State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawaii 96813

January 10, 2020

Board of Land and
Natural Resources
Honolulu, Hawaii

REQUEST FOR APPROVAL TO ENTER INTO A FEDERALLY FUNDED CONTRACT FOR YEAR ONE (1), OF A 3-YEAR GRANT. YEAR ONE WILL NOT EXCEED $181,226, BETWEEN THE BOARD OF LAND AND NATURAL RESOURCES AND CASCADIA RESEARCH COLLECTIVE, TO PROVIDE SERVICES TO SUPPORT STATE EFFORTS TO MANAGE ENDANGERED SPECIES; TO UNDERSTAND THE HEALTH, THREATS, AND STATUS OF THE INSULAR FALSE KILLER WHALE POPULATION AND OTHER ENDANGERED SPECIES IN HAWAII. DECLARATION OF EXEMPTION FOR CONTRACT ACTIONS UNDER HRS CHAPTER 343 AND HAR CHAPTER 11-200

Submitted for your consideration is a request to enter into a contract between the Board of Land and Natural Resources and Cascadia Research Collective (CRC), a foreign S0l(c) 3 non- profit corporation. The contract will be in the amount of $181,226 and is funded solely from the federal grant from National Oceanic and Atmospheric Administration Endangered Species Act (ESA) Section 6, Grant No. NA1SNMF4720015. The term of the contract will begin upon the receipt of the final signature on the contract until December 31, 2020, with continuation of the next 2-year grant depending on fund availability. This represents year one (1), on the beginning year of the 3-year grant.

In 2012, the Main. Hawaiian Islands Insular Distinct Population Segment (DPS) OF False Killer Whales (*Pseudorca crassidens*) was listed as endangered under the Endangered Species Act (ESA). To support recovery of this local species, the Department of Land and Natural Resources submitted and received another Section 6 ESA grant award in 2019 for Endangered Species Management: Understanding the Health, Threats, and Status of the Insular False Killer Whale Population and other Endangered Species in Hawaii. The 2019 Cascadia Research Collective contract will enhance State efforts to minimize and mitigate incidental take of false killer whales through fieldwork, research, health assessment, threats and status determination as well as spatial and temporal analysis of the overlap between fisheries and false killer whales, stranding response support and targeted outreach efforts. By CRC providing these services, the State will be able to achieve the following required grant objectives:

1. ***Assess FKW health***. Collect and analyze biological data and samples from live FKWs during field work;

2. ***Research FKW spatial distribution***. Address gaps in spatial data, including temporal (seasonal and inter-annual) and group-specific patterns. Continue

analyses of inter-annual variability through the deployments of satellite tags and building on the existing satellite tag dataset;

3. ***Conduct targeted outreach to fishers, boaters, and tour operators***. Reduce and mitigate interactions with FKWs. Improve identification of species for greater accuracy in reporting. Increase photo submission by boaters. Increase public reporting of strandings;

4. ***Secondary objectives include obtaining information on other ESA-listed species in Hawaiian waters***, including sei whales, fin whales, sperm whales, giant manta rays, oceanic whitetip sharks, scalloped hammerhead sharks, and offshore sea turtles (olive ridley, hawksbill, leatherback). While these species may only be infrequently encountered, opportunities will be taken to obtain photos for individual identification, genetic sampling (of whales and possibly others), and possibly deployment of tags to track movements. Support for stranding capacity will include sperm, sei and fin whale strandings and the curation of specimens. Outreach efforts will also be broadened to include giant manta rays and other ESA-listed species to encourage reporting and contribution of photos of these species for research purposes.

The Division of Aquatic Resources (DAR) is providing administrative services for the contracting process.

HRS Chapter 343 Compliance with Environmental Law

Dr. Robin W. Baird, Cascadia Research Collective, is authorized to conduct odontocete research in Hawaiian waters by Federal Permit No. 20605, termination date of August 1, 2022, see attached federal NMFS permit title page.

The attached Departments Chapter 343 analysis and Declaration of Exemption have determined that the activities to be performed under Federal Permit No. 60605 would have minimal or no significant effect on the environment. To exempt the permit from the Environmental Assessment (EA) requirement, the Department's exemption analysis used the general Exemption Class for scientific research as provided by the Hawaii Department of Health, Section 11-200-8(a)(5), Hawaii Administrative Rules, and more specifically used the Department of Land and Natural Resources, Exemption List approved June 5, 2015, which includes "implanting transponders and affixing tags, transmitters, markers, or other similar devices to birds, mammals, invertebrates, or aquatic organisms to record movement..." and the conducting of "game and non-game wildlife surveys, vegetation and rare plant surveys, aquatic life surveys, inventory studies, new transect lines, photographing, recording, sampling, collection...".

RECOMMENDATONS:

Based on the above discussions, The Division of Aquatic Resources recommends the Board approve the following:

1. That the Board declare that the actions which are anticipated to be undertaken under this contract is exempt from the preparation of an environmental assessment.

2. That the Board authorize the Chairperson to negotiate and subject to necessary approvals, enter into a contract with Cascadia Research Collective to provide services to minimize and mitigate incidental take of false killer whales through fieldwork, through understanding the health, threats, and status of the Insular FKW Population and other Endangered Species in Hawaii and utilizing targeted outreach efforts.

3. That review and approval of the Department of the Attorney General be obtained prior to entering into this contract.

4. Such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully submitted,

Brian J. Neilson
Administrator

APPROVED FOR SUBMITTAL:

SUZANNE D. CASE
Chairperson

Attachments:

1) Offer Form (OF-1) False Killer Whale - Field Work, State of Hawaii Department of Aquatic Resources, RFP-20000378

2) False Killer Whale – Field Work State of Hawaii Department of Aquatic Resources, Evaluation for RFP - 20000378

3) Declaration of Exemption (DE) for Contract Actions Under HRS Chapter 343 and HAR Chapter 11-200.

4) Federal NMFS Permit No. 20605 (title page)

5) Competitive Purchases of Service, Chapter 103F, HRS, Statement of Findings and Decision

OFFER FORM
OF-1

False Killer Whale – Field Work
STATE OF HAWAII
DEPARTMENT OF AQUATIC RESOURCES
RFP-20000378

Procurement Officer
DLNR - DAR
State of Hawaii
Honolulu, Hawaii 96813

Dear Procurement Officer:

The undersigned has carefully read and understands the terms and conditions specified in the Specifications and Special Provisions attached hereto, and in the General Conditions, by reference made a part hereof and available upon request; and hereby submits the following offer to perform the work specified herein, all in accordance with the true intent and meaning thereof. The undersigned further understands and agrees that by submitting this offer, 1) he/she is declaring his/her offer is not in violation of Chapter 84, Hawaii Revised Statutes, concerning prohibited State contracts, and 2) he/she is certifying that the price(s) submitted was (were) independently arrived at without collusion.

Offeror is:

☐ Sole Proprietor ☐ Partnership ☐ *Corporation ☐ Joint Venture
■ Other 501(c)3 non-profit
*State of incorporation: Washington

Hawaii General Excise Tax License I.D. No. GE-040-715-8784-01

Federal I.D. No. 91-1113375

Payment address (other than street address below): _____
City, State, Zip Code: _____

Business address (street address): Cascadia Research Collective, 218 ½ W. 4th Avenue
City, State, Zip Code: Olympia, WA 98501

Respectfully submitted:

Date: December 3, 2019

(x) _____
Authorized (Original) Signature

Telephone No.: 360-943-7325

Robin W. Baird, Research Biologist
Name and Title (Please Type or Print)

Fax No.: 360-943-7026

E-mail Address:
rwbaird@cascadiaresearch.org

**Cascadia Research Collective
Exact Legal Name of Company (Offeror)

**If Offeror is a "dba" or a "division" of a corporation, furnish the exact legal name of the corporation under which the awarded contract will be executed:

OFFER FORM
OF-2

Total contract cost for accomplishing the development and delivery of the services.

