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 a scientific research permit 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 permit would be valid for five years from the date of issuance and would authorize research on five species of pinniped, fifty-seven species of cetacean, and five species of sea turtles. The purposes of Project I (Pinnipeds) are to conduct population assessments to determine abundance, distribution patterns, length frequencies, and breeding densities. Scats and spewings would be collected to determine the diet of California sea lions. The purpose of Project II (Cetaceans) is to determine the abundance, distribution, movement patterns, and stock structure of cetaceans in U.S. territorial and international waters. Projects I and II would be conducted through vessel surveys, aerial surveys, photogrammetry, photo-identification, biological sampling, radio tagging, and satellite tagging. The purpose of Project III (Sea Turtles) is to determine the abundance, distribution, movement patterns, stock structure, and diet of sea turtles in U.S. territorial and international waters. Sea turtles would be opportunistically captured during Project II for collection of blood samples, stomach contents, and tissue samples and to attach satellite tags. Cetacean, pinniped, and sea turtle parts, specimens, and biological samples would also be salvaged and imported/exported.

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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 DESCRIPTION OF ACTION

In response to receipt of a request from the National Marine Fisheries Service (NMFS), Southwest Fisheries Science Center (SWFSC; Lisa Ballance, Responsible Party) (File No. 14097), NMFS proposes to issue a scientific research permit that 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

Under the ESA and MMPA, NMFS is responsible for the conservation and recovery of most endangered and threatened marine mammals. Scientific research is an important means of gathering valuable information about these species and is necessary to conserve them and promote their recovery. The research activities and data collection and analysis conducted by the SWFSC are for the protection, management, and recovery of protected resources. The objectives of the research are to determine the abundance, distribution, movement patterns, dive behavior,

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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."

demographic parameters, trends in recruitment, and stock structure of cetaceans, pinnipeds, and sea turtles in U.S. territorial and international waters.

The proposed research would continue research that has been conducted since 2004 under Permit No. 774-1714 and all subsequent amendments. The take numbers requested for some species are higher than those currently authorized, but are needed to ensure a high enough sample size to conduct the best and most thorough population assessments possible, to allow for a significant number of takes where no data is obtained (most often due to bad weather leading to approaches with no biopsy or tagging success or poor quality photographs), and to allow for a variety of research objectives which alternate from one year to the next.

Biopsy sampling large whale calves older than two months is a valuable, but rare, opportunity, and is necessary to develop a genetic catalog with whales of known age as the calves are re-sampled as juveniles and adults. Sampling calves also is important for determination of paternity and reproductive success of individual males, will in the long term provide an independent measure of reproductive success for an individual female, and will allow for refined determination of stock separation or mixing. Biopsy samples of adults and calves are also necessary to determine diet and nutritional status from blubber samples.

1.2 OTHER EA/EIS THAT INFLUENCE SCOPE OF THIS EA

The SWFSC has been authorized to conduct similar research since 2004 under Permit No. 774-1714, expiring in June 2010. The issuance of this permit and ten subsequent amendments has been analyzed under numerous NEPA documents. The NEPA documents that contain analyses relevant to the proposed action include:

- *Environmental Assessment on the Effects of the Issuance of Eleven National Marine Fisheries Service Permitted Scientific Research Activities on Marine Mammal and Sea Turtle Species in the U.S. Territorial Waters and High Seas of the North Pacific Ocean (including the Gulf of Alaska and Bering Sea), Arctic Ocean (including the Chukchi Sea and Beaufort Sea), Southern Ocean (including waters off Antarctica), and Foreign Territorial Waters of Mexico (Gulf of California only), Canada, Russia, Japan and the Philippines* (NMFS 2004a). This was a batched EA which analyzed the issuance of Permit No. 774-1714 and ten other research permits. The objective of the various permits was to collect information on the biology, foraging ecology, behavior, and communication of a variety of marine mammal and sea turtle species in the action area, with a focus on humpback whales in the North Pacific. This EA described and analyzed the effects of research activities ranging from close approaches during aerial and vessel surveys for photo-identification to biopsy sampling and acoustic playbacks. Four alternatives were proposed: 1) no action; 2) authorizing the proposed activities except invasive sampling; 3) authorize all the proposed activities; and 4) retraction of all permits and no further issuance of permit requests. All but alternative 3 were found to be unsuitable because they would fail to provide critical information on the ecology and biology of marine mammals that would help conserve, manage, and recover these species. A Finding of No Significant Impact (FONSI) was signed June 30, 2004 based on the best available information suggesting that careful approaches to cetaceans, even

repeated approaches, elicited only moderate to minimal reactions, and that most animals showed no observed change in behavior in response to biopsy sampling or tagging.

- *Supplemental Environmental Assessment on the Effects of the Issuance of Nine National Marine Fisheries Service Permit Actions for Scientific Research Activities on Marine Mammal Species in the U.S. Territorial Waters and High Seas of the Eastern, Central, and Western North Pacific Ocean, with a Primary Focus on the Waters Off Hawaii and from California Northward to Southeast Alaska (Including Gulf of Alaska and Aleutian Islands), and Including Foreign Territorial Waters of Japan* (NMFS 2005a). For issuance of the first major amendment No. 774-1714-03, an SEA was prepared that analyzed the effects of increasing the number of humpback whales biopsy sampled in the North Pacific under the SWFSC's permit. It concluded that biopsy sampling would not result in more than short-term disturbance to individual animals and no significant cumulative effect of the request was expected. A FONSI was signed September 16, 2005.

- *Environmental Assessment on the Effects of the Issuance of Four National Marine Fisheries Service Scientific Research Permits and Three Permit Amendments on the Eastern North Pacific Southern Resident Killer Whale (Orcinus orca) and Other Marine Mammals in the U.S. Territorial Waters, Exclusive Economic Zones, and High Seas of the Eastern North Pacific Ocean along the Coast of the U.S. from Southeastern Alaska to Central California, and Coastal Inlets and Estuaries of These States* (NMFS 2006a). This batched EA was prepared for amendment No. 774-1714-04 as a result of the ESA listing of Southern Resident killer whales (SRKW). Although the SWFSC was already authorized for takes of killer whales, takes had to be re-analyzed for the listing of one stock and broken out between takes for listed SRKW versus transient, non-listed orcas. The proposed activities (close approach, biopsy sampling, and tagging) were expected to result only in short-term stress and discomfort to individual animals and no long-term, cumulative effects were anticipated. A FONSI was signed March 30, 2006.

- *Supplemental Environmental Assessment on the Effects of Issuance of an Amendment to Scientific Research Permit No. 774-1714-09 [National Marine Fisheries Service (NMFS) Southwest Fisheries Science Center (SWFSC)] for Marine Mammal Studies* (NMFS 2009). This SEA was prepared for amendment No. 774-1714-10 analyzing the effects of increasing takes by harassment of two species of common dolphins during research and extending the permit duration by one year. It was concluded that the proposed activities would not change the nature of the research activities, the species that may be affected, or effects to species that may occur. A FONSI was signed June 22, 2009.

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.

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 application was made available for public review and comment for 30 days (74 FR 37015; July 27, 2009).

- No public comments were received.

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 EA. The Marine Mammal Commission recommended that NMFS defer consideration of this scientific research permit until an Institutional Animal Care and Use Committee (IACUC) has reviewed the proposed research activities and has found them to be consistent with Animal Welfare Act (AWA) requirements.

- The NMFS Science Board has moved to adopt IACUCs, pursuant to the AWA, as standard procedure for NOAA Fisheries Service science facilities conducting research on marine mammals. Efforts have been made to create and train Regional IACUCs, but the final IACUC policy has not yet been signed. In a memorandum dated November 9, 2009, James W. Balsiger, Ph.D., Acting Assistant Administrator for Fisheries, directed NMFS Science Centers to include a NMFS IACUC assurance statement, signed by the Regional IACUC chair, with all applications submitted after December 31, 2009, for permits or amendments to permits to conduct scientific research on marine mammals. Because this application was received in October 2008 and complete by July 2009, the application was processed without the NMFS IACUC assurance statement.

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

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action, as well as who is responsible for obtaining them. Even when it is the applicant's responsibility to obtain such permissions, NMFS is obligated under NEPA to ascertain whether the applicant is seeking other federal, state, or local approvals for their action.

1.4.1 National Environmental Policy Act

NEPA was enacted in 1969 and is applicable to all "major" federal actions significantly affecting the quality of the human environment. A major federal action is an activity that is fully or partially funded, regulated, conducted, or approved by a federal agency. NMFS issuance of permits for research represents approval and regulation of activities. While NEPA does not dictate substantive requirements for permits, licenses, etc., it requires consideration of environmental issues in federal agency planning and decision making. The procedural

provisions outlining federal agency responsibilities under NEPA are provided in the CEQ implementing regulations (40 CFR Parts 1500-1508).

NOAA has, through NOAA Administrative Order (NAO) 216-6, established agency procedures for complying with NEPA and the implementing regulations issued by the CEQ. NAO 216-6 specifies that issuance of scientific research permits under the MMPA and ESA is among a category of actions that are generally exempted (categorically excluded) from further environmental review, except under extraordinary circumstances. When a proposed action that would otherwise be categorically excluded is the subject of public controversy based on potential environmental consequences, has uncertain environmental impacts or unknown risks, establishes a precedent or decision in principle about future proposals, may result in cumulatively significant impacts, or may have an adverse effect upon endangered or threatened species or their habitats, preparation of an EA or EIS is required.

While issuance of scientific research permits is typically subject to a categorical exclusion, as described in NAO 216-6, NMFS is preparing an EA for this action to provide a more detailed analysis of effects to ESA-listed species. This EA is prepared in accordance with NEPA, its implementing regulations, and NAO 216-6.

1.4.2 Endangered Species Act

Section 9 of the ESA, as amended, and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption such as by a permit. Permits to take ESA-listed species for scientific purposes, or for the purpose of enhancing the propagation or survival of the species, may be granted pursuant to Section 10(a)(1)(A) of the ESA.

NMFS has promulgated regulations to implement the permit provisions of the ESA (50 CFR Part 222) and has produced OMB-approved application instructions that prescribe the procedures necessary to apply for permits. All applicants must comply with these regulations and application instructions in addition to the provisions of the ESA.

Section 10(d) of the ESA stipulates that, for NMFS to issue permits under section 10(a)(1)(A) of the ESA, the Agency must find that the permit: was applied for in good faith; if granted and exercised will not operate to the disadvantage of the species; and will be consistent with the purposes and policy set forth in Section 2 of the ESA.

Section 2 of the ESA sets forth the purposes and policy of the Act. The purposes of the ESA are to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in section 2(a) of the ESA. It is the policy of the ESA that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of the ESA. In consideration of the ESA's definition of conserve, which indicates an ultimate goal of bringing a species to the point where listing under the ESA is no longer necessary for its continued

existence (i.e., the species is recovered), exemption permits issued pursuant to section 10 of the ESA are for activities that are likely to further the conservation of the affected species.

Section 7 of the ESA requires consultation with the appropriate federal agency (either NMFS or the U.S. Fish and Wildlife Service) for federal actions that "may affect" a listed species or adversely modify critical habitat. NMFS issuance of a permit affecting ESA-listed species or designated critical habitat, directly or indirectly, is a federal action subject to these Section 7 consultation requirements. Section 7 requires federal agencies to use their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. NMFS is further required to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of habitat for such species. Regulations specify the procedural requirements for these consultations (50 Part CFR 402).

1.4.3 Marine Mammal Protection Act

The MMPA prohibits takes of all marine mammals in the U.S. (including territorial seas) with a few exceptions. Permits for *bona fide* scientific research on marine mammals, or to enhance the survival or recovery of a species or stock, issued pursuant to section 104 of the MMPA are one such exception. These permits must specify the number and species of animals that can be taken, and designate the manner (method, dates, locations, etc.) in which the takes may occur. NMFS has sole jurisdiction for issuance of such permits and authorizations for all species of cetacean and for all pinnipeds except walrus[4].

NMFS may issue a permit or authorization pursuant to section 104 of the MMPA to an applicant who submits with their application information indicating that the taking is required to further a bona fide scientific purpose. An applicant must demonstrate to NMFS that the taking will be consistent with the purposes of the MMPA and applicable regulations. If lethal taking of a marine mammal is requested, the applicant must demonstrate that a non-lethal method of conducting research is not feasible. NMFS must find that the manner of taking is "humane"[5] as defined in the MMPA. In the case of proposed lethal taking of a marine mammal from a stock listed as "depleted" NMFS must also determine that the results of the research will directly benefit the species or stock, or otherwise fulfill a critically important research need.

NMFS has promulgated regulations to implement the permit provisions of the MMPA (50 CFR Part 216) and has produced OMB-approved application instructions that prescribe the procedures (including the form and manner) necessary to apply for permits. All applicants must comply with these regulations and application instructions in addition to the provisions of the MMPA.

1.4.4 National Marine Sanctuaries Act

The NMSA (32 U.S.C. 1431 *et seq*.) authorizes the Secretary of Commerce to designate and manage areas of the marine environment with special national significance. The National Marine Sanctuary Program, operating under the NMSA and administered by NOAA's National

[4] The U.S. Fish and Wildlife Service has jurisdiction for walrus, polar bears, sea otters, and manatees.
[5] The MMPA defines humane in the context of the taking of a marine mammal, as "that method of taking which involves the least possible degree of pain and suffering practicable to the mammal involved."

Ocean Service (NOS) has the authority to issue special use permits for research activities that would occur within a National Marine Sanctuary. Obtaining special use permits is the responsibility of individual researchers. However, as a courtesy, the Office of Protected Resources consults with NOS when proposed research would occur in or near a National Marine Sanctuary.

1.4.5 Convention on International Trade in Endangered Species of Wild Fauna

CITES is an international agreement between governments with the goal of ensuring that international trade in specimens of wild animals and plants does not threaten their survival. All import, export, re-export and introduction from the sea of species covered by CITES has to be authorized through a licensing system. In the United States, the Fish and Wildlife Service is the Management Authority for CITES. Obtaining CITES permits is the responsibility of individual researchers.

1.4.6 Animal Welfare Act

The AWA (7 U.S.C. 2131 – 2156) sets forth standards and certification requirements for the humane handling, care, treatment, and transportation of mammals. Enforcement of these requirements for non-federal facilities is under jurisdiction of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service. Each research facility is required to establish an IACUC which reviews study areas and animal facilities for compliance with the AWA standards. The IACUC also reviews research protocols and provides written approvals for those that comply with AWA requirements. For federal research facilities, the head of the federal agency is responsible for ensuring compliance with the AWA requirements. It is the responsibility of the researcher to seek and secure IACUC reviews and approvals for their research.

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 the proposed permit would not be issued. The No Action alternative is the baseline for rest of the analyses. The Proposed Action alternative represents the research proposed in the submitted application for a permit, with standard permit terms and conditions specified by NMFS.

2.1 ALTERNATIVE 1 – NO ACTION

Under the No Action alternative, Permit No. 14097 would not be issued. This alternative would eliminate any potential risk to the environment from the proposed research activities. However, it would not allow the research to be conducted and the opportunity would be lost to collect information that would contribute to further our understanding of the species that NMFS is responsible for conserving and recovering under the ESA and MMPA.

This alternative would not affect any existing NMFS research permits or future requests for permits or amendments. Current research permits would remain active and NMFS would continue to evaluate new permit requests as they are received, including requests from the applicant.

2.2 ALTERNATIVE 2 – PROPOSED ACTION (ISSUANCE OF PERMIT WITH STANDARD CONDITIONS)

Under the Proposed Action alternative, a five-year research permit 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 SWFSC proposes to conduct three research projects on five species of pinniped, fifty-seven species of cetacean, and five species of sea turtles in U.S. territorial and international waters. Specific species and numbers are listed in Appendices A-D. All projects also include the salvage and import/export of cetacean, pinniped, and sea turtle parts, specimens, and biological samples (Appendix E).

Project I (Pinniped Studies) is designed to conduct population assessments of pinnipeds via aerial photography, ground or vessel surveys, and photogrammetry to determine abundance, distribution patterns, length frequencies, and breeding densities. Pinniped research would occur in the Pacific Ocean in California, Oregon, Washington, and Alaska. This research is part of an ongoing program to assess the status of pinniped species and identify fishery-marine mammal conflicts.

Project II (Cetacean Studies) is designed to determine the abundance, distribution, movement patterns, and stock structure of cetaceans in the Pacific, Southern, Arctic, and Indian Oceans. Cetacean abundance data would be used to set limits of allowable human-caused mortality under the MMPA and to monitor trends in abundance through time.

Project III (Sea Turtle Studies) is designed to determine the abundance, distribution, movement patterns, stock structure and diet of sea turtles in the North Pacific Ocean.

Permit Duration

For the proposed action, the permit would be valid for five years from the date of issuance, and would expire on the date specified in the permit. NMFS would consider issuing a single one-year extension of the permit if the permit holder submits a request in writing before the expiration of the permit and in sufficient time for processing prior to expiration. The request to extend the permit would be considered a modification, pursuant to NMFS regulations at 50 CFR §222.306, and as such would have to be accompanied by full justification and supporting information, and formatted in accordance with NMFS permit application instructions. As with any modification to a permit, the extension of the permit duration would be subject to the same issuance criteria as the original application, including the requirements that the taking will not operate to the disadvantage of the species and will be consistent with the purposes and policies of the ESA.

If granted, a one-year extension of the permit would only allow “takes” of marine mammals and sea turtles that were not used in the last year of the permit; these remaining takes would be carried forward into a sixth permit year. The extension would not change any other terms or conditions of the permit. NMFS does not consider a one-year extension of this nature to represent a substantial change to the proposed action that involves changes in environmental impacts. As such, NMFS would not prepare a supplemental EA for the one-year extension unless significant new information or circumstances relating to environmental impacts is

available (e.g., a change in the status of the target species, listing of new threatened or endangered species in the project area).

Activities

Project I (Pinniped Studies): All age and sex classes would be taken by Level B harassment during aerial photographic censuses, aerial photogrammetry, ground censuses, and California sea lion scat and spewing collections. Species and take numbers are listed in Appendix A. The proposed activities would take place on rookeries and haulouts located at the Channel Islands in the Southern California Bight (Santa Barbara Island, San Clemente Island, San Nicolas Island, San Miguel Island, Santa Cruz Island, Santa Catalina Island, Anacapa Island, and Santa Rosa Island), Año Nuevo Island, the Farallon Islands, and the coasts and bays of California, Oregon, Washington, and Alaska.

Aerial, ground, and vessel surveys would be conducted throughout the year, and include pup counts made at the end of the pupping season, which are needed to estimate population growth rates and population size. Scat and spewing samples collected in July would occur at or near the end of the California sea lion breeding/pupping season.

Aerial photographic censuses and photogrammetry would be conducted from a twin engine, high wing aircraft flying at an altitude of at least 500 feet. A camera mounted in the belly of the aircraft would be used to collect high resolution images. California sea lions (*Zalophus californianus*), Steller sea lions (*Eumetopias jubatus*), harbor seals (*Phoca vitulina richardsi*), and northern fur seals (*Callorhinus ursinus*) would normally be censused at 700 feet altitude, and northern elephant seals would be censused at 800 feet altitude. Lower altitudes would be flown if there are low fog ceilings.

Generally, only one photographic pass would be made over the animals. Occasionally a pass is repeated because photos are missed, or because animals were sighted too late to photograph. When the surface area inhabited by pinnipeds is too large for one photographic pass, multiple overlapping and slightly offset transect photo passes would be made until the entire area is photographed.

Ground or small vessel surveys would be conducted when aerial photographic censuses are not, or when the ground counts are being compared to photographic counts (i.e., ground truth). Ground surveys are done on foot by one or two observers approaching the animals close enough to observe with the naked eye or through binoculars. Approach would be between 1 to 50 meters, depending on terrain and topographical features which can hide the observer from the target animals. Based on previous surveys, disturbance during ground counts would be minimal; often no disturbance is caused. Vessel surveys would be conducted from a small rigid-hull or inflatable-hull boat powered with an outboard motor. Target animals would be approached quietly to within 5 meters. Vessel surveys of pinniped haulouts and rookeries would rarely be conducted, if ever.

Scat and spewing collection involves walking the areas where the animals have been recently, taking care to cause them the least alarm possible. Researchers would vacate the collection area

as soon as the desired sample size is obtained. Collections would be made quarterly, usually during January, April, July, and October; however, they might be made during other months if a sufficient amount of scat and spew was not collected on previous trips to complete the diet analysis.

Researchers would continue to use mitigation measures in place for the current permit to minimize risks:

- Potential disturbance from aerial surveys and photogrammetry would be minimized by flying at a constant speed and altitude.
- Aerial photographic passes would be limited in number to reduce the potential for harassment of individual animals.
- Pinniped ground surveys and scat collection are conducted on a routine basis throughout the year. Disturbance from research activities usually is a reaction to the researchers' presence; therefore continued presence to monitor the animals could continue the source of disturbance. On leaving the study site the researcher would monitor whether the animals are returning to their normal activities.
- If unusual patterns arise in the population status or the diet analysis that could be tied to disturbance from research activities, they would be thoroughly investigated.

Project II (Cetacean Studies): Vessel and aerial surveys are the primary tools used by the SWFSC to estimate abundance and distribution of marine mammals. Cetaceans would be taken during large and small vessel surveys, aerial surveys and photogrammetry, biological sample collection, and tagging. Species and take numbers are listed in Appendices B-C. Cetacean research activities would occur year-round, although vessel surveys (with concurrent aerial photogrammetry, photo-identification, biological sample collection, and tagging) would primarily be conducted July through December.

In addition to dedicated biopsy projects, biopsy sampling would be conducted in conjunction with photo-identification surveys and tagging projects. Biopsy samples would be collected from both sexes and any reproductive status. Mothers and calves would be sampled if there is no adverse reaction to the approach of the vessel. Tagging would be done by remote deployment methods. Biopsy samples would be obtained from tagged animals when possible.

Level B harassment would occur during vessel surveys, aerial surveys, aerial photogrammetry, and photo-identification activities. Sloughed skin or feces would be collected from the water with either a small aquarium net or a pool skimming net. This would only result in Level B harassment in instances when a cetacean is within 100 yards of the vessel.

Large vessel surveys would typically occur once per year, on a roughly three-year cycle per region – for example, one year a survey would be done on the west coast of the United States, one year a survey would be done in the Eastern Tropical Pacific, and one year a survey would be done in areas around Hawaii. Survey schedules are funding dependent, and typically start in July and end in December.

Data would be collected using line-transect methodology to estimate population abundance by species/stock. Although procedures may vary slightly depending on the specific objective of the

survey, the following protocol is typically used on SWFSC research vessel surveys. The vessel (likely to be the NOAA research vessel McArthur II, 68.3 m) would traverse predetermined track lines within the study area at a constant speed (usually 10 knots). Marine mammal observers stationed on the flying bridge deck of the vessel would search the area from directly ahead to abeam of the ship using pedestal-mounted 25X binoculars. At times, depending on the species sighted and the data collection priorities, the vessel might turn off the track line and approach marine mammals to confirm species identification and to estimate group size. Photographs of bow-riding animals would also be taken on an opportunistic basis from the bow of the main research vessel.

