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Stephen L. Leathery
Chief, Permits, Conservation and Education Division
Office of Protected Resources, NOAA Fisheries

Dear Steve,

I am writing to request an amendment to Scientific Research Permit No. 731-1774 to allow for work with "southern resident" killer whales under the ESA.

My permit currently allows for takes of killer whales by suction cup tagging (with up to 35 animals tagged annually) and unlimited numbers taken by harassment during close approaches for vessel and aerial surveys, photo-identification, behavioral observation, video and acoustic recording, and incidental harassment. As well as working with southern resident killer whales my research involves working with other populations of killer whales ("transients", "offshores", Alaskan "residents"). For work with southern resident killer whales, I request an additional take by suction cup tagging of up to 15 individuals per year (to assess inter-annual variability in diving patterns), and up to 100 takes per year by harassment during close approaches (for the reasons outlined above). The location of takes for southern resident killer whales would primarily be in waters of Washington state, though it is possible that some takes may occur off of Oregon or California. For other populations of killer whales no amendment from the number currently authorized is requested. The requested 15 takes for suction-cup tagging of "southern residents" would be in addition to the 35 takes for tagging already authorized. At most three tagging attempts per individual would be undertaken, as in the current authorization. My existing permit also allows for the import/export of up to five parts/samples (e.g., skeletal parts) from killer whales. At most one of these parts/samples would be from southern resident killer whales, with the remaining four from other populations of killer whales.

Details on the methodology for all planned activities is given on the attached sheets, as well as information on the conservation value of the research.

Please let me know if any additional information is required.

Sincerely,



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Research Biologist

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Permit 731-1774 modification request to work with “southern resident” killer whales

Methodology

The following methodology is currently authorized for all species of cetaceans in the U.S. waters of the Pacific under Permit No. 731-1774, and would be used for southern resident killer whales.

Photo-identification and behavioral studies: Photo-identification and behavioral activities will usually be conducted from small boats (rigid-hull inflatables or fiberglass boats), though some will be undertaken from larger support vessels, particularly for work in offshore waters. Approaches could last for periods ranging from one minute up to 12 hours, depending on the sea conditions, time of day, behavior, and research goals. The animals will be approached closely enough to optimize photographic quality (i.e., well-focused images, utilizing at least one half of the frame viewing area). Vessel approaches will typically be done slowly and the vessel maneuvered to approach an animal or group of animals from behind or the side to minimize potential disturbance. Behavioral work will involve focal follows with continuous information recorded on group size, composition, distance between and orientation of individuals, directionality of travel, location (determined using a GPS), interactions with other species, and the occurrence of specific behavioral events (e.g., breaches, spyhops, taillobs, prey captures). Sampling of acoustic behavior using hydrophones will also be undertaken. Collection of prey parts using hand-held nets may also be undertaken.

Tagging: Two boats will often be used in tagging operations, so a second boat can video-tape responses to tagging and/or monitor acoustically, to determine whether there is an acoustic response to tagging (this has been done once with southern resident killer whales in Washington, with no acoustic response noted with a successful tagging – P. Miller, D. Bain, personal communications).

No animals will be captured or restrained in the tagging process. Tagging will be undertaken from a variety of vessels depending on the particular field circumstances. Tags are deployed either using a 67 kg pull crossbow or a pole, depending on the circumstances and type of tag being used. Approaches will be undertaken in a manner so as to minimize disturbance of approached animals (tag attachment usually requires relatively slow approaches to within 4-5 meters of a target animal, which is virtually impossible if an animal is disturbed, thus approaches are undertaken in a manner to minimize disturbance).