$ 181,225.92

Note: Pricing shall include labor, materials, supplies, all applicable taxes, and any other costs incurred to provide the specified services.

Offeror Cascadia Research Collective
Name of Company

Experience and Capabilities of Cascadia Research Collective in relation to research on false killer whales in Hawaiian waters

1) Current client listing

Agency: National Marine Fisheries Service, Conservation Biology Division, Northwest Fisheries Science Center, Seattle, WA. Award number and dates: 1333MF19PNFFP0197, August 19, 2019-August 31, 2020. Award value $39,973.35. Award purpose: collection of cetacean breath samples by drone. PI: Robin W. Baird.

Agency: National Marine Fisheries Service, Pacific Islands Fisheries Science Center, Honolulu, HI. Award number and dates: NA19NMF4720070, August 1, 2019-July 31, 2022. Award value: $150,039.98. Award purpose: Population assessment, fisheries interactions and spatial use of Hawaiian odontocetes: research to inform false killer whale recovery planning and assess odontocete abundance and fisheries interactions. PI: Robin W. Baird.

Agency: HDR Inc. Award number and dates: TO 010, January 4, 2019-June 31, 2020. Award value: $134,144.68. Award purpose: Visual survey and satellite tagging prior to a Navy training event. PI: Robin W. Baird.

Agency: Marisla Foundation. Award number and dates: Grant #3-19-102, September 30, 2019-September 15, 2020. Award value: $20,000. Award purpose: Engaging fishermen and other ocean users in protected species science: loans of camera systems for photo-identification to assess survival and abundance of false killer whales. PI: Robin W. Baird.

Agency: National Marine Fisheries Service, Fisheries Headquarters Program Office. Award number and dates: NA18NMF4720048, August 1, 2019-December 31, 2020. Award value: $99,914. Award purpose: Enhanced large whale entanglement and stranding response efforts in the Pacific Northwest. PI: John Calambokidis.

Agency: National Marine Fisheries Service, Fisheries Headquarters Program Office. Award number and dates: NA19NMF4390130, June 1, 2018-December 31, 2019. Award value: $598,812. Award purpose: Spatial ecology, abundance, life history, and population structure of humpback whales and other cetaceans along the US west coast. PI: John Calambokidis.

Agency: National Marine Fisheries Service, Fisheries Headquarters Program Office. Award number and dates: NA18NMF4390032, August 1, 2018-December 31, 2020. Award value: $99,713. Award purpose: Cascadia Research response activities in Washington State: coverage of primary response areas and statewide effort for large whales, 2018-2020. PI: John Calambokidis.

Agency: Office of Naval Research. Award number and dates: Subcontract 19-200-Cascadia of Prime N00014-19-1-2572, September 16, 2019-December 31, 2021. Award value: $92,288. Award purpose: Using real Navy sources in integrating remote sensing methods to measure baseline behavior and responses of social delphinids to Navy sonar. PI: John Calambokidis.

Agency: NOAA through Washington Department of Fish and Wildlife. Award number and dates: WDFW Sect6-WC-ID-2018-20, January 1, 2019-December 31, 2021. Award

value: $186,144. Award purpose: Improving information on large whales off Washington, Oregon and California. PI: John Calambokidis.

2) Number of years Offeror has been in business and the number of years Offer has performed services specified by this RFP

Cascadia Research Collective (CRC) has been in business for 40 years (incorporated in Washington State in 1979 as a 501(c)3 non-profit research and education organization). CRC has been undertaking a study of false killer whales in Hawaiian waters (originally started in 2000 by the Principal Investigator Robin W. Baird) that has included all aspects of the services specified by this RFP. This research has resulted in or contributed to 16 publications on false killer whales in peer-reviewed journals (to date) as well as being incorporated into one book (Baird 2016) and numerous reports and conference presentations[1].

Details on CRC's prior work with false killer whales in relation to the services specified in the RFP are outlined below. CRC curates a false killer whale individual photo-identification catalog that includes 2,680 identifications (as of September 2019) of 498 individuals, including individuals from the endangered main Hawaiian Islands population as well as the pelagic and northwestern Hawaiian Islands populations. This photo-identification catalog includes contributions from all major research groups in Hawai'i (e.g., Pacific Islands Fisheries Science Center) as well as community science contributions from ocean users off all the main islands. This catalog is the basis for abundance estimation for the MHI population (e.g., Bradford et al. 2018) and has also been used to examine social organization (Baird et al. 2012, 2019; Martien et al. 2019), and fishery interactions (Baird et al. 2014, 2017). CRC has deployed 62 LIMPET satellite tags on false killer whales since 2007, including individuals from all three populations, that have been used to examine spatial use and overlap with fisheries (Baird 2016; Baird et al. 2012, 2019), as well as used to set stock boundaries for the three populations (Bradford et al. 2015). CRC has also collected 182 biopsy samples of false killer whales in Hawaiian waters, with samples used for studies of genetics (e.g., Martien et al. 2012, 2019) and toxicology (Ylitalo et al. 2009; Foltz et al. 2014; Kratofil et al. 2019), as well as being archived for studies of hormone chemistry and stable isotopes. In 2018 CRC began using unmanned aerial systems (drones) both to obtain aerial images for the purposes of detailed photogrammetry and examining body condition, as well as for the collection of breath samples for examination of the respiratory microbiome (Lerma et al. 2019). CRC has been able to successfully collect breath samples via drone and obtain images for photogrammetry and body condition of individuals from both false killer whales and short-finned pilot whales in Hawaiian waters. CRC also has photo-identification catalogs of fin whales, sei whales, and sperm whales from Hawaiian waters, and has obtained photos of pelagic (i.e., leatherback, olive ridley, hawksbill) sea turtles in Hawaiian waters and have contributed these photos to researchers at the Pacific Islands Fisheries Science Center.

CRC holds a NMFS MMPA/ESA Scientific Research Permit (no. 20605, valid through August 1, 2022) that allows for biopsy sampling, LIMPET tagging, photo-identification, and using a UAS (drone) with false killer whales as well as other species of ESA-listed cetaceans in Hawaiian waters including sei whales, fin whales, and sperm whales, and also allows for the approach and photography of ESA-listed sea turtles in Hawai'i.

[1]See http://www.cascadiaresearch.org/hawaiian-cetacean-studies/publications for a list.

3) List of key personnel

Principal investigator: Robin W. Baird, Ph.D. Dr. Baird is a Research Biologist with CRC and an Affiliate Faculty with the Hawai'i Institute of Marine Biology. Dr. Baird has been undertaking research with false killer whales in Hawai'i for 21 years (since 1999). He has authored or co-authored 131 publications in peer-reviewed journals including 19 on false killer whales (15 based on research in Hawaiian waters). In addition, he authored a report assessing the status of false killer whales in Hawai'i for the U.S. Marine Mammal Commission (Baird 2009), the most-recent IUCN Red List assessment of false killer whales (Baird 2018a), the false killer whale chapter in the Encyclopedia of Marine Mammals (Baird 2018b), and a chapter on false killer whales in Hawai'i in a book on cetaceans in Hawaiian waters (Baird 2016). Dr. Baird leads a team of researchers that have experience with photo-identification, biopsy sampling, LIMPET tagging (including false killer whales and sperm whales), drone photogrammetry and breath sampling, analyses of tag and photo-ID datasets, as well as outreach and education. His CV/resume is attached.

UAS pilot-in-command: Jordan K. Lerma. Mr. Lerma has worked with CRC as a research assistant and is the remote Pilot in Command and safety coordinator for UAS operations. He holds a FAA Part 107 Remote Pilot Certificate with UAS rating and has over 500 hours of logged flight time with nine different UASs. He has collected breath samples and photogrammetry data using a drone from false killer whales and short-finned pilot whales, and also works with Cascadia with tag data sets. His CV/resume is attached.

