



United States Department of the Interior  
U.S. FISH AND WILDLIFE SERVICE  
Fairbanks Fish and Wildlife Field Office  
101 12<sup>th</sup> Avenue, Room 110  
Fairbanks, Alaska 99701  
April 24, 2014



**MEMORANDUM**

**To:** Acting USFWS Regional Endangered Species Coordinator

**From:** Ted Swem, USFWS Endangered Species Branch Chief *Ted Swem*

**Subject:** Amendment of Intra-Service Biological Opinion for USFWS issuance of a Section 10 permit to Fairbanks Fish and Wildlife Office for Breeding Biology of Steller's and Spectacled Eiders and Other Waterfowl near Barrow, Alaska

**Cc:** David Safine, USFWS Fish and Wildlife Biologist

This memo transmits the U.S. Fish and Wildlife Service's (Service) amended Biological Opinion (BO) for the issuance of a 3-year Section 10 permit to Fairbanks Fish and Wildlife Office for Breeding Biology of Steller's and Spectacled Eiders and Other Waterfowl and Fox Control near Barrow, Alaska. We previously consulted on this project in May 2012. This BO describes the effects of these actions on threatened spectacled (*Somateria fischeri*) and Alaska-breeding Steller's (*Polysticta stelleri*) eiders, and polar bears (*Ursus maritimus*), pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). The BO was previously amended May 2013 to address changed to fox trapping protocols.

This BO amendment addresses the following modifications:

- Issuance of a new section 10 permit that will permit research activities for the 2014 and 2015 breeding seasons that will also result in a title change to this BO to replace "3-year" with "multiple year;"
- Removal of an analysis of polar bear critical habitat because the designation of polar bear critical habitat was vacated and remanded back to the Service; and
- Changes to research protocols. Please see the attached *Breeding Biology of Steller's and Spectacled Eiders near Barrow, Alaska: 2014 Study Plan and Standard Operating Procedures* and *Proposed amendments to the existing study plan for the 2014 field season* documents for a description of the proposed changes (changes would apply to the 2014 and 2015 field season).

We further describe and analyze effects of the proposed changes that may affect listed species below.

## EFFECTS ON LISTED SPECIES

### *Spectacled and Steller's Eiders*

Direct effects may increase slightly for individual female Steller's and spectacled eiders by the addition of the following proposed protocols:

- Increase blood volume drawn from 4 to 5 ml for spectacled eiders, and from 3 to 4 ml for Steller's eiders;
- Collection of toe nail samples for stable isotope measurements;
- Placement of Hobo data loggers in nests to measure incubation constancy; and
- Measurement of length and width of all eggs in each nest.

*Increased blood sample volume* - Collection of up to 1% of body mass (1 g = 1 ml) of blood is acceptable for wild birds (American Veterinary Medical Association 2007). Mean body mass of Steller's and spectacled eider hens during late incubation from the Barrow area was  $692 \pm 12$  g and  $1062 \pm 25$  g, respectively (2009-2013). Field crews would collect up to approximately 0.6% of Steller's and 0.5% of spectacled eider body mass via blood samples; thus, researchers would remain below this 1% threshold. Thus, we expect that the increased blood sampling volume collected would have, at most, a minor impact on individual listed eider females.

*Nail collection* – Researchers propose to collect toe nail tissue from spectacled and Steller's eiders for isotope analysis. The proximal tip extends past the cuticle and is metabolically inert; therefore, nail retains the stable isotope signature of prior diet (Chamberlain et al. 1997) and is an ideal tissue for stable isotopic studies (Hobson 1999). Field crews would collect up to 2 mm of the right and left middle toenails of adult hens captured on the nest in late incubation by clipping the nail tip using fingernail clippers. Nail is a keratinized tissue analogous to human fingernails which grows continuously, extending over vascularized tissue (cuticle). Oppel et al. (2008) collected the distal 2 mm of the middle toe nail of king eiders, and Mazerolle and Hobson (2005) collected 2.5 mm of nail from the middle toe of white-throated sparrows. Because sea duck size far exceeds that of sparrows, a 2-mm clip from the tip of each spectacled and Steller's eider nail would be proportionately less than was sampled in the study above, and would be consistent with the methods of Oppel et al. (2008).

The venous and nervous tissue of duck toes is near the bone (restricted to the cuticle), and the nail extends above and beyond this point; the portion of nail which extends past the cuticle has no vascular or nervous tissue. Thus, clipping the nail only should not cause pain or damage vascularized tissue. Museum specimens at Southern Illinois University of king, spectacled, and Steller's eiders, and long-tailed ducks have nails extending 3-4 mm past the cuticle (M. Miller, unpubl. data); therefore, removing up to 2 mm would leave 1-2 mm of inert nail tissue beyond the cuticle and would minimize the chance of clipping the cuticle, damaging vascular tissue, and causing pain.

Collecting two nails would ensure adequate tissue mass for stable isotope analyses, as a single nail may not be sufficient for multiple isotopes (M. Miller, unpublished data). Oppel et al. (2008) stated that "data on claw growth rates for sea ducks are currently unavailable, but

experimentally determined nail growth rates for 3 species of captive waterfowl (mallard *Anas platyrhynchos*, pintail *Anas acuta*, and lesser scaup *Aythya affinis*) ranged from 0.06 to 0.13 mm per day (R. G. Clark unpubl. data).” Researchers have estimated that complete nail regrowth for listed eiders would be complete in 15 to 33 days after collection. Because field crews would collect nail from adult hens captured within 5 days of hatch (mean hatch date of 16 July estimated from 2012 Barrow data; Safine 2013), nail would regrow just after migration starts and before winter. We expect minor, if any, effect of collecting nails on listed female eiders.

