual animals to the research activities would first have to result in:

- direct mortality,
- serious injury that would lead to mortality, or
- disruption of essential behaviors such as feeding, mating, or nursing, to a degree that the individual's likelihood of successful reproduction or survival was substantially reduced.

That mortality or reduction in the individual's likelihood of successful reproduction or survival would then have to result in a net reduction in the number of individuals of the species. In other words, the loss of the individual or its future offspring would not be offset by the addition, through birth or emigration, of other individuals into the population. That net loss to the species would have to be reasonably expected, directly or indirectly, to appreciably reduce the likelihood of both the survival and recovery of the listed species in the wild.

Level B harassment occurs during large and small vessel surveys, photo-identification activities, and aerial surveys currently authorized by Permit No. 14097-03. Aerial surveys previously analyzed were traditional manned aircraft surveys at a height of at least 500 ft and the use of UASs at 100-400 ft in altitude. Close approach was analyzed in the original EA for Permit No. 14097, and it was determined that close vessel and aerial approaches could lead to disturbance of marine mammals, but reactions are generally short-term and of a low impact and not likely to disrupt the migration, breathing, nursing, feeding, breeding, or sheltering behavior of marine mammals (NMFS 2010*a*).

Level A harassment occurs when activities have the potential to injure animals. The effects of biopsy sampling and tagging cetaceans, including the concurrent attachment of a suction cup tag and dart tag to an animal, were analyzed in Ch. 4 of the 2010 EA for Permit No. 14097. That analysis is incorporated here by reference. As described in the 2010 EA, suction cup tagging is a short-term (lasting less than a day) attachment resulting in minimal impacts to the target animal; any additional energetic costs from drag of the tag unit would be insignificant. Because dart tags pierce the skin, there is a potential risk of infection at the tag site with the wound healing after the tag is shed, usually in a couple of weeks. The extent of biopsy- and tag-related injury would be minimized by conditions of the permit limiting how biopsy sampling and the attachment of tags may occur, such as avoiding sensitive areas of the body. The SWFSC would also continue to minimize potential disturbance by:

- Limiting time spent in the vicinity of target animals and the number of attempts made to collect biopsy samples or to deploy tags in order to minimize incidental harassment or disturbance from the presence of the small boat or the activities.
- Not approaching animals exhibiting behaviors that indicate a negative reaction to the vessel, such as aerial behaviors or tail slaps. If at any time during these activities there is a negative reaction (rapidly diving, tail slapping, or rapidly swimming away), all efforts to approach the animals would cease.

Level B harassment from large and small vessel surveys and photo-identification, as described above, would continue to occur concurrently with Level A harassment activities, as described in the 2010 EA.

4.1.2 Effects of Alternative 1: No Action

Under the No Action alternative, the take activities would continue as currently authorized under the existing permit. Based on the analyses in the 2010 EA and Biological Opinion, NMFS determined issuance of the permit would not likely jeopardize the continued existence of any ESA-listed species (NMFS 2010*a, b*). Additionally, the activities conducted under the permit were not expected to significantly affect any other portions of the environment. There would be no effects of the No Action alternative other than those described in the above section on *EFFECTS COMMON TO ALL ALTERNATIVES.*

4.1.3 EFFECTS OF ALTERNATIVE 2: Issue Permit Amendment Request -04 with Standard Conditions

The activities requested in the permit amendment application would allow additional takes for research conducted on certain cetacean species. The amendment would add takes by harassment during the following: photographing cetaceans and collecting breath samples from gray whales using UAS; suction cup tagging gray whales; and attaching dart/barb tags to up to 15 bottlenose and 15 Risso's dolphins per year. Except for the requested take of bottlenose and Risso's dolphins, the number of cetaceans that would be taken annually would not change from what is currently authorized. The number of animals proposed to be taken annually would be slightly higher than is currently authorized for some species, but would not be substantially different from the level of effort currently authorized under Permit No. 14097-03. The overall effects of issuing the permit amendment would be similar to the effects of issuing Permit No. 14097, which was analyzed in the 2010 EA resulting in a FONSI.

The effects of attaching suction cup and dart/barb tags to cetaceans were analyzed in the 2010 EA resulting in a FONSI. In addition to the effects described in the above section *EFFECTS COMMON TO ALL ALTERNATIVES*, photographing cetaceans and collecting breath samples from gray whales by UAS would result in Level B harassment of animals.