Photo-identification catalog curator and data analyst: Sabre D. Mahaffy. Ms. Mahaffy has worked with CRC studying Hawaiian odontocetes since 2005 and is the curator of CRC's false killer whale photo-identification catalog, as well as catalogs of fin whales and sperm whales from Hawaiian waters. She has authored or co-authored 18 publications including six on false killer whales. Ms. Mahaffy received her M.Sc. in 2012 with her thesis focusing on site fidelity, associations and long-term bonds of short-finned pilot whales in Hawai'i. She undertakes analyses of association data to assess social structure of odontocetes including false killer whales. Her CV/resume is attached.

4) List of three references from Offeror's client listing

Dr. Erin Oleson, Lead Scientist, Cetacean Research Program, PIFSC. Phone 808-725-5712. Email erin.oleson@noaa.gov. Postal address: NOAA IRC, Cetacean Research Program, NMFS, 1845 Wasp Boulevard, Building 176, Honolulu, HI 96818

Dr. Brad Hanson, Team Lead, Marine Mammal Ecology Team, NWFSC. Phone 206-860-3220. E-mail brad.hanson@noaa.gov. Postal address: Conservation Biology Division, Northwest Fisheries Science Center, NOAA, 2725 Montlake Boulevard East Seattle, WA 98112.

Dr. Mark Deakos, Deputy Program Manager, HDR Ltd. Phone 808-280-6448. E-mail mark.deakos@hdrinc.com. Postal address: HDR Ltd., 1132 Bishop St #1200, Honolulu, HI 96813.

5) Summary listing of judgments or pending lawsuits or actions against.

None.

6) A list of sample projects and/or examples of written plans

CRC received contracts (64675 in 2016, 65780 in 2017, 67703 in 2019) from the State of Hawai'i Board of Land and Natural Resources for work under a previous NOAA Section 6 grant. A comprehensive report from these contracts (Baird et al. 2019a - "Cooperative conservation and long-term management of false killer whales in Hawai'i: geospatial analysis of fisheries and satellite tag data to understand fishery interactions") was delivered in September 2019 and is available from http://www.cascadiaresearch.org/files/publications/Bairdetal2019_Section6_FinalReport.pdf. In addition, data obtained during the first year of this project were incorporated into a document submitted to the Pacific Scientific Review Group (PSRG) at their 2017 annual meeting (Baird et al. 2017) and additional results were also presented at the 2018 and 2019 meetings of the PSRG. Results from this work were also provided to NOAA Fisheries in 2019 for inclusion in a draft Recovery Plan.

CRC has received contracts from HDR Inc (funded by the U.S. Navy) for multiple field efforts and analyses of tag data from studies of odontocetes off Kaua'i, most undertaken prior to Navy exercises involving mid-frequency active sonar. This research has involved collaborations with Navy scientists from the Naval Information Warfare Center and the Naval Undersea Warfare Center, and has resulted in a series of detailed reports on spatial use and site fidelity of multiple species of cetaceans in the western main Hawaiian Islands, as well as reactions of several species to mid-frequency active sonar. The most recent reports (Baird et al. 2019b, 2019c) are available at http://www.cascadiaresearch.org/hawaiian-cetacean-studies/publications#reports.

A proposal for research on false killer whales in the main Hawaiian Islands submitted by Cascadia Research Collective

Overall research strategy

The main Hawaiian Islands insular population of false killer whales was listed as endangered under the Endangered Species Act in 2012, and NOAA Fisheries is currently in the process of developing a recovery plan for this population. To help fill data gaps and inform recovery planning as well as providing information that can be used to minimize and mitigate incidental take, a multi-focus research strategy is planned that builds upon and leverages existing datasets and samples held by Cascadia Research, as well as leveraging field efforts funded by other sources. The research strategy involves utilizing multiple methods (e.g., community science contributions, dedicated field work) and a variety of analytical approaches to gain information on false killer whales around the main Hawaiian Islands. Community science contributions will be encouraged through targeted outreach efforts, including public talks associated with field projects (funded both through this contract and through efforts funded by other sources), social media, articles in community publications (e.g. Hawai'i Fishing News), and by engaging local ocean users and educators both on and off the water during field projects. Dedicated field efforts involve a multi-faceted research approach including photo-identification, behavioral observations (e.g., documenting predation), satellite tagging for examining spatial use, biopsy sampling for genetics, toxicology and hormone chemistry, and drone operations for breath sampling and detailed photogrammetry for measuring body length, assessing body condition, and determining near-term pregnancies of known individuals. Results from all of these methods will be tied to individual identifications and cluster affiliations to examine factors that may limit the population and inform recovery planning.

Plan

Field operations

CRC has been undertaking boat-based field studies in Hawaiian waters since 2003, including efforts off all the main Hawaiian Islands, continuing a study originally begun in 2000. Search strategies for maximizing encounters with false killer whales and other priority species have been refined over time based both on these studies (a combined total of 1,135 field days) and from extensive satellite tag and photo-ID data sets (Baird et al. 2019a). From work supported by a prior Section 6 grant to the State of Hawai'i, it is known that the five social clusters from the main Hawaiian Islands false killer whale population differ in their spatial use and that spatial use also varies seasonally (Baird et al. 2019a). We are planning three weeks of field work to be undertaken under this contract, either in one contiguous block or split over two efforts. Field work would be targeted at locations and times of the year to maximize encounters with false killer whales, particularly social groups with limited data or samples available (e.g., Clusters 2, 3, 4 and 5). The most likely locations for planned field work would be based out of Lāna'i (to maximize encounters with Cluster 4), O'ahu (to maximize encounters with Clusters 3 and 5), or Kawaihae (to maximize encounters with Cluster 2). In addition, during field work funded by other sources (e.g., 13-days of effort off Kaua'i in February 2020, funded by the U.S. Navy) we will also collect photographs and samples (and possibly deploy tags) that can be incorporated into the larger set of analyses that will be undertaken in association with this contract.

Field surveys would be undertaken from a ~24' rigid-hulled inflatable, operating at speeds of approximately 14-20 kilometers per hour, with at least five observers scanning in 360 degrees around the vessel. Prior to field operations, outreach will be undertaken with local tour operators and fishermen to request calls regarding sightings of false killer whales to increase sighting rates for the research vessel. As broad an area as possible will be surveyed each day, depending on weather conditions, with the vessel leaving at sunrise to take advantage of typical calm winds in the morning. A GPS will record locations at 5-minute locations to allow for quantifying survey effort. During an effort when one or more false killer whales have been tagged, information from the location of the tagged individual(s) will be used to help re-locate groups for additional sampling/photo-identification.

During each encounter, information will be recorded on group size, group envelope (i.e., spatial spread of group), start and end location, behavior and direction of travel. Instances of predation will be documented with photos and video to confirm prey species. Video footage obtained may include above- and below-water footage, the latter taken with a GoPro on a pole over the side of the vessel, as well as aerial video taken from the drone simultaneous with photogrammetry and breath sampling. Multiple photographers will attempt to photograph all individuals present, to obtain mouthline photos (for assessment of fishery interactions) and for individual identification. An iPad with a catalog of false killer whales organized by social cluster will be used in the field to determine cluster(s) present and help with prioritizing additional sampling/tagging, as has been done for field work supported by the previous Section 6 grant to the State of Hawai'i. Priorities for additional sampling/tagging within any encounter would depend on the social cluster present (see Baird et al. 2019a) and how often that cluster has been previously biopsied or tagged, as well as the behavior of the animals and prevailing conditions. Some of the methodologies used (e.g., LIMPET tagging, biopsy sampling, drone operations for breath sampling or photogrammetry) may be more or less productive depending on the conditions and behavior of the animals (e.g., fast moving animals cannot easily be LIMPET tagged). Biopsy sampling, LIMPET tagging, and drone operations will follow established procedures (Baird et al. 2010; Lerma et al. 2019; Martien et al. 2019) approved by the CRC Institutional Animal Care and Use Committee and authorized under a NMFS scientific research permit (no. 20605). Simultaneous to tagging or sampling (breath or biopsy), photos will be obtained to identify individuals tagged/sampled. We will also attempt to obtain photogrammetry images from tagged or sampled individuals for assessment of body condition and analyses in relation to information on contaminant loads (Ylitalo et al. 2009; Kratofil et al. 2019), evidence of prior fishery interactions (Baird et al. 2017), and results from analyses of respiratory microbiome and hormone levels from collaborating researchers (see below).