Large vessel approaches to cetaceans would be conducted at the minimum speed needed to close the distance between ship and the animals, typically 10 knots or less, and often cease when the ship is within 500 yards of the animals. Approaches would be made from behind or from the side of animals. Approach methods are designed to cause as little disturbance as possible, because it is in the best interest of the science not to disrupt the school or cause it to break into smaller groups.

Other activities that might occur concurrently with large vessel surveys include:

- aerial photogrammetry,
- photo-identification from small vessels,
- collection of skin/blubber biopsy samples from small vessels,
- tagging activities from small vessels, and
- skin/blubber biopsy samples and photographs collected from the main vessel.

Small vessel approaches would be conducted from behind animals in a manner that minimizes boat noise, does not involve sudden changes in speed or course, and does not greatly exceed the animal's travel speed. Small vessels would be used in conjunction with large vessels or for dedicated local surveys. Time spent in the vicinity of target animals, as well as the number of attempts made to collect photographs or biopsy samples or to deploy tags, would be limited in order to minimize any harassment or disturbance from the presence of the small boat or the activities.

Small vessel surveys conducted by SWFSC (typically local to San Diego) would occur year-round. Small vessel surveys conducted by Co-Investigators (CIs) would occur year-round or seasonally, depending on data collection needs. In Hawaii, surveys would generally occur in the winter and in Alaska they would occur in the summer.

Photo-identification activities are primarily conducted from small boats (e.g., rigid-hull inflatables or a 19' Cutty cabin cruiser with a 150 hp outboard four-stroke engine) either on an opportunistic basis during large vessel surveys, or during coastal small boat surveys off California, Oregon, Washington, Hawaii, Alaska, American Samoa, Palmyra Atoll, or in international waters.

Animals would be approached closely enough to optimize photographic quality (i.e., well-focused images, utilizing at least one half of the slide viewing area). Distance for optimal approach varies with the species being photographed. Generally, large whales would be

approached within 15-20 m. Smaller animals, such as delphinids, would be approached within 5-10 m. Photo-identification of adult and juvenile males and females would occur. If the opportunity arises, females accompanied by calves would be approached for photo-identification, but efforts would cease immediately if there is any evidence that the activity may be interfering with pair bonding, nursing, reproduction, feeding or other vital functions.

Aerial surveys use conventional line-transect sampling and are flown at an altitude of 500-1,000 ft (generally at 700 ft) using a twin-engine, high wing Partenavia or Twin Otter aircraft. A small, electric powered "quadracopter" would be used to survey some non-listed sea lions at 100-400 ft altitude. Surveys would be conducted along the U.S. west coast to determine the distribution and abundance of dolphin and whale stocks. Surveys would be flown year-round and are weather dependent. The number of survey days per year varies considerably, but generally ranges from 7 to 20. Two 4-hour flights per day would typically be conducted. Aerial surveys would occur from the coast to 150 nmi offshore. The aircraft would circle over animals to confirm species identification and to estimate group size. All age and sex classes would be harassed.

Photogrammetry surveys would be conducted using using twin-engine, high wing Partenavias or Twin Otter aircraft, and are separate from the aerial surveys described above. A camera, designed to collect high resolution images from high speed aircraft flying at low altitudes, is mounted in the belly of the aircraft and takes large-format, motion-compensated photographs. Photographs would generally be taken at altitudes between 500 and 700 ft. All age and sex classes would be photographed from the air.

Level A harassment would occur during biopsy sampling and tagging activities. Level B harassment from large and small vessel surveys and photo-identification, as described above, would occur concurrently.

Biopsy sample collection would occur during large vessel surveys or during coastal small boat surveys by collecting skin/blubber using a projectile dart. Projectile biopsies would be collected using a crossbow, adjustable-pressure modified air-gun, black powder gun, or pole. During any single encounter, no more than three biopsy sample attempts per individual would be made. Animals would rarely be targeted for biopsy more than twice during an encounter.

If signs of harassment (such as rapid changes in direction or prolonged diving) are observed from an individual or a group, biopsy activities would be discontinued on that individual or group. The animals to be sampled would either approach the vessel on their own or be approached using the methods described under *Large vessel surveys, Small vessel approaches,* and *Photo-identification*. The projectile biopsy sample would be collected from animals within approximately 5 to 30 m of the bow of the vessel or small boat.

Tethered biopsy darts would be used if animals are bow riding on the large vessel. There are two basic configurations for tethering biopsy darts. For the one used most often by SWFSC with bow-riding dolphins, a length of line is tied at one end to a handrail on the ship and at the other end to the dart. The line is just long enough for the biopsy dart to hit the dolphin on the back, close to the dorsal fin, and bounce up and back or away from the dolphin. A metal washer would be tied to the lower end to keep the line somewhat taut in case of wind. On the rare occasion the

dart misses the dolphin, the dart would be retrieved using the tether and the process repeated. The other tethering method involves using spooled line with the spool attached to the crossbow and the other end of the line attached to the dart. This method would be used when attempting to sample large whales from a ship where dart retrieval is impractical. With the exception of bowriding animals, tethered systems would not normally be used because the trajectory of a tethered dart is more easily affected by the wind.

The tissue collected from bowriding dolphins would be a small plug of skin and blubber, approximately 7 mm in diameter and 20 mm long, from the area behind the blowhole and in front of the dorsal fin. The depth of the biopsy tip would be controlled by a cushioned stop of neoprene vacuum hose, 25 mm in diameter, which encircles the biopsy head. The tissue collected from large cetaceans (<1 g) would be obtained from free-ranging individuals using a biopsy dart with a stainless steel tip measuring approximately 4 cm in length and 9 mm in external diameter. The tip would be fitted with a 2.5 cm stop to ensure recoil and prevent penetration deeper than 1.5 cm. The same size biopsy dart would be used for all age classes. Between sample periods, biopsy tips would be thoroughly cleaned and disinfected with bleach.

Biological samples would be collected from adults, juveniles, females with calves, and calves. No biological samples would be taken from large whale calves less than two months old or their mothers, or from dolphin calves that appear to be less than one year old or their mothers. The age of a calf would be determined by biologists in the field, who would err on the side of caution to prevent biopsy of an animal that appeared too young.

Tagging activities would be conducted during large vessel surveys and during coastal small boat surveys. Most tagging activities would be done from a small vessel platform, though the applicant would take advantage of a large ship with a configuration that would allow a potentially high success rate (i.e., low sides allowing for successful tagging of an animal swimming alongside). Animals would be approached using the methods described under *Large vessel surveys, Small vessel approaches,* and *Photo-identification*. Approaches would be slow and steady, from behind and beside the animal, and would be timed to coincide with the individual surfacing.

All tags would be deployed with a crossbow, adjustable-pressure modified air-gun, black powder gun or pole. The tag would be attached to the dorsal fin or the dorsal surface just in front of or beside the dorsal fin so that the antenna would be exposed when the animal surfaces.

Tags would be attached to adult and juvenile males and females. No tagging attempts would be made on dependent calves; however, mothers accompanying calves would be tagged. The minimum age of large whales that would be tagged is six months, which corresponds with the age that calves are usually weaned. The minimum age for medium-sized cetaceans would be one year. Dolphins would not be tagged.

Three types of tags would be employed, and usage would depend on the primary research question being addressed:

- radio tags,
- time-depth-recorder (TDR) tags, and

- satellite tags.

Radio tags allow for individual animals to be tracked and dive pattern data recorded, which, for example, provides the information to estimate dive times required to establish correction factors for estimating abundance. The radio tag would consist of a radio transmitter and an antenna. The transmitter generally operates at 148 mHz with a 30-millisecond pulse and 100 pulses/minute. The tags would be approximately 7.6 cm x 1.3 cm with a transmitting antenna approximately 40 cm. The tag with antenna would weigh approximately 30 g.

The *time-depth-recorder tag* package is a recoverable unit that provides even more detailed data on dive behavior because it records water temperature, depth and time. The TDR would provide a profile of the animal's diving activity (e.g., sound, pitch, roll, heading, depth). Time and depth would be recorded at a time interval specified by the user.

Satellite tags would be used to collect data on longer-term movements of animals as well as dive time and depth data.

Tags would be attached either by suction cup or by implanting into the skin and/or blubber. The combination of tag and attachment type would vary based on research goals. Tags described below are based on tags currently in use.

Suction cup attached TDR tags, which generally fall off within 72 hours, would be used to study diving and foraging behavior. Two types of suction-cup tags would be used:

- DTAGs
- Acousonde tags

Table 1. Comparison of suction cup tags proposed for use on cetaceans. Tag dimensions may vary depending on the target species and advances in technology.

Tag	**Dimensions**	**Attached using**	**Release**	**Attachment time**	**Attachment method**	**VHF frequency**
DTAG	6 x 3 x 2 in	Four 1 in diameter suction cups	Programmed to release by venting suction cups	24 hours recording; longest attachment 17 hrs	15 ft pole from small boat	148-150 mHz
Acousonde tag	1.25 in diameter x 8.7 in long	Two 2.5 in diameter suction cups	Until suction cups naturally release	15 minutes to 40 hrs	15 ft pole from small boat	164-165 mHz

Implantable tags would include:

- "dart" tags
- "flat implant" tags

Satellite tags, and satellite-linked TDR tags, would be deployed as dart-tags, attached externally to the animal by barbed posts. A small implant ("flat-implant") configuration of the satellite dart-tag would also be used, where some of the tag body would implant in the sub-dermal tissue in order to provide longer attachments by minimizing water resistance. Exact dimensions and weights would vary with generation of tag and specific components included. Advancements in technology have consistently led to smaller and more effective tags, and this trend is expected to continue in the future. The SWFSC expects to update its tagging equipment as newer models become available, and careful consideration of the primary research objective would be given before finalizing the tag package and deployment system to ensure that the smallest, lightest package is deployed.

Both types of implantable tags would be remotely attached using an adjustable-pressure modified air-gun or crossbow equipped with a 150 lb draw limb. The tag antenna would be inserted into the hollow shaft of a projectile bolt, and on contact with the whale this dart would fall away and be retrieved by a tether line.

Table 2. Comparison of implantable tags proposed for use on cetaceans. Tag dimensions may vary depending on the target species and advances in technology.

Tag	**Dimensions**	**Weight**	**Attached Using**	**Attachment Location**	**Length of Attachment**
"dart" tag*	6.3 cm long 3 cm wide 1.9 cm tall	40 g	Two barbed darts 4.2mm in diameter with penetration depth of 6.5 cm	Externally to the dorsal fin or dorsal surface of medium-sized cetaceans and large whales	8-9 weeks
"flat implant" tag**	7.8cm long 2cm wide 1 cm tall	77 g	Up to 7 cm of tag with penetrating tip and 4 barbs implanted into sub-dermal tissue	Dorsal fin of medium-sized cetaceans, and dorsal fin/dorsal ridge of large whales	14-24 weeks

* Based on Andrews et al. (2008); Durban et al. (submitted), used successfully on killer whales in Antarctic and Alaskan waters.
** Based on Wildlife Computers model AM-194-01S or similarly sized packages.

During any single encounter, no more than three tag deployment attempts per individual would be made. Individuals may be re-tagged after attachment of a first tag has failed, but only up to two tags per year would be placed on the same individual. On occasion, both a suction-cup tag and an implantable tag would be attached to an animal.

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.

Project III (Sea Turtle Studies): Sighting data and biological samples would be collected opportunistically during cetacean studies when it would not conflict with other research priorities. During marine mammal surveys, sightings of sea turtles would be recorded and photographed for species identification. Species and take numbers are listed in Appendix D. In addition, sea turtles would be captured to:

- measure, weigh, sex, and attach flipper tags,
- collect blood samples to determine sex of juveniles and reproductive status of adults,
- collect stomach contents by lavage to identify prey items,
- collect tissue biopsy and/or blood samples for genetic analyses of stock identification and stable isotope analysis, and
- attach satellite tags to collect movement and dive behavior data.

Blood, stomach contents, and tissue biopsy samples collected from sea turtles in international waters (high seas) would be imported into the United States.

Sea turtles weighing less than 100 lbs would be captured from an inflatable raft to be measured, sexed, weighed, and tagged. The use of an inflatable raft would reduce the danger of physical injury during handling. After approach of the raft to target sea turtles, a swimmer would enter the water and grasp the turtle at the top and rear of its carapace to direct the turtle up and out of the water. The turtle would then be handed to personnel in the raft to be processed.

Measuring, weighing, sexing, and flipper tagging of each turtle captured would be conducted by a minimum of 2 and a maximum of 4 individuals. Standard carapace (both straight line and curved) and tail measurements would be made as outlined in the *Manual of Sea Turtle Research and Conservation Techniques* (Pritchard et al. 1983). Each turtle would be double flipper tagged (one tag on each front flipper) with an Inconel tag (Style 681, National Band and Tag Company) using the standard technique described in the *Marine Turtle Specialist Group Manual on Research Techniques* (Eckert et al. 1999). A tag would be attached to the trailing edge of each front flipper near the carapace, using an applicator similar to those used to ear-tag livestock: the pointed end of the tag goes through the flipper and connects on the underside. Although fibropapilloma (FP) is generally not associated with the species the applicant expects to encounter, if an FP turtle is observed a separate set of sampling equipment would be used.

Blood samples would be collected from each turtle captured. After cleansing and disinfecting the site with betadine or alcohol, approximately 10 cc of blood would be collected from each turtle by inserting a sterile needle, attached to a vacuum syringe, into the dorsal cervical sinus on the lateral dorsal region of the neck, using the technique described in Bentley and Dunbar-Cooper (1980) and Owens and Ruiz (1980). Once sampling is complete the area would be cleansed again with betadine or alcohol to avoid infection at the sample site. The samples would be kept on ice for no more than two hours until they can be centrifuged. The separated serum would then be pipetted off and frozen. Hormone assays would follow the standard procedure described by Plotkin et al. (1997). Remaining red blood cells would be used for genetic analysis.

Collection of stomach contents by lavage would be conducted immediately after capture to identify prey items. Turtles would be elevated and a length of 3/4 inch diameter soft plastic tubing would be inserted down the esophagus to the "pre-stomach" and flushed with clean seawater poured into the tubing. Contents would be collected in a separate basin. The procedure would take 5-10 minutes. Leatherbacks would not be subject to stomach lavage.

Tissue biopsy sample collection would be conducted for genetic analyses of stock identification and stable isotope studies. After cleansing the sample area with betadine or alcohol, a small disk of skin measuring 6 mm in diameter would be collected from the hind flipper (Dutton and Balazs 1995) using a sterile Acu-punch 6 mm biopsy tool (Acuderm, Fort Lauderdale, Florida).

Satellite tagging activities would follow procedures set forth in Balazs *et al.* (1996). Turtles would be held in a prone position after capture and kept in enclosures (such as on top of a small tire, on foam pads, or if available, in a wooden or plastic box) to prevent them from injuring themselves or other turtles. They would be kept in a natural position without the use of ropes, straps, or other means of binding in order to physically control flipper movement. They would be shaded, covered with towels, and kept wet to prevent overheating. A wet cloth would be used to block the turtle's vision, reducing the desire to move around. Leatherbacks would not be satellite tagged.

Turtles would typically be held for 20 minutes or less, even when multiple turtles are being processed.

Table 3. Examples of satellite tags proposed for use on sea turtles. Tag dimensions could vary depending on the target species and advances in technology.

Tag	Dimensions	Weight	Use
Telonics A-1010, (formerly the ST-20)	6.0 x 12.3 x 2.8 cm	276 g	location only
Telonics A-2025	13.97 x 7.6 x 4.1 cm	595 g	location and depth
Wildlife Computers 'Splash' Tag	8.5 cm x 7.6 cm x 3.3 cm	65 g	location and depth
Wildlife Computers 'Spot 5' Tag	7.2 x 3.4 x 2.5 cm	30 g	location and depth
Wildlife Computers MK-10 GPS tag	10.2 cm x 5.7 cm x 3.1 cm	225 g	location, depth (argos-derived and gps), water temperature, and light level

Note: a maximum of one satellite tag would be deployed per turtle.

Transmitters would be attached to the carapace with thin coats of fiberglass resin as described in Balazs et al. (1996). The attachment area on the carapace would be lightly sanded to remove algae. A non-toxic elastomer compound would be used to "cushion" the transmitter and hold it in place during the attachment procedure (Sammons & Preston). A thin coat of laminating resin would be applied to the carapace and transmitter and 6-8 strips of fiberglass cloth would be pasted over the transmitter to attach it.

The SWFSC would minimize potential effects to sea turtles by:

- using sterile equipment or disinfecting equipment between animals;
- using a separate set of sampling equipment on FP turtles;
- cleaning and disinfecting sites of blood and tissue samples before and after collection;
- limiting blood collection to 10 cc;
- keeping turtles shaded, wet, and in areas that prevent injury;
- holding turtles for 20 minutes or less, unless attaching transmitters. If transmitters are attached, turtles would be held for approximately 2.5 hours with adequate ventilation.

Salvage and Import/Export/Re-export of Marine Mammal and Sea Turtle Parts, Specimens and Biological Samples: Marine mammal and turtle parts would be collected,

imported, exported, or re-exported in conjunction with research activities. Salvaged parts or specimens and biological samples collected by other researchers would also be imported, exported, and re-exported. The requested number of parts, specimens, or biological samples taken, salvaged and/or imported/exported/re-exported is listed in Appendix E.

The SWFSC maintains an archive of samples representing nearly all recognized species or subspecies of cetacean, pinniped and sea turtle, including 80 of 86 cetacean, 21 of 36 pinniped and all sea turtle species. The archive database may be viewed at http://swfscdata.nmfs.noaa.gov/Genetics_Noncls/. Most samples collected by other researchers are from fishery bycatch or from research projects conducted under other research permits. It is rarer for samples taken from captive or subsistence hunted animals from outside the United States to be transferred to the SWFSC, but this has happened in the past and could potentially happen in the future.

CHAPTER 3 AFFECTED ENVIRONMENT

This chapter presents baseline information necessary for consideration of the alternatives, and describes the resources that would be affected by the alternatives, as well as environmental components that would affect the alternatives if they were to be implemented. The effects of the alternatives on the environment are discussed in Chapter 4.

Proposed research activities would 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 beginning June 30, 2010, when the current permit (No. 774-1714-10) expires. Small vessel cetacean surveys and pinniped research would occur year round, cetacean large ship surveys would generally occur between July and December annually, and turtle work would coincide with the large ship cetacean surveys.

3.1 SOCIAL AND ECONOMIC ENVIRONMENT

Economic and social factors are listed in the definition of effects in the NEPA regulations. However, the definition of human environment states that "economic and social effects are not intended by themselves to require preparation of an EIS." An EA must include a discussion of a proposed action's economic and social effects when these effects are related to effects on the natural or physical environment. The social and economic effects of the Proposed Action 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 the Proposed Action related to significant natural or physical environmental effects, so no further analyses were completed.

3.2 PHYSICAL ENVIRONMENT

3.2.1 National Marine Sanctuaries

All holders of NMFS's scientific research permits conducting work within a National Marine Sanctuary are 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. In addition, permit actions including those in the proposed action are sent to the NMSP for review if research is to occur in sanctuary waters. If permits are required from the Sanctuaries to conduct research, it is the applicants' responsibility to obtain them.

Under the proposed action, large vessel surveys and aerial surveys might occur in or above the following National Marine Sanctuaries:

- **Olympic Coast National Marine Sanctuary** was designated in 1994 and covers over 3300 square miles (2500 nm^2) of ocean waters off Washington State's peninsula coastline. More species of whales, dolphins, and porpoises spend time in these waters and more varieties of kelp are found here than anywhere else in the world. Twenty-nine species of marine mammals inhabit these sanctuary waters.
- **Cordell Bank National Marine Sanctuary** encompasses 526 square miles (397 nm^2) off the northern California coast and was designated in 1989. The Cordell Bank is the dominant feature of the sanctuary and is approximately 9 miles long and 5 miles wide. Deep light penetration combined with upwelling nutrients leads to high productivity and abundant forage species such as krill. With this huge amount of krill this area is an important summer feeding ground for humpback whales, blue whales, pacific salmon and bottom fishes. There are 25 species of marine mammals and more than 47 species of seabirds found in this sanctuary.
- **Gulf of Farallones National Marine Sanctuary** was designated in 1981 and encompasses 1,255 square miles (948 nm^2) off the northern and central California coast. Spring and early summer upwellings of cold, nutrient-rich waters create a highly productive ocean environment rich in plankton and other forage species. The Sanctuary supports an abundance of species (e.g., 33 species of marine mammals and 15 species of breeding seabirds). One fifth of California's harbor seals also breed within the sanctuary.
- **Monterey Bay National Marine Sanctuary** was designated in 1992 and is the largest marine sanctuary in the National Marine Sanctuary Program. This sanctuary encompasses the waters of Monterey Bay and the adjacent Pacific Ocean off the central California coast covers over 5,300 square miles (4,024 nm^2) and is inhabited by 26 species of marine mammals, 94 species of seabirds, and 4 species of sea turtles.
- **Channel Islands National Marine Sanctuary** encompasses 1,658 square miles (1,253 nm^2), was designated in September 1980, and is located 25 miles (22 nm) off the coast of Santa Barbara, California. The sanctuary encompasses the waters surrounding Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara Islands, extending from mean high tide to 7 miles (6 nm^2) offshore. Thirty four species of marine mammals including whales, dolphins, seals, sea lions and southern sea otters and 60 species of marine birds have been sighted sighted in the sanctuary.
- **Hawaiian Islands Humpback Whale National Marine Sanctuary**, designated on November 4, 1992, is a series of five marine protected areas distributed across the Main Hawaiian Islands. The total area of the sanctuary is approximately 1,400 square miles. Encompassing about half of the total sanctuary area, the largest contiguous portion of the sanctuary is delineated around Maui, Lana`i and Moloka`i. The four smaller portions are located off the north shore of Kaua`i, off Hawai`i's Kona coast, and off the north and southeast coasts of

O`ahu. These areas provide habitats for various species of marine life, including marine mammals, coral reefs and associated fauna, sharks, and invertebrates. Most notably, the Sanctuary is home to a population of humpback whales during the winter months each year. Approximately 2,000-5,000 humpback whales migrate from their Alaskan feeding grounds to the Hawaiian Islands to mate and give birth in its protected, warm waters. The Sanctuary also holds cultural significance to Native Islanders and is active in conducting many projects, such as restoration of the Native Hawaiian Fishpond, named Ko`ie`ie Loko I`a.

- **Papahānaumokuākea Marine National Monument**, established on June 15, 2006, is the largest marine protected area in the world. The Monument is made up of many small islands and atolls of the Hawaiian chain that are located northwest of the main Hawaiian Islands (*e.g.*, French Frigate Shoals, Midway, and Kure). The Monument covers 105,564 square nautical miles of both marine and terrestrial habitat (with approximately 3,910 square nautical miles being coral reef habitat). The Monument is home to over 7,000 marine species, including the threatened green sea turtle and endangered Hawaiian monk seal. There are also 1,700 endemic species found within the Monument that cannot be found anywhere else in the world (*e.g.*, Nihoa, Laysan Finch).