Effects of Level B Harassment

Harassment from close approach to cetaceans by UAS would be added to the list of authorized activities under Alternative 2, but the use of the UAS would not be expected to have greater impacts to the target animals than what was previously analyzed in the 2010 EA, incorporated by

reference here. As described in that EA and in the above section, reactions due to close approach are expected to be generally short-term and of a low impact and are not likely to disrupt the migration, breathing, nursing, feeding, breeding, or sheltering behavior of marine mammals. A discussion of potential impacts from the UAS flown at a lower altitude than previously described and analyzed is provided here.

The proposed UAS operates almost silently and would be expected to result in minimal to no disturbance to animals, during aerial surveys at 30 to 60 m altitude and during breath sampling at 2 m altitude. With a noise level of 18 dB when flown at an altitude of 2 m, the perceived sound level of the UAS to the whale below the water surface is expected to be lower due to sound attenuation as it passes beneath the water; thus, it is expected that a large whale is unlikely to detect the presence of the UAS while overhead. In addition, the duration of the encounter with the UAS would be brief (minutes), lasting long enough for the UAS to pass through the whale blow to collect up to three samples. In comparison, the twin-engine aircraft currently used under permit No. 14097-03 to conduct aerial surveys at 150 m above sea level or higher, has a sound level of 58 dB, loud enough to be heard by cetaceans. Not only would potential noise impacts from the UAS be lower than currently authorized for aircraft but the UAS also would have a substantially lower risk of injury.

Risk of collision or physical contact with the whale is considered minimal because the UAS would be operated by a trained, qualified pilot. A significant portion of the pilot training is handling the aircraft at very low altitudes. The UASs are very stable in a hover: they have internal accelerometers and gyros that keep the aircraft in the same position until the pilot commands it to do something else. At low heights, the pilot can use altitude hold to keep the aircraft at a fixed altitude while maneuvering it over an animal. Therefore, the odds of a UAS contacting an animal are extremely low and, if by chance the UAS hit one, the odds of even scratching the skin are about nil given its small size and weight. Similar methods using remotely operated vehicles have been used by other researchers to successfully collect blow samples from blue fin, Bryde's, and sperm whales; whales did not display more avoidance behavior when approached by a model helicopter flown at 13 m altitude than is commonly observed during photo-identification approaches (D. Gendron, unpubl. data cited in Acevedo-Whitehouse et al. 2010). Dr. Fred Sharpe reported that feeding humpback whales in Alaskan waters did not react to the use of a mini-helicopter when flown 10 m above whales (Permit No. 716-1705-01 annual report 2008). In addition, an EA examining the impacts of authorizing four permits for research on endangered Southern Resident killer whales (*Orcinus orca*) evaluated the use of UASs for collecting blow samples 3 m above the target whales (NMFS 2012*a*). The manner of sampling analyzed is similar to the proposed blow sampling for Permit No. 14097-04. That analysis, which concluded in a FONSI, determined that blow sampling would result in no more than Level B harassment.

Based on the 2012 EA, the design of the UAS, pilot qualifications (how it will be operated), and the reported use of UASs over cetaceans thus far, NMFS does not expect that flying a UAS at the proposed lower altitudes over cetaceans would result in greater impacts than described and analyzed in the 2010 EA. As described in the 2010 EA, behavioral responses would be expected to vary from no response to diving, tail slapping, or changing direction and should be short-lived and minimal. These short-term behavioral responses would not likely lead to mortality, serious injury, or disruption of essential behaviors such as feeding, mating, or nursing, to a degree that the

individual's likelihood of successful reproduction or survival would be substantially reduced. Annual reports submitted by the SWFSC under Permit No. 14097 indicate that conduct of activities resulting in Level B harassment have not lead to mortality, serious injury, or permanent disruption of essential behaviors such as feeding, mating, or nursing (NMFS 2011, 2012*b*, 2013, and 2014); no more than short-term disturbance was reported by the SWFSC when conducting the authorized research activities These reports are hereby incorporated by reference.

The permit amendment, if issued, would contain the same conditions as Permit No. 14097, intended to minimize impacts to target animals, for example requiring the SWFSC to retreat from animals if behaviors indicate the approach may be interfering with reproduction, pair bonding, feeding, or other vital functions. As part of this alternative, conditions would also be added to the permit to limit the altitude at which the UAS can be flown over whales to minimize the potential for disturbance and injury of the target cetaceans.