Although false killer whales are the priority species, other cetaceans encountered will be approached for species identification and collection of sighting information (see above). Any other ESA-listed species encountered (i.e., sei whales, fin whales, sperm whales, giant manta rays, oceanic whitetip sharks, scalloped hammerhead sharks, or offshore sea turtles) will be photographed for individual identification. For ESA-listed cetaceans if possible biopsy samples will be collected.

Data analyses and distribution of samples and data

CRC has approximately 30 archived false killer whale blubber biopsy samples that are available for analyses. These archived samples will be made available for analysis of

stress and reproductive hormones as well as blubber histology by a collaborating researcher. Additional samples that are collected during field operations funded by this contract or through field work supported by other sources will also be made available for analyses. Skin sub-samples will be provided to NOAA for genetic analyses (e.g., determination of sex, mitochondrial haplotype, and inclusion in an epigenetic aging study), and blubber sub-samples will be made available for analysis of stress and reproductive hormones, persistent organic pollutants (POPs), and blubber histology. Breath samples will be provided to collaborating laboratories for microbial assessment. CRC has been collecting breath samples via drone since 2018 from false killer whales and two other species of odontocetes in Hawai'i and is providing these samples to Dr. Linda Rhodes at the Northwest Fisheries Science Center.

Photos obtained during encounters will be sorted by individual within encounters and matched to the CRC long-term false killer whale photo-identification catalog (Baird et al. 2008). Each individual in the catalog is given a distinctiveness rating from 1-4: 1=not distinctive; 2=slightly distinctive; 3=distinctive; 4=very distinctive. The best photo quality for each individual is rated based on the focus, contrast, size and angle of the fin relative to the photographic frame, categorized from 1-4: 1=poor; 2=fair; 3=good; 4=excellent. Association analyses to determine social cluster will be undertaken following the same procedures used in previous analyses (Baird et al. 2012, 2019a). Mouthline images (either from above-water still photos or from stills taken from underwater video) will be scored for evidence of fisheries interactions following protocols outlined by Baird et al. (2017). Proportion of individuals with evidence of prior fishery interactions will be assessed by social cluster, age class, and sex. Sighting histories of individuals will be provided to collaborating researchers with the Pacific Islands Fisheries Science Center for abundance estimation as has been done previously (Bradford et al. 2018). We will also continue to collaborate with the NOAA Pacific Islands Region Marine Mammal Response Network and the University of Hawai'i in providing rapid identifications from photos of any stranded individuals including information on prior sighting, sampling and tagging history.

For photogrammetry, still images from the drone are sorted by image quality and the animal's surfacing angle. These images are then synced to the laser measured altitude file and tilt data, then processed using WhaleLength v6.0 (Dawson et at. 2017) to incorporate camera calibration parameters. Images for measurements, body condition and relative body size are matched to known individuals using boat-based identification photos taken simultaneously during an encounter.

Photos obtained of other ESA-listed cetaceans (i.e., sperm whales, sei whales, fin whales) will be matched and added to CRC photo-identification catalogs of these species. Photos of offshore sea turtles will be provided to the Pacific Island Fisheries Science Center, and photos of other species (i.e., giant manta rays, oceanic whitetip sharks, scalloped hammerhead sharks) will be archived and made available to collaborating researchers upon request.

Methods related to the false killer whale satellite tagging data set have been published in detail (Baird et al. 2010, 2012) and so are only briefly summarized here. Location data are first processed by Argos using a Kalman method, and subsequently filtered with a Douglas Argos-filter using a distance-angle-rate filter (Douglas et al. 2012), with user defined parameters as noted in Baird et al. (2012). For cases where there more than one satellite tag is transmitting at a time, we will assess potential coordination of individuals

by measuring the straight-line distances between all pairs of individuals when locations were received during the same satellite overpass. To avoid pseudoreplication, when mean distances between a pair are less than 5 km and maximum distances are less than 25 km, we will use only one of each pair (the longest duration track) in analyses. Filtered tracks of tagged individuals will also be processed through a switching state space model (SSSM) to produce locations at even time-steps. Data will be compared to the previous tag data available for this population (Baird et al. 2019a).

Outreach and communications

CRC already has established partnerships with many tour operators (e.g., whale and dolphin watching companies) from throughout the islands, with captains, naturalists and/or photographers contributing sightings and photographs (of false killer whales and other species) to our photo-identification catalogs. We will continue to work with these operators and approach others from throughout the islands to develop new partnerships. This will be done both to encourage contribution of photos and to provide information that may be used in their education and outreach efforts, for example false killer whale social cluster identification sheets. We will also provide information on sightings received and results from research back to operators, through social media, e-mail, and in-person contacts. During field projects off different islands (supported both by this contract and for field projects supported by other contracts or grants to CRC) we will invite captains and crew from various tour companies to join us in the field for a day, to help build relationships and to provide information on our research and on the biology of false killer whales and other species.

Results from research (including photos, videos, maps) will be provided to the state and federal partners (e.g., NOAA) for use in outreach and educational efforts and for incorporation into the false killer whale recovery plan as appropriate. Information will be shared with the general public through social media postings on CRC's Facebook and Youtube pages as well as on Instagram. Public presentations will be given on various islands in association with travel to the islands both for field work supported by this contract and by field work supported by other sources.

Potential limiting factors and strategies to minimize shortfalls

Field work is inherently unpredictable, with sighting rates of priority species influenced by sea conditions and movements of animals into and out of the study area. We mitigate the risks associated with this unpredictability in several ways: 1) targeting field operations in areas and at times of the year with high likelihood of encountering false killer whales, based on an extensive satellite tagging data set, reports from community science contributors, and a field study spanning 20 years and all islands; 2) maximizing the spatial extent of survey effort as allowed for by sea conditions; 3) working with a strong network of other ocean users to obtain sighting information that can be used in real time to encounter groups; 4) leveraging field efforts funded by other sources (e.g., US Navy, Pacific Islands Fisheries Science Center) to effectively increase the number of field days; and 5) working with a team of researchers who have extensive experience with this species in Hawaiian waters. We may utilize a land-based survey team using high powered optics (a 20-60 power spotting scope and a 16x70 binocular) to help find groups and direct the research vessel to them, depending on the location chosen for field. This approach has been used on two prior CRC field projects (November 2018 and

October/November 2019) with success at increasing encounter rates of the research vessel.

Timeline

Task	First quarter	Second quarter	Third quarter	Fourth quarter
Outreach to encourage photo submission	x	x	x	x
Obtaining citizen science photos	x	x	x	x
Photo-identification matching to catalog	x	x	x	x
Planning for field effort	x	x		
Field effort for tagging and sampling			x	x
Provision of samples and data for hormone analyses (existing and new)	x		x	x
Analyses of photo-identification data			x	x
Analyses of mouthline images to assess evidence for fishery interactions			x	x
Analyses of drone images			x	x
Analyses of tag data			x	x
Reporting (progress and final)		x	x	x

Expected results

Ultimately the goal of this effort is to provide a strong basis for management of endangered false killer whales in Hawaiian waters. Expected results towards this meeting this goal include: an improved photo-identification data set for abundance estimation and assessment of fishery-related injuries; improved understanding of the health status of individuals through photogrammetry and collection and provision of breath and biopsy samples for analyses by collaborating researchers; and reducing gaps and biases in tag data available to understand spatial use of this population in relation to fishing effort.

