INTERNATIONAL WHALING COMMISSION
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RESEARCH PROPOSAL REQUEST

1. RELEVANT AGENDA ITEM (NO. AND TITLE)

7 Work Plan and Budget Consideration
7.2 Blue whales

2. PROJECT TITLE

Photo-identification analysis of blue whales from the newly discovered foraging ground in the South Taranaki Bight of New Zealand

3. BRIEF DESCRIPTION OF PROJECT AND WHY IT IS NECESSARY TO SUB-COMMITTEE

The hypothesis that the South Taranaki Bight (STB) in New Zealand is a blue whale (*Balaenoptera musculus*) foraging ground (Torres 2013) was recently tested through field observations and data collection. Over five days of survey work between 21 Jan and 4 Feb 2014, ten sightings of blue whales were made of an estimated 50 individual blue whales, including a cow/calf pair. Blue whale foraging behavior was observed and krill swarms were also detected at five sightings and hydro-acoustically. Hundreds of photos and ten biopsy samples were collected during the field work. A minimum of 21 individual blue whales were identified through photo-ID analyses, with only one possible re-sight of an individual, indicating that a relatively low proportion of the blue whales present in the STB were encountered during the field work. (See Torres *et al.* 2014 and SC/65b/SH02 for detailed results).

Although results derived from this field work strongly support the hypothesis that the STB is a blue whale foraging ground, virtually nothing is known about the population identity and connectivity of these blue whales. This proposal requests funding to support the photo-ID analysis of the blue whale identification photos captured in the STB with five other photo-ID datasets of blue whales in the region.

Results from this analysis will reveal the level of connectivity between blue whales that use the STB as a foraging ground with populations elsewhere in the region. This information is a crucial first step to understanding the vulnerability of this population to current and future anthropogenic threats in the STB (e.g., oil and gas production, seismic surveys, sea bed mining, vessel traffic). Although the blue whale is considered a Migrant by The New Zealand Threat Classification System (Baker et al. 2010), there has been a recent surge of information documenting blue whales in New Zealand (Olson et al. 2013; Torres 2013; Miller et al. 2014). Analysis of photo-id and tissue samples (currently underway by Oregon State University and The University of Auckland to identify the sub-species present in the STB) collected during recent field work in the STB will clarify this population's genetic identity, population connectivity, and movement patterns in order to raise the designated threat status of blue whales in New Zealand and improve our ecological understanding of this population.

Objectives:
The identification photographs from 21 individual blue whales documented in the STB will be compared visually using proprietary software, to images from the following blue whale photo-ID datasets:

- The Southern Hemisphere Blue Whale Catalog (SHBWC; http://www.bluewhalecatalogue.org/)
- The 2013 Antarctic voyage (SORP; Double et al. 2013)
- Bonney upwelling photos 2012 (SORP; unpub. data, Mike Double)
- The Blue Whale Study catalog of animals from the Bonney Upwelling area 1998-2011 (http://bluewhalestudy.org/)
- Photos contributed by independent researchers and whale watching companies around New Zealand

Image matching effort will initiate with comparison between individuals sighted in the STB to other sightings from around New Zealand, where matches are most likely. The next phase of matching will compare images between the STB and the Bonney Upwelling area south-east Australia, held by the Blue Whale Study and SORP. Finally image matching will occur between the STB and the Southern Hemisphere Blue Whale Catalog, focusing first on Western Australia (this population is known to interchange with the Bonney Upwelling), and then on other areas of the Southern Hemisphere, as guided by genetic identification of the subspecies and population identity of STB whales.

4. TIMETABLE

If funding is acquired by 1 July 2014, photo-id analysis will be completed by 1 December 2014. A report will be submitted to the IWC at the culmination of the project to describe the research findings including tables of all matches between catalogs. Additionally, a manuscript will be submitted for publication in a peer-reviewed journal that describes the blue whale population present in the STB based on (1) photo-ID results derived through this project and (2) genetic analysis results from 10 biopsy samples collected during field work in the STB and previously collected tissue samples from stranded blue whales in the STB area. A New Zealand blue whale photo-ID catalog will also be initiated.

5. RESEARCHERS' NAME(S)

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6. ESTIMATED TOTAL COST (WITH BREAKDOWN AS NEEDED, E.G. SALARY, EQUIPMENT)

Funding is requested to support an experienced blue whale photo-ID analyst to conduct uploading and matching of images. Funding will also support the PI who will be responsible for project oversight, coordination between catalogue owners, report and manuscript preparation, and the initiation of a New Zealand blue whale photo-id catalogue. It is estimated that this will require about 100 hours of work for the photo-id technician at a cost of US$25/hour, and 35 hours for the PI at US$110/hour, for a total of US$6,350. Co-funding for this work has been committed by the Australian Marine Mammal Centre at the Australian Antarctic Division. Therefore, we request a total of US$2,200 (35% of the total) from the IWC to support this project.

References:

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