Effects of Level A harassment - Tagging

The proposed tagging activities would use suction cup and dart/barb tags currently authorized by Permit No. 14097-03 and analyzed in the 2010 EA and are discussed in the above section *EFFECTS COMMON TO ALL ALTERNATIVES.* As discussed in Ch. 4 the 2010 EA, incorporated by reference, suction cup tags are short-term attachments lasting less than a day that are not expected to result in additional energetic costs to the target animal. Hence, the attachment of both tag types on an animal concurrently, as proposed for gray whales, would be short-lived and is not expected to result in additional cumulative impacts to the target animal not previously considered. A summary of potential impacts from the dart tags is provided here to supplement the analysis in the 2010 EA.

The "dart" tags authorized by Permit No. 14097-03 are a medium-duration satellite tag (after Andrews et al. 2008) that attach using small, penetrating darts for an average of four weeks (NMFS 2008*b*), before backing out of the entrance holes. Applications of the "dart" tag unit on other marine mammals indicate that it may remain attached for 14 weeks (Jay et al. 2006). The 2010 EA considered the use of dart tags attached to the dorsal fin or dorsal surface of medium-sized cetaceans and large whales.

Dart tags have been used on smaller cetaceans, such as Risso's and bottlenose dolphins as proposed in this amendment (e.g. Falcone and Schorr 2012, Baird et al. 2013). For these species, tags would be attached to the dorsal fin using two 4.5 cm penetrating titanium darts with backward facing petals (following the protocol for small cetaceans by Falcone and Schorr 2011). The penetrating darts for Risso's and bottlenose dolphins are shorter than the 6.5 cm penetrating darts used for other species and analyzed in the 2010 EA because they have smaller dorsal fins. According to the SWFSC, no negative long-term effects have been documented after dart tagging these species; however, short-term effects, such as tissue reaction and discoloration, have been noted.

These tags have been safely and successfully deployed on beaked whales (Baird et al. 2008a, Schorr et al. 2009), sperm whales (Schorr et al. 2007), fin whales (Schorr et al unpublished)), pilot whales (Andrews et al. 2011), melon-headed whales (Schorr et al. 2009) and false killer whales

(Baird et al. 2008b). Behavioral reactions of 14 cetacean species to dart-tagging activity carried out from 2006-2009, are summarized below (Baird, unpublished data). The few short-term strong reactions lasted less than 15 minutes and no significant long term individual reactions were documented in post-tagging observations of over 40 individuals.

Table 2. Reactions to satellite and VHF dart-tagging by species, 2006 - 2009. Reaction levels follow Weinrich et al. (1992) and Berrow et al. (2002).

Species (N)	No Reaction # (%)	Low Level (e.g. slight acceleration) # (%)	Moderate (e.g. Fast dive, tail flick, acceleration) # (%)	Strong (e.g. several tail flicks, breaches) # (%)
Short-finned pilot whale (40)	0 (0)	1 (3)	38 (95)	1 (3)
False killer whale (23)	2 (9)	0 (0)	21 (91)	0 (0)
Melon-headed whale (13)	0 (0)	0 (0)	13 (100)	0 (0)
Pygmy killer whale (4)	0 (0)	0 (0)	4 (100)	0 (0)
Killer whale (9)	1 (11)	2 (22)	6 (67)	0 (0)
Risso's dolphin (2)	0 (0)	1 (50)	1 (50)	0 (0)
Bottlenose Dolphin (1)	0 (0)	0 (0)	0 (0)	1 (100)
Blainville's beaked whale (11)	0 (0)	0 (0)	11 (100)	0 (0)
Cuvier's beaked whale (8)	0 (0)	0 (0)	8 (100)	0 (0)
Sperm whale (12)	0 (0)	2 (17)	10 (83	0 (0)
Fin whale (16)	7 (44)	4 (25)	5 (31)	0 (0)
Minke whale (1)	0 (0)	0 (0)	0 (0)	1 (100)
Blue whale (3)	1 (33)	1 (33)	1 (33)	0 (0)
Humpback whale (1)	0 (0)	1 (100)	0 (0)	0 (0)
Total (144)	11 (7.6)	12 (8.3)	118 (81.9)	3 (2.1)