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Pricing for proposal for research on false killer whales in the main Hawaiian Islands submitted by Cascadia Research Collective

Budget detail

Personnel	units	unit cost	# units	cost
PI field	day	$631.68	21	$13,265.28
PI prep/analysis/reporting	week	$2,145.60	6	$12,873.60
Tagger field	day	$275.00	21	$5,775.00
Photographer field	day	$192.00	21	$4,032.00
Land-based survey crew lead field	day	$180.00	21	$3,780.00
Data recorder field	day	$180.00	21	$3,780.00
UAS pilot in command field	day	$204.00	21	$4,284.00
Data analyst office	week	$1,112.40	6	$6,674.40
Photo-ID specialist office	week	$1,214.40	7	$8,500.80
Sub-total wages				$62,965.08
Benefits and payroll tax (35.7%)				$22,478.53
Sub-total wages, benefits & payroll tax				**$85,443.61**
Travel for field project				
M&IE ($65/day per person, 6 people)	6 people/day	$390.00	21	$8,190.00
Airport transfer, parking, baggage	mainland trip	$200.00	2	$400.00
Accommodation	day	$400.00	21	$8,400.00
van rental and fuel	day	$120.00	21	$2,520.00
Jeep rental and fuel	day	$95.00	21	$1,995.00
interisland travel	trip	$250.00	4	$1,000.00
Airfare mainland to/from HI	trip	$900.00	2	$1,800.00
Sub-total travel				**$24,305.00**
Supplies				
satellite tags and darts with shipping and tax	tag plus two darts	$2,900.00	5	$14,500.00
tagging arrows	arrow	$75.00	3	$225.00
Sub-total supplies				**$14,725.00**
Vessel costs				
Research vessel charter	day	$800.00	21	$16,800.00
Research vessel fuel	day	$160.00	21	$3,360.00
Sub-total Other				**$20,160.00**
Sub-total all				**$144,633.61**
Indirect (25.3%)				**$36,592.30**
Total				**$181,225.92**

Budget narrative

Personnel

Personnel costs include wages for six employees for a 3-week (21 consecutive days) field effort. Wages for field efforts are calculated at an average of 12 hours per day. These wages include the PI (also acting as vessel driver and field team lead), a tagger, primary photographer, data recorder, and UAS pilot in command. In addition, the field effort will include a land-based spotting crew and wages include the land-based survey crew lead. Matching for field costs will be through volunteers for both land-based and boat-based crews. Personnel costs also include six weeks of the PIs time for preparation and coordination, overseeing analyses, outreach, and reporting, six weeks of time for a Data Analyst (who will be processing sighting, effort and tag data including running switching-state-space models and undertaking photogrammetry with drone images), and seven weeks of time for a Photo-ID Specialist, who will be overseeing photo-ID matching and undertaking analyses of association data, as well as shipping of samples to collaborating researchers. Matching for office costs will be through volunteers based in our office assisting with photo-ID matching.

Benefits and payroll tax for personnel are 35.7% of wages based on 2018 cost experience. Please see our 2018 indirect cost rate proposal to NOAA for details.

Travel

Travel costs include funds for one three-week (21-day) field effort, likely to be held off Lāna'i unless logistics (e.g., accommodation and dock space) prohibit a field project there. In that case, the field effort will be held either off O'ahu or out of Kawaihae, and any cost savings would be used to increase the number of field days. Included in costs are meals and incidental expenses at $65/day for six people (total of $390/day for 21 days), accommodation (shared for all six people) at $400/day, a van rental and fuel ($120/day for 21 days), a Jeep rental and fuel (for the land-based crew; at $95/day), inter-island travel for four people and mainland travel for two people.

Supplies

Supplies include the purchase of five Wildlife Computers SPOT6 satellite tags and associated attachment darts (including shipping and tax) at $2,900 per tag, and three tagging arrows (at $75/arrow).

Vessel costs

Vessel costs include the research vessel charter ($800/day for 21 days which includes the vessel transfer to/from Lāna'i or O'ahu, and fuel for the research vessel ($160/day for 21 days).

Indirect costs

Indirect costs are calculated at 25.3% of all direct costs based on our 2018 cost experience. Please see our 2018 indirect cost rate proposal to NOAA.

Matching support

Matching support will primarily be through volunteer hours in the field and office. Volunteers in the field will work as observers and secondary photographers, while volunteers in the office will primarily undertake photo-ID matching of photos obtained both from community science contributors and through field projects. We agree to obtain matching support in the amount of $37,862.

Exceptions for proposal for research on false killer whales in the main Hawaiian Islands submitted by Cascadia Research Collective

6.2. Intellectual Property Rights

Cascadia Research Collective (CRC) prides itself on the free and open dissemination of information to all interested parties, and members put a premium on publication of research results. The research outlined in this proposal builds upon and extends research that CRC has been undertaking for over 15 years. Without impinging on the rights of the state to use the information collected in any way, CRC would like to retain the right to use the information collected (e.g., photos, tag data) in association with long-term research efforts on these species.

Attachment 2 (Item F-2)

False Killer Whale – Field Work
STATE OF HAWAII
DEPARTMENT OF AQUATIC RESOURCES
Evaluation for RFP - 20000378
F-2

EVALUATION CRITERIA

Evaluation criteria and the associated points are listed below.

Evaluating DAR Staff:

DAR - Marine Wildlife Program: Earl Miyamoto, Kristen Kelly

DAR: Catherine Gewecke, Aquatic Biologist

Evaluation Proposal F-2 from Offeror: Cascadia Research Collective

Cascadia Research Collective was the only applicant for RFP – 2000378 (F-2)

The total number of points used to score this contract is 100.

1) Previous experience researching False Killer whales (FKW) and other ESA-listed species in Hawaiian waters, capability and proficiency in field work, data analysis and outreach and communication. Previous experience and capacity to fulfill the research requirements listed in the scope of work (25)

    a. Number of years in the business and number of years performing services specified in this RFP

    Cascadia Research Collective (CRC) has been in business for 40 years (incorporated in Washington State in 1979 as a 501(c)3 non-profit research and education organization). CRC has been undertaking a study of false killer whales in Hawaiian waters (originally started in 2000 by the Principal Investigator Robin W. Baird) that has included all aspects of the services specified by this RFP. This research has resulted in or contributed to 16 publications on false killer whales in peer-reviewed journals (to date) as well as being incorporated into one book (Baird 2016) and numerous reports and conference presentations.

    b. A minimum of three (3) references preferably from government and private sectors for whom comparable services have been performed prior to the date of bid submittal.

    Vendor submitted 3 current references

    Comments:

Cascadia Research Collective (CRC) has been studying FKW as well as other endangered species for over 40 years with extensive research in the Hawaiian Islands. CRC curates a false killer whale individual photo-identification catalog that includes 2,680 identifications (as of September 2019) of 498 individuals, including individuals from the endangered main Hawaiian Islands population as well as the pelagic and northwestern Hawaiian Islands populations. CRC has also collected 182 biopsy samples of false killer whales in Hawaiian waters, with samples used for studies of genetics. CRC holds a NMFS MMPA/ESA Scientific Research Permit (no. 20605, valid through August 1, 2022) that allows for biopsy sampling, LIMPET tagging, photo-identification, and using a UAS (drone) with false killer whales as well as other species of ESA-listed cetaceans in Hawaiian waters including sei whales, fin whales, and sperm whales, and also allows for the approach and photography of ESA-listed sea turtles in Hawai'i.

CRC is more than qualified to conduct this research.

Points Awarded: 25

2) Cost of services (15)

Comments: Total of 181,225.92 including matching support of $37,862 is within the budgeted range of the 2019 Section 6 awarded FKW grant.

Points Awarded: 15

3) Documented history of successfully meeting project requirements and deadlines while working collaboratively with state and/or federal agencies (10)

Comments: ***CRC currently has over 9 client listings and has proved to be a successful 501 C 3 organization over the last 40 years.***

Points Awarded: 10

4) Knowledge and proficiency with False Killer Whale and other ESA listed species research (15)

Comments: ***Cascadia Research Collective (CRC) has been studying FKW as well as other endangered species for over 40 years with extensive research in the Hawaiian Islands. CRC curates a false killer whale individual photo-identification catalog that includes 2,680 identifications (as of September 2019) of 498 individuals, including individuals from the endangered main Hawaiian Islands population as well as the pelagic and northwestern Hawaiian Islands populations. CRC has also collected 182 biopsy samples of false killer whales in Hawaiian waters, with samples used for studies of genetics. CRC holds a NMFS MMPA/ESA Scientific Research Permit (no. 20605, valid through August 1, 2022) that allows for biopsy sampling, LIMPET tagging, photo-identification, and using a UAS (drone) with false killer whales as well as other species of ESA-listed cetaceans in Hawaiian waters including sei whales, fin whales, and sperm whales, and also allows for the approach and photography of ESA-listed sea turtles in Hawai'i.***
CRC is more than qualified to conduct this research.

Attachment 2 (Item F-2)

Points Awarded: 15

5) Project Proposal (30)

   a. Methodology

   b. Timeline

   c. Expected Results

   d. Possible Shortfalls

Comments: ***Proposal Methodology was sound and a continuation and collaboration completed with UH research laboratory. Timeline was realistic, expected results are inclusive of data needed to fulfill the section 6 grant objectives. Possible Shortfalls only originate from unforeseen circumstances such as mechanical failures or difficult weather windows.***

Points Awarded: 30

Total Points Awarded: 100

Evaluation Conclusion: Cascadia Research Collective has ample background knowledge and history with researching ESA listed species. The cost of services as well as the project proposal fits within the grant criteria and budget. CRC exceeds this RFP's requirements.

Attachment 3 (Item F-2)

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 10, 2020

TO: Division of Aquatic Resources File

THROUGH: Suzanne D. Case, Chairperson

FROM: Brian J. Neilson, Administrator
Division of Aquatic Resources

SUBJECT: Declaration of Exemption from the Preparation of an Environmental Assessment under the Authority of Chapter 343, HRS, and Chapter 11-200, HAR, for activities conducted under contract between the Board of Land and Natural Resources and Cascadia Research Collective (Endangered Species Act (ESA) Section 6 Grant (Award No. NA1SNMF4720015)) to provide services to support state efforts to manage endangered species.

The following activities are found to be exempted from preparation of an environmental assessment under the authority of Chapter 343, HRS and Chapter 11-200, HAR:

Project Title: Request for approval to enter into a federally funded contract for year one (1), of a 3-year grant, not exceed $181,226, between the Board of Land and Natural Resources and Robin W. Baird, Cascadia Research Collective, Research Biologist, to provide services to support state efforts to manage endangered species; to understand the health, threats, and status of the insular false killer whale population and other endangered species in Hawaii.

Contract Number: Endangered Species Act (ESA) Section 6 Grant (Award No. NA1SNMF4720015)

Project Description: The research contract, as described below, will enhance State efforts to minimize and mitigate incidental take of false killer whales through fieldwork, research, health assessment, threats and status determination, as well as spatial and temporal analysis of the overlap between fisheries and false killer whales, stranding response support and targeted outreach efforts, in State waters from January 10, 2020, through January 9, 2021. Research activities for cetaceans are authorized federally in Hawaii by NMFS Permit #20605, where activities per species are defined and outlined. The research biologist is authorized for the following amount of approaches for ESA listed cetaceans. 1100 approaches for sperm whales, 3095 approaches for (Hawaiian insular stock) false killer whales, 2090 approaches for (range-wide stock) false killer whales, 1100

approaches for fin whales and 1060 approaches for sei whales to conduct sperm whale, false killer whale, fin whale and sei whale movement and habitat use research. No animals will be captured. Approaches for ESA listed turtles, manta rays or sharks will be authorized under another researcher's federal permit for which the applicant is listed as an authorized assistant or may be authorized under the researcher's own federal permit, pending approval. Certain activities with certain species may require a supplemental State permit; if the request for approval to enter into a federally funded contract is approved, the Division of Aquatic Resources shall consult with the researcher to see which permits are necessary.

By Cascadia Research Collective (CRC) providing these research services (health assessment, threats and status determination, spatial and temporal analysis of the overlap between fisheries and false killer whales, stranding response support and targeted outreach efforts), the State will be able to achieve the following required grant objectives:

1. **Assess False Killer Whale (FKW) health**. Collect and analyze biological data and samples from live FKWs during field work;

2. **Research FKW spatial distribution**. Address gaps in spatial data, including temporal (seasonal and inter-annual) and group-specific patterns. Continue analyses of inter-annual variability through the deployments of satellite tags and building on the existing satellite tag dataset;

3. **Conduct targeted outreach to fishers, boaters, and tour operators**. Reduce and mitigate interactions with FKWs. Improve identification of species for greater accuracy in reporting. Increase photo submission by boaters. Increase public reporting of strandings;

4. **Secondary objectives include obtaining information on other ESA-listed species in Hawaiian waters**, including sei whales, fin whales, sperm whales, giant manta rays, oceanic whitetip sharks, scalloped hammerhead sharks, and offshore sea turtles (olive ridley, hawksbill, leatherback). While these species may only be infrequently encountered, opportunities will be taken to obtain photos for individual identification, genetic sampling (of whales and possibly others), and possibly deployment of tags to track movements. Support for stranding capacity will include sperm, sei and fin whale strandings and the curation of specimens. Outreach efforts will also be broadened to include giant manta rays and other ESA-listed species to encourage reporting and contribution of photos of these species for research purposes.

<u>Overall research strategy</u>

The main Hawaiian Islands insular population of false killer whales was listed as endangered under the Endangered Species Act in 2012, and NOAA Fisheries is currently in the process of developing

a recovery plan for this population. To help fill data gaps and inform recovery planning as well as providing information that can be used to minimize and mitigate incidental take, a multi-focus research strategy is planned that builds upon and leverages existing datasets and samples held by Cascadia Research, as well as leveraging field efforts funded by other sources. The research strategy involves utilizing multiple methods (e.g., community science contributions, dedicated field work) and a variety of analytical approaches to gain information on false killer whales around the main Hawaiian Islands. Community science contributions will be encouraged through targeted outreach efforts, including public talks associated with field projects (funded both through this contract and through efforts funded by other sources), social media, articles in community publications (e.g. Hawai'i Fishing News), and by engaging local ocean users and educators both on and off the water during field projects. Dedicated field efforts involve a multi-faceted research approach including photo-identification, behavioral observations (e.g., documenting predation), satellite tagging for examining spatial use, biopsy sampling for genetics, toxicology and hormone chemistry, and drone operations for breath sampling and detailed photogrammetry for measuring body length, assessing body condition, and determining near-term pregnancies of known individuals. Results from all of these methods will be tied to individual identifications and cluster affiliations to examine factors that may limit the population and inform recovery planning.

Plan

Field operations

CRC has been undertaking boat-based field studies in Hawaiian waters since 2003, including efforts off all the main Hawaiian Islands, continuing a study originally begun in 2000. Search strategies for maximizing encounters with false killer whales and other priority species have been refined over time based both on these studies (a combined total of 1,135 field days) and from extensive satellite tag and photo-ID data sets (Baird et al. 2019a). From work supported by a prior Section 6 grant to the State of Hawai'i, it is known that the five social clusters from the main Hawaiian Islands false killer whale population differ in their spatial use and that spatial use also varies seasonally (Baird et al. 2019a). The researchers are planning three weeks of field work to be undertaken under this contract, either in one contiguous block or split over two efforts. Field work would be targeted at locations and times of the year to maximize encounters with false killer whales, particularly social groups with limited data or samples available (e.g., Clusters 2, 3, 4 and 5). The most likely locations for planned field work would be based out of Lāna'i (to maximize encounters with Cluster 4), O'ahu (to maximize encounters with Clusters 3 and 5), or Kawaihae (to maximize encounters with Cluster 2). In addition, during field work funded by other sources (e.g., 13-days of effort off Kaua'i in February 2020, funded by the U.S. Navy) the researchers will also collect photographs and samples (and possibly deploy tags) that can be incorporated into the larger set of analyses that will be undertaken in association with this contract.

