United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish and Wildlife Field Office
605 West 4th Avenue, Room G-61
Anchorage, Alaska 99501-2249

in reply refer to
AFWFO

April 19, 2012

Dawn Roberts
Collections Manager
Chicago Academy of Sciences
2430 N. Cannon Dr.
Chicago, IL 60614

Emailed to: droberts@naturemuseum.org

Dear Ms. Roberts,

The U.S. Fish & Wildlife Service (FWS) in collaboration with Queen's University is undertaking a range-wide genetic study of Kittlitz's Murrelet (*Brachyramphus brevirostris*; KIMU). This is a request for grant of KIMU tissue from specimens in the U.S. National Museum of Natural History Bird Collection. This project aims to estimates the extent of genetic differentiation and dispersal among populations of KIMU that will directly aid the FWS in designating Distinct Population Segments for listing KIMU under the Endangered Species Act (ESA), and enable the FWS to assess the vulnerability of KIMU to local environmental and population-level perturbations.

In 2004, the FWS posted KIMU as a candidate species for listing under the ESA (Federal Register: 69[86], May 4, 2004), but development of a proposal was deferred due to funding limitations. In 2008, the FWS reprioritized KIMU to Listing Priority 2 (the highest possible priority for a species with more than one species in the genus) to reflect a greater urgency for protection (USFWS 2008). The reprioritization was based on the magnitude and imminence of threats, which are now perceived as greater than when the species was first added to the candidate list. Drastically receding glaciers are believed to be a major threat to KIMU, especially in southeast and southcentral Alaska where their distribution is strongly associated with tidewater glaciers. We propose to provide genetic information that, in combination with ecological data, will aid ESA in delineating Distinct Population Segments for listing and recovery decisions.

Preliminary analyses of variation in mitochondrial DNA (mtDNA) and 11 microsatellite loci in 53 KIMU indicate significant genetic differences and essentially no migration between KIMU from the western Aleutian Islands versus Kachemak Bay on the Kenai Peninsula and Glacier Bay in the Alexander Archipelago (Birt et al. 2011). The level of divergence suggests that KIMU may include two or more cryptic species or subspecies (Birt et al. 2011). However, the preliminary work involved a small number of samples from only three parts of the species' breeding range, and few genes. We propose to assay variation in a 700 base pair fragment of the mitochondrial control region and 27 nuclear genes (microsatellites) in a range-wide sample of KIMU to estimate the extent of genetic differentiation and dispersal among local populations. Specifically, we will provide (1) an index of range-wide population genetic structure; (2) estimates of dispersal among local populations; (3) estimates of inbreeding within local populations; and (4) genetic markers for assigning nonbreeding KIMU killed by gill nets or oil pollution to breeding populations. This information is critical for FWS to prepare a Rule to List and recovery plan.

Genetic material has already been collected from approximately 200 KIMU during previous dietary studies and ongoing nest monitoring studies in western, south-central and southeast Alaska; subsamples of these are archived at -80°C at Queen's University. Variation in the mitochondrial control region and 11 microsatellite loci has already been screened in 53 of these samples (Birt et al. 2011). We propose to build on this existing data; PCR primers and protocols for additional loci are available (Rew et al. 2006). Laboratory analyses are anticipated to require 6 weeks and the project is expected to be completed by October, 2012.

We request tissue samples (toe pad) from the following specimen; costs for these services will be reimbursed if requested:

ID	Collection Location	Collector	Date
CAS 7128	Wales, AK	D. Tevuk	07/19/34

Sample should be shipped to:

Dr. Tim Birt,
Rooms 4433-4443, Biosciences Complex
116 Barrie Street,
Kingston, Ontario K7L3N6, Canada.
Tel: 613-533-6000 x 77530

Dr. Vicki Friesen is a Professor of Biology at Queen's University. She has 20 years research experience in molecular, evolutionary and conservation genetics, including extensive work on alcids. She is also an Associate Editor of the scientific journal Conservation Genetics.

Dr. Tim Birt is a Research Associate and Adjunct Professor Biology at Queen's University. He also has 20 years research experience in molecular, evolutionary and conservation genetics, including extensive work on alcids.

Dr. John Piatt is a Senior Research Biologist (GS-15) with the USGS Alaska Science Center in Anchorage, Alaska. He has been conducting research on seabirds and marine ecosystems in Alaska for more than 20 years, and specializes in the study of auks, particularly Brachyramphus murrelets. Dr. Piatt is author of more than 140 peer-reviewed articles and 100 agency reports, including 35 on Brachyramphus biology.

Ellen W. Lance is Senior Wildlife Biologist in the Endangered Species Program of the Anchorage Fish and Wildlife Field Office and has a background in conservation genetics. She is responsible for preparing candidate assessment documentation for Kittlitz's Murrelet, as well as the documentation which led to the change their status from a low priority to high priority candidate.

Please contact me with any questions.

Regards,

Stormy Haught
Endangered Species Biologist
U.S. Fish & Wildlife
605 W. 4th Ave
Anchorage, AK
907-271-2778

Literature Cited

Birt, T.P., D. MacKinnon, J.F. Piatt and V.L. Friesen. 2011. Genetic differentiation of the Kittlitz's murrelet Brachyramphus brevirostris in the Aleutian Islands and Gulf of Alaska. *Mar. Ornithol*. 39:39-45.

Rew, M.B., M.Z. Peery, S.R. Beissinger, M. Bérubé, J.D. Lozier, E.M. Rubidge and P.J. Polsbøll. 2006. Cloning and characterization of thirty tetranucleotide and two dinucleotide polymorphic microsatellite loci from the endangered marbled murrelet (*Brachyramphus marmoraturus*). *Mol. Ecol. Notes* 6: 241-244.

US Fish and Wildlife Service. 2008. US Fish and Wildlife Service species assessment and listing priority assignment form for Kittlitz's murrelet. Unpublished document, Anchorage Fish and Wildlife Field Office, Anchorage, Alaska.