Additional risks from tagging include infection and interruption of blood flow to the tagged area of the body. A review of 17 LIMPET tagging events of four species of Hawaiian odontocetes, including false killer whales, was conducted by Hanson et al. (2008). Analysis of photographs collected post-tagging indicates that long term effects are scarring along with some tissue inflammation. There was no indication of infection or necrosis as expected based on prior studies of cetacean skin healing processes (Bruce-Allen and Geraci 1985, Geraci and Bruce-Allen 1987). The wounds associated with tagging fell within the range of naturally sustained tissue damage from sources such as cookie cutter sharks, remoras, conspecifics, etc., which are commonly documented in healthy, reproductive cetaceans (McSweeney et al. 2007, Walker and Hanson 1999, McCann 1974, Heithaus 2001*a, b*). Additionally, a known successfully reproducing female false killer whale lacking a dorsal fin has been observed in Hawaiian waters, with only a small amount of unpigmented scar tissue documented at the site of the missing dorsal fin (Baird and Gorgone 2005), indicating that individuals can heal completely from larger wounds than those expected from the darts.

The harassment would not be expected to have any additional effects that were not previously analyzed. The short-term effects that might result from harassment takes would not likely lead to mortality, serious injury, or disruption of essential behaviors such as feeding or mating to a degree that the individual's likelihood of successful reproduction or survival would be substantially reduced. In addition, existing conditions and mitigation measures would remain in the permit to further limit the potential for negative effects from the takes by harassment and conditions would be added as noted in Ch.2.2 limiting the use of the UAS to no lower than the proposed altitudes while over cetaceans.

4.1.4 Effects of Alternative 3: Issue Permit Amendment Request -05 (Humpback Whales) with Standard Conditions

The activities requested in the permit amendment application would allow additional harassment takes for research to be conducted on certain cetacean species. The amendment would add authorization for Level A harassment to collect multiple biopsy samples of humpback whales in the Southern Ocean. Specifically, up to 25 humpback whales would be biopsied no more than 5 times each in a 12-month period. No more than three samples would be collected from an individual within 24 hours. The number of humpback whales that would be taken annually would not change from what is currently authorized. The expiration date of the permit also would be extended by 12 months, to June 30, 2016. The potential for an extension to the permit was described as part of the action to issue Permit No. 14097 in Ch. 2.2 of the 2010 EA and that analysis is incorporated by reference here. In keeping with that action, an extension to the permit would not authorize additional takes under the permit; rather an extension would allow researchers to use any takes remaining from the fifth year of the permit. Therefore, the extension would not result in impacts to the species not already analyzed in the 2010 EA. On the contrary, the potential cumulative impacts to the species and target individuals from authorized annual takes would be reduced because the annual takes would be spread over two years instead of one year thereby increasing the recovery period between survey effort. Because NMFS is not aware of any new information that would substantially change the assessment of the environment impacts of this action and the status of the target and non-target species in the action area have not significantly changed since the writing of the 2010 EA, the extension of the permit is not considered further in this SEA. Given that 1) biopsy sampling is expected to result in short-term impacts (see below for more discussion) and 2) the extension would not result in additional take of the target species as described in the 2010 EA, the overall effects of issuing the permit amendment would be similar to the effects of issuing Permit No. 14097, which was analyzed in the 2010 EA resulting in a FONSI .

The effects of biopsy sampling were analyzed in the 2010 EA and are summarized in the above section *EFFECTS COMMON TO ALL ALTERNATIVES.*

As described in the 2010 EA, these procedures would be expected to result only in short-term stress and discomfort and no long-term effects would be anticipated. Any behavioral impacts would likely be short-term and considered minimal. Collecting multiple samples from the same individual within a 12-month period would not be expected to result in direct mortality, serious injury that would lead to mortality, or disruption of essential behaviors such as feeding, mating, or nursing, to a degree that the individual's likelihood of successful reproduction or survival was

The proposed takes would not be expected to result in more than short-lived, minimal harassment of individual animals of any age class or sex. No serious injury or mortality would be expected from these activities.

The proposed takes would not be expected to reduce the reproductive fitness or success of any cetacean. Re-sightings of sampled animals suggest that animals would not significantly alter their range or habitat use and that any wounds at the biopsy site would heal over time, resulting in no long-term adverse effects to individual health, as described in the 2010 EA. The proposed takes from biopsy activities would not likely lead to serious injury, mortality, or disruption of essential behaviors such as feeding, mating, or nursing, to a degree that the individual's likelihood of successful reproduction or survival would be substantially reduced; therefore no stock- or species-level effects would be expected.

The takes would not be expected to have any additional effects that were not previously analyzed. The short-term effects that might result from takes would not likely lead to mortality, serious injury, or disruption of essential behaviors such as feeding or mating to a degree that the individual's likelihood of successful reproduction or survival would be substantially reduced. In addition, conditions and mitigation measures would remain in the permit as described in Ch. 2 to further limit the potential for negative effects from these activities.

4.1.5 COMBINED EFFECTS OF ALTERNATIVES 2 and 3: Issue Permit Amendment Requests -04 and -05 with Standard Conditions

If NMFS issues both permit amendments, the amended permit would allow additional harassment takes for research to be conducted on all of the cetacean species described in Alternatives 2 and 3 and extend the permit by 12 months, to June 30, 2016. The two amendments together would add takes by harassment during the following:

- photographing cetaceans and collecting breath samples from gray whales using UAS;
- suction cup tagging gray whales;
- attaching dart/barb tags to up to 15 bottlenose and 15 Risso's dolphins per year; and
- collecting multiple biopsy samples of humpback whales in the Southern Ocean.

Except for the requested take of bottlenose and Risso's dolphins, the number of cetaceans that would be taken annually would not change from what is currently authorized. The number of animals proposed to be taken annually if both amendments were issued would be slightly higher than is currently authorized for some species, but would not be substantially different from the level of effort currently authorized under Permit No. 14097-03.

The effects of issuing both permit amendments would combine the effects described above for each alternative. The proposed takes would not be expected to result in more than short-lived, minimal harassment of individual animals of any age class or sex. No serious injury or mortality would be expected from these activities.

The takes would not be expected to have any additional effects that were not previously analyzed. The short-term effects that might result from takes would not likely lead to mortality, serious

injury, or disruption of essential behaviors such as feeding or mating to a degree that the individual's likelihood of successful reproduction or survival would be substantially reduced. In addition, conditions and mitigation measures would remain in the permit to further limit the potential for negative effects from these activities.

The overall effects of issuing both permit amendments would be similar to the effects of issuing Permit No. 14097, which was analyzed in the 2010 EA resulting in a FONSI.

4.2 SUMMARY OF COMPLIANCE WITH APPLICABLE LAWS, NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

NMFS has determined that the proposed research is consistent with the purposes, policies, and applicable requirements of the MMPA, ESA, and NMFS regulations summarized below. NMFS issuance of the permit would be consistent with the MMPA and ESA. In addition, NMFS consulted with the National Ocean Service's National Marine Sanctuary Program to ensure that issuance of the requested amendments would comply with the National Marine Sanctuary Act.

4.2.1 Endangered Species Act

This section summarizes conclusions resulting from consultation as required under section 7 of the ESA. No consultation is required for Alternative 2. Alternative 3 is the only alternative to require section 7 consultation. The consultation process will be conducted after the close of the comment period on the application to ensure that no relevant issues or information were overlooked during the initial scoping process summarized in Chapter 1. For the purpose of the consultation, the draft SEA represents NMFS' assessment of the potential biological impacts of Alternative 3. Permit amendment -05 would not be issued until and unless consultation with NMFS determines that the proposed amendment would not jeopardize any endangered species or destroy or modify any critical habitat under NMFS jurisdiction.

In addition, permits for scientific purposes are issued under Section 10(a)(1)(A) of the ESA, and must be consistent with Section 10(d) of the ESA. These permits exempt research and enhancement activities on threatened and endangered species from the ESA's take prohibitions. An ESA section 10 permit is required for the research described because it will result in takes of endangered species by harassment, pursuit, and wounding.

4.2.2 Marine Mammal Protection Act

The applicant submitted two amendment applications, which included responses to all applicable questions in the application instructions. The requested amendments are consistent with applicable issuance criteria in the MMPA and NMFS implementing regulations. As required by the MMPA and NMFS regulations, the information provided by the applicant must demonstrate that:

- the taking is required to further a *bona fide* scientific purpose;
- the taking will be consistent with the purposes of the MMPA and applicable regulations;
- the proposed research will not likely have significant adverse effects on any other component of the marine ecosystem of which the affected species or stock is a part;
- for species or stocks designated or proposed to be designated as depleted, or listed or proposed to be listed as endangered or threatened

- the research cannot be accomplished using a surrogate species or stock, and
- the research, by itself or in combination with other activities will not likely have a long-term direct or indirect adverse impact on the species or stock.

The views and opinions of scientists or other persons or organizations knowledgeable of the marine mammals that are the subject of the application or of other matters germane to the application were considered, and support NMFS's initial determinations regarding the application.

The amended permit would contain standard terms and conditions stipulated in the MMPA and NMFS's regulations. As required by the MMPA, the permit would specify: (1) the effective date of the permit; (2) the number and kinds (species and stock) of marine mammals that may be taken; (3) the location and manner in which they may be taken; and (4) other terms and conditions deemed appropriate. Other terms and conditions deemed appropriate relate to minimizing potential adverse impacts of specific activities, coordination among permit holders to reduce unnecessary duplication and harassment, monitoring of impacts of research, and reporting to ensure permit compliance.

4.2.3 National Marine Sanctuaries Act

The SWFSC has obtained a permit to conduct research activities in National Marine Sanctuaries (Permit # MULTI-2008-003). If additional permits are required, they will be obtained by the SWFSC.

4.2.4 Convention on International Trade in Endangered Species of Wild Fauna

Permits have been or will be obtained from the USFWS to authorize under CITES the import/export activities included in this application.

4.3 COMPARISON OF ALTERNATIVES

The activities described in Alternatives 2 and 3 would each allow takes of certain cetacean species. The takes proposed in both Alternatives 2 and 3 would not be expected to have any additional effects that were not previously analyzed in the 2010 EA. The short-term effects that might result from takes would not likely lead to mortality, serious injury, or disruption of essential behaviors such as feeding or mating to a degree that the individual's likelihood of successful reproduction or survival would be substantially reduced. Neither Alternative 2 nor 3 would result in a substantial increase in the harassment of marine mammals in the action area. Alternative 3 would extend the duration of harassment for 12 months beyond what is currently authorized under Permit No. 14097-03. No additional incidental disturbance of non-target cetacean, pinniped, or turtle species would occur. The potential for adverse impacts on the human environment is not greater under Alternative 2 or 3 than under the No Action alternative.

4.4 MITIGATION MEASURES

In addition to the measures identified in the SWFSC's application and otherwise considered "good practice or protocol," all NMFS marine mammal research permits contain conditions intended to minimize the potential adverse effects of the research activities on the animals. These conditions are based on the type of research authorized, the species involved, information in the literature and from the researchers about the effects of particular research techniques and the responses of animals to these activities.

Under either Alternative 2 or 3, the permit conditions would remain the same as those in Permit No. 14097-03. Under Alternative 2, conditions would also be added to the permit to limit the altitude at which the UAS can be flown over whales to minimize the potential for disturbance and injury of the target cetaceans.

4.5 UNAVOIDABLE ADVERSE EFFECTS

The mitigation measures imposed by permit conditions are intended to reduce, to the maximum extent practical, the potential for adverse effects of the research on the targeted species as well as any other species that may be incidentally harassed.

4.6 CUMULATIVE EFFECTS

Cumulative effects are defined as those that result from incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time. These effects are the same under all Alternatives.

A discussion of cumulative effects was included in the 2010 EA, and included:

- *Vessel Interactions: Ship Strikes*
- *Vessel Interactions: Marine Mammal Watching*
- *Conservation Efforts*
- *Commercial Whaling and Subsistence Hunting*
- *Entrapment and Fishing Gear Entanglement*
- *Habitat Degradation*
- *Noise*
- *Climate and Ecosystem Change*
- *Incidental Harassment Authorizations*
- *Other Scientific Research Permits and Authorizations*

The following sections update the *Incidental Harassment Authorizations* and *Other Scientific Research Permits and Authorizations portions of the EA*, because additional authorizations and scientific research permits have been issued since the 2010 EA was finalized.

Incidental Harassment Authorizations

In addition to scientific research permits, NMFS issues Letters of Authorization (LOAs) and Incidental Harassment Authorizations (IHAs) under the MMPA for the incidental take of marine mammals. NMFS has issued four IHAs, six rulemakings, and eight LOAs for the take of multiple target species in the action area[7].

Other Scientific Research Permits and Authorizations

NMFS has issued dozens of permits for the take of marine mammals by harassment from a variety of activities, including aerial and vessel surveys, photo-identification, remote biopsy sampling, and

7 As of January 31, 2014.

attachment of scientific instruments in the Pacific and Southern Oceans. One permit (NMFS Marine Mammal Health and Stranding Response Program, File No. 932-1905) authorizes the take of stranded or distressed marine mammals, including disentangling whales.

As described in the 2010 EA, the number of permits and associated takes by harassment indicate a high level of research effort of some endangered marine mammal species in the proposed action area. This is due, in part, to intense interest in developing appropriate management and conservation measures to recover these species. Given the number of permits, associated takes and research vessels and personnel present in the environment, repeated disturbance of individual large whales is likely to occur in some instances, particularly in coastal areas (due to the proximity to shore). It is difficult to assess the effects of such disturbance. However, NMFS has taken steps to limit repeated harassment and avoid unnecessary duplication of effort through permit conditions requiring coordination among permit holders. NMFS would continue to monitor the effectiveness of these conditions in avoiding unnecessary repeated disturbances.

A total of 29 permits[8] authorize the harassment of one or more of the target cetacean species in the action area during research. Most of this research does not overlap in area or timing. Some spatial overlap exists for research on species with known feeding or breeding grounds, such as humpback whales. The majority of the takes authorized by these permits are for Level B harassment that will result in no more than disturbance to the target species.

In addition to these permits, eight Letters of Confirmation (LOC) under the General Authorization for Scientific Research have been issued for at least one of the target cetacean species; these LOCs confirm that the research will result in no more than Level B harassment of non-ESA marine mammals.

As described in the 2010 EA, none of the active research permits authorize activities likely to result in the serious injury or mortality of any animal. Further, no such incidences have been reported by permitted cetacean researchers. Therefore, the amendments proposed by the SWFSC are not expected to result in a significant adverse impact on the target species. In addition, all permits issued by NMFS for takes of protected species during *bona fide* research, including Permit No. 14097 and any potential amendments, contain conditions requiring the Permit Holders to coordinate their activities with the NMFS regional offices and other Permit Holders conducting research on the same species in the same areas, and, to the extent possible, share data to avoid unnecessary duplication of research and disturbance of animals.

Summary of cumulative effects

As described in the 2010 EA, permit issuance (including amendments) is likely to have some level of impact on marine mammal populations in the proposed action area, particularly where ESA-listed (endangered and threatened) and MMPA-depleted species are involved. Although the target species are impacted by a number of human activities, it is important to note that these activities are not occurring simultaneously on the same individuals of a population/stock on a daily basis and most human impacts are not known to cause serious injury or mortality of marine mammals. Further, the target species are not exposed to all human activities at all times, particularly given the broad action area and migratory nature of some species.

8 As of January 31, 2014.

The short-term stresses (separately and cumulatively with other environmental stresses) resulting from the permit would be expected to be minimal to targeted animals. Behavioral reactions suggest that harassment is brief, lasting minutes, before animals resume normal behaviors. NMFS expects any effects of harassment to dissipate before animals could be harassed by other human activities. Significant cumulative impacts are not expected since no serious injury or mortality is expected (resulting in no direct loss of animals from the population) nor is an appreciable reduction in the fecundity of target individuals. Therefore, the proposed additional takes in Alternatives 2 and 3 would contribute a negligible increment of harassment over and above the effects of the baseline activities currently occurring in the marine environment of the proposed action area.

Although the effects of repeated or chronic disturbance from scientific research permits should not be dismissed, the potential long-term benefits and value of information gained on these species also must be considered. The proposed research may provide valuable information on these species' biology and ecology that in turn could be used to improve their management and reduce the effects of human activities on these populations.

CHAPTER 5 LIST OF PREPARERS AND AGENCIES CONSULTED

This document was prepared by the Permits and Conservation Division of NMFS' Office of Protected Resources in Silver Spring, Maryland.

The National Ocean Service was consulted in the preparation of this SEA.

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