Field surveys would be undertaken from a ~24' rigid-hulled inflatable, operating at speeds of approximately 14-20 kilometers per hour, with at least five observers scanning in 360 degrees around the vessel. Prior to field operations, outreach will be undertaken with local tour operators and fishermen to request calls regarding sightings of false killer whales to increase sighting rates for the research vessel. As broad an area as possible will be surveyed each day, depending on weather

conditions, with the vessel leaving at sunrise to take advantage of typical calm winds in the morning. A GPS will record locations at 5-minute locations to allow for quantifying survey effort. During an effort when one or more false killer whales have been tagged, information from the location of the tagged individual(s) will be used to help re-locate groups for additional sampling/photo-identification.

During each encounter, information will be recorded on group size, group envelope (i.e., spatial spread of group), start and end location, behavior and direction of travel. Instances of predation will be documented with photos and video to confirm prey species. Video footage obtained may include above- and below-water footage, the latter taken with a GoPro on a pole over the side of the vessel, as well as aerial video taken from the drone simultaneous with photogrammetry and breath sampling. Multiple photographers will attempt to photograph all individuals present, to obtain mouthline photos (for assessment of fishery interactions) and for individual identification. An iPad with a catalog of false killer whales organized by social cluster will be used in the field to determine cluster(s) present and help with prioritizing additional sampling/tagging, as has been done for field work supported by the previous Section 6 grant to the State of Hawai'i. Priorities for additional sampling/tagging within any encounter would depend on the social cluster present (see Baird et al. 2019a) and how often that cluster has been previously biopsied or tagged, as well as the behavior of the animals and prevailing conditions. Some of the methodologies used (e.g., LIMPET tagging, biopsy sampling, drone operations for breath sampling or photogrammetry) may be more or less productive depending on the conditions and behavior of the animals (e.g., fast moving animals cannot easily be LIMPET tagged). Biopsy sampling, LIMPET tagging, and drone operations will follow established procedures (Baird et al. 2010; Lerma et al. 2019; Martien et al. 2019) approved by the CRC Institutional Animal Care and Use Committee and authorized under a NMFS scientific research permit (no. 20605). Simultaneous to tagging or sampling (breath or biopsy), photos will be obtained to identify individuals tagged/sampled. The researchers will also attempt to obtain photogrammetry images from tagged or sampled individuals for assessment of body condition and analyses in relation to information on contaminant loads (Ylitalo et al. 2009; Kratofil et al. 2019), evidence of prior fishery interactions (Baird et al. 2017), and results from analyses of respiratory microbiome and hormone levels from collaborating researchers (see below).

Although false killer whales are the priority species, other cetaceans encountered will be approached for species identification and collection of sighting information (see above). Any other ESA-listed species encountered (i.e., sei whales, fin whales, sperm whales, giant manta rays, oceanic whitetip sharks, scalloped hammerhead sharks, or offshore sea turtles) will be photographed for individual identification. For ESA-listed cetaceans if possible biopsy samples will be collected.

Data analyses and distribution of samples and data CRC has approximately 30 archived false killer whale blubber biopsy samples that are available for analyses. These archived samples will be made available for analysis of stress and reproductive hormones as well as blubber histology by a collaborating researcher. Additional samples that are collected during field operations funded by this contract or through field work supported by other sources will also be made available for analyses. Skin sub-samples will be provided to NOAA for genetic analyses (e.g., determination of sex, mitochondrial haplotype, and inclusion in an epigenetic aging study), and blubber sub-samples

will be made available for analysis of stress and reproductive hormones, persistent organic pollutants (POPs), and blubber histology. Breath samples will be provided to collaborating laboratories for microbial assessment. CRC has been collecting breath samples via drone since 2018 from false killer whales and two other species of odontocetes in Hawai'i and is providing these samples to Dr. Linda Rhodes at the Northwest Fisheries Science Center.

Photos obtained during encounters will be sorted by individual within encounters and matched to the CRC long-term false killer whale photo-identification catalog (Baird et al. 2008). Each individual in the catalog is given a distinctiveness rating from 1-4: 1=not distinctive; 2=slightly distinctive; 3=distinctive; 4=very distinctive. The best photo quality for each individual is rated based on the focus, contrast, size and angle of the fin relative to the photographic frame, categorized from 1-4: 1=poor; 2=fair; 3=good; 4=excellent. Association analyses to determine social cluster will be undertaken following the same procedures used in previous analyses (Baird et al. 2012, 2019a).

Mouthline images (either from above-water still photos or from stills taken from underwater video) will be scored for evidence of fisheries interactions following protocols outlined by Baird et al. (2017). Proportion of individuals with evidence of prior fishery interactions will be assessed by social cluster, age class, and sex. Sighting histories of individuals will be provided to collaborating researchers with the Pacific Islands Fisheries Science Center for abundance estimation as has been done previously (Bradford et al. 2018). The researchers will also continue to collaborate with the NOAA Pacific Islands Region Marine Mammal Response Network and the University of Hawai'i in providing rapid identifications from photos of any stranded individuals including information on prior sighting, sampling and tagging history.

For photogrammetry, still images from the drone are sorted by image quality and the animal's surfacing angle. These images are then synced to the laser measured altitude file and tilt data, then processed using WhaleLength v6.0 (Dawson et at. 2017) to incorporate camera calibration parameters. Images for measurements, body condition and relative body size are matched to known individuals using boat-based identification photos taken simultaneously during an encounter.
Photos obtained of other ESA-listed cetaceans (i.e., sperm whales, sei whales, fin whales) will be matched and added to CRC photo-identification catalogs of these species. Photos of offshore sea turtles will be provided to the Pacific Island Fisheries Science Center, and photos of other species (i.e., giant manta rays, oceanic whitetip sharks, scalloped hammerhead sharks) will be archived and made available to collaborating researchers upon request.

Methods related to the false killer whale satellite tagging data set have been published in detail (Baird et al. 2010, 2012) and so are only briefly summarized here. Location data are first processed by Argos using a Kalman method, and subsequently filtered with a Douglas Argos-filter using a distance-angle-rate filter (Douglas et al. 2012), with user defined parameters as noted in Baird et al. (2012). For cases where there more than one satellite tag is transmitting at a time, the researchers will assess potential coordination of individuals by measuring the straight-line distances between all pairs of individuals when locations were received during the same satellite overpass. To avoid pseudoreplication, when mean distances between a pair are less than 5 km and maximum distances are less than 25 km, the researchers will use only one of each pair (the longest duration track) in

analyses. Filtered tracks of tagged individuals will also be processed through a switching state space model (SSSM) to produce locations at even time-steps. Data will be compared to the previous tag data available for this population (Baird et al. 2019a).

Outreach and communications

CRC already has established partnerships with many tour operators (e.g., whale and dolphin watching companies) from throughout the islands, with captains, naturalists and/or photographers contributing sightings and photographs (of false killer whales and other species) to the researcher's photo-identification catalogs. The researchers will continue to work with these operators and approach others from throughout the islands to develop new partnerships. This will be done both to encourage contribution of photos and to provide information that may be used in their education and outreach efforts, for example false killer whale social cluster identification sheets. The researchers will also provide information on sightings received and results from research back to operators, through social media, e-mail, and in-person contacts. During field projects off different islands (supported both by this contract and for field projects supported by other contracts or grants to CRC) the researchers will invite captains and crew from various tour companies to join the researchers in the field for a day, to help build relationships and to provide information on the us research and on the biology of false killer whales and other species.

Results from research (including photos, videos, maps) will be provided to the state and federal partners (e.g., NOAA) for use in outreach and educational efforts and for incorporation into the false killer whale recovery plan as appropriate. Information will be shared with the general public through social media postings on CRC's Facebook and Youtube pages as well as on Instagram. Public presentations will be given on various islands in association with travel to the islands both for field work supported by this contract and by field work supported by other sources.

Potential limiting factors and strategies to minimize shortfalls

Field work is inherently unpredictable, with sighting rates of priority species influenced by sea conditions and movements of animals into and out of the study area. The researchers mitigate the risks associated with this unpredictability in several ways: 1) targeting field operations in areas and at times of the year with high likelihood of encountering false killer whales, based on an extensive satellite tagging data set, reports from community science contributors, and a field study spanning 20 years and all islands; 2) maximizing the spatial extent of survey effort as allowed for by sea conditions; 3) working with a strong network of other ocean users to obtain sighting information that can be used in real time to encounter groups; 4) leveraging field efforts funded by other sources (e.g., US Navy, Pacific Islands Fisheries Science Center) to effectively increase the number of field days; and 5) working with a team of researchers who have extensive experience with this species in Hawaiian waters. The researchers may utilize a land-based survey team using high powered optics (a 20-60 power spotting scope and a 16x70 binocular) to help find groups and direct the research vessel to them, depending on the location chosen for field. This approach has been used on two prior CRC field projects (November 2018 and October/November 2019) with success at increasing encounter rates of the research vessel.

Expected results
Ultimately the goal of this effort is to provide a strong basis for management of endangered false killer whales in Hawaiian waters. Expected results towards this meeting this goal include: an improved photo-identification data set for abundance estimation and assessment of fishery-related injuries; improved understanding of the health status of individuals through photogrammetry and collection and provision of breath and biopsy samples for analyses by collaborating researchers; and reducing gaps and biases in tag data available to understand spatial use of this population in relation to fishing effort.

The Division of Aquatic Resources (DAR) is providing administrative services for the contracting process.

Consulted Parties: Earl Miyamoto, Marine Wildlife Program Coordinator, DAR and Kristen Kelly, Marine Wildlife Program Assistant, DAR

Exemption Determination: After reviewing HAR § 11-200-8, including the criteria used to determine significance under HAR § 11-200-12, DLNR has concluded that the activities under this permit would have minimal or no significant effect on the environment and that issuance of the permit is categorically exempt from the requirement to prepare an environmental assessment based on the following analysis:

1. All activities associated with this contract have been evaluated as a single action. Since this contract involves an activity that is precedent to a later planned activity, i.e., the collection of field data throughout the contract period, the categorical exemption determination here will treat all planned activities as a single action under § 11-200-7, HAR.

2. The Exemption Class for Scientific Research with no Serious or Major Environmental Disturbance Appears to Apply. §11-200-8(a)(5), HAR, exempts the class of actions that involve "basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource." This exemption class has been interpreted to include the study, as proposed.

The proposed activities here appear to fall squarely under the exemption class identified under HAR §11-200-8(a)(5), and as described under the 2015 DLNR under exemption class #5, exempt items #13, #14 and #15 respectively, which includes "research or experimental management actions that the Department declares are designed specifically to monitor, conserve, or enhance native species or native species' habitat" as well as "implanting transponders and affixing tags, transmitters, markers, or other similar devices to birds, mammals, invertebrates, or aquatic organisms to record movement..." and the conducting of "game and non-game wildlife surveys, vegetation and rare plant surveys, aquatic life surveys, inventory studies, new transect lines, photographing, recording, sampling, collection...".

As discussed below, no significant disturbance to any environmental resource is anticipated. Thus, so long as the below considerations are met, an exemption class should include the action now contemplated.

3. Cumulative Impacts of Actions in the Same Place and Impacts with Respect to the Potentially Particularly Sensitive Environment Will Not be Significant. Even where a categorical exemption appears to include a proposed action, the action cannot be declared exempt if "the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment." HAR § 11-200-8.B. To gauge whether a significant impact or effect is probable, an exempting agency must consider every phase of a proposed action, any expected primary and secondary consequences, the long-term and short-term effects of the action, the overall and cumulative effect of the action, and the sum effects of an action on the quality of the environment. HAR § 11-200-12.

Significant cumulative impacts are not anticipated as a result of this activity, and numerous safeguards further ensure that the potentially sensitive environment of the project area will not be significantly affected. All activities will be conducted in a manner that does not diminish marine resources, qualities, and ecological integrity, or have any indirect, secondary, cultural, or cumulative effects. All field activities will be conducted either in accordance with established whale research protocols and/or as described and approved under a federal permit.

Since no significant cumulative impacts or significant impacts with respect to any particularly sensitive aspect of the project area are anticipated, the categorical exemptions identified above should remain applicable.

4. Overall Impacts will Probably have a Minimal or No Significant Effect on the Environment. Any foreseeable impacts from the proposed activity will probably be minimal, and further mitigated by general and specific conditions attached to the permit. Specifically, all research activities covered by this permit will be carried out with strict safeguards for the natural, historic, and cultural resources, other applicable law and agency policies and standard operating procedures.

Conclusion. Upon consideration of the contract to be approved by the Chairperson, being delegated signatory authority on behalf of the Board of Land and Natural Resources at its meeting of January 10, 2020, the potential effects of the above listed project as provided by Chapter 343, HRS, and Chapter 11-200, HAR, have been determined to be of probable minimal or no significant effect on the environment and exempt from the preparation of an environmental assessment.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

JUL 2 8 2017

Permit No. 20605
Expiration Date: August 1, 2022
Reports Due: November 1, annually

PERMIT TO TAKE PROTECTED SPECIES[1] FOR SCIENTIFIC PURPOSES

I. Authorization

This permit is issued to Robin Baird, Ph.D., Cascadia Research Collective, 218 ½ West Fourth Ave., Olympia, WA 98501 (hereinafter "Permit Holder"), pursuant to the provisions of 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).

II. Abstract

The objective of the permitted activity, as described in the application, is to continue a long-term assessment of the biology and ecology of multiple species of cetaceans to obtain information relevant to the management and conservation of populations and species and assess responses to anthropogenic activities. Questions being addressed include the size of populations, habitat use, population structure, social organization, range, movement patterns, movement rates, diving behavior, diet, ecology, disease monitoring, and behavior.

III. Terms and Conditions

The activities authorized herein must occur by the means, in the areas, and for the purposes set forth in the permit application, and as limited by the Terms and Conditions specified in this permit, including attachments and appendices. Permit noncompliance constitutes a violation and is grounds for permit modification, suspension, or revocation, and for enforcement action.

A. Duration of Permit

1. Personnel listed in Condition C.1 of this permit (hereinafter "Researchers") may conduct activities authorized by this permit through August 1, 2022. This permit expires on the date indicated and is non-renewable. This permit may be extended by the Director, NMFS Office of Protected Resources, pursuant to applicable regulations and the requirements of the MMPA and ESA.

[1] "Protected species" include species listed as threatened or endangered under the ESA, and marine mammals.

Attachment 5 (Item F-2)

Competitive Purchases of Service
Chapter 103F, HRS
Statement of Findings and Decision

12/13/19

(Date)

State Agency Issuing RFP: DLNR – Division of Aquatic Resources – Marine Wildlife Program

Applicant: Cascadia Research Collective Log # F-4

Request for Proposal Title: False Killer Whale – Field Work RFP ID # 20000378

Applicant's proposal was selected.

Amount awarded subject to appropriation and availability of funds: $ 181,226.

Comments:

Cascadia Research Collective was the only applicant for RFP ID #20000378 False Killer Whale – Filed work and is very qualified to receive the grant award.

Identification of applicant(s) selected for this RFP:

Cascadia Research Collective

Robin W. Baird Ph.D.; Principal Investigator rwbaird@cascadiaresearch.org (425)879-3542

Jordan K LermaL: UAS pilot

Sabre D. Mahaffy: Photo Identification catalog curator & Data analyst

A copy of applicant's proposal evaluation worksheet is attached for your information.

If there are any questions, please call Kristen Kelly at (808)295-6483.

(Contact name) *(Phone #)*

State Purchasing Agencies should use this notice in conjunction with their agency's cover letter.