3.2.2 Essential Fish Habitat

EFH has been designated for many of the fish species within the action area. Details of the designations and descriptions of the habitats are available in the Pacific Fishery Management Plans. Activities that have been shown to affect EFH include disturbance or destruction of habitat from stationary fishing gear, dredging and filling, agricultural and urban runoff, direct discharge, and the introduction of exotic species. None of the activities in the Proposed Action are directed at or likely to have any impact on designated EFH, so no further analyses were required.

3.2.3 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.

Steller sea lion – Eastern DPS

NMFS designated critical habitat areas for SSLs in 1993 (50 CFR 226.202). Critical habitat includes marine waters, terrestrial rookeries (breeding sites), and haulouts (resting sites). The critical habitat for SSLs includes three separate zones: terrestrial, air, and aquatic. For both the western and eastern DPSs, the terrestrial zone extends 3,000 feet (ft) (0.9 km) landward from the baseline or base point of each major rookery and haulout in Alaska and the air zone extends 3,000 ft (0.9 km) above the terrestrial zone, measured vertically from sea level. In areas used by the western DPS, the aquatic zone extends 20 nautical miles (nm) (37 km) seaward in state and federally managed waters from the baseline and basepoint of each major rookery and haulout that is west of 144º W longitude. In areas used by the eastern DPS, the aquatic zone extends 3,000 ft (0.9 km) seaward from the baseline or basepoint of each major rookery and haulout in Alaska that is east of 144º W longitude. In California and Oregon, critical habitat is the same as what is designated for the eastern DPS in Alaska, except that there is no terrestrial zone that extends landward.

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

3.3 BIOLOGICAL ENVIRONMENT

3.3.1 Targeted Species

The proposed action involves takes of many different marine species, including some 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. All species of cetaceans, pinnipeds, and sea turtles under NMFS jurisdiction in U.S. territorial and international waters would be targeted for study in the proposed action, and are considered part of the affected biological environment. Specific species that would be taken during the proposed action are listed in Appendices A, B, C, and D. A brief description of the species and stocks targeted for research under the proposed action 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.

3.3.1.1 ESA Listed Species Directly Targeted for Research

Bowhead whale (*Balaena mysticetus):* Bowhead whales are distributed in seasonally ice-covered waters of the Arctic and near-Arctic, generally north of 54°N and south of 75°N in the western Arctic Basin (Moore and Reeves 1993). They reach sexual maturity at about the age of 20 years, at a length of about 35-40 ft (13-14 m). Females generally have one calf every 3 to 4 years after a gestation period around 13 to 14 months. Calves are usually about 13 ft (4 m) long at birth and weigh about 2,000 lbs (900 kg). Adults grow to about 45-60 ft long (14-18 m) and weigh 150,000- 200,000 lbs (75-100 tons). The average and maximum lifespan are unknown; however, some evidence suggests that they can live over 100 years.

Bowhead whales are classified as endangered under the ESA and thus also as a strategic stock under the MMPA. For management purposes, five stocks are recognized by the IWC. Small stocks occur in the Okhotsk Sea and Spitzbergen, but only tens to a few hundred are found in each of these stocks and the status of each is not well understood (Zeh et al. 1993). Until recently, available evidence indicated that only a few hundred bowheads were in the Hudson Bay and Davis Strait stocks, but it now appears these should be considered one stock based on genetics (Postma et al. 2006), aerial surveys (Cosens et al. 2006), and tagging data (Dueck et al. 2006; Heide-Jørgensen et al. 2006), and the abundance may be over 1,000 (Heide-Jørgensen et al. 2007).

The Western Arctic stock (also referred to as the Bering-Chukchi-Beaufort stock) is the only stock recognized in U.S. waters for management purposes under the MMPA. This stock migrates from wintering areas (November to March) in the northern Bering Sea, through the Chukchi Sea in the spring (March through June), to the Beaufort Sea where they spend much of the summer (mid-May through September) before returning to the Bering Sea in the autumn (September through November) (Moore and Reeves 1993),

The most recent abundance estimate for this stock, based on surveys conducted in 2001, is 10,545. Using this abundance estimate, the minimum population estimate for the Western Arctic stock is 9,472 (NMFS 2008 SAR). The count of 121 calves during the 2001 census was the highest yet recorded, and provides corroborating evidence for a healthy and increasing population.

Rare cases of rope or net entanglement have been reported from bowhead whales taken in the subsistence hunt (Philo et al. 1993), and some bowhead whales have historically had interactions with crab pot gear. There are several documented cases of bowheads with ropes or rope scars. Alaska Region stranding reports document three bowhead whale entanglements between 2001 and 2005. In 2003 a bowhead whale was found dead in Bristol Bay entangled in line around the peduncle and both flippers; the origin of the line is unknown. In 2004 a bowhead whale near Point Barrow was observed with fishing net and line around the head. The estimated average annual rate of known entanglement in U.S. commercial fishing gear is currently not available.

Direct takes of bowhead whales by Eskimos have occurred for at least 2,000 years (Stoker and Krupnik 1993). The annual average subsistence take of this stock (by Natives of Alaska, Russia, and Canada) during the 5-year period from 2002 to 2006 is 42.4 bowhead whales. The estimated annual mortality rate incidental to U. S. commercial fisheries is not known to exceed 10% of the PBR, and therefore can be considered to be insignificant. The annual level of human-caused mortality and serious injury is not known to exceed the PBR nor the IWC annual maximum.

Sei whale *(Balaenoptera borealis):* Sei whales are widely distributed in all oceans, although this species is not found as far into polar waters as other rorquals (Gambell 1985). Several stocks of sei whales have been identified, but updated estimates of the number of sei whales worldwide are not available. Commercial whaling reduced sei whale numbers in the North Pacific from 42,000 whales to approximately 7,000 to 12,000 animals by 1974 (Tillman 1977). For management purposes, sei whales within the Pacific U.S. EEZ are divided into two discrete, non-contiguous areas: 1) waters around Hawaii, and 2) California, Oregon and Washington waters.

Eastern North Pacific stock: The IWC recognizes only one stock of sei whales in the North Pacific, but some evidence exists for multiple populations (Masaki 1977; Mizroch et al. 1984; Horwood 1987). Lacking additional information on sei whale population structure, sei whales in the eastern North Pacific (east of longitude 180°) are considered a separate stock for management purposes under the MMPA. The best abundance estimate for whales off the coasts of California, Oregon and Washington is 46 animals with an annual PBR level of 0.05 (Caretta et al. 2008). No population trend is available for this stock. The offshore drift gillnet fishery may threaten this stock but no mortalities or serious injuries have been reported. Vessel collisions result in 0.2 whales killed each year.

Hawaii stock: Little information is known about animals in Hawaii waters. The best abundance estimate for whales off Hawaii is 37 animals with an annual PBR level of 0.1 (Caretta et al. 2008). No population trend is available for this stock. It is likely threatened by fishery interactions although none have been reported.

Blue whale *(Balaenoptera musculus):* The blue whale is a cosmopolitan species of baleen whale. Maximum reported body length is about 27 m. As is true of other baleen whale species, female blue whales are somewhat larger than males. Blue whales have a long body and comparatively slender shape; a broad, flat rostrum; a proportionately smaller dorsal fin than other baleen whales; and a mottled gray color pattern that appears light blue when seen through the water.

The primary and preferred diet of blue whales is krill. Although other prey species, including fish and copepods, have been mentioned in the scientific literature, they likely do not contribute significantly to the diet of blue whales.

Scientists have yet to discern many details regarding the life history of the blue whale. The best available science suggests that the gestation period is approximately 10 to 12 months and that blue whale calves are nursed for about 6 to 7 months (NMFS 1998). Most reproductive activity, including mating and birthing, takes place during the winter. Weaning probably occurs on, or en route to, summer feeding areas. The average calving interval is probably 2 to 3 years. The age at sexual maturity is thought to be 5 to 15 years (Mizroch et al. 1984; Yochem and Leatherwood 1985).

Blue whales inhabit sub-polar to sub-tropical latitudes. Poleward movements in spring allow the whales to take advantage of high zooplankton production in summer. Movement toward the subtropics in the fall allows blue whales to use less energy while fasting, avoid ice entrapment in some areas, and engage in reproductive activities in warmer waters of lower latitudes. Although the species is often found in coastal waters, generally blue whales are thought to occur more offshore than humpback whales, for example.

Blue whales are found in oceans worldwide and are separated into populations by ocean basin in the North Atlantic, North Pacific, and Southern Hemisphere. They follow a seasonal migration pattern between summering and wintering areas, but some evidence suggests that individuals remain in certain areas year-round. Although the extent of knowledge concerning distribution and movement varies by area, and migratory routes are not well known, in general, distribution is driven largely by food requirements.

North Pacific stocks: The blue whale's range encompasses much of the North Pacific Ocean, from Kamchatka to southern Japan in the west, and from the Gulf of Alaska and California south, to at least Costa Rica in the east. The species is found primarily south of the Aleutian Islands and the Bering Sea. Whaling and sighting data suggest the existence of at least five subpopulations of blue whales, with an unknown degree of mixing among them.

For management purposes under the MMPA, blue whales inhabiting U.S. waters in the North Pacific are divided into two stocks: Western and Eastern. Based on acoustic and whaling data, it is believed that the Eastern stock winters in waters off Mexico to Costa Rica, and feeds during summer off the U. S. West Coast and to a lesser extent in the Gulf of Alaska and in central North Pacific waters. The Western stock appears to feed in summer southwest of Kamchatka, south of the Aleutians, and in the Gulf of Alaska (Watkins et al. 2000; Stafford 2003); in winter they migrate to lower latitudes in the western Pacific and less frequently in the central Pacific,

including Hawaii (Stafford et al. 2001). Insufficient data is available to evaluate the current abundance or population trends of blue whale stocks in the western North Pacific.

Blue whales accompanied by young calves have been observed often in the Gulf of California from December through March, indicating that at least some calves may be born in or near the Gulf (Sears 1990). Therefore, this area is probably an important calving and nursing area for the species.

The best estimate of blue whale abundance in the eastern North Pacific is 1,368 animals with an annual PBR of one whale per year. Along the California coast blue whale abundance has been increasing during the past two decades (Calambokidis et al. 1990; Barlow 1994; Calambokidis 1995). Because this apparent increase is too large to be accounted for by population growth alone, it is assumed that a shift in distribution has occurred. Although the population in the North Pacific is expected to have grown since protection began in 1966, the possibility of continued unauthorized takes, incidental ship strikes and mortality, and serious injury in fishing gear makes this trend uncertain.

Blue whales were significantly depleted by commercial whaling activities worldwide. The reported take of North Pacific blue whales by commercial whalers totaled 9,500 between 1910 and 1965 (Ohsumi and Wada 1972). Approximately 3,000 of these were taken from the west coast of North America from Baja California, Mexico to British Columbia, Canada (Rice 1974; Tonnessen and Johnsen 1982; Rice 1992; Clapham et al. 1997). The primary threats currently facing blue whales are vessel strikes and fisheries interactions but also include anthropogenic noise, natural mortality, vessel disturbance, habitat degradation, and competition for prey resources.

Changes in distribution
Evidence suggests the distribution and migratory patterns of blue whales may have changed in at least three areas within the proposed action area: southern Japan, eastern Aleutian Islands, and northern California.

In the western North Pacific, the lack of blue whales off southern Japan today may also suggest that the distribution of these animals has changed or that the animals of this region have been extirpated. South of the eastern Aleutian Islands, relatively large concentrations of blue whales were documented in the 1970s but the species appears rare there today, suggesting that illegal and unreported whaling depleted the population (Stewart et al. 1987; Forney and Brownell 1997).

Off northern California (e.g., Farallon Islands, Moss Landing, and Trinidad), the recent appearance of numerous blue whales is noteworthy in light of their rarity in these regions prior to the late 1970s. Calambokidis (1995) concluded that such changes in distribution reflect a shift in feeding from the more offshore euphausiid, *Euphausia pacifica*, to the primarily neritic euphausiid, *Thysanoëssa spinifera*. More recently, some Californian animals have been observed returning to waters of southern Alaska and British Columbia to feed (Calambokidis et al. 2009).

Fin whale *(Balaenoptera physalus):* Fin whales are the second-largest species of whale, with animals in the Northern hemisphere having a maximum length of about 22 m. Fin whales show mild sexual dimorphism, with females measuring longer than males by 5 to 10 percent. Adults can weigh 40 to 80 tons. Fin whales have a sleek, streamlined body with a V-shaped head. They have a tall, falcate dorsal fin, located about two-thirds of the way back on the body, that rises at a shallow angle from the animal's back. The species has a distinctive coloration pattern: the back and sides of the body are black or dark brownish-gray, and the ventral surface is white.

Fin whales can be found in social groups of 2 to 7 whales and in the North Atlantic are often seen feeding in large groups that include humpback whales, minke whales, and Atlantic white-sided dolphins (Jefferson et al. 2008). Fin whales are large, fast swimmers and the killer whale is their only non-human predator.

During the summer, fin whales feed on krill, small schooling fish (e.g., herring, capelin, and sand lance), and squid by lunging into schools of prey with their mouth open, using their throat pleats to gulp large amounts of food and water, filtering out food particles using baleen plates on each side of the mouth. Fin whales fast in the winter while they migrate to warmer waters.

Little is known about the social and mating systems of fin whales. Similar to other baleen whales, long-term bonds between individuals are rare. Males become sexually mature at 6 to 10 years old; females at 7 to 12 years old. Physical maturity is attained at approximately 25 years for both sexes. After 11 to 12 months of gestation, females give birth to a single calf in tropical and subtropical areas during midwinter. Newborn calves are approximately 6 m long and weigh 2 tons. Fin whales can live 80 to 90 years.

Fin whales are found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes, and less commonly in the tropics. They occur year-round in a wide range of latitudes and longitudes, but the density of individuals in any one area changes seasonally.

Fin whales occur in all major oceans worldwide and seasonally migrate between temperate and polar waters (Perry et al. 1999). In the North Pacific, the International Whaling Commission (IWC) recognizes two stocks of fin whales, the east China Sea stock and the rest of the North Pacific (Donovan 1991). For management purposes under the MMPA, four stocks of fin whales are recognized in U.S. waters: the California/Oregon/Washington stock, the Northeast Pacific (Alaska) stock, the Hawaii stock, and the western North Atlantic stock.

California/Oregon/Washington stock: This stock is found along the U.S. west coast from California to Washington in waters out to 300 nmi. Because fin whale abundance appears lower in winter/spring in California (Dohl et al. 1983; Forney et al. 1995) and in Oregon (Green et al. 1992), it is likely that the distribution of this stock extends seasonally outside these coastal waters. The best available estimate of the stock's population size is 2,636 whales with a PBR of 14 whales (Carretta et al. 2008). Some data indicate that fin whales have increased in abundance in California coastal waters (Barlow 1994, 1997), but these trends are not significant. Ship strikes average 1.6 serious injuries or mortality each year. Fishery interactions may be approaching zero mortality and serious injury rate.

Northeast Pacific (Alaska) stock: Whales in this stock are found from Canadian waters north to the Bering Sea. Reliable estimates of current and historical abundance of fin whales in the entire northeast Pacific are currently not available. Based on surveys which covered only a small portion of the range of this stock, a rough minimum estimate of the size of the population west of the Kenai Peninsula is 5,700 with a PBR level of 11.4 whales (Angliss and Allen 2009). Data suggests that this stock may be increasing at an annual rate of 4.8 percent, however, this is based on uncertain population size and incomplete surveys of its range (Angliss and Allen 2009). Fishery interactions may threaten this stock but fishery-related mortality levels can be determined to have met a zero mortality and serious injury rate.

Hawaii stock: The best available abundance estimate for this stock is 174 whales based on a 2002 survey of the entire Hawaiian Islands EEZ (Barlow 2003) with a PBR of 0.2 whales per year (Carretta et al. 2008). Data is not available to determine a population trend for this stock. Insufficient information is available to determine whether the total fishery mortality and serious injury for fin whales is insignificant and approaching zero mortality and serious injury rate.

Commercial whaling for this species ended in the North Pacific Ocean in 1976 and in the Southern Ocean in 1976-77. Other current threats include reduced prey abundance due to overfishing, habitat degradation, disturbance from low-frequency noise and the possibility that illegal whaling or resumed legal whaling will cause removals at biologically unsustainable rates. Of all species of large whales, fin whales are most often reported as hit by vessels (Jensen and Silber 2003). Schooling fish constitute a large proportion of the fin whale's diet, so trends in fish populations, whether driven by fishery operations, human-caused environmental deterioration, or natural processes, may strongly affect the size and distribution of fin whale populations.

Southern right whale *(Eubalaena australis):* Southern right whale adults are generally between 45 and 55 feet (12.5-15.5 m) long and can weigh up to 60 tons (120,000 lbs; 54,431 kg); females are larger than males. Calves are 13-15 feet (4.0-4.5 m) in length at birth. They occur throughout the southern hemisphere from temperate to polar latitudes (20° and 60° S. latitude). Within this range, they migrate between low-latitude winter breeding grounds and higher latitude feeding grounds. Southern right whales feed from spring to fall, and also in winter in certain areas. For much of the year, their distribution is strongly correlated to the distribution of their prey. The location of feeding grounds is not known with certainty but the IWC has identified the areas of Brazil, False Banks, and Falkland Islands (30º - 50º S.); South Georgia and Shag Rocks (53º S.); Tristan da Cunha (40º S.); South of 50º S.; and Antarctic Peninsula (60 -70º S.). The distribution of winter breeding, calving, and nursing grounds is known with greater certainty. Scientists have identified South Africa, Argentina, Australia, and sub-Antarctic New Zealand as major wintering areas.

In South Africa, right whales are predominantly found along the Cape coast between Muizenberg and Woody Cape. In Argentina, the major nursery and calving grounds are located along Península Valdés. In Australia, the main aggregations are found along the southern coasts of Western Australia, South Australia, and Tasmania. Within sub-Antarctic New Zealand, the two primary winter concentrations occur off the Auckland and Campbell Islands.

Southern right whales also occur off mainland New Zealand, Uruguay, Peru, Chile, Namibia, Madagascar, and Mozambique. However, less is known about right whales in these regions as their populations are smaller, sightings are less frequent, and little research has been done.

Worldwide, the historical abundance of southern right whales is estimated at 60,000. Worldwide abundance of southern right whales in 1997 was estimated at about 7,000 (IWC, 2001). Since 1997, a number of breeding stocks have been recovering at annual rates of approximately 7 percent.

North Pacific right whale *(Eubalaena japonica):* Adults are generally between 45 and 55 feet (13.7-16.7 m) long and can weigh up to 70 tons (140,000 lbs; 63,502 kg). Females are larger than males, and give birth to their first calf at an average age of 9-10 years. Calves are 13-15 feet (3.9-4.6 m) long at birth. Gestation lasts approximately 1 year. Calves are usually weaned toward the end of their first year. It is believed that right whales live at least 50 years, but there are few data on the longevity of right whales.

In April 2008, the North Pacific right whale was listed as a separate, endangered species. The same two areas that were designated as critical habitat for the northern right whale are now designated as critical habitat for the North Pacific right whale.

North Pacific right whales inhabit the Pacific Ocean, particularly between 20° and 60° latitude. Before commercial whalers heavily exploited right whales in the North Pacific, concentrations were found in the Gulf of Alaska, eastern Aleutian Islands, south central Bering Sea, Sea of Okhotsk, and Sea of Japan. Recently, there have been few sightings of right whales in the central North Pacific and Bering Sea. Sightings have been reported as far south as central Baja California in the eastern North Pacific, as far south as Hawaii in the central North Pacific, and as far north as the sub-Arctic waters of the Bering Sea and sea of Okhotsk in the summer. Since 1996, right whales have been consistently observed in Bristol Bay, southeastern Bering Sea, during the summer months.

Migratory patterns of the North Pacific right whale are unknown, although it is thought the whales spend the summer on high-latitude feeding grounds and migrate to more temperate waters during the winter.

There are no reliable estimates of current abundance or trends for right whales in the North Pacific. However, the pre-exploitation size of this stock exceeded 11,000 animals. In general, there are no data on trends in abundance for either the eastern or western population. For the western North Pacific, sighting survey estimates for the summer feeding ground indicate an abundance of around 900 in the Sea of Okhotsk. It is clear that this population is significantly larger than that in the eastern North Pacific. Over the past forty years, most sightings in the eastern North Pacific have been of single whales. However, during the last few years, small groups of right whales have been sighted. This is encouraging but there has been only one confirmed sighting of calves in the 20th century.

In the North Pacific, ship strikes and entanglements may pose a threat to right whales. However, because of their rare occurrence and scattered distribution, it is impossible to assess the threat of

ship strikes or entanglement to North Pacific right whales at this time. Thus, the estimated annual rate of human-caused mortality and serious injury appears minimal. The reasons for the apparent lack of recovery for right whales in this region are unknown.

Humpback whale *(Megaptera novaeangliae):* The humpback whale is a mid-sized baleen whale. They occur throughout the world's oceans, generally over continental shelves, shelf breaks, and around some oceanic islands (Balcomb and Nichols 1978; Whitehead 1987). Humpback whales exhibit seasonal migrations between warmer temperate and tropical waters in winter and cooler waters of high prey productivity in summer. Humpback whales exhibit a wide range of foraging behaviors, and feed on many prey types including small schooling fishes, krill, and other large zooplankton.

Humpback whale reproductive activities occur primarily in winter. They become sexually mature at age four to six. Female humpback whales are believed to become pregnant every two to three years. Cows nurse their calves for up to 12 months. The age distribution of the humpback whale population is unknown, but the portion of calves in various populations has been estimated at about 4 to 12 percent (Chittleborough 1965; Herman et al. 1980; Whitehead 1982; Bauer 1986; Clapham and Mayo 1987). Sources and rates of natural mortality are generally unstudied, but potential sources of mortality include parasites, disease, predation (killer whales, false killer whales, and sharks), biotoxins, and ice entrapment.

Data suggests that up to 11,570 whales may reside within the entire North Atlantic (Palsbøll et al. 1997) and may be increasing 3.1 percent annually (Stevick et al. 2003). The four recognized stocks (based on geographically distinct winter ranges) of humpback whales in the United States are: the Gulf of Maine stock, the eastern North Pacific stock, the central North Pacific stock, and the western North Pacific stock.

North Pacific stocks: Their summer range includes coastal and inland waters from Point Conception, California, north to the Gulf of Alaska and the Bering Sea, and west along the Aleutian Islands to the Kamchatka Peninsula and into the Sea of Okhotsk (Tomlin 1967; Nemoto 1957; Johnson and Wolman 1984). Humpback whales also summer throughout the central and western portions of the Gulf of Alaska, including Prince William Sound, around Kodiak Island, and along the southern coastline of the Alaska Peninsula. Japanese scouting vessels continued to observe high densities of humpback whales near Kodiak Island during 1965–1974 (Wada 1980). In Prince William Sound, humpback whales have congregated near Naked Islands, in Perry Passage, near Cheega Island, in Jackpot, Icy and Whale Bays, in Port Bainbridge and north of Montague Islands between Green Island and the Needle (Hall 1979, 1982; von Ziegesar 1984; von Ziegesar and Matkin 1986). The few sightings of humpback whales in offshore waters of the central Gulf of Alaska are usually attributed to animals migrating into coastal waters (Morris et al. 1983), although use of offshore banks for feeding is also suggested (Brueggeman et al. 1987).

Winter breeding areas are known to occur in Hawaii, Mexico, and south of Japan. Around the Hawaiian Islands, humpback whales are most concentrated around the larger islands of Maui, Molokai, Lanai, and Kahoolawe. Newborn and nursing calves with cows are seen throughout the winter and comprise 6 to 11 percent of all humpbacks sighted during aerial surveys.

Humpbacks from the Mexican wintering grounds are found with greatest frequency on the central California summering ground (NMFS 1991). In the western Pacific, humpbacks have been observed in the vicinity of Taiwan, Ogasawara Islands, and Northern Mariana Islands (NMFS 1991).

Three management units of humpback whales are recognized within the North Pacific: the eastern North Pacific, the central North Pacific stock, and the western North Pacific stock. Population estimates for the entire North Pacific increased from 1,200 in 1966 to 6,000-8,000 in 1992. More recently, photo-identification results from an international collaborative research program on the abundances, population structure, and potential human impacts on humpback whales in the North Pacific involving more than 50 research groups and 300 researchers, estimated the abundance of humpback whales in the North Pacific to be just under 20,000 animals (Calambokidis et al. 2008). This study collected data from all known wintering and feeding areas for humpback whales in the North Pacific, and the data suggest the likely existence of missing wintering areas that have not been previously described. Humpback whales that feed off the Aleutians and in the Bering Sea were not well represented on any of the sampled wintering areas and must be going to one or more unsampled winter locations (Calambokidis et al. 2008). The population is estimated to be growing six to seven percent annually (Carretta et al. 2008).

Eastern North Pacific stock: The eastern North Pacific stock is referred to as the winter/spring population in coastal Central America and Mexico which migrates to the coast of California to southern British Columbia in summer/fall (Steiger et al. 1991; Calambokidis et al. 1993). The best available abundance estimate for this stock is 1,391 whales and appears to be increasing in abundance (Carretta et al. 2008). The estimated annual mortality and injury due to entanglement (2.6 whales/yr), other anthropogenic sources (zero), plus ship strikes (zero) in California exceeds the PBR allocation of 2.5 whales annually for U.S. waters.

Central North Pacific stock: The central North Pacific humpback whale stock is referred to as the winter/spring population of the Hawaiian Islands which migrates to northern British Columbia/Southeast Alaska and Prince William Sound west to Kodiak (Baker et al. 1990; Perry et al. 1990; Calambokidis et al. 1997). Population estimates vary for this stock, but it likely contains approximately 4,000 whales (Calambokidis et al. 1997). The stock appears to be increasing, but it is not possible to assess the rate of increase or set a PBR level for this stock. It is impacted by fishery interactions (3.2 whales seriously injured or killed annually) and ship strikes (1.8 animals/year).

Western North Pacific stock: The western North Pacific Stock is referred to as the winter/spring population of Japan and probably migrates to waters west of the Kodiak Archipelago (the Bering Sea and Aleutian Islands) in summer/fall (Berzin and Rovnin 1966; Nishiwaki 1966; Darling 1991). This population is estimated to include 394 individuals and the PBR is undetermined. No population trend is available for this stock. Fisheries interactions result in an annual mortality rate of 0.2 whales.

Sperm whale *(Physeter macrocephalus):* Sperm whales are the largest of the odontocetes and the most sexually dimorphic cetaceans, with males considerably larger than females. Adult females may grow to lengths of 11 m and weigh 15 tons. Adult males, however, reach about

16 m and may weigh as much as 45 tons. The sperm whale is distinguished by its extremely large head, which takes up to 25 to 35 percent of its total body length. Sperm whales are mostly dark gray, but oftentimes the interior of the mouth is bright white, and some whales have white patches on the belly.

Because sperm whales spend most of their time in deep waters, their diet consists of many larger organisms that also occupy deep waters of the ocean. Their principal prey is large squid, but they will also eat large demersal and mesopelagic sharks, skates, and fishes. The average dive lasts about 35 minutes and is usually down to 400 m, however dives may last over an hour and reach depths over 1,000 m.

Female sperm whales reach sexual maturity around 9 years of age when they are roughly 9 m long. At this point, growth slows and they produce a calf approximately once every 5 years. After a 14 to 16 month gestation period, a single calf about 4 m long is born. Although calves will eat solid food before one year of age, they continue to suckle for several years. Females are physically mature around 30 years and 10.6 m long, at which time they stop growing. Males reach physical maturity around 50 years and when they are 16 m long. Males often do not actively participate in breeding until their late 20s.

Most females will form lasting bonds with other females of their family, and on average 12 females and their young will form a family unit. While females generally stay with the same unit all their lives in and around tropical waters, young males between 4 and 21 years old form "bachelor schools", comprised of other males that are about the same age and size. As males get older and larger, they begin to migrate to higher latitudes and slowly bachelor schools become smaller, until the largest males end up alone. Older, larger males are generally found near the edge of pack ice in both hemispheres. On occasion, however, these males will return to the warm water breeding area.

Sperm whales tend to inhabit areas with a water depth of 600 m or more, and are uncommon in waters less than 300 m deep. Female sperm whales are generally found in deep waters (at least 1,000 m) of low latitudes (less than 40°, except in the North Pacific where they are found as high as 50°). These conditions generally correspond to sea surface temperatures greater than 15°C, and while female sperm whales are sometimes seen near oceanic islands, they are typically far from land.

Sperm whales inhabit all oceans of the world. They can be seen close to the edge of pack ice in both hemispheres and are also common along the equator, especially in the Pacific. Their distribution is dependent on their food source and suitable conditions for breeding, and varies with the sex and age composition of the group. Their migrations are not as predictable or well understood as migrations of most baleen whales. In some mid-latitudes, there seems to be a general trend to migrate north and south depending on the seasons, moving poleward in summer. However, in tropical and temperate areas, there appears to be no obvious seasonal migration.

Currently, no good estimate is available for the total number of sperm whales worldwide. For management purposes, sperm whales inhabiting U.S. waters have been divided into five stocks, three of which are found in the action area:

California-Oregon-Washington stock: Sperm whales are found year-round in California waters, but they reach peak abundance from April through mid-June and from the end of August through mid-November. They have been seen in every season except winter in Washington and Oregon. The most precise and recent estimate of sperm whale abundance for this stock is 2,853 animals from the ship surveys conducted in 2001 (Barlow and Forney 2007) and 2005 (Forney 2007). Survey data from the last few decades indicate that sperm whale abundance has been rather variable off California and does not show obvious trends. The offshore driftnet gillnet fishery is the main threat to this stock. The potential biological removal (PBR) level for this stock is set at 9.3 whales per year.

North Pacific (Alaska) stock: The shallow continental shelf apparently bars the movement of sperm whales into the northeastern Bering Sea and Arctic Ocean. Males are thought to move north in the summer to feed in the Gulf of Alaska, Bering Sea, and waters around the Aleutian Islands. Current and historic estimates for the abundance of sperm whales in the North Pacific are considered unreliable. The number of sperm whales of the North Pacific occurring within Alaska waters is unknown. Consequently, the PBR for this stock is unknown. Potential entanglement in fishing gear is a growing concern for this stock as whales have been observed depredating in several commercial Alaskan fisheries.

Hawaiian stock: Summer/fall surveys in the eastern tropical Pacific show that although sperm whales are widely distributed in the tropics, their relative abundance tapers off markedly westward towards the middle of the tropical Pacific and tapers off northward towards the tip of Baja California. The best estimate for sperm whales occurring in U.S. waters of Hawaii is 7,082 (Barlow 2003); however, no population trend is available. The PBR for this stock is 11 animals per year. Commercial longline fisheries are a threat to this stock though no serious injuries or mortalities of sperm whales were reported from 1998 to 2002.

The greatest natural predators to sperm whales are killer whales, which have been documented killing at least one sperm whale in California. Typically, however, it is believed that most killer whale attacks are unsuccessful. Pilot whales have been observed harassing sperm whales, but it is unclear if they pose any real threat (Perry et al. 1999). Large sharks may also be a threat, especially for young sperm whales.

The greatest threat for sperm whales has been man, especially with the advent of whaling. By 1987, whalers took at least 345,000 sperm whales in the North Pacific and North Atlantic Oceans combined, with approximately 99 percent coming from North Pacific stocks (Perry et al. 1999). Hunting of sperm whales by commercial whalers declined in the 1970s and 1980s, and virtually ceased with the implementation of a moratorium against whaling by the IWC in 1988. Sperm whales are still being targeted in a few areas; there is a small catch by primitive methods in Lamalera, Indonesia, and Japan takes sperm whales for scientific purposes. There is also some evidence to suggest that sperm whales are being hunted illegally in some parts of the world (Angliss and Allen 2008).

In addition to whaling, sperm whales may be impacted by other shipping traffic, noise disturbance, and fishing operations. Sperm whales have the potential to be harmed by ship

strikes and entanglements in fishing gear, although these are not as great of a threat to sperm whales as they are to more coastal cetaceans. Disturbance by anthropogenic noise may prove to be an important habitat issue in some areas of this population's range, notably in areas of oil and gas activities or where shipping activity is high. Another potential human-cased source of mortality is from accumulation of stable pollutants (e.g. polycholorobiphenyls, chlorinated pesticides, polycyclic aromatic hydrocarbons, and heavy metals). Stable pollutants might affect the health or behavior of sperm whales. The potential impact of coastal pollution may be an issue for this species in portions of its habitat, though little is known on this to date. In efforts to recover this species, the NMFS' recovery plan for sperm whales noted that the potential effects of pollutants is poorly understood and should be determined (2006). At present, because of their general offshore distribution, sperm whales are less likely to be impacted by humans, and those impacts that do occur are less likely to be recorded.

Killer whales – Eastern North Pacific Southern Resident stock *(Orcinus orca):* The species shows considerable size dimorphism. Adult males develop larger pectoral flippers, dorsal fins, tail flukes, and girths than females. Male adult killer whales reach up to 32 feet (9.8 m) in length and weigh nearly 22,000 pounds (10,000 kg); females reach 28 feet (8.5 m) in length and weigh up to 16,500 pounds (7,500 kg). Sexual maturity of female killer whales is achieved when the whales reach lengths of approximately 15-18 feet (4.6 m-5.4 m), depending on geographic region. The gestation period for killer whales varies from 15-18 months, and birth may take place in any month. Calves are nursed for at least one year, and may be weaned between 1 and 2 years of age. The birth rate for killer whales is not well understood, but is estimated as every five years for an average period of 25 years. Life expectancy for wild female killer whales is approximately 50 years, with maximum longevity estimated at 80-90 years. Male killer whales typically live for about 30 years, with maximum longevity estimated at 50-60 years.

The Southern Resident killer whale (SRKW) stock contains three pods (or stable family-related groups)--J pod, K pod, and L pod. Their range during the spring, summer, and fall includes the inland waterways of Puget Sound, Strait of Juan de Fuca, and Southern Georgia Strait. Their occurrence in the coastal waters off Oregon, Washington, Vancouver Island, and more recently off the coast of central California in the south and off the Queen Charlotte Islands to the north has been documented. Little is known about the winter movements and range of the Southern Resident stock. Southern Residents have not been observed associating with other resident whales, and mitochondrial and nuclear genetic data suggest that Southern Residents rarely interbreed with other killer whale populations.

The population is currently estimated at about 88 whales, with a PBR of 0.17 animals per year. The estimated population shows a decline from its estimated historical level of about 200 during the mid- to late 1800s. Beginning in about 1967, the live-capture fishery for oceanarium display removed an estimated 47 whales and caused an immediate decline in SRKW numbers. The population fell an estimated 30% to about 67 whales by 1971. By 2003, the population increased to 83 whales.

Steller sea lions – Eastern DPS (*Eumetopias jubatus*) [Threatened]: Steller sea lions (SSLs) prefer the colder temperate to sub-arctic waters of the North Pacific Ocean. Haul outs and rookeries usually consist of beaches (gravel, rocky or sand), ledges, rocky reefs. In the Bering

Sea and Okhotsk Sea, sea lions may also haul out on sea ice, but this is considered atypical behavior. Critical habitat has been defined for SSLs as a 20 nautical mile buffer around all major haul-outs and rookeries, as well as associated terrestrial, air and aquatic zones, and three large offshore foraging areas.

SSLs are distributed mainly around the coasts to the outer continental shelf along the North Pacific Ocean rim from northern Hokkaiddo, Japan through the Kuril Islands and Okhotsk Sea, Aleutian Islands and central Bering Sea, southern coast of Alaska and south to California. For management purposes, SSLs inhabiting U.S. waters have been divided into two Distinct Population Segments (DPSs) at 144° West longitude (Cape Suckling, Alaska). The differentiation is based primarily on genetic and physical differences, but also on differing population trends in the two regions. The Western DPS includes SSLs that reside in the central and western Gulf of Alaska, Aleutian Islands, as well as those that inhabit the coastal waters and breed in Asia (e.g., Japan and Russia). The Eastern DPS includes SSLs living in southeast Alaska, British Columbia, California, and Oregon.

There are approximately 44,500-48,000 in the Eastern DPS. Population surveys suggest that the Eastern U.S. DPS is stable or increasing in the northern part of its range (Southeast Alaskan and British Columbia), while the remainder of the Eastern DPS is declining. The population in southeast Alaska increased by almost 4 percent per year between 1985-1989 (Loughlin *et al.* 1992). From 1990 to 2000, counts of non-pup SSLs at trend sites showed an overall increase of 29 percent, or an average increase of almost 2 percent per year (Sease *et al.* 2001). Trends in British Columbia, Washington, and Oregon have shown similar increases. While numbers in central and southern California have been decreasing, the eastern stock as a whole is stable or increasing slowly (Angliss and Outlaw 2007).

SSLs in southeast Alaska are not an isolated population, as demonstrated by the movement of branded and tagged animals from southeast Alaska to British Columbia and Washington (Raum-Suryan *et al.*2002). In addition, recent mitochondrial deoxyribonucleic acid (DNA) studies with large samples of pups from newly established rookeries in the eastern DPS have shown that some females born in the western DPS are pupping in the eastern DPS (NMFS unpublished data).

Overall, the eastern DPS has increased over 3 percent per year since the 1970s, more than doubling in southeast Alaska, British Columbia, and Oregon. The eastern DPS contained only about 10 percent of the total number of SSLs in the United States in the 1970s. However, large declines in the western DPS coupled with notable increases in the east resulted in a shift such that over half of the SSLs in the U.S. now belong to the eastern DPS (NMFS 2006).

Anthropogenic threats to SSLs include boat strikes, contaminants/pollutants, habitat degradation, illegal hunting/shooting, offshore oil and gas exploration, direct and indirect interactions with fisheries, and subsistence harvests by natives in Alaska and Canada (150-300 taken a year). In the 1800s, they were targeted by hunters for their meat (food), fur hides (clothing), oil, and various other products. In the early 1900s, fishermen killed and placed bounties on this species, which they blamed for stealing fish from them. Some SSLs were killed to limit their predation

on fish in aquaculture facilities (fish farms), but intentional killing of SSLs has not been permitted since they were protected under the MMPA and listed under the ESA.

SSLs' direct and indirect interactions with fisheries are currently receiving significant attention and may possibly be an important factor in their decline. Direct fishing impacts are largely due to fishing gear (drift and set gillnets, longlines, trawls, etc.) that has the potential to entangle, hook, injure, or kill sea lions. These pinnipeds have been seen entangled in fishing equipment with what are considered "serious injuries". SSLs are also indirectly threatened by fisheries because they have to compete for food resources and critical habitat may be modified by fishing activities.

Green Sea Turtles* (*Chelonia mydas*): Green turtles are found throughout the world, occurring primarily in tropical, and to a lesser extent, subtropical waters. Throughout the Pacific, nesting assemblages group into two distinct regional clades: 1) western Pacific and South Pacific islands, and 2) eastern Pacific and central Pacific, including the rookery at French Frigate Shoals, Hawaii. In the Hawaiian Islands, green turtles are site-specific and consistently feed in the same areas on preferred substrates, which vary by location and between islands (in Landsberg *et al.* 1999). In Hawaii, green turtles lay up to six clutches of eggs per year (mean of 3.7) and clutches consist of about 100 eggs each. Females migrate to breed only once every two or possibly many more years. On the Hawaiian Archipelago, females nest every 3 to 4 years (Balazs and Chaloupka 2004). Eastern Pacific green turtles have reported nesting between two and six times during a season, laying a mean of between 65 and 86 eggs per clutch, depending on the area studied (Michoacán, Mexico and Playa Naranjo, Costa Rica) (in Eckert 1993 and NMFS and USFWS 1998a). Mean observed and estimated clutch frequency for green turtles nesting at Colola beach (Michoacan, Mexico) was 2.5 and 3.2, respectively (Arias-Coyotl *et al.* 2003). Nesting populations are doing relatively well in the Pacific, Western Atlantic, and Central Atlantic Ocean but are doing relatively poorly in Southeast Asia, Eastern Indian Ocean, and perhaps the Mediterranean (NMFS and USFWS 2007a).

Hawksbill Sea Turtles *(Eretmochelys imbricata*): The hawksbill sea turtle occurs in tropical and subtropical seas of the Atlantic, Pacific, and Indian Oceans. Within the Central Pacific, nesting is widely distributed but scattered and in very low numbers. Foraging hawksbills have been reported from virtually all of the island groups of Oceania, from the Galapagos Islands in the eastern Pacific to the Republic of Palau in the western Pacific (Witzell 1983; Pritchard 1982a,b in NMFS and USFWS 1998b). NMFS and USFWS (2007b) suggest that some regions are doing better than others based on available trend data, and explain:

> "Although greatly depleted from historical levels, nesting populations in the Atlantic in general are doing better than in the Indo-Pacific. In the Atlantic, more population increases have been recorded in the Insular Caribbean than along the Western Caribbean Mainland or the Eastern Atlantic. In general, hawksbills are doing better in the Indian Ocean (especially the South Western and North Western Indian Ocean) than in the Pacific Ocean. In fact, the situation for hawksbills in the Pacific Ocean is particularly dire, despite the fact that it still has more nesting hawksbills than in either the Atlantic or Indian Oceans."

Leatherback Sea Turtles (*Dermochelys coriacea*): The leatherback ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NMFS and USFWS 1995). Leatherbacks are widely distributed throughout the oceans of the world, and are found throughout waters of the Atlantic, Pacific, Caribbean, and the Gulf of Mexico (Ernst and Barbour 1972). Historically, population decline was due primarily to intense exploitation of the eggs (Ross 1979), but adult mortality has increased significantly from interactions with fishery gear (Spotila *et al.* 1996). On some beaches in the Pacific, nearly 100 percent of the eggs laid have been harvested (Eckert 1993). Adult mortality has also increased significantly, particularly as a result of driftnet and longline fisheries (Eckert 1993; Eckert 1997; Spotila *et al.* 1996). In the western Pacific, the major nesting beaches in Papua New Guinea, Papua, Indonesia, Solomon Islands, and Vanuatu (Limpus 2002, Dutton *et al.* 2007), consist of approximately 2,700-4,500 breeding females. However, this estimate should be interpreted with caution as it was derived from nest counts, and reliable data on the number of nests per female are not available (Dutton *et al.* 2007).

Loggerhead Sea Turtles (*Caretta caretta):* While loggerheads can be found throughout tropical to temperate waters in the Pacific, they are restricted to a number of breeding sites in the North Pacific and South Pacific. The recent loggerhead status review (Conant *et al.* 2009) concluded that there are nine loggerhead distinct population segments (DPSs). These include the North Pacific Ocean DPS; the South Pacific DPS; the North Indian Ocean DPS; the Southeast Indo-Pacific Ocean DPS; the Southwest Indian Ocean DPS; the Northwest Atlantic Ocean DPS; the Northeast Atlantic Ocean DPS; the Mediterranean Sea DPS; and the South Atlantic Ocean DPS. While NMFS has not yet officially recognized these DPSs, the information provided in the status review represents the most recent and available information relative to the status of this species. Animals from the North Pacific Ocean DPS and the South Pacific Ocean DPS would be affected by the proposed action. Conant *et al*. (2009) assessed the extinction risk of the North Pacific and South Pacific Ocean DPS. Given that it is unlikely that loggerhead bycatch mortality in fisheries can be sufficiently reduced in the near future due to a host of challenges, and given coastal development and coastal armoring on nesting beaches continues as a substantial threat, the assessment concluded that these DPS' are currently at risk of extinction.

Olive Ridley Sea Turtles* (*Lepidochelys olivacea*): Olive ridley turtles occur throughout the world, primarily in tropical and subtropical waters. The species is divided into three main populations in the Pacific, Indian, and Atlantic oceans. Preferred nesting areas occur along continental margins and, rarely, on oceanic islands. Nesting aggregations in the Pacific Ocean are found in the Marianas Islands, Australia, Indonesia, Malaysia, and Japan (western Pacific); and Mexico, Costa Rica, Guatemala, and South America (eastern Pacific). Olive ridley turtles from both eastern and western Pacific nesting beaches were tagged in the Hawaii-based longline fishery (Polovina *et al.* 2004). Olive ridleys are famous for their synchronized mass nesting emergences, a phenomenon commonly known as "arribadas." The threatened large arribada populations in the eastern Pacific have declined since the 1970s. Nesting at some arribada beaches continues to decline (e.g., Nancite in Costa Rica) and is stable or increasing at others (e.g., Ostional in Costa Rica) (NMFS and USFWS 2007d).

**Green turtles and Olive ridley turtles in U.S. waters are listed as threatened except for the Florida breeding population and Mexico's Pacific coast breeding population, which are listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green and Olive ridley turtles are considered endangered wherever they occur in U.S. waters.*

3.3.1.2 MMPA-Depleted Marine Mammal Species Directly Targeted for Research

Under the MMPA, a stock is designated as depleted when it falls below its optimum sustainable population. The MMPA defines optimum sustainable population as "the number of animals which would result in the maximum productivity of the population or the species, keeping in mind the optimum carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element" (16 U.S.C. 1362). NMFS regulations have further defined optimum sustainable population as "a population size, which falls within a range from [the carrying capacity of the] ecosystem to the population level that results in maximum net productivity." Once stocks have been designated as depleted, a conservation plan is developed to guide research and management actions to restore the population. All marine mammals stocks/species listed under the ESA are also considered depleted under the MMPA. However, some marine mammal stocks have only been designated by NMFS as depleted under the MMPA. Depleted stocks targeted for research in the proposed action include:

Spinner dolphin – Eastern Tropical Pacific stock *(Stenella longirostris orientalis)*: Spinner dolphins are distributed in tropical and subtropical waters worldwide (Perrin and Gilpatrick 1994) and are most abundant in warm, tropical waters (Wade and Gerrodette 1993). Spinners are an offshore, deep water species. The three subspecies of spinner dolphins in the Pacific Ocean are the white belly, the eastern, and the Central American. (Perrin 1990; DeMaster and Sisson 1992).

Spinner dolphins are relatively small, reaching lengths of 6 to 7 feet (2 m) and weighing approximately 130 to 170 pounds (59-77 kg) at adulthood. Spinner dolphins often occur in groups of several hundred to several thousand animals. They often school in large groups and with other dolphin species, such as spotted dolphins, bottlenose dolphins, or humpback whales in Hawaii.

Mating and calving occurs year-round, with gestation similar to that of most dolphins, around eleven months. Multiple males may mate with one female in short, consecutive intervals. Lactation often takes place for two years, but can also last for only one year. Calving intervals average three years. Maturity occurs at around 7 years of age and maximum longevity is 20 years.

In most places, spinner dolphins are found in the deep ocean where they likely track prey. The Hawaii population has a more coastal distribution. There, the animals rest in bays and protected areas during the day and then fuse into larger groups to feed in deeper water on fish and squid at night.

At the time of the MMPA depleted listing, the eastern spinner dolphin was estimated to be at 44 percent of its pre-exploitation population size. Currently, the eastern stock is estimated to have a

population size of 613,000 (Gerrodette et al. 2005). The long-term trend is flat for this stock. The current population sizes of the non-depleted stocks are as follows: Hawaii - 2,800 and Northern Gulf of Mexico - 12,000.

Due to the as yet unexplained association between large yellowfin tuna and some dolphin stocks in the ETP, the presence of the eastern stock of spinner dolphins has been used by the tuna purse-seine fishery to find tuna. Dolphins can become trapped in the nets and drown. Stress from becoming encircled in purse seines has also been documented as a very serious threat to dolphins. Currently, fishing methods for tuna imported into the United States under the Dolphin-Safe program do not allow fishing practices, such as setting on dolphins. Interactions with tourists are a growing threat to the Hawaiian stock; because the species is active at night, daytime interactions with tourists inhibit necessary rest and sleep time.

Northern fur seals *(Callorhinus ursinus)*: Northern Fur Seals range throughout the North Pacific Ocean from southern California north to the Bering Sea and west to the Okhotsk Sea and Honshu Island, Japan. Two separate stocks are recognized in U.S. waters: the Eastern Pacific stock and the San Miguel Island stock.

Their habitat includes a variety of marine waters and haulouts (resting sites), and a small number of terrestrial rookeries (breeding sites). Rookeries can be found at St. Paul and St. George islands (i.e., collectively the Pribilof Islands), Bogoslof Island in the southern Bering Sea, San Miguel Island in southern California. Rookeries outside of U.S. waters exist on the Commander Islands in the western Bering Sea, Robben Island in the Sea of Okhotsk, and the Kuril Islands north of Japan. Southeast Farallon Island and San Nicolas Island, California, are known haulout sites; however, they may temporarily haul out on land at other sites in Alaska, British Columbia, and on islets along the coast of the continental United States

Adult males inhabit the rookeries from May through August, and some may stay until November after giving up their territories. Adult females occupy the rookeries from June through November. The following 7 to 8 months will then be spent at sea migrating south. Females and pups originating from the Pribilof Islands tend to migrate to the North Pacific Ocean offshore of Oregon and California. Pups may stay at sea for 22 months before returning to the rookery of their birth. Males commonly migrate only as far as the Gulf of Alaska.

The Pribilof Island population was designated as "depleted" under the Marine Mammal Protection Act (MMPA) in 1988 because it had declined by more than 50% since the 1950s. Current trends show that northern fur seal populations on the Pribilof Islands have continued to decline. The Eastern Pacific stock is currently estimated at 666,000 animals from a historical high of 2.1 million in the late 1940s to early 1950s. On the Pribilof Islands of St. Paul and St. George, the estimated pup production has declined 5.2% per year since 1998. Conversely, fur seal abundance on Bogoslof Island increased through the 1990s (58% per year from 1988 to 1997) and continues to increase.

The first fur seals to populate San Miguel Island likely migrated from the Pribilof Islands. The population grew steadily in the 1950s and early 1960s (46%), but experienced declines from major El Niño events. The population began to recover in 1999 (approximately 1,084 pups and

4,336 adults were documented), but a reduced number of females after 1998 may mean fewer numbers of pups for several more years. A small population has developed on South Farallon Island (off the California coast), presumably immigrants from San Miguel Island.

The Commander Islands, Kuril Islands, and Robben Islands in Asia experienced a severe decline of northern fur seals in the early 1900s from commercial sealing. The number of seals declined on all three islands between the late 1960s and the late 1980s. The Robben Island population now appears to be recovering.

Historical declines were caused by unregulated commercial harvests; however, after "pelagic" harvests were stopped in 1911, the fur seal population recovered, and by the 1950s was thought to be at pre-harvest levels. The most recent decline began soon after an experimental female harvest was implemented in 1956 to increase the productivity of the herd. Although the consequences of this program were recognized within a few years and the female harvest ended in 1968, the northern fur seal population on the Pribilof Islands continued to decline. Regulated commercial harvests ended on St. George Island in 1976 and on St. Paul Island in 1984. NMFS currently allows a subsistence harvest by Alaskan natives based on need. This is not thought to be a cause of continued population decline. The number of fur seals taken for subsistence purposes currently ranges from 1,645-2,000 seals on St. Paul Island and 300-500 on St. George Island.

Northern fur seals face a variety of threats including: predation, changes in the availability of prey, bycatch in fishing gear, habitat change, entanglement in marine debris, disturbance from vessels and humans, climate change, and environmental pollutants. The factors affecting northern fur seal survival are poorly understood, particularly while the animals range outside the Bering Sea. Studies of Steller sea lions, which have experienced similar population declines, suggest that factors limiting recovery include changes in quantity and quality of prey and possible increased predation by killer whales. Reduced survival rates of northern fur seal adult females and juveniles may also limit recovery.

3.3.1.3 Other Marine Mammals Directly Targeted for Research

Takes for several marine mammal species that are not listed under the ESA or depleted under the MMPA have been requested under the proposed action. (See Appendices A-C for more information on specific takes requested.)

NMFS publishes annual SARs for the marine mammals under its jurisdiction. The 2008 and 2009 Stock Assessment Reports (SARS; Pacific: Carretta et al. 2008, 2009; Alaska: Angliss and Allen 2009, Allen and Angliss 2010) describe the distribution, abundance, productivity, and annual human-caused mortality for the targeted marine mammal species and are available in PDF format at www.nmfs.noaa.gov. This includes the following species:

Pacific SARS - U.S. West Coast

- California sea lion
- Harbor seal
- Northern elephant seal
- Harbor porpoise
- Dall's porpoise
- Pacific white-sided dolphin
- Risso's dolphin
- Bottlenose dolphin
- Striped dolphin
- Short-beaked common dolphin
- Long-beaked common dolphin
- Northern right whale dolphin
- Killer whale (non-Southern Resident stocks)
- Short-finned pilot whale
- Baird's beaked whale
- Mesoplodont beaked whales
- Cuvier's beaked whale
- Pygmy sperm whale
- Dwarf sperm whale
- Minke whale

Pacific SARS – Hawaii and Western Pacific

- Rough-toothed dolphin
- Risso's dolphin
- Bottlenose dolphin
- Pantropical spotted dolphin
- Spinner dolphin
- Striped dolphin
- Fraser's dolphin
- Melon-headed whale
- Pygmy killer whale
- False killer whale
- Killer whale
- Short-finned pilot whale
- Longman's beaked whale
- Cuvier's beaked whale
- Pygmy sperm whale
- Dwarf sperm whale
- Bryde's whale
- Minke whale

Alaska SARS

- Beluga whale (non-Cook Inlet stocks)
- Killer whale (non-Southern Resident stocks)
- Pacific white-sided dolphin
- Harbor porpoise
- Dall's porpoise
- Baird's beaked whale
- Cuvier's beaked whale
- Gray whale

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 by the proposed action. Research is not directed at these species and any impacts would be considered incidental to the proposed action.

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. Informal consultation with the USFWS indicated that the proposed action was not likely to adversely affect listed species or designated critical habitat under USFWS jurisdiction.

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 ALTERNATIVE 1: No Action

The activities requested in the permit application are currently authorized under Permit No. 774-1714-10, originally issued in 2004, and as such are considered as part of the baseline. The take numbers currently authorized are similar to those requested in the action, as detailed in Appendices A-D.

Under Alternative 1, the requested permit would not be issued. Activities currently authorized under Permit No. 774-1714-10 would cease in July 2010 after the permit expires. This alternative would eliminate any potential risk to the environment from the proposed research activities. However, the research would not be conducted and the opportunity would be lost to collect information that would contribute to better understanding marine mammal and sea turtle populations. This information is necessary for NMFS to conduct mandated stock assessments and status reviews and implement management activities.

More specifically, the No Action alternative would prohibit the researchers from collecting valuable information on cetaceans, pinnipeds, and sea turtles in the action area. The work described in the proposed action directly addresses research needs identified in NMFS recovery plans for several of the target species, and would provide important information that would help conserve, manage, and recover species as required by the ESA, MMPA, and implementing regulations. The information would also contribute substantially to conservation efforts by providing critical information about marine mammal ecology. Without relevant, up-to-date information on species biology, ecology, and behavior, management decisions may be too conservative or not sufficiently conservative to ensure a stock or species to recover.

Even if the requested permit is not issued, marine mammals and sea turtles living within the action area would still be exposed to vessel traffic and anthropogenic effects, including existing permitted scientific research and future requests for permits. This includes a total of 48 permits that currently authorize takes on one or more of the target species in the proposed action area. Takes in these permits occur by a variety of research and enhancement activities involving harassment, as defined under the MMPA, and take as defined under the ESA.

4.2 EFFECTS OF ALTERNATIVE 2: Issue permit with standard conditions

The activities requested in the permit application would allow research conducted since 2004 under Permit No. 774-1714, and under various prior scientific research permits, to continue for five additional years. The number of animals proposed to be taken annually would be slightly

higher than is currently authorized for some species, as detailed in Appendices A, B, C, and D, but would not be substantially different from the level of effort currently authorized under Permit No. 774-1714. The overall effects of issuing the permit would be similar to the effects of issuing Permit No. 774-1714, which has been amended 10 times since issuance and analyzed under a variety of NEPA documents (see Section 1.2), all resulting in a FONSI. Research activities may result in short-term behavioral responses by individuals, but would not be expected to result in stock- or species-level effects.

Although tags used in this 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 this analysis 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 the proposed action 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.

Effects of Project I (Pinniped Studies)

Level B harassment, as defined by the MMPA, would occur during aerial, vessel, and ground surveys and during scat collection. These activities were analyzed in the original EA for Permit No. 774-1714 (NMFS 2004), and no changes to take numbers are proposed for these species. Issuance of Permit No. 14097 would not be expected to have any additional effects that were not previously analyzed. No more than short-term behavioral responses would be expected to result from research activities.

The SWFSC reports that in the years they have conducted these activities, they have observed the following reactions for each activity (percentages are percentage of individuals):

- Aerial photographic surveys: (1) nothing (~99%), (2) awaken (unknown%), (3) look up and around (0.001%), (4) vocalize (unknown%), (5) stop nursing (unknown%), (6) move

to the water (<0.1%), or (7) enter the water (<0.1%).

- Ground surveys: (1) nothing (~90%), (2) awaken (1%), (3) look up and around (10%), (4) vocalize (1%), (5) stop nursing (1%), (6) move to the water (5%), or (7) enter the water (5%).
- Vessel surveys: (1) nothing (~99%), (2) awaken (0%), (3) look up and around (0%), (4) vocalize 0%), (5) stop nursing (0%), (6) move to the water (0%), or (7) enter the water (0%).
- Scat and spewing collections: (1) nothing (~50%), (2) awaken (5%), (3) look up and around (10%), (4) vocalize 20%), (5) stop nursing (20%), (6) move to the water (50%), or (7) enter the water (50%).

As described in the application and analyzed in NMFS 2004, activities have the potential to flush animals or cause stampedes, but researchers propose to continue to use mitigation measures in place for the current permit to minimize risks, as described in Chapter 2.

Twenty-seven years of experience by the researchers indicates that sea lions return to the scat collection area soon after departure of biologists, but it is not known if they are the same individuals that vacated the area during scat collection. There has been no population response to past scat collections; the sea lion population has increased at an average annual rate of 6% since the diet study began in 1981.

No mortalities or long-term adverse effects would be expected as a result of these research activities. The short-term behavioral responses that might result from research activities 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.

Effects of Project II (Cetacean Studies)

Level B harassment, as defined by the MMPA, would occur during large and small vessel surveys, photo-identification activities, aerial surveys, and aerial photogrammetry surveys. Close approach was analyzed in the original EA for Permit No. 774-1714, 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 2004). The differences in close approach activities requested in the proposed action from what was previously authorized are limited to small increases in the number of animals that would be taken (described in Appendices B and C), and would not be expected to have any additional effects that were not previously analyzed.

Behavioral responses would be expected to vary from no response to diving, tail slapping, or changing direction. With experienced vessel drivers, any potential effect of vessel approach 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. 774-1714

indicate that conduct of activities resulting in Level B harassment have not lead to mortality, serious injury, or disruption of essential behaviors such as feeding, mating, or nursing.

The permit, if issued, would contain conditions requiring the SWFSC to retreat from animals if behaviors indicate the approach may be interfering with reproduction, pair bonding, feeding, or other vital functions.

Level A harassment, as defined by the MMPA, would occur during biopsy sampling and tagging activities, when physical contact is made that has the potential to injure animals. Actual injury would be minimized by conditions of the permit limiting how sampling and attachment of tags may occur, such as avoiding sensitive areas of the body. The SWFSC would also 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 occur concurrently with Level A harassment activities.

Biopsy sample collection
Biopsy sampling has been used extensively worldwide and is a common and widely accepted method for obtaining tissue samples, especially because the unequivocal value of molecular genetic tools and analyses has been recognized. The potential for serious injury and/or long-term effects on individuals from remote biopsy sampling is considered minimal. The biopsy darts would not contain any hazardous materials, and the penetration depth of the dart relative to the blubber depth, and the mitigation measures employed to prevent deeper penetration, make it highly unlikely that serious injury would occur to target individuals.

As with any instance where the dermis is penetrated, there is the possibility of infection associated with biopsy sampling. However, no evidence of infection has been seen at the point of penetration or elsewhere among the many whales re-sighted in days following the taking of a biopsy sample. There have been no documented cases of infection or injury to large whales resulting from biopsies, including well-monitored populations with repeatedly observed identified individuals.

Wounds heal quickly in cetaceans (Weller et al. 1997, Krützen et al. 2002, Parsons et al. 2003). In addition to naturally occurring coloration patterns, the marks used to identify individuals include healed wounds from predation attempts (see Heithaus 2001*a* for a review of predator interactions), inter- and intra-species interactions, barnacles, remora, entanglement, and vessel interactions. In Shark Bay, Australia, approximately 74% of non-calf bottlenose dolphins had shark bite scars (Heithaus 2001*b*). A recent permit application for capture of bottlenose dolphins in the Indian River Lagoon, Florida, indicated that wounds from the collection of a full-thickness

skin and blubber wedge biopsy approximately 5 cm length x 3 cm width typically heal in 14-30 days. No known morbidity or mortality has been associated with these procedures as described (G. Bossart, File No. 14352). Biopsy samples collected in the proposed action would be approximately 9 mm in diameter and 4 cm in depth from large whales and 7 mm in diameter and 20 mm in depth from small cetaceans; these relatively small wounds would be expected to heal in a similar time frame.

Reeb and Best (2006) collected deeper biopsy samples from Southern right whales of all age classes using a hand-held pole system. The longest (deepest) samples collected for that study were from two early season calves (11.7 and 12.4 cm), a late season calf (13.2 cm), an early season adult (18.6 cm), and a late season adult (21.2 cm). Behavioral reactions to this system of biopsy collection were no greater than those observed during use of the more superficial Paxarms biopsy system (Best et al. 2005). The greatest component of the behavioral reaction to pole sampling was to the close approach of the vessel (Reeb and Best 2006). The biopsy site was hardly visible following biopsy, with one exception. In that instance, a thin spray of blood was seen from the biopsy site of a neonate, who reacted by lifting its head and fluke, slapping the water surface with its fluke, and swimming away. The bleeding ceased within minutes and the neonate's behavior appeared normal (Reeb and Best 2006). The SWFSC would not be authorized to sample large whale calves less than two months old, or small cetaceans less than one year old.

In the years that the SWFSC has been collecting biopsy samples, no known instance of an injury to a marine mammal has occurred. Bearzi et al. (2000) reported the death of a common dolphin following penetration of a biopsy dart and subsequent handling. The authors concluded that the biopsy dart did not produce a lethal wound, but that the biopsy darting and subsequent handling, perhaps in combination with potential pre-existing health conditions of the animal, produced physical and/or physiological consequences that were fatal to the animal. There is no evidence that the biopsy procedure or associated boat approaches, if conducted responsibly and by experienced individuals, has any significant impact on cetacean populations. Studies to date indicate no long-term consequences on survival, return rates, or fecundity.

Effects of biopsy sample collection on large whales

The effects of biopsy sampling on the large whale species requested in the proposed action were analyzed in the original EA for Permit No. 774-1714 (NMFS 2004). In addition to the effects of the close approach of a vessel to whales associated with collecting biopsy samples (described above), that analysis determined:

- No evidence of infection has been seen at the point of penetration of a biopsy dart or elsewhere among whales re-sighted following biopsy sampling.
- The responses of whales are generally minimal to non-existent when approaches are slow and careful, and even when subjected to invasive biopsy and tagging procedures, a careful approach generally elicits at most a minimal and short-lived response from the whales.
- Biopsy sampling would not be expected to have long-term, adverse effects on the target species; therefore disturbances from the activities were considered not likely to have a significant cumulative effect on any research animals.

Biopsy sampling has been conducted successfully with little or no behavioral reactions (e.g., Weinrich et al. 1991, 1992; Clapham and Mattila 1993; Brown et al. 1994; Gauthier and Sears 1999; Cerchio 2003); NMFS' Northeast Fisheries Science Center (NEFSC) has reported that most right whales darted during past research (80.6 percent; Brown et al. 1991) have shown no reaction. Those individuals that did react either responded by "flinching" or through a tail flick or dive. Whales that have been inadvertently biopsied more than once have been documented displaying either no response or short-term behavioral responses (Gauthier and Sears 1999), although Southern right whale cows in cow-calf pairs may react more strongly to inadvertent repeat sampling (Best et al. 2005). A few strong reactions have been documented in humpback whales following biopsy procedures (Weinrich et al. 1991, 1992), but all involved unusual instances, such as a biopsy dart retrieval line being snagged on a fluke. Observations of whales in the days and years following darting indicated no long-term effects of the procedure. When reactions to biopsy sampling are observed, most individuals resume their normal behavior within a few minutes (Gauthier and Sears 1999).

The proposed action contains higher take numbers for biopsy sampling of large whale species than are authorized for Permit No. 774-1714; however, there is no evidence that responses of individual whales would exceed short-term stress and discomfort and no long-term effects would be anticipated. The activities would not be expected to have any additional effects that were not previously analyzed. The short-term behavioral responses that might result from research activities 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. In addition, conditions and mitigation measures would be placed in the permit to further limit the potential for negative effects from these activities.

Effects of Biopsy Sampling Large Whale Calves and Mother/Calf Pairs
Studies indicate that mothers/calf pairs are no more sensitive to biopsy procedures than other groups, although mothers tended to be more evasive of approaching boats (Weinrich et al. 1991, 1992). Mother/calf pairs show qualitatively similar reactions to sampling as other animals, and in some cases mothers react significantly less than other age classes to the actual biopsy hit (Clapham and Mattila 1993). The potential for disturbance of mother/calf pairs lies not in the sampling, but rather in the associated vessel approach (Clapham and Mattila 1993). Similar to other age classes, changes in behavior associated with sampling have been observed to be momentary; the biopsied individual will almost always continue the original behavior, or resume the behavior within a few minutes.

The main consideration for potential impacts from biopsy sampling calves and mother/calf pairs is the potential for the close presence of the vessel to disrupt the important mother/calf pair bond or otherwise interfere with mother or calf fitness or survival. There have been a number of studies that have collected biopsy samples from large whales, including calves, with the following results:

- Clapham and Mattila (1993) conducted a detailed, directed study of the effects of biopsy sampling on humpback whales, including individual calves less than 6 months old, and

concluded "biopsies can be obtained from mothers and their calves with little effect on the animals." They analyzed behaviors before and after biopsy sampling, and the immediate reactions of 565 biopsied humpback whales (in addition to 427 misses). They found that most whales did not react (or did so minimally), and those behaviors, before and after, most often did not change. Additionally, mothers were the *least* likely to react to a biopsy hit, and calves reacted the same as non-calf whales that were not anticipating contact (*e.g.*, noncompetitive and not mothers). Minimal reaction has been observed in studies of biopsy-sampled calves (Clapham and Mattila 1993, Cerchio 2003). Calves reacted more to biopsy hits than mothers, principal escorts, challengers and secondary escorts, but not significantly different than all the other classes of whales (Clapham and Mattila 1993). In no instance was a calf ever observed to separate from a mother, and many hundreds of mothers and calves have been observed and biopsied. The reactions were always short-term and the mothers and calves resumed normal behavior after the sampling ended (Clapham and Mattila 1993).

- Gauthier and Sears (1999) studied reactions of three baleen whales species, including humpback, fin and blue whales, revealing differences between the species. The majority of fin and blue whales exhibited no behavioral response to biopsy sampling, including two fin whale calves biopsied. No strong reactions were observed for these species (Gauthier and Sears 1999). The majority of humpback responses were moderate, consisting of hard tail flicks. Of the humpback whale calves biopsied, 4 out of 7 had a moderate to low reaction while the rest had no reaction (Gauthier and Sears 1999). They also noted that reactions of whales typically lasted at the most only a few minutes.
- Minimal reactions of biopsied adult females, including mothers, have been observed in many studies (Weinrich et al. 1992; Clapham and Mattila 1993; Brown et al. 1994). Mothers reacted significantly less to the biopsy strike than all other classes combined (Clapham and Mattila 1993). Reactions were always short in duration.
- A study of the long-term effects of biopsy sampling southern right whales found that the majority of cows that accompanied calves elicited a non-forceful fluke movement or lesser reaction (Best et al. 2005). Calves of cow/calf pairs on average showed a lesser response akin to a startle when biopsied (Best et al. 2005). Their data also suggested that cows may become more sensitive to repeated biopsy sampling within short time frames (less than one year) while this could not be detected in calves due to low sample sizes (Best et al. 2005). The authors also were unable to detect any difference in reproductive success or the proportion of normal calving intervals based on whether an animal was biopsy sampled in the prior two years, but they caution this could be due to low sample sizes and statistical power. Despite this, no major effects to the population were detected and the authors cautiously approve of the biopsy sampling of southern right whale cow/calf pairs when done with care.
- The NEFSC has evaluated long-term impacts of biopsy sampling for humpback whale mothers and calves, and a similar analysis is underway for North Atlantic right whales. The humpback whale data indicates that survival of biopsied (n = 106) and unbiopsied (n = 112) calves is not significantly different. Similarly, the fecundity and return rates of biopsied adult females (n = 52) and unbiopsied mature females (n = 144) were not significantly different. The NEFSC has seen little effect from biopsy activities conducted

on right and humpback whales both in the short and long term based on records maintained for biopsy operations. The available data suggest that in all cases, the activity has had little effect on right and humpback whales (Clapham et al. in prep).

- The NMFS National Marine Mammal Lab (NMML) is authorized to biopsy sample calves less than six months of age and females accompanying them in Permit No. 782-1719-09. Annual reports indicate that no more than short-term behavioral responses (e.g., tail flick, dive) have been observed during sampling. The mother-calf bond has not been broken during sampling events.

Based on this information, NMFS expects that the effects of biopsy sampling large whale calves and females with calves would be similar to sampling adult large whales. 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 to this age class and pairing would likely be short-term and considered minimal. In addition, conditions and mitigation measures would be placed in the permit to further limit the potential for negative effects from these activities.

Effects of biopsy sample collection on dolphins
As with large whales, the effects expected from biopsy sampling dolphins would include behavioral reactions to close vessel approach (as described above) and responses to biopsy darts. During past research conducted by the SWFSC, reactions by individuals of various species to biopsy sampling and tagging generally have been low-level and short-lived, ranging from no visible response to a "startled" reaction sometimes followed by an animal swimming away or diving; individual animals were more likely to respond to the approach of the small boat than to the biopsy itself. Bowriding dolphins sampled from the main research vessel often continue to ride the bow after the biopsy sample has been collected. No known injuries or other significant effects have been observed during the two decades the SWFSC has conducted this type of sampling, and no entanglements have resulted from using tethered biopsy darts.

The proposed action contains higher take numbers for biopsy of some species (see Appencices B and C) than are authorized for Permit No. 774-1714; however, there is no evidence that responses of individual dolphins would exceed short-term stress and discomfort and no long-term effects would be anticipated. The activities would not be expected to have any additional effects that were not previously analyzed. The short-term behavioral responses that might result from research activities 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. In addition, conditions and mitigation measures would be placed in the permit to further limit the potential for negative effects from these activities.

Summary of effects of biopsy sample collection
The proposed activities 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. Vessel collision during research is not likely to occur given the nature of the proposed activities, the researchers' experience in maneuvering boats around cetaceans, and the mitigating measures in the permit. Mitigating measures would also reduce the

level of harassment to sensitive groups such as females with calves and repeated harassment of animals during all activities.

The proposed activities 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. The proposed 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.

Tagging

In addition to the potential for behavioral responses to close approach (described above), potential effects to individuals targeted for tagging include behavioral responses to attachment of the tag, increased hydrodynamic drag, and the possibility for infection at the attachment site of tags that break the skin.

The proposed tagging activities would continue using suction cup and implantable tags currently authorized by Permit No. 774-1714-10 and analyzed previously (NMFS 2004, 2008). The use of suction cup attached and implantable tags was analyzed in the original EA for Permit No. 774-1714 (NMFS 2004), and NMFS determined that, in addition to any Level B harassment resulting from the close approach to attach tags:

- Suction cup attachments would be short-term (generally less than one day), and could be dislodged by the animal by maneuvering rapidly, breaching, or rubbing against a solid surface.
- The suction cup assembly could migrate along the skin of the whale, but because the tag would be attached caudal to the blowhole, movement would be toward the fluke of the animal and therefore would create no danger that the tag would cover the blowhole.
- The proportion of the suction cup assembly to the animal's size and weight would be such that any additional energetic demand created by hydrodynamic drag would likely be insignificant.
- Implantable tags would work their way out of the blubber in days to weeks after tagging, and the chance of infection would be expected to be extremely low.
- None of the attachment types would be likely to injure individuals or elicit more than a minimal, short-lived response from whales.

Fully implantable satellite tags, authorized upon issuance of Permit No. 774-1714, attach to the blubber on the dorsal surface and generally work their way out in days to weeks after tagging (NMFS 2004). The "dart" tags authorized with Permit No. 774-1714-08 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. In terms of size and weight, these tags are approximately equal to or less than the tag units originally authorized by

Permit No. 774-1714, therefore this type of tag would create less hydrodynamic drag than the partially implantable dart tags previously authorized for use. In issuing Permit No. 774-1714-08, NMFS concluded that "the modification of research activities to include the new tag type would not cause effects to cetaceans in a manner or to an extent not previously considered in the most recent Biological Opinion or SEA or affect its finding (FONSI, April 15, 2008). The conclusions in the previous Biological Opinions, EA, and SEA on NMFS' issuance of this permit will remain unchanged by this amendment."

Applications of the "dart" tag unit on other marine mammals indicate that it may remain attached for 14 weeks (Jay 2006). The tag would be expected to back out of the entry site leaving only small wounds that would heal rapidly. Signs of chronic inflammation have been observed at the dart site in two pilot whales, but after tag loss the penetration sites and surrounding tissue appeared to be granulation tissue (Hanson et al. 2008). The SWFSC reported that three "dart" tags were applied to the dorsal fins of fin whales in 2008, and transmitted for 26, 34, and 86 days. Although follow-up photographs had not yet been obtained at the time of reporting, Hanson et al. (2008) have shown this tag type to have minimal long-term impact and generally only slight scarring evident around the tag implant site.

Exact dimensions and weights vary with tag generation and specific components (Tables 1 and 2), but the ongoing trend is toward smaller, lighter tags. The tags described in the original EA (NMFS 2004) weighed up to approximately 500 g, and annual reports from the use of older tag models indicate that no known mortality or serious injury has arisen from their use by the SWFSC under past permits.

Tag configurations might include the use of VHF transmitters to aid researchers in locating tags, but the frequency range for these transmitters would be greater than 148 mHz. Because this is well above the known hearing range for marine mammals and turtles, and NMFS considers anything over 200 kHz to have no effects to species (A. Scholik-Schlomer, pers. comm. to K. Beard, Oct 2009), the effects of VHF transmissions are not considered further.

Impacts of currently authorized satellite tag types were found not to be significant, with the majority of effects (responses) occurring during the tagging event due to vessel approach and tag attachment and causing no more than short-term disturbance of animals (NMFS 2004, 2008*b*). SWFSC scientists involved in tagging activities have extensive experience with animals in the wild. During past efforts, researchers have successfully attached a tag on the first or second attempt approximately 80-90% of the time, minimizing harassment to individual whales. No injury or mortality would be expected as a result of continued use of the tags. The SWFSC has also stated that:

- Animals exhibiting negative reactions to the vessel (e.g., tail slaps, aerial behaviors) would not be approached.
- Attempts to tag an animal would be terminated if an animal exhibits a negative reaction (e.g., rapidly diving, tail slapping, rapidly swimming away).

The proposed action contains higher take numbers for tagging of large whale species (see Appencices B and C) than are authorized for Permit No. 774-1714; however, there is no evidence that responses of individual whales would exceed short-term stress and discomfort and

no long-term effects would be anticipated. The activities would not be expected to have any additional effects that were not previously analyzed. The short-term behavioral responses that might result from research activities 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. In addition, conditions and mitigation measures would be placed in the permit to further limit the potential for negative effects from these activities.

Effects of Project III (Sea Turtle Studies)

The effects of capturing, handling, tagging, measuring, weighing, blood sampling, and attaching tags to sea turtles was analyzed in the original EA for Permit No. 774-1714 (NMFS 2004). That analysis determined that the activities could result in physiological effects or cause short-term minor injury or stress to individual animals. As described, the research was expected to have a relatively low level of physiological effect on the species, and it was determined to be unlikely to affect the future survival or reproduction of individuals. No accidental mortality takes were authorized under the permit, and none were reported to have occurred.

That analysis (NMFS 2004) determined that the research activities would not appreciably reduce any of the sea turtles' likelihood of survival in the wild. In particular, NMFS believed the proposed research would not affect adult turtles in a way that would reduce their reproductive success; the survival of young turtles; or the number of young turtles that annually recruit into the breeding populations of the affected sea turtles. Therefore, NMFS determined that the activities were not likely to have a significant cumulative effect on any research animals or any animals incidentally harassed from these activities.

The methods in the proposed action have not changed since that analysis was completed. The only change in the requested activities is an increase in the number of leatherback sea turtles captured and handled for flipper tagging, measuring, weighing, and blood sampling. The proposed increase is from the currently authorized ten leatherbacks annually to 80 annually (Appendix D). No accidental mortality takes would be anticipated during the proposed activities, and none would be authorized by the permit. The authorization of capture and handling of 80 leatherbacks annually would not be expected to appreciably reduce any of the sea turtles' likelihood of survival in the wild. NMFS believes that the proposed research would not affect adult turtles in a way that would reduce their reproductive success; the survival of young turtles; or the number of young turtles that annually recruit into the breeding populations of the affected sea turtles.

Capture and handling generally result in only short term effects and are not long lasting, dissipating within a couple of days or sooner. Capture methods in the proposed action do not include net captures; instead, a swimmer would enter the water and grasp the turtle at the top and rear of its carapace to direct the turtle up and out of the water. The turtle would then be handed to personnel in the raft to be processed. NMFS expects that hand capture would result in short-term, minimally adverse impacts to individual turtles. There is a remote possibility that a turtle would be recaptured during a cruise or between successive cruises. The potential negative effects of recapture are considered to be minimal. No injury or mortality would be expected. The duration of impact would always be on individual turtles not populations.

Measuring, weighing, sexing, and flipper tagging would not be expected to result in more than short-term stress. Based on past observations of similar research, these effects are expected to dissipate within a day (Stabenau and Vietti, 2003). Turtles would be worked up as quickly as possible to minimize stress resulting from their capture. The applicant would be required to follow procedures designed to minimize the risk of either introducing a new pathogen into a population or amplifying the rate of transmission from animal to animal of an endemic pathogen when handling animals.

Flipper tagging has been used for more than 20 years in green turtle populations such as Hawaii and San Diego Bay (Balazs 1999) to track sea turtle movement and growth. All tag types have negative aspects associated with them, especially concerning tag retention. Plastic tags can become brittle, break, and fall off underwater, and titanium tags can bend during implantation and not close properly, leading to tag loss. The small wound-site resulting from a tag applied to a flipper has been observed to heal completely in a short period of time in animals recaptured in San Diego Bay, and the risk of infection is low, especially because the equipment and tag would be sterilized prior to tagging each turtle.

The application of all types of flipper tags would be expected to produce some level of pain. The discomfort displayed is usually short and highly variable between individuals - most turtles barely seem to notice when being tagged, while others exhibit a marked response (Balazs 1999). No post-tagging infection has been noted during past research projects conducted by SWFSC scientists in San Diego Bay, CA; Bahia de Los Angeles, Mexico; and St. Croix, USVI (Dutton and Seminoff, NMFS, pers. comm, 2009). In addition, animals tagged in San Diego Bay have been observed in the initial capture area for over 19 years, indicating that tagging has had no lasting effects on the animals. NMFS does not anticipate any mortality or long-term adverse effect to the turtle with the attachment of the flipper tags.

Blood collection would be expected to result in no more than short-term stress. Taking a blood sample from the dorsal side of the neck is a routine procedure when conducted by trained personnel following proper guidelines (Owens 1999). According to Owens (1999), with practice it is possible to obtain a blood sample 95% of the time, and the sample collection time should take about 30 seconds. Sample collection sites are always sterilized with alcohol or other antiseptics, prior to sampling. Blood sampling volume would be conditioned to only allow a conservative amount of blood to be drawn. Blood hormones and heart rate have been measured in animals that have had this amount of blood drawn from them and no stress has been observed (Stabenau, pers.comm. 2005).

NMFS expects that the collection of a blood sample would cause minimal additional stress or discomfort to the turtle beyond what was experienced during capture, collection of measurements, tagging, etc.

Collection of stomach contents by gastric lavage (stomach flushing) is the preferred technique for determining prey preferences of turtles. This technique has been successfully used on green, hawksbill, olive ridley, and loggerhead turtles ranging in size from 25-115” CCL. Many individual turtles have been lavaged more than three times without any known detrimental effect (Forbes 1999). Individuals have been recaptured from the day after the procedure up to three

years later and appear healthy and feeding normally. Laparoscopic examination following the procedure has not detected any swelling or damage to the intestines. Although individual turtles are likely to experience discomfort during this procedure, NMFS does not expect individual turtles to experience more than short-term stress. Injuries and mortalities are not anticipated.

Tissue biopsy sample collection would not be expected to result in more than short-term stress. The effects of harassment on turtles during tissue sampling can result in raised levels of stressor hormones and may cause some discomfort during sampling procedures. However, no adverse effects have been noted when sampling animals in San Diego Bay (P. Dutton, NMFS, pers. comm., 2008). Researchers who examined turtles recaptured two to three weeks after initial capture and sample collection noted that the sample collection site was almost completely healed (W. Witzel, Research Biologist; P. Dutton, NMFS, pers. comm., 2008). Sampling sites on turtles recaptured in San Diego Bay after several months to years have completely healed and have shown no signs of infection. In San Diego Bay, animals remain in the study area long term, indicating that sampling does not produce any adverse effects on their behavior (Dutton, NMFS, pers. comm., 2009).

The permit would contain conditions to mitigate adverse impacts to turtles. The SWFSC would be required to follow procedures designed to minimize the risk of either introducing a new pathogen into a population or amplifying the rate of transmission from animal to animal of an endemic pathogen when handling and sampling animals. NMFS does not expect that the collection of a tissue sample will cause any additional stress or discomfort to the turtle beyond what was experienced during the capture, collection of measurements, and tagging.

Satellite tagging is a commonly used and permitted technique by NMFS. Turtles outfitted with transmitters would be held for approximately 2.5 hours to allow time for the laminating resin to cure. During this time, turtles would be kept in a shaded area and are kept cool and moist to prevent dehydration and overheating. During the attachment of all transmitters, researchers would provide adequate ventilation around the turtle's head so that any chemicals contained in the resin have the least effect on the turtle.

The total weight of transmitter attachments would not exceed 5% of the body mass of the animal. Each transmitter attachment would either contain a weak link or have no gap between the transmitter and the turtle so that there is no risk of entanglement. NMFS is unaware of transmitters resulting in any serious injury to these species. SWFSC expects the majority of satellite tags to slough within six months, with maximum retention time of less than 12 months.

Transmitters, as well as biofouling of the tag, attached to the carapace of turtles increase hydrodynamic drag and affect lift and pitch. Transmitters proposed for use have angled edges, which would be expected to minimize hydrodynamic drag; this type of transmitter has been shown to substantially reduce hydrodynamic drag of backpack mounted satellite transmitters in experimental conditions (Watson and Granger 1998). The transmitters would be expected to have negligible effects on the movements of turtles.

In a study of video camera-equipped green turtles, telemetered turtles exhibited normal diving behavior and swimming speeds (Seminoff et al. 2006). The green turtles in the proposed action are expected to be larger than those studied by Seminoff et al. (mean of previously captured

green turtles in San Diego Bay = 85.73 cm straight carapace length (SCL); mean in Seminoff et al. 2006 = 79.6 cm SCL), so a lower degree of potential impacts would be expected.

Sonic tracked green turtles have returned to areas of initial capture, suggesting that the transmitters and the tagging experience left no lasting effect on habitat use patterns (Seminoff et al. 2002). During previous tracking sessions in San Diego Bay, both telemetered and nontelemetered turtles were seen in the same areas exhibiting roughly similar surface behavior, even swimming within meters of the tracking vessel, suggesting the transmitter packages have negligible effects. In addition, turtles outfitted with transmitters have been recaptured after several years with no indication that they previously carried a transmitter (Dutton, NMFS, pers. comm. 2009). Any new information on the optimum location for transmitter application would be utilized by the SWFSC to minimize impacts to sea turtles as well as optimize research results.

Long-distance movements of satellite-tagged juvenile and adult male loggerheads also help substantiate the idea that sea turtles can survive the tagging experience as well as continue normal activities (SCDNR pers. comm. 2007). The SCDNR reported that fifteen adult male loggerheads dispersed from Cape Canaveral, FL, to locations as far away as Panama City, FL; Andros Island in the Caribbean; and off the coast of New Jersey. SCDNR reported that several juvenile loggerheads have traveled from SC to GA and NC, with one juvenile loggerhead traveling as far north as Delaware Bay (SCDNR pers. comm. 2007).

NMFS does not expect that satellite transmitters would have more than negligible effects on the movements of turtles, and would not expect transmitters to result in serious injury or death of individuals.

The activities would not be expected to have any additional effects that were not previously analyzed. The short-term effects that might result from research activities 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 be placed in the permit to further limit the potential for negative effects from these activities.

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

As summarized below, NMFS has determined that the proposed research is consistent with the purposes, policies, and applicable requirements of the MMPA, ESA, and NMFS regulations. NMFS issuance of the permit would be consistent with the MMPA and ESA.

4.3.1 Endangered Species Act

This section summarizes conclusions resulting from consultation as required under section 7 of the ESA. The consultation process was concluded after 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 EA represented NMFS' assessment of the potential biological impacts. Informal consultation with the U.S. Fish and Wildlife Service (USFWS) indicated that the proposed action was not likely to adversely affect listed species or designated critical habitat under USFWS jurisdiction. Consultation with NMFS determined that the proposed action would not jeopardize any

endangered species or destroy or modify any critical habitat under NMFS jurisdiction (NMFS 2010).

4.3.2 Marine Mammal Protection Act

The applicant submitted an application which included responses to all applicable questions in the application instructions. The requested research is consistent with applicable issuance criteria in the MMPA and NMFS implementing regulations. 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 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.

4.3.3 National Marine Sanctuaries Act

The SWFSC has obtained a permit to conduct research activities in National Marine Sanctuaries (Permit # MULTI-2008-003).

4.3.4 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.

4.4 COMPARISON OF ALTERNATIVES

The activities described in the proposed action are currently authorized under Permit No. 774-1714-10, which expires June 30, 2010, and as such are included in the baseline of the No Action alternative. The Proposed Action has higher take numbers for some species (see Appendices A-D), and if all requested takes were to be used, may result in a small amount of additional disturbance to species and stocks. The Proposed Action does not represent a substantial increase in the harassment of marine mammals or sea turtles in the action area, but would extend the duration of harassment for five years beyond what is currently authorized under Permit No. 774-1714-10. Additional incidental disturbance of non-target cetacean, pinniped, or turtle species may occur if those animals are in the vicinity of research activities. The potential for adverse impacts on the human environment is not greater under the Proposed Action than under the No Action alternative.

4.5 MITIGATION MEASURES

In addition to the measures identified in the SWFSC's application and otherwise considered "good practice or protocol", all NMFS marine mammal and sea turtle 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.

A full list of permit conditions is available in the permit. For marine mammals, conditions would include:

- Limitations on activities authorized for specific age classes and species.
- Requirements for Researchers to suspend permitted activities in the event serious injury or mortality of protected species occurs or authorized take is exceeded.
- Requirements for Researchers to exercise caution when approaching animals and retreating if behaviors indicate the approach may be interfering with reproduction, feeding, or other vital functions.
- During authorized activities on females with calves:
    - Termination of efforts if there is any evidence that the activity may be interfering with pair-bonding or other vital functions.
    - Not positioning the research vessel between the mother and calf.
    - Approaching mothers and calves gradually to minimize or avoid startle response.
    - Not approaching mothers or calves while the calf is actively nursing.
    - Sampling the calf first to minimize the mother's reaction.
- Requirements for Researchers to take reasonable measures to avoid unintentional repeated tagging or biopsy sampling of any individual (e.g., compare photo-identifications).
- Limitations on the number of attempts that would be made to tag or biopsy sample an individual.
- Requirements that Researchers not attempt to biopsy or tag a cetacean anywhere forward of the pectoral fin.
- Requirements to discontinue attempts to attach tags or collect biopsy samples if an animal exhibits repetitive strong adverse reactions to the activity or the vessel.

For sea turtles, conditions would include methods of capture and handling, sample collection, and satellite tagging that would cause the least potential risk to individual turtles.

4.6 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.

4.7 CUMULATIVE EFFECTS

Cumulative effects are defined 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.

4.7.1 Vessel Interactions: Ship Strikes

Collisions with commercial ships are an increasing threat to many large whale species, particularly as shipping lanes cross important large whale breeding and feeding habitats or migratory routes. Many types and sizes of vessels have been involved in ship strikes, including

container/cargo ships/freighters, tankers, steamships, U.S. Coast Guard (USCG) vessels, U.S. Navy vessels, cruise ships, ferries, recreational vessels, fishing vessels, and whale watching vessels (Jensen and Silber 2003).

Vessel speed (if recorded) at the time of a large whale collision has ranged from 2 to 51 knots (Jensen and Silber 2003). A summary paper on ship collisions and whales by Laist et al. (2001) reported that, of 28 recorded collisions causing lethal or severe injuries to whales, 89 percent involved vessels traveling at 14 knots or faster, and the remaining 11 percent involved vessels traveling at 10 to 14 knots; none occurred at speeds below 10 knots, although there is a predicted 45 percent chance of death or serious injury to the whale at 10 knots (Pace and Silber 2005). New regulations (discussed in the following section) requiring vessels to slow down in certain circumstances may reduce the likelihood of future vessel collisions with large whales.

Collisions occur off almost every U.S. coastal state, but strikes are most common along the east coast, followed by the west coast and Alaska/Hawaii (Jensen and Silber 2003). The 2008 U.S. Pacific Marine Mammal Stock Assessments (Caretta et al. 2008) report:

- Ship strikes were implicated in the deaths of at least two humpback whales in 1993, one in 1995, and one in 2000. One humpback was reported injured as the result of a ship strike in 2005, but the fate of that animal is unknown and details are lacking to determine if it was a serious injury.
- Ship strikes were implicated in the deaths of blue whales in 1980, 1986, 1987, 1993, 2002 and 2004. In addition, there was one blue whale injured as the result of a ship strike in 2003 (blood observed in the water).
- Ship strikes were implicated in the deaths of seven fin whales and the injury of another in CA/OR/WA from 2002 to 2006 (NMFS, unpublished stranding data),
- A ship strike mortality was reported for a sei whale in Washington in 2003 (NMFS Northwest Regional Office, unpublished data).
- Twelve injuries and one mortality of unidentified large whales were reported from 2002-2006.

Based on a recent estimate of the mortality rate and records of ship strikes to large whales, scientists estimate that less than one-quarter (17 percent) of ship strikes are actually detected (Kraus et al. 2005). Incidences of ship strikes on large whales in the proposed action area are difficult to quantify because not all whales that were hit will strand, and even if they do, there's not always a clear indicator as to what the cause was.

4.7.2 Vessel Interactions: Marine Mammal Watching

Commercial and private vessels engaged in marine mammal watching or other recreational activities have the potential to impact cetaceans in the proposed action area. A study of whale watch activities worldwide found that the business of viewing whales and dolphins in their natural habitat has grown rapidly over the past decade into a billion dollar (U.S. dollars) industry involving over 80 countries and territories and over 9 million participants (Hoyt 2001). In 1988, a workshop sponsored by the Center for Marine Conservation (CMC) and NMFS was held to review and evaluate whale watching programs and management needs (CMC and NMFS 1988). Several recommendations were made to address concerns about the harassment of marine mammals during wildlife viewing activities including the development of regulations to restrict

operating thrill craft near cetaceans, swimming and diving with the animals, and feeding cetaceans in the wild.

