Species Status Summary and Information Needs

Sea Duck Joint Venture, March 2015

Common Eider, American Race *(Somateria mollissima dresseri)*

Population Size and Trends: While long-term datasets exist for some regions (e.g. St. Lawrence Estuary), there have been no comprehensive, range-wide surveys and no reliable overall population estimates or abundance trends are available (Bowman et al. 2015). The Atlantic Coast Wintering Sea Duck survey estimated a 3-year mean of 251,400 Common Eiders south of the US-Canada border (Silverman et al. 2012) and the continental population has been estimated at 300,000 for *S. m. dresseri* (NAWMP 2012). In general, numbers appear to have peaked in the late 1990s in the southern part of the range and may be declining in some areas since then (St. Lawrence Estuary, Bay of Fundy) but seem to be increasing in the northern part of range (Labrador, Newfoundland, Gulf of St. Lawrence) (Bowman et al. 2015). In Maine, there are an estimated 22,740 pairs breeding on 312 islands (Bowman et al. 2015). In the Bay of Fundy, New Brunswick, aerial surveys since 1991 showed stable numbers until the late 1990s, with a decline of 5%/year from 2000 to 2012 (Bowman et al. 2015). In the St. Lawrence Estuary, the population was stable from mid-1960s to late 1990s, but after an avian cholera epidemic in 2002, the population has not increased and current estimates are 20,000 to 30,000 nests (Bowman et al. 2015). On the Lower North Shore of the Gulf of St. Lawrence, ground counts at colonies since 1925 indicate growth in the past 30 years, with currently 17,000 – 20,000 breeding pairs (Bowman et al. 2015). However, some recent data indicate decreasing trends in the St. Lawrence Gulf and Estuary (J.-F. Giroux, pers. comm. in Lepage and Bordage 2013). Data are lacking for Newfoundland and Labrador; there were an estimated 8,800 males on the Labrador coast in 1980, and 18,000 males in 1994 while in northern Newfoundland the current estimate of 6,000 males suggests an annual 5% increase from 1988 to 2006 (Bowman et al. 2015). Surveys in coastal Labrador (*S. m. borealis* and *S. m. dresseri* combined) indicate an annual population growth rate of ~18% during 1998-2003 (Chaulk et al. 2005) and there was an overall increase of 244% from 1980 to 2006, mostly in southern Labrador (Chaulk 2009). Little information exists on the size of the non-breeding and sub-adult component of the population.

In response to concerns for this population, resource agencies in Canada and the U.S. are currently undertaking an assessment of the status of this population and are planning to implement a regular range-wide monitoring program for American Eiders (see Gilliland et al. 2011 and SDJV 2007). Accordingly, in May 2012, preliminary surveys of a few colonies in the St. Lawrence Estuary were conducted to test feasibility of counting males from the air and repeatability as a first step towards a concerted range-wide monitoring program.

Priority Information Needs:

1. Develop and implement a coordinated, standardized breeding population survey throughout its range.
2. Conduct surveys to determine the status and location of non-breeding and sub-adult eiders.

3. Determine key molting locations and assess feasibility of conducting molting surveys for *dresseri*.
4. Conduct regular winter surveys to obtain information on the size of the population.

Population Definition/Delineation: This subspecies breeds from central Labrador to Massachusetts and winters from Newfoundland south to Rhode Island. Hunter band returns indicate that eiders breeding across the range of *S. m. dresseri* may use common molting and wintering areas. Because of this, the present approach to manage this subspecies as one population unit seems appropriate. The extent of the breeding range of *S. m. dresseri* is well known, but not the delineation of sub-populations. Female Common Eiders captured during winter in southern New England and implanted with satellite transmitters migrated to breeding areas in Maine, Gulf of St. Lawrence, St. Lawrence Estuary and Nova Scotia (Beuth 2013). Winter home ranges were relatively small (mean individual core use areas were 38.5 km^2 and utilization distributions were 199.3 km^2) and return rates were high (83% returned to the study area in the following winter) (Beuth 2013). Of 14 females that transmitted data for two consecutive summers, all returned the same breeding areas in both years (Beuth 2013). A genetic analysis of breeding populations in different geographic areas has not been conducted, although some blood samples have been taken.

Priority Information Needs:

1. Determine affiliations between breeding, molting and wintering areas.
2. Assess population genetic characteristics of breeding populations in different geographic areas of the race's range.
3. Coordinate management actions among jurisdictions.

Population Dynamics: Measures of nesting and hatching success have been well-studied for this subspecies throughout its range. However, with the exception of survival estimates of adult females and several localized studies on duckling survival, there have been, until recently, few estimates of several key population parameters. This subspecies experiences irregular epizootic events that cause large die-offs of females and affect annual productivity, and are harvested by sport and subsistence hunters. Understanding the interