U.S. Fish & Wildlife Service

Steller's Eider Reintroduction Project

2016 Fieldwork Plan

Why are we trying reintroduction?
In 1997, the Alaska-breeding population of Steller's eiders was listed as threatened under the Endangered Species Act based on the contraction in the species' breeding range and their near disappearance from the Yukon-Kuskokwim Delta (YKD). Steller's eiders were once common breeders on the YKD's central coast, but by the mid-1970's sightings were rare and only one nest has been found since 2005. Reasons for decline are thought to include increased predation and harvest on eiders as geese populations were declining, and contaminant exposure due to ingestion of spent lead shot.

The Steller's Eider Recovery Team (SERT) developed recovery criteria which include viable breeding sub-populations on the YKD and the Arctic Coastal Plain (ACP). Because the YKD sub-population is considered essentially extirpated it is unlikely to meet recovery goals without re-establishing a breeding population.

The primary research objective for 2016 is to determine the feasibility of using wild surrogate duck species to hatch and raise Steller's eider ducklings using eggs produced by the captive flock at the Alaska SeaLife Center (ASLC).

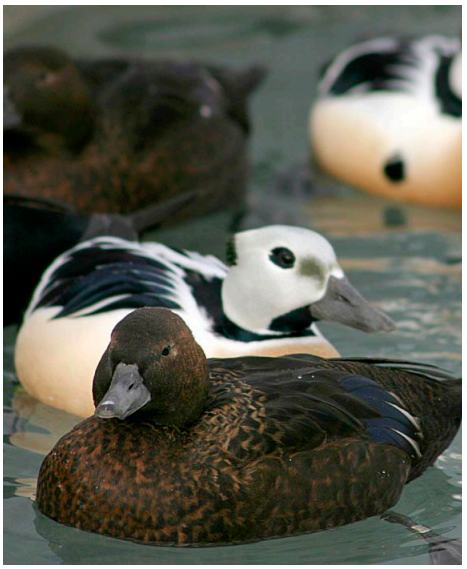
Fieldwork summary - 2016
At Kigigak Island, nests of surrogate duck species will be found and their clutches replaced with Steller's eider eggs and the hen marked with an external VHF radio transmitter. These nests and broods will be monitored for hatching and fledging success. Crews will attempt to locate radio-marked surrogate hens when ducklings are 3 days of age and recheck every seven days until broods fledge or cannot be found. When the ducklings are 28-30 days of age, crews will attempt to capture surrogate hens and ducklings to fit a portion of the ducklings with VHF transmitters to determine if they successfully migrate to their molting and wintering areas along the Alaska Peninsula. Biological samples will also be collected for DNA and to screen for contaminants and diseases.

Why did we choose Kigigak Island?
Potential release sites on the YKD were ranked by accessibility, infrastructure feasibility, land ownership, potential disturbance to introduced birds, potential for lead shot contamination, and favorable habitat characteristics. The Kashunuk River area and Kigigak Island ranked highest and both were evaluated for habitat suitability. Waterfowl hens and ducklings were also sampled to evaluate exposure to contaminants and pathogens.

Based on lesser potential for lead exposure compared to the Kashunuk River area, historical observations of Steller's eider nests, the presence of an established field camp at Kigigak Island, and density of nesting waterfowl that can serve as surrogate hens, we will conduct the 2016 field project at Kigigak Island.

Why did we choose a surrogate hen approach?
There is no single surrogate species at Kigigak Island that perfectly matches Steller's eider breeding behavior and non-breeding distribution. Three species that proved to be a reasonable compromise were chosen based on responses to a query of YKD waterfowl experts. These are Pacific common eider, northern pintail, and greater scaup.

Release methods were narrowed by logistical (available propagation techniques, staff requirements, cost) and biological constraints (bird's ability to migrate to molting and wintering areas and return to YKD to breed, avoid predators, and feed). Fidelity to natal, molting, and wintering sites may be developed through imprinting on specific habitat types or breeding areas during the first year of life. Additionally, the hatchability of Steller's eider eggs using only artificial incubation has been low, and partial incubation by a hen of any duck species increases hatching success. Therefore, we have selected to use surrogate hens to incubate eggs and rear the ducklings so that they learn natural behaviors. We anticipate substituting approximately 200-250 Steller's eider eggs into surrogate nests during mid-incubation.



Laura Whitehouse/USFWS

Male and female Steller's eiders rest in a pool at the Alaska SeaLife Center.

Where are we getting Steller's eider eggs from?
The eider research and conservation program at the ASLC supports recovery of Steller's and spectacled eiders and has developed husbandry, disease, genetics, and propagation management procedures for a captive flock of Alaska-origin Steller's eiders. The ASLC has specialized facilities to maintain and care for eiders throughout the annual cycle. Currently the captive flock of Steller's eiders can produce 200-250 eggs in a breeding season.

Will reintroduction be successful?
Re-establishing a viable subpopulation of Steller's eiders on the YKD will likely take decades to accomplish, and we have much to learn about feasibility, uncertainties, and success of different release methods. We are in the experimental phase of the project and the results of 2016 will be applied when determining if and how the project should continue.

We developed and continue to refine an adaptive management strategy that addresses uncertainties. This strategy integrates learning and modeling to reduce uncertainty and make informed decisions on all aspects of the project.

Uncertainties and consequences of reintroduction
The SERT classified the biological uncertainties and potential negative consequences of reintroduction into two categories. One category of uncertainties are considered critical risk factors that, if left unmitigated, have the potential to cause negative consequences to remaining natural populations or the environment. These uncertainties must meet acceptable levels of risk for the project to proceed. The other category of uncertainties not considered "critical risk factors" are unaddressed threats causing original population declines and factors affecting the success of releases. Because we are using an adaptive management framework, reintroduction activities will be designed to minimize these uncertainties and gain greater understanding of factors affecting success.

Disease risk is a critical risk factor. Disease management procedures for the captive flock of Steller's eiders include biosecurity practices to minimize exposure to pathogens, health monitoring and disease screening, behavioral observations, and treatment and response plans should diseases be detected. Specific screening and management plans will be completed for transport, release, and monitoring of birds and the eggs they produce to be released to the wild. After that, the health status of the breeding flock will be continually monitored, and all eggs will be screened prior to transport.

The risk of loss of genetic variation in the wild population through loss of genetic variation in the captive flock is another critical risk factor. The genetic management plan for the captive flock of Steller's eiders includes pedigree and genetic analysis to conserve genetic diversity. Genotyping and a specialized software program are used to select optimum breeding pairs and maintain genetic pedigrees and diversity. We are concerned about maximizing genetic diversity in the captive population because through generations, genetic and behavioral changes may occur that affect fitness and adaptability of captive-bred individuals upon release. To reduce those effects, we are limiting the number of generations in captivity, minimizing selection that favors captive conditions, and monitoring physiological fitness and behavioral traits of captive-bred offspring.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Village visits are an effective way for USFWS staff and partners to share information, and to hear and work together to address any concerns from community members. At the Yukon Delta National Wildlife Refuge headquarters, local residents participated in a discussion about Steller's eider reintroduction at a public meeting in spring 2014. Visits to other villages also provided opportunities to share information, receive feedback, and respond to questions.

Uncertainties not considered "critical risk factors" that may affect the success of reintroduction efforts include suitable habitat availability, predation, harvest, disease exposure or contaminant threats to reintroduced birds, and life history characteristics such as reintroduction or natal site fidelity, migration behavior, and predator avoidance strategies. We will be implementing temporary, localized fox management at Kigigak Island to reduce predation and increase nest success and duckling survival.

We have conducted field observations, experiments, workshops, and modeling to inform site selection, evaluate field husbandry methods, sample for contaminants, and determine the effects of salinization of coastal ponds on young waterfowl. Any experimental releases, including those during 2016, will be designed to address additional uncertainties.

Outreach and communication activities
Outreach, the process of sharing and receiving information from partners and stakeholders, is a central part of Steller's eider reintroduction. We strive to listen and respond to stakeholder needs and concerns in a timely manner.

To date, we have conducted community meetings, village visits, and meetings with Tribal governments in Hooper Bay, Chevak, and Newtok. We have also shared written communication with Tribal governments throughout Alaska and made presentations to the Alaska Migratory Bird Co-Management Council and the Association of Village Council Presidents Waterfowl Conservation Committee. A website and a Facebook page (Steller's Eider Y-K Delta Reintroduction Project) have been established to provide more information and provide contact details of key staff who can answer questions.

In 2016 we will visit Hooper Bay, Chevak, Newtok, and Bethel for communication and outreach purposes. We will also support an Alaska Native Science and Engineering Program (ANSEP) student at the Yukon Delta National Wildlife Refuge.

For more information contact:
Neesha Stellrecht
U.S. Fish & Wildlife Service
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
907/456 0297
Neesha_Stellrecht@fws.gov

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