Although marine mammal watching is considered by many to be a non-consumptive use of marine mammals with economic, recreational, educational, and scientific benefits, it is not without potential negative impacts. One concern is that animals may become more vulnerable to vessel strikes once they habituate to vessel traffic (Swingle et al. 1993; Wiley et al. 1995). Another concern is that preferred habitats may be abandoned if disturbance levels are too high. In the Notice of Availability of Revised Whale Watch Guidelines for Vessel Operations in the Northeastern United States (64 FR 29270; June 1, 1999), NMFS noted that whale watch vessel operators seek out areas where whales concentrate, which has led to numbers of vessels congregating around groups of whales, increasing the potential for harassment, injury, or even the death of these animals.

Several recent research efforts have monitored and evaluated the impacts of people closely approaching, swimming, touching, and feeding marine mammals and have suggested that marine mammals are at risk of being disturbed ("harassed"), displaced, or injured by such close interactions. It is a concern that mammals may avoid preferred habitat altogether if the disturbance in that area is too high. Researchers are reporting boat strikes, disturbance of vital behaviors and social groups, separation of mothers and young, abandonment of resting areas, and habituation to humans (Kovacs and Innes 1990; Kruse 1991; Wells and Scott 1997; Samuels and Bejder 1998; Bejder et al. 1999; Colborn 1999; Cope et al. 1999; Mann et al. 2000; Samuels et al. 2000; Boren et al. 2001; Constantine 2001; Nowacek et al. 2001). More recently, a study conducted by Weinrich and Corbelli (2009) suggests that whale watching does not result in long-term impacts to humpback whales. The authors found that whale watching in New England waters did not negatively affect long-term calving rates of females, calf survival during the first two years of life, or a female's reproductive success in a given year.

4.7.3 Conservation Efforts

Some human activities result in beneficial impacts to the target cetacean species, including guidelines that encourage responsible, safe viewing of protected animals by the public, regulations that reduce the potential for harmful interactions with aircraft and vessels, and conservation efforts to reduce interactions with commercial fisheries. NMFS has launched an education and outreach campaign to provide commercial boat operators and the general public with responsible marine mammal viewing guidelines. Each NMFS region provides guidelines for the public's viewing of marine wildlife. Viewing distances vary slightly by region, but NMFS generally recommends the public remain at least 50 to 100 yards away from protected marine mammals.

In addition to the viewing guidelines, federal regulations (50 CFR 224.103) prohibit vessels from approaching humpback whales within 100 yards in Alaska and Hawaii. There are a few exceptions to these regulations, such as permitted researchers, but whale-watching vessels must maintain the regulatory distance. These regulations on vessel approaches have reduced the potential for temporary, perhaps relatively minor, effects on these whales. However, recent collisions between whale-watching boats and a humpback (2001) and a minke whale (1998) illustrate that death or serious injury is still possible.

4.7.4 Commercial Whaling and Subsistence Hunting

The target large whale populations were the subject of commercial whaling to varying degrees for hundreds of years. The development of steam-powered boats in the late 19th century, coupled with the use of the forward-mounted gun-fired harpoon, made it possible to more efficiently kill and tow ashore the larger baleen whale species such as blue, fin, and minke whales. Earliest efforts to end commercial whaling included a ban by the League of Nations in the mid-1930s and the formation of the International Convention for the Regulation of Whaling in 1946. Prior to current prohibitions on whaling, such as the IWC's moratorium, most large whale species had been depleted to the extent that it was necessary to list them as endangered under the ESA.

The industry caused significant declines in several of the target species' populations. Over 28,000 humpback whales were taken by commercial whalers during the 20th century (Rice 1978). Before its protection by the IWC in 1966, whalers took approximately 9,500 blue whales throughout the North Pacific over a span of 55 years, beginning in 1910 (Ohsumi and Wada 1972). Commercial whaling severely depleted the Eastern gray whale population between the mid-1800s and early 1900s. Sei whales were estimated to have been reduced to 20% of their pre-whaling abundance in the North Pacific (Tillman 1977). Over 3,000 blue whales were taken by whalers in the Eastern North Pacific during the early 1900s (Carretta et al. 2007). At least 20,000 Bryde's and 436,000 sperm whales were harvested in the North Pacific (Best 1976; Ohsumi 1980; Brownell 1998; Kasuya 1998; Carretta et al. 2008).

Native tribes have an IWC subsistence quota for Eastern gray whales. The annual subsistence take averaged 122 whales by foreign and national tribes from 1999 to 2003, which does not exceed the PBR for this stock (Angliss and Allen 2009).

4.7.5 Entrapment and Fishing Gear Entanglement

Because the occurrence of some large whales can overlap with frequented fishing areas, gear entanglements are common and can cause death by drowning or serious injuries such as lacerations, which in turn can lead to severe infections. Injuries and entanglements that are not initially lethal may result in a gradual weakening of entangled individuals, making them more vulnerable to some other direct cause of mortality (Kenney and Kraus 1993). For example, entanglement may reduce a whale's ability to maneuver, making it more susceptible to ship strikes. Entanglement-related stress may decrease an individual's reproductive success or reduce its life span, which may in turn depress population growth.

Annual fishery related mortality and serious injury is described in the 2008 Pacific Marine Mammal Stock Assessment Reports. The estimated minimum annual mortality rate of gray whales incidental to U.S. commercial fisheries (6.7 whales) does not exceed 10 percent of the PBR for the stock and, therefore, is considered to be insignificant and approaching a zero mortality and serious injury rate (Angliss and Allen 2009). In the North Pacific, on average ≥2.6 humpback (Carretta et al. 2008) 0.2 bowhead, 0.23 fin, 0.32 minke, and 2 sperm (Angliss and Allen 2009) whale deaths result from fishery interactions each year.

The number of deaths attributed to fishing gear interactions may be grossly underestimated. In many cases, veterinarians and researchers are unable to determine a cause of death from a whale

carcass. Another possibility is that some whales become entangled, drown, and fail to resurface, so their carcasses are never recovered and examined.

4.7.6 Habitat Degradation

Some researchers have correlated contaminant exposure to possible adverse health effects in marine mammals. Organochlorines are chemicals that tend to bioaccumulate through the food chain, thereby increasing the potential of exposure to a marine mammal via its food source. During pregnancy and nursing, some of these contaminants can be passed from the mother to developing offspring. Contaminants like organochlorines do not tend to accumulate in significant amounts in invertebrates, but do accumulate in fish and fish-eating animals. Thus, contaminant levels in planktivorous mysticetes have been reported to be one to two orders of magnitude lower compared to piscivorous odontocetes (Borell 1993; O'Shea and Brownell 1994; O'Hara and Rice 1996; O'Hara et al. 1999). Chronic exposure to the neurotoxins associated with paralytic shellfish poisoning (PSP) via contaminated zooplankton prey has been shown to have detrimental effects on marine mammals. Estimated ingestion rates are sufficiently high enough to suggest that the PSP toxins are affecting marine mammals, possibly resulting in lower respiratory function, changes in feeding behaviour, and a lower reproductive fitness (Durbin et al. 2002).

Anthropogenic activities, such as emitting discharge from wastewater facilities, dredging, ocean dumping and disposal, aquaculture, and coastal development are also known to have deleterious impacts on marine mammals and their prey's habitat, ultimately affecting the animals themselves. Point source pollutants from coastal runoff, at sea disposal of dredged material and sewage effluents, oil spills, as well as substantial commercial and recreational vessel traffic and impacts of fishing operations continue to negatively affect marine mammals in the proposed action areas.

4.7.7 Noise

The impacts of noise pollution and the increasing level of anthropogenic noise are growing concerns that may affect cetacean communication (Carretta et al. 2001). Animals inhabiting the marine environment are continually exposed to many sources of sound. Naturally occurring sounds such as lightning, rain, sub-sea earthquakes, and animal vocalizations (*e.g.*, whale songs) occur regularly.

There is evidence that anthropogenic noise has substantially increased the ambient level of sound in the ocean over the last 50 years. Much of this increase is due to increased shipping as ships become larger and more numerous. Commercial fishing vessels, cruise ships, transport boats, airplanes, helicopters and recreational boats all emit sound into the ocean. The military uses acoustics to test the construction of new vessels as well as for naval operations, and has recently requested MMPA 101(a)(5)(A) authorization for activities in the Hawaii Range Complex, as well as having been issued Incidental Harassment Authorizations (IHAs) for prior training activities in this vicinity.

In some areas where oil and gas production takes place, noise originates from the drilling and production platforms, tankers, vessel and aircraft support, seismic surveys, and the explosive removal of platforms. Many researchers have described behavioral responses of marine

mammals to sounds produced by helicopters and fixed-wing aircraft, boats and ships, as well as dredging, construction, and geological explorations (Richardson 1995). Most observations have been limited to short-term behavioral responses, which included cessation of feeding, resting, or social interactions. Several studies have demonstrated short-term effects of disturbance on humpback whale behavior (Hall 1982; Baker et al. 1983; Krieger and Wing 1984; Bauer and Herman 1986), but the long-term effects, if any, are unclear or not detectable.

The marine mammals and their prey that occur in the proposed action area are regularly exposed to these types of natural and anthropogenic sounds. Marine mammals can be found in areas of intense human activity, suggesting that some individuals or populations may tolerate, or have become habituated to, certain levels of exposure to noise (Richardson 1995). Impacts may be chronic, resulting in behavioral changes that can stress the animal and ultimately lead to increased vulnerability to parasites and disease. The net effect of disturbance is dependent on the size and percentage of the population affected the ecological importance of the disturbed area to the animals, and the parameters that influence an animal's sensitivity to disturbance or the accommodation time in response to prolonged disturbance (Geraci and St. Aubin 1980).

4.7.8 Climate and Ecosystem Change

The extent to which climate and/or ecosystem changes impact the target cetacean species is largely unknown. However, NMFS recognizes that such impacts may occur based on the biology, diet, and foraging behavior of dolphins and whales. Interannual, decadal, and longer time-scale variability in climate can alter the distribution and biomass of prey available to large whales. The effects of climate-induced shifts in productivity, biomass, and species composition of zooplankton on the foraging success of planktivorous whales have received little attention. Such shifts in community structure and productivity may alter the distribution and occurrence of foraging whales in coastal habitats and affect their reproductive potential as well. Similar shifts in prey resources could likewise impact large whales if climate change alters the density, distribution, or range of prey.

4.7.9 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 five IHAs, six rulemakings, and 5 LOAs for the take of multiple target species in the action area.

4.7.10 Other Scientific Research Permits and Authorizations

Marine mammals have been the subject of field studies for decades. The primary purposes of most studies are generally for monitoring populations and gathering data for behavioral and ecological studies. Over time 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 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.

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 39 permits authorize the harassment of one or more of the target pinniped, cetacean, and turtle species in the action area and an additional 9 permits authorize the harassment of one or more of the target turtle species during research (Appendix F). Permits in Appendix F are identified by ocean basin, but the majority of permits authorize a smaller study area or region within an ocean basin, reducing the chance of repeated harassment of individual whales by researchers. 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 have been issued for at least one of the target species (six for cetaceans and two for pinnipeds); these LOCs confirm that the research will result in no more than Level B harassment of non-ESA marine mammals. Unlike research permits, LOCs do not authorize activities or associated take numbers for the target species but rather only confirm that the proposed activities will not result in Level A harassment.

Several of the permits are currently operating under a one-year extension (Appendix F); an extension does not authorize additional takes of the target species but allows researchers to use authorized takes remaining from the last year of the permit for an additional 12 months or until the remaining takes have been exhausted, whichever occurs first. Many of the active permits (Appendix F) will expire before Permit No. 14097 can be issued or shortly thereafter (within approximately 6 months). As permits gradually expire over the life of the permit, the level of impact on each species would gradually decrease, assuming that none of the active permits are amended to increase take activities. NMFS expects that some researchers, such as NMFS Science Centers which are mandated to assess the status of U.S. marine mammal stocks, will request new permits, or renewals, to continue their work once the current permit expires. NMFS cannot predict with certainty the level of take of each species that may be requested in the future but, conservatively, expects the amount of future research to be similar to or slightly greater than current levels as interest in marine conservation, biology, and management of these species grows.

In addition to the active permits, NMFS Office of Protected Resources is processing 18 new permit requests and 6 requests to amend current permits to conduct research on one or more of the target species/stocks in the action area. This is due largely to the broad scope of the action area of the SWFSC's request. At least 12 of these requests are from current permit holders

whose permit is set to expire by the end of 2010 or permit holders that have recently had a permit expire. An ESA section 7 consultation will be completed for each of these requests.

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 number of takes proposed by the SWFSC is not expected to result in a significant adverse impact on the target species, especially considering the majority of the takes are authorized in the SWFSC's current permit. In addition, all permits issued by NMFS for research on protected species, including the proposed permit, 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.

NMFS acknowledges that repeated disturbance of some individual large whales could occur. However, NMFS expects that the temporary harassment of individuals would dissipate within minutes, and therefore animals would recover before being targeted for research by another Permit Holder. Further, 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.

It is also important to note that many of the target whales are migratory and may transit in and out of U.S. waters and the high seas. NMFS does not have jurisdiction over the activities of individuals conducting field studies in other nations' waters, and cumulative effects from all scientific research on these species across the Proposed Action area cannot be fully assessed. However, where possible, NMFS attempts to collaborate with foreign governments to address management and conservation of these transboundary ESA-listed species.

4.7.11 Summary of cumulative effects

The activities noted above are 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 and sea turtles. 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.

The short-term stresses (separately and cumulatively with other environmental stresses) resulting from the proposed research activities 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 research 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 over the life of the permit.

Although the effects of repeated or chronic disturbance from scientific research activities should not be dismissed, the potential long-term benefits and value of information gained on these species also must be considered. The proposed research would provide valuable information on these species' biology and ecology that in turn may 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 Kristy Beard with the Permits, Conservation and Education Division of NMFS' Office of Protected Resources in Silver Spring, Maryland.

The National Marine Sanctuary Program was consulted for activities that would be conducted in the Olympic Coast, Cordell Bank, Gulf of the Farallones, Monterey Bay, and Channel Islands National Marine Sanctuaries.

The U.S. Fish and Wildlife Service was consulted on potential effects to ESA-listed species under their jurisdiction.

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Appendix A - Take Information for Pinnipeds in the Pacific Ocean (CA, OR, WA, AK)

SPECIES	LISTING UNIT/ STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKES PER ANIMAL	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Sea lion, Steller	East of 144° Long (Eastern US) (NMFS Threatened)	All	Male and Female	30000	6	Harass	Survey, aerial	Count/survey; Incidental disturbance; Photo-id; Photogrammetry		No change
Sea lion, Steller	East of 144° Long (Eastern US) (NMFS Threatened)	All	Male and Female	3000	3	Harass	Survey, ground	Incidental disturbance	during CSL aerial/ ground surveys	No change
Sea lion, California	US Stock	All	Male and Female	275000	4	Harass	Survey, ground	Collect, scat; Collect, spew; Count/survey; Incidental disturbance	on CSL haulouts only	No change
Sea lion, California	US Stock	All	Male and Female	275000	6	Harass	Survey, aerial	Count/survey; Photo-id; Photogrammetry	aerial, ground, and vessel surveys	No change
Seal, harbor	California Stock	All	Male and Female	99000	3	Harass	Survey, aerial	Count/survey; Photo-id; Photogrammetry	aerial, ground, and vessel surveys	No change
Seal, northern elephant	California Breeding Stock	All	Male and Female	90000	3	Harass	Survey, aerial	Count/survey; Photo-id; Photogrammetry	aerial, ground, and vessel surveys	No change
Seal, Northern fur	Range-wide	All	Male and Female	11000	3	Harass	Survey, aerial	Count/survey; Photo-id; Photogrammetry	aerial, ground, and vessel surveys	No change

Appendix B - Take Information for Cetaceans in the Pacific Ocean (international and U.S. territorial waters of the Pacific and Southern Oceans, including eastern tropical Pacific and U.S. EEZ waters (primarily CA, OR, WA, HI))

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, bowhead	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	15	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	Includes Arctic Ocean	No change
Whale, bowhead	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older; Includes Arctic Ocean	No change in take number, **younger calf age**
Whale, bowhead	Range-wide (NMFS Endangered)	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces; Includes Arctic Ocean	No change
Whale, sei	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	23	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, sei	Range-wide (NMFS Endangered)	All	Male and Female	2	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	No change in take number, **calves new**
Whale, sei	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	23	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		No change
Whale, sei	Range-wide (NMFS Endangered)	All	Male and Female	2	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older	No change in take number, **calves new**
Whale, sei	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	90	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, sei	Range-wide (NMFS Endangered)	All	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	No change in take number, **younger calf age**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, sei	Range-wide (NMFS Endangered)	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, sei	Range-wide (NMFS Endangered)	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, blue	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change
Whale, blue	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	No change in take number, **calves new**
Whale, blue	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, blue	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older	No change in take number, **calves new**
Whale, blue	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	175	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, blue	Range-wide (NMFS Endangered)	All	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	No change in take number, **younger calf age**
Whale, blue	Range-wide (NMFS Endangered)	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, blue	Range-wide (NMFS Endangered)	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, blue	Range-wide (NMFS Endangered)	All	Male and Female	300	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	Indian Ocean	**New**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, fin	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change
Whale, fin	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	No change in take number, **calves new**
Whale, fin	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		No change
Whale, fin	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older	No change in take number, **calves new**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, fin	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	450	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 100 to 500**
Whale, fin	Range-wide (NMFS Endangered)	All	Male and Female	50	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, fin	Range-wide (NMFS Endangered)	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, fin	Range-wide (NMFS Endangered)	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, right, southern	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	9	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, right, southern	Range-wide (NMFS Endangered)	All	Male and Female	1	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	No change in take number, **younger calf age**
Whale, right, southern	Range-wide (NMFS Endangered)	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, right, North Pacific	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	4	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change
Whale, right, North Pacific	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	4	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		No change
Whale, right, North Pacific	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 10 to 30; younger calf age**
Whale, right, North Pacific	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, right, North Pacific	Range-wide (NMFS Endangered)	All	Male and Female	40	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, right, North Pacific	Range-wide (NMFS Endangered)	All	Male and Female	40	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 20 to 40**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, humpback	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	**Increase from 17 to 30 total; calves new**
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	
Whale, humpback	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		**Increase from 18 to 30; calves new**
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, humpback	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	225	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 260 to 300; younger calf age**
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	75	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	400	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 100 to 400**
Whale, sperm	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	**Increase from 20 to 30; calves new**
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, sperm	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		**Increase from 25 to 30; calves new**
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older	
Whale, sperm	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	275	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 80 to 300; younger calf age**
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	1000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 900 to 1000**
Whale, killer	Eastern North Pacific Southern Resident Stock (NMFS Endangered)	Adult/ Juvenile	Male and Female	8	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, killer	Eastern North Pacific Southern Resident Stock (NMFS Endangered)	All	Male and Female	2	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, killer	Eastern North Pacific Southern Resident Stock (NMFS Endangered)	All	Male and Female	40	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, minke	Range-wide	Adult/ Juvenile	Male and Female	75	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change; **younger calf age**
Whale, minke	Range-wide	All	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, minke	Range-wide	All	Male and Female	700	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, minke	Range-wide	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, Bryde's	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change; **younger calf age**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, Bryde's	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	
Whale, Bryde's	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		No change, **calves new**
Whale, Bryde's	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older	
Whale, Bryde's	Range-wide	Adult/ Juvenile	Male and Female	75	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change; **younger calf age**
Whale, Bryde's	Range-wide	All	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, Bryde's	Range-wide	All	Male and Female	900	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, Bryde's	Range-wide	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, Baird's beaked	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change
Whale, Baird's beaked	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 1 year or older	
Whale, Baird's beaked	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy		No change
Whale, Baird's beaked	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, Baird's beaked	Range-wide	Adult/ Juvenile	Male and Female	40	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 20 to 50**
Whale, Baird's beaked	Range-wide	All	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, Baird's beaked	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, Baird's beaked	Range-wide	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, Commerson's	Range-wide	Adult/ Juvenile	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	High seas off coast of South America	No change
Dolphin, Commerson's	Range-wide	All	Male and Female	200	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id	High seas off coast of South America	No change
Dolphin, black	Range-wide	Adult/ Juvenile	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	High seas off coast of Chile	No change
Dolphin, black	Range-wide	All	Male and Female	200	Harass/Sampling	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	High seas off coast of Chile; Other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, Hector's	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	High seas off coast of New Zealand	No change
Dolphin, Hector's	Range-wide	All	Male and Female	200	Harass/Sampling	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	High seas off coast of New Zealand; Other: collect feces	No change
Whale, beluga	Range-wide	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	non-Cook Inlet	No change
Whale, beluga	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	non-Cook Inlet; intended for calves 1 year or older	
Whale, beluga	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	non-Cook Inlet; other: collect feces	No change
Whale, beluga	Range-wide	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	non-Cook Inlet	No change
Dolphin, common, long-beaked	Range-wide	Adult/ Juvenile	Male and Female	1500	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, common, long-beaked	Range-wide	All	Male and Female	55000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	**Increase from 50,000**
Dolphin, common, long-beaked	Range-wide	All	Male and Female	65000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 60,000**
Dolphin, common, short-beaked	Range-wide	Adult/ Juvenile	Male and Female	1500	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, common, short-beaked	Range-wide	All	Male and Female	55000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	**Increase from 50,000**
Dolphin, common, short-beaked	Range-wide	All	Male and Female	65000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 60,000**
Whale, gray	Eastern North Pacific	Adult/ Juvenile	Male and Female	25	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	**New**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, gray	Eastern North Pacific	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 6 months or older	
Whale, gray	Eastern North Pacific	Adult/ Juvenile	Male and Female	150	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 50 to 200; younger calf age**
Whale, gray	Eastern North Pacific	All	Male and Female	50	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, gray	Eastern North Pacific	All	Male and Female	2000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, gray	Eastern North Pacific	All	Male and Female	2000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, unidentified	NA	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	UNID common dolphin	No change
Dolphin, unidentified	NA	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	UNID common dolphin; other: collect feces	Decrease from 400