*Measuring incubation constancy with Hobos* – Researchers propose to use 20 Hobo model U23-003 temperature loggers or similar units (Onset Computer Corporation, Bourne, Massachusetts, USA) to monitor incubation behavior of listed eiders. Temperature loggers would be placed in nests only during visits where a nest is unattended by the hen or when a hen is accidentally flushed (i.e., the first visit). The temperature logger consists of two small probes: one is placed in the nest to record incubation temperature; the other is set outside the nest to record ambient temperature. The probe in the nest would be secured inside of a dummy egg to minimize potential disturbance to the nesting hen, and is attached to a 20-foot cable woven gently through the nest material. The data logger itself would be hidden in adjacent vegetation to minimize detection by aerial predators. Maintenance of loggers would take place during other scheduled nest visits. This design has been used successfully in studies of king eiders on the North Slope (e.g., Bentzen et al. 2010).

Potential effects to the incubating female and nest could include increased egg rolling duration due to the added dummy egg and disruption of the nest bowl and adjacent vegetation while the probe and cable are hidden. Field crews would also minimize disturbance to nests and females by limiting damage to adjacent vegetation around the nest during logger placement, using the longest available cable to keep potential attractants (scent or visual) as far from the nest as possible, and by using dummy eggs to simulate a natural egg in the bowl. Other waterfowl studies have demonstrated no adverse effects of similar temperature probes on nest survival (e.g., Flint and MacCluskie 1995, Hartman and Oring 2006, Legagneux et al. 2011, and Ringelman and Stupaczuk 2013). We anticipate the use of temperature loggers to have only minor behavioral effects on listed eiders.

*Measuring egg dimensions* – Researchers propose to measure dimensions of listed eider eggs at the first nest visit if the hen is accidentally flushed from the nest and on a subsequent visit if new eggs are present). To minimize potential disturbance, field crews would only measure eggs when hens are absent from nests (either when hens are on incubation breaks or after accidental flushes), and not by deliberately flushing hens. If eggs have not been measured by late incubation, field crews will measure eggs when hens are captured on the nest for banding (when hens are unlikely to abandon nests given their investment in the nest to this point).

The increased egg handling related to measuring eggs in a nest may increase the chances of research-related egg damage (i.e., an egg getting cracked during handling) and add up to 1-2 minutes to a nest visit. Field crews would be trained in egg measurement methods prior to performing them on listed species to minimize chances of damaging eggs and time spent taking measurements. To the extent practicable, only personnel with prior experience handling

waterfowl eggs in the field will measure eggs of threatened eiders. With adequate training and experienced personnel, the risk of egg damage from measuring eggs is low.

Cumulatively, the proposed modifications will increase the total time researchers spend at each nest by up to 2 minutes (sum of all visits for a nest). The blood draw, nail collection, and egg measurements are all one-time activities for each nest/hen. Installing and maintaining temperature loggers in nests will take approximately the same amount of time as the current method (using digital cameras); thus, no additional time at nests will be required.

*Summary* – A summary of the potential effects to listed eiders of the four amendments to the study protocol include increases to: handling time during nest captures, length of nest visits, blood volume collected, disturbance to the nest bowl and incubating female, and number of nests monitored with cameras/temperature loggers. Based on methods, training, and use of experienced personnel, we expect the proposed additional research components would have minimal, non-lethal effects on listed eiders and would not have population-level impacts.

#### *Polar Bears*

We do not anticipate effects from proposed project modifications would measurably increase impacts on polar bears in the Action Area. Therefore, our previous determination that the Barrow Eider Project is not likely to adversely affect polar bears remains valid.

## CONCLUSION

Based on the information provided on the proposed activities, and the information currently available on listed and proposed species and designated and proposed critical habitat, the Service has determined that it is unlikely that the proposed action, including the additional activities described above, will violate section 7(a)(2) of the Act. Section 7(a)(2) of the Act states that Federal agencies must ensure that their activities are not likely to:

- 1) jeopardize the continued existence of any listed species, or
- 2) result in the destruction or adverse modification of proposed critical habitat.

The incidental take statement for this non-jeopardy BO includes reasonable and prudent measures, and terms and conditions that are mandatory for the Fairbanks Fish and Wildlife Office to implement.

A complete administrative record of this consultation is on file at the Fairbanks Fish and Wildlife Field Office, 101 12<sup>th</sup> Ave., Room 110, Fairbanks, Alaska 99701. If you have comments or concerns regarding this BO, please contact Shannon Torrence, Endangered Species Biologist, at (907) 456-0441.

## REPORTING REQUIREMENTS

Please include the following information in the annual report for the Section 10 permit:

1. Incidents where nail clipping results in bleeding or other injuries to adult females;
2. Incidents where egg measurements results in egg damage;
3. Incidents where the placement of temperature data loggers in nests may have resulted in nest disturbance or significant changes in hen disturbance;
4. Incidents when research activities may have resulted in incidental take

## LIST OF CITATIONS

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