Tags to be used are attached with a suction-cup. Most tags weigh between 300-500 grams in air, depending on the precise configuration of tag components, and are approximately 25 X 7 X 4 cm (excluding the suction cup, which is about 7.5 cm in diameter). Video camera (National Geographic Crittercams) or acoustic systems will also be used for some tagging. Such tags have been previously deployed on southern resident killer whales (Baird et al. 2003). Most tags will contain a Wildlife Computers time-depth recorder (Mk6, Mk8, Mk9 or Mk10), a VHF radio transmitter, and are potted in syntactic foam, so that they are buoyant and float when they detach from a tagged animal (these tags have been used under Permit Nos 926 and 731-1509 and foreign permits for attachment to a number of species of small cetaceans, including southern resident killer whales, see Baird et al. 2005). The inner surface of the suction cups are coated with a non-toxic silicone grease to reduce air leaks in the suction cup. Tags are usually attached to the dorsal surface of an animal in front of or beside the dorsal fin, but because of the nature of the suction-cup attachment the tags may slide backwards on a tagged animal. Tags remain attached for relatively short periods (of 41 deployments of these tags on killer whales in both

U.S. and Canadian waters, tag attachment has ranged from 8 minutes to 31 hours, with an average attachment duration of 10 hours), and release from an animal either due to a magnesium release mechanism, or do to other factors (e.g., high-speed acrobatic movements of the tagged animal can cause release of the tag).

Once tagged, focal follows of the tagged animals are undertaken, with data recorded as described above. The tagged animal is followed at distances ranging from 5-500 meters. The tagged animal and other group members are photo-identified, and acoustic information may be recorded to monitor vocal activity of the tagged animal or group. Information on behavior of the tagged animal relevant to other group members (e.g., whether similar behavior is being exhibited by other animals) can be used to evaluate the reactions to tagging. Interactions between the tagged animal and other individuals (including other species of cetaceans) are recorded. Collection of prey parts (from defecation or pieces of prey left by a foraging animal) may be undertaken using a long-handled net.

Aerial survey overflights: Aerial survey overflights are requested for two purposes, to determine at what depth cetaceans can be observed in the water column, and to assist (on an occasional basis) in finding cetaceans for tagging or other purposes. With the TDRs, we are able to obtain information on the proportion of time in various parts of the water column, which can be used for aerial survey calibration. However, knowledge of what depth cetaceans can be spotted at is essential. We propose to use either a helicopter (exact type not yet determined) or a fixed-winged aircraft to fly over tagged cetaceans, to record when they can be observed below the surface, for later correlation with tag depth data (since the clocks in the TDRs are very accurate and can be calibrated with an aerial observers watch). This activity would be undertaken at most for five flights during a particular field season (and likely only for one flight per field season). Each flight could involve up to 2 hours of time flying at altitudes appropriate for surveys (e.g., for humpback whales, at 800 feet, for dolphins, at 500 feet). In terms of finding cetaceans for tagging or other purposes a helicopter or fixed winged aircraft may be used. Altitudes for such overflights would typically be 800' (for ESA listed species). Such overflights are likely to be conducted on only a few days per field season.

Conservation value of the research

The information to be collected on southern resident killer whales is directly relevant to understanding the potential factors limiting the growth and recovery of this population, as well as monitoring population trends. Photo-identification photographs collected will go to the long-term monitoring program for this population being undertaken by Ken Balcomb and the Center for Whale Research. Collection of fish remains and fecal samples from southern resident killer whales will be used to assess diet (including inter-annual and seasonal variation as well as pod- and geographic variation) as well as be used to monitor stress hormones (in the case of fecal samples). As outlined in Baird et al. (2005), there is considerable inter-annual variation in diving patterns of southern resident killer whales, which may reflect inter-annual variation in prey behavior, species, or abundance. Tagging work outlined would be used to assess inter-annual variation in southern resident diving patterns to better understand the causes of such variation. The use of video camera and/or acoustic tags would both contribute to understanding inter-annual variation as well as providing evidence of predation and prey species.

Literature Cited

Baird RW, Hanson MB, Ashe EE, Heithaus MR, Marshall GJ (2003) Studies of foraging in "southern resident" killer whales during July 2002: dive depths, bursts in speed, and the use of a "Cittercam" system for examining sub-surface behavior. Report prepared under Order AB133F-02-SE-1744 for the National Marine Fisheries Service, National Marine Mammal Laboratory, Seattle, WA. Available from www.cascadiaresearch.org/robin/kwindex.htm

Baird RW, Hanson MB, Dill LM (2005) Factors influencing the diving behaviour of fish-eating killer whales: sex differences and diel and interannual variation in diving rates. *Can J Zool* 83:257-267. Available from www.cascadiaresearch.org/robin/kwindex.htm