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Dolphin, unidentified	NA	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	UNID common dolphin	**Increase from 200 to 500**
Dolphin, unidentified	NA	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	UNID common dolphin; intended for calves 1 year or older	No change
Whale, pygmy killer	Range-wide	Adult/ Juvenile	Male and Female	27	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 20 to 30**
Whale, pygmy killer	Range-wide	All	Male and Female	3	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, pygmy killer	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, pygmy killer	Range-wide	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, pilot, short-finned	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, pilot, short-finned	Range-wide	All	Male and Female	1	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 1 year or older	
Whale, pilot, short-finned	Range-wide	Adult/ Juvenile	Male and Female	180	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, pilot, short-finned	Range-wide	All	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, pilot, short-finned	Range-wide	All	Male and Female	2000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	**Decrease from 2500 to 2000**
Whale, pilot, short-finned	Range-wide	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, Risso's	Range-wide	Adult/ Juvenile	Male and Female	180	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, Risso's	Range-wide	All	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, Risso's	Range-wide	All	Male and Female	1500	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, Risso's	Range-wide	All	Male and Female	2000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 1000 to 2000**
Whale, Longman's beaked	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	Indian Ocean & Pacific Ocean	No change
Whale, Longman's beaked	Range-wide	All	Male and Female	1	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	Indian Ocean & Pacific Ocean; intended for calves 1 year or older	
Whale, Longman's beaked	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Incidental harassment; Photo-id	Indian Ocean & Pacific Ocean	No change
Whale, pygmy sperm	Range-wide	Adult/ Juvenile	Male and Female	18	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, pygmy sperm	Range-wide	All	Male and Female	2	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, pygmy sperm	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, pygmy sperm	Range-wide	All	Male and Female	50	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, dwarf sperm	Range-wide	Adult/ Juvenile	Male and Female	18	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, dwarf sperm	Range-wide	All	Male and Female	2	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, dwarf sperm	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, dwarf sperm	Range-wide	All	Male and Female	50	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, Fraser's	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, Fraser's	Range-wide	All	Male and Female	2000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, Fraser's	Range-wide	All	Male and Female	1000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, Peale's	Range-wide	Adult/ Juvenile	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	High Seas off South American coasts	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, Peale's	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	High Seas off South American coasts; other: collect feces	No change
Dolphin, hourglass	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 10 to 20**
Dolphin, hourglass	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, hourglass	Range-wide	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, Pacific white-sided	North Pacific Stock	Adult/ Juvenile	Male and Female	90	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, Pacific white-sided	North Pacific Stock	All	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, Pacific white-sided	North Pacific Stock	All	Male and Female	7000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, Pacific white-sided	North Pacific Stock	All	Male and Female	3000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, dusky	Range-wide	Adult/ Juvenile	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, dusky	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, northern right whale	Range-wide	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, northern right whale	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, northern right whale	Range-wide	All	Male and Female	5000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, northern right whale	Range-wide	All	Male and Female	2000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, southern right whale	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, southern right whale	Range-wide	All	Male and Female	1	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, southern right whale	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, unidentified Mesoplodon	NA	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, unidentified Mesoplodon	NA	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, unidentified Mesoplodon	NA	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, unidentified Mesoplodon	NA	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, melon-headed	Range-wide	Adult/ Juvenile	Male and Female	130	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, melon-headed	Range-wide	All	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, melon-headed	Range-wide	All	Male and Female	1500	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, melon-headed	Range-wide	All	Male and Female	1000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Porpoise, spectacled	Range-wide	Adult/ Juvenile	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Porpoise, spectacled	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Porpoise, harbor	Range-wide	All	Male and Female	2000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 200 to 2000**
Porpoise, harbor	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Porpoise, harbor	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Porpoise, Burmeister's	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	High Seas off South American coasts	No change
Porpoise, Burmeister's	Range-wide	All	Male and Female	1	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	High Seas off South American coasts; intended for calves 1 year or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Porpoise, Burmeister's	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	High Seas off South American coasts; other: collect feces	No change
Porpoise, Burmeister's	Range-wide	All	Male and Female	20	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	High Seas off South American coasts	No change
Porpoise, Dall's	Range-wide	Adult/ Juvenile	Male and Female	270	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		**Increase from 100 to 300**
Porpoise, Dall's	Range-wide	All	Male and Female	30	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Porpoise, Dall's	Range-wide	All	Male and Female	4000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Porpoise, Dall's	Range-wide	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 400 to 500**
Whale, false killer	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, false killer	Range-wide	All	Male and Female	1	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; intended for calves 1 year or older	
Whale, false killer	Range-wide	Adult/ Juvenile	Male and Female	90	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, false killer	Range-wide	All	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, false killer	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, false killer	Range-wide	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, pantropical spotted	Range-wide	Adult/ Juvenile	Male and Female	900	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, pantropical spotted	Range-wide	All	Male and Female	100	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, pantropical spotted	Range-wide	All	Male and Female	80000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, pantropical spotted	Range-wide	All	Male and Female	40000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 20,000 to 40,000**
Dolphin, pantropical spotted	Coastal ETP Stock	Adult/ Juvenile	Male and Female	450	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, pantropical spotted	Coastal ETP Stock	All	Male and Female	50	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, pantropical spotted	Coastal ETP Stock	All	Male and Female	40000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, pantropical spotted	Coastal ETP Stock	All	Male and Female	10000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, striped	Range-wide	Adult/ Juvenile	Male and Female	90	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, striped	Range-wide	All	Male and Female	10	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, striped	Range-wide	All	Male and Female	20000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, striped	Range-wide	All	Male and Female	5000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Dolphin, spinner	Hawaiian Stock	Adult/ Juvenile	Male and Female	360	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, spinner	Hawaiian Stock	All	Male and Female	40	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, spinner	Hawaiian Stock	All	Male and Female	40000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, spinner	Hawaiian Stock	All	Male and Female	40000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 10,000 to 40,000**
Dolphin, spinner	Range-wide	Adult/ Juvenile	Male and Female	180	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	Central American stock	**Increase from 100 to 200**
Dolphin, spinner	Range-wide	All	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	Central American stock; intended for calves 1 year or older	
Dolphin, spinner	Range-wide	All	Male and Female	40000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Central American stock; other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, spinner	Range-wide	All	Male and Female	40000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	Central American stock	**Increase from 10,000 to 40,000**
Dolphin, spinner	Eastern Tropical Pacific Stock	Adult/ Juvenile	Male and Female	360	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, spinner	Eastern Tropical Pacific Stock	All	Male and Female	40	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, spinner	Eastern Tropical Pacific Stock	All	Male and Female	40000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, spinner	Eastern Tropical Pacific Stock	All	Male and Female	40000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		**Increase from 10,000 to 40,000**
Dolphin, rough-toothed	Range-wide	Adult/ Juvenile	Male and Female	180	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, rough-toothed	Range-wide	All	Male and Female	20	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, rough-toothed	Range-wide	All	Male and Female	2000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, rough-toothed	Range-wide	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, bottlenose	Range-wide	Adult/ Juvenile	Male and Female	360	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Dolphin, bottlenose	Range-wide	All	Male and Female	40	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Dolphin, bottlenose	Range-wide	All	Male and Female	20000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Dolphin, bottlenose	Range-wide	All	Male and Female	5000	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, Cuvier's beaked	Range-wide	Adult/ Juvenile	Male and Female	18	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, Cuvier's beaked	Range-wide	All	Male and Female	2	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, Cuvier's beaked	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	other: collect feces	No change
Whale, Cuvier's beaked	Range-wide	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Dolphin, unidentified	NA	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	UNID delphinid	No change
Dolphin, unidentified	NA	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	UNID delphinid; intended for calves 1 year or older	
Dolphin, unidentified	NA	All	Male and Female	500	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	UNID delphinid; other: collect feces	**Increase from 200 to 500**
Dolphin, unidentified	NA	All	Male and Female	500	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	UNID delphinid	**Increase from 100 to 500**
Whale, killer	Range-wide	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; NOT Southern Residents	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, killer	Range-wide	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Photo-id; Sample, skin and blubber biopsy	one dart/ implant tag per animal; NOT Southern Residents; intended for calves 1 year or older	
Whale, killer	Range-wide	Adult/ Juvenile	Male and Female	360	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	NOT Southern Residents	**Increase from 130 to 200**
Whale, killer	Range-wide	All	Male and Female	40	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	NOT Southern Residents; intended for calves 1 year or older	
Whale, killer	Range-wide	All	Male and Female	1000	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	NOT Southern Residents; other: collect feces	No change
Whale, killer	Range-wide	All	Male and Female	600	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry	NOT Southern Residents	**Increase from 300 to 600**
Whale, unidentified rorqual	NA	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change, **younger calves**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, unidentified rorqual	NA	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	
Whale, unidentified rorqual	NA	All	Male and Female	150	Harass	Survey, vessel	Incidental harassment; Photo-id		No change
Whale, unidentified rorqual	NA	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, unidentified pilot	NA	Adult/ Juvenile	Male and Female	45	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, unidentified pilot	NA	All	Male and Female	5	Harass/Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	
Whale, unidentified pilot	NA	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, unidentified pilot	NA	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change

Appendix C – Take Information for Cetaceans in the Southern Ocean (international waters)

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, humpback	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	4	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	one dart/implant tag per animal; might suction-cup tag animal that has dart/implant tag	No change; **calves are new**
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	1	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older; one dart/implant tag per animal; might suction-cup tag animal that has dart/implant tag	
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	1	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves 6 months or older; suction-cup includes crittercam	No change; **calves are new**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, humpback	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	4	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	suction-cup includes crittercam	
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	10	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	No change; younger calf age
Whale, humpback	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	30	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	100	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, humpback	Range-wide (NMFS Endangered)	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, sperm	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	5	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	one dart/implant tag per animal; might suction-cup tag animal that has dart/implant tag	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	5	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	No change; **younger calf age**
Whale, sperm	Range-wide (NMFS Endangered)	Adult/ Juvenile	Male and Female	15	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	100	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, sperm	Range-wide (NMFS Endangered)	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, Antarctic minke	Range-wide	Adult/ Juvenile	Male and Female	20	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	one dart/implant tag per animal; might suction-cup tag animal that has dart/implant tag	**New**

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, Antarctic minke	Range-wide	All	Male and Female	5	Harass/ Sampling	Survey, vessel	Incidental harassment; Instrument, dart/barb tag; Instrument, implantable (e.g., satellite tag); Instrument, suction-cup (e.g., VHF, TDR); Photo-id; Sample, skin and blubber biopsy	intended for calves >6mo; one dart/implant tag per animal; might suction-cup tag animal that has dart/implant tag	
Whale, Antarctic minke	Range-wide	All	Male and Female	15	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 2 months or older	No change; **younger calf age**
Whale, Antarctic minke	Range-wide	Adult/ Juvenile	Male and Female	35	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, Antarctic minke	Range-wide	All	Male and Female	100	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, Antarctic minke	Range-wide	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, Arnoux's beaked	Range-wide	All	Male and Female	2	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, Arnoux's beaked	Range-wide	Adult/ Juvenile	Male and Female	8	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, Arnoux's beaked	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, Arnoux's beaked	Range-wide	All	Male and Female	10	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, pygmy right	Range-wide	All	Male and Female	10	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		No change
Whale, pygmy right	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Incidental harassment; Photo-id		No change
Whale, pygmy right	Range-wide	All	Male and Female	50	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, pilot, long-finned	Southern Hemisphere	All	Male and Female	2	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	No change
Whale, pilot, long-finned	Southern Hemisphere	Adult/ Juvenile	Male and Female	18	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, pilot, long-finned	Southern Hemisphere	All	Male and Female	500	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change

SPECIES	LISTING UNIT/STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	DETAILS	Change from Permit No. 774-1714-10
Whale, pilot, long-finned	Southern Hemisphere	All	Male and Female	100	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change
Whale, southern bottlenose	Range-wide	All	Male and Female	1	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	No change
Whale, southern bottlenose	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, southern bottlenose	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, Shepherd's beaked	Range-wide	All	Male and Female	1	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy	intended for calves 1 year or older	No change
Whale, Shepherd's beaked	Range-wide	Adult/ Juvenile	Male and Female	9	Harass/ Sampling	Survey, vessel	Incidental harassment; Photo-id; Sample, skin and blubber biopsy		
Whale, Shepherd's beaked	Range-wide	All	Male and Female	200	Harass	Survey, vessel	Collect, sloughed skin; Incidental harassment; Other; Photo-id	Other: collect feces	No change
Whale, Shepherd's beaked	Range-wide	All	Male and Female	200	Harass	Survey, aerial	Incidental harassment; Photo-id; Photogrammetry		No change

Appendix D – Take Information for Turtles in the Pacific Ocean (CA,HI,OR,WA)

SPECIES	LISTING UNIT/ STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	Change from Permit No. 774-1714-10
Turtle, olive ridley sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	15	Capture/ Handle/ Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, olive ridley sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	50	Capture/ Handle/ Release	Hand and/or Dip Net	Lavage; Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, olive ridley sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	235	Capture/ Handle/ Release	Hand and/or Dip Net	Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, green sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	10	Capture/ Handle/ Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, green sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	10	Capture/ Handle/ Release	Hand and/or Dip Net	Lavage; Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, green sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	80	Capture/ Handle/ Release	Hand and/or Dip Net	Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change

SPECIES	LISTING UNIT/ STOCK	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION	OBSERVE/ COLLECT METHOD	PROCEDURES	Change from Permit No. 774-1714-10
Turtle, leatherback sea	Range-wide (NMFS Endangered)	Adult/ Subadult/ Juvenile	Male and Female	10	Capture/ Handle/ Release	Hand and/or Dip Net	Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, hawksbill sea	Range-wide (NMFS Endangered)	Adult/ Subadult/ Juvenile	Male and Female	5	Capture/ Handle/ Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, hawksbill sea	Range-wide (NMFS Endangered)	Adult/ Subadult/ Juvenile	Male and Female	15	Capture/ Handle/ Release	Hand and/or Dip Net	Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, loggerhead sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	10	Capture/ Handle/ Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change
Turtle, loggerhead sea	Range-wide (NMFS Threatened)	Adult/ Subadult/ Juvenile	Male and Female	10	Capture/ Handle/ Release	Hand and/or Dip Net	Lavage; Mark, flipper tag; Measure; Sample, blood; Sample, tissue; Weigh	No change

Appendix E – Take Information for Import/Export/Re-Export of Parts

SPECIES	LIFESTAGE	SEX	EXPECTED TAKE	TAKE ACTION
Cetacean, unidentified	All	Male and Female	10000	Import/export/receive only
Pinniped, unidentified	All	Male and Female	5000	Import/export/receive only
Turtle, unidentified sea	All except hatchling	Male and Female	10000	Import/export/receive only

Appendix F – Active Scientific Research Permits Authorizing the Same Species in the Action Area.

Permit No.	Permit Holder	Ocean Basin	Expiration date	Species	Harassment
369-1757-01	Mate	Pacific Ocean	5/31/2011	humpback, blue, fin, sperm, gray, killer whale	Level A & B
1071-1770-02	The Dolphin Institute	Pacific Ocean	6/30/2010	humpback, sperm, fin, blue, false killer, melon-headed, pygmy killer, short-finned pilot, killer, pygmy sperm, dwarf sperm, beaked whale; bottlenose, spinner, rough-toothed, striped, pantropical spotted dolphin	Level A & B
782-1719-09*	NMFS, NMML	Southern & Pacific Ocean	6/30/2010	humpback, blue, fin, sei, sperm, bowhead, Cook Inlet beluga, SRKW, killer, gray, southern right, minke, beaked, short-finned pilot, pygmy sperm, dwarf sperm, beluga, melon-headed whale; bottlenose, common, northern right whale, Pacific white-sided, Risso's, rough-toothed, pantropical spotted, spinner, striped dolphin; Dall's, harbor porpoise	Level A & B
*774-1714-10**	*NMFS, SWFSC*	*Southern & Pacific Ocean*	*6/30/2010*	*all except blue whales in Indian Ocean*	*Level A & B*
473-1700-02*	Straley	Pacific Ocean	6/30/2010	sperm, humpback, killer, minke, gray, fin	Level A & B
716-1705-02*	Sharpe	Pacific Ocean	6/30/2010	humpback, killer	Level A & B
1049-1718*	Wynne	Pacific Ocean	6/30/2010	humpback, killer, minke, gray, fin, sperm, sei	Level A & B
1039-1699-01*	Zoidis	Pacific Ocean	6/30/2010	humpback, short-finned pilot, false killer, pygmy killer, melon-headed whale; spinner, bottlenose dolphin	Level B only

Permit No.	Permit Holder	Ocean Basin	Expiration date	Species	Harassment
731-1774-06	Baird	Pacific Ocean	8/31/2010	sei, fin, blue, humpback, sperm, gray, minke, bryde's, killer, short-finned pilot, false killer, beaked, dwarf sperm, pygmy sperm, melon-headed, pygmy killer whale; bottlenose, Pacific white-sided, northern right whale, spinner, pantropical spotted, Fraser's, Risso's, rough-toothed, common dolphin; Dall's, harbor porpoise; harbor, northern elephant seal; California, Steller sea lion	Level A & B
545-1761	North Gulf Oceanic Society	Pacific Ocean	9/15/2010	humpback, killer, minke, gray, beaked whale; Pacific white-sided dolphin; Dall's, harbor porpoise	Level A & B
393-1772-02	Glockner-Ferrari	Pacific Ocean	9/30/2010	humpback, killer, short-finned pilot, false killer whale; bottlenose, spinner, pantropical spotted dolphin	Level B only
587-1767-01	Salden	Pacific Ocean	9/30/2010	humpback, killer, short-finned pilot, false killer whale; bottlenose, spinner, pantropical spotted dolphin	Level B only
1000-1617-04	Au	Pacific Ocean	11/15/2010	humpback, short-finned pilot, dwarf sperm, pygmy sperm, killer, beaked, false killer, pygmy killer, melon-headed whale; bottlenose, Pacific white-sided, pantropical spotted, Risso's, spinner, striped, rough-toothed, common dolphin	Level A & B
540-1811-03	Calambokidis	Pacific Ocean	4/14/2011	blue, humpback, fin, sei, sperm, killer, minke, bryde's, gray, pygmy sperm, dwarf sperm, beaked,short-finned pilot, false killer, whale; bottlenose, northern right whale, Pacific white-sided, Risso's, striped, common dolphin; Dall's, harbor porpoise; California, Steller sea lion; harbor, northern elephant, Northern fur seal	Level A & B
781-1824-01	NMFS, NWFSC	Pacific Ocean	4/14/2011	blue, humpback, fin, sperm, killer, minke, gray, pygmy sperm, beaked, short-finned pilot, whale; common, Pacific white-sided, Risso's, striped, northern right whale dolphin; Dall's, harbor porpoise	Level A & B
532-1822-02	Balcomb	Pacific Ocean	4/14/2011	killer	Level B only

Permit No.	Permit Holder	Ocean Basin	Expiration date	Species	Harassment
965-1821-01	Bain	Pacific Ocean	4/14/2011	killer, humpback, fin, minke, gray whale; Pacific white-sided dolphin; Dall's, harbor porpoise; California, Steller sea lion; harbor, northern elephant, Northern fur seal	Level B only
1058-1733-01	Baumgartner	Southern & Pacific Oceans	5/31/2012	North Pacific right, bowhead, humpback, fin, sei, blue, gray, Antarctic minke whale	Level A & B
1120-1898	Eye of the Whale	Pacific Ocean	7/31/2012	humpback	Level B only
727-1915	Scripps Institute of Oceanography	Pacific Ocean	2/1/2013	blue, sei, fin, humpback, sperm, gray, short-finned pilot, beaked, dwarf sperm, pygmy sperm, false killer, pygmy killer, minke, bryde's, melon-headed whale; Pacific white-sided, bottlenose, northern right whale, Fraser's, rough-toothed, striped, spinner, pantropical spotted, Risso's, common dolphin; Dall's porpoise	Level A & B
1127-1921	Hawaii Marine Mammal Consortium	Pacific Ocean	6/30/2013	humpback, sperm, blue, sei, fin, beaked, bryde's, dwarf sperm, false killer, pygmy killer, killer, minke, pygmy sperm, short-finned pilot, melon-headed whale; bottlenose, Fraser's, Risso's,rough-toothed, spinner, striped, pantropical spotted dolphin	Level A & B
10018	Cartwright	Pacific Ocean	6/30/2013	humpback, false killer, short-finned pilot whale; bottlenose, spinner, pantropical spotted dolphin	Level B only
10045	Wasser	Pacific Ocean	7/15/2013	killer	Level B only
945-1776	Glacier Bay National Park and Preserve	Pacific Ocean	3/31/2011	humpback, minke, killer	Level B only
808-1735	Read	Southern Ocean	5/31/2012	blue, humpback, fin, sei, minke	Level A & B
13392	Jefferson	Pacific Ocean	8/1/2013	bottlenose dolphins	Level A & B
13545	Ocean Alliance	Pacific, Indian Oceans	2/15/2015	Blue, Bryde's, fin, gray, humpback, killer, minke, sei, sperm, false killer, long-finned pilot, short-finned pilot, dwarf and pygmey sperm whale; long-beaked common dolphin	Level A & B

Permit No.	Permit Holder	Ocean Basin	Expiration date	Species	Harassment
14610	Alaska Department of Fish and Game	Pacific Ocean	5/31/2015	Beluga, gray whale; harbor seal	Level A & B
87-1743-05*	Costa	Pacific Ocean	9/30/2010	northern elephant seal, California sea lion	Level A & B
486-1790	Stewart	Pacific Ocean	10/1/2010	California sea lions, northern elephant seals, Pacific harbor seals, and northern fur seals	Level A & B
782-1812-01	NMFS NMML	Pacific Ocean	4/30/2011	California sea lions	Level A & B
87-1851	University of California at Santa Cruz	Pacific Ocean	1/31/2012	California sea lions, harbor, Northern elephant, and Northern fur seal	Level A & B
373-1868	Point Reyes Bird Observatory	Pacific Ocean	4/15/2012	harbor seal, northern elephant seal	Level A & B
555-1870	Harvey	Pacific Ocean	4/15/2012	harbor seal	Level A & B
14325	Alaska DFG	Pacific Ocean	8/31/2014	Steller sea lion	Level A & B
14326	NMFS NMML	Pacific Ocean	8/31/2014	Steller sea lion	Level A & B
14327	NMFS National Marine Mammal Laboratory	Pacific Ocean	8/31/2014	northern fur seals	Level A & B
14336	Markus Horning	Pacific Ocean	8/31/2014	Steller sea lion	Level A & B
14337	Andrew Trites, Ph.d.	Pacific Ocean	8/31/2014	Steller sea lion	Level A & B
13430	NMFS National Marine Mammal Laboratory	Pacific Ocean	1/31/2015	Harbor seal, killer whale, California sea lion, Steller sea lion, Northern elephant seal	Level A & B
1514	NMFS Pacific Islands Region (PIR)	Pacific Ocean	3/31/2010	green, leatherback, loggerhead, olive ridley	
1537	Guam Division of Aquatic and Wildlife Resources	Pacific Ocean	9/1/2010	green, hawksbill	
1556	Commonwealth of the Northern Mariana Islands	Pacific Ocean	6/1/2011	green, hawksbill	
1581	NMFS Pacific Islands Fisheries Science Center (PIFSC)	Pacific Ocean	12/31/2011	green, hawksbill	

Permit No.	Permit Holder	Ocean Basin	Expiration date	Species	Harassment
1596	NMFS Southwest Fisheries Science Center (SWFSC)	Pacific Ocean	2/1/2012	leatherback	
1512	American Samoa Dept. of Marine and Wildlife Resources	Pacific Ocean	9/23/2012	hawksbill, green, olive ridley	
1591	NMFS Southwest Fisheries Science Center (SWFSC)	Pacific Ocean	10/31/2012	green, loggerhead, olive ridley	
10027	American Museum of Natural History, Center for Biodiversity and Conservation	Pacific Ocean	7/31/2013	green, hawksbill	
14510	NMFS Southwest Fisheries Science Center	Pacific Ocean	4/30/2015	Green, loggerhead, olive ridley	

* indicates that there is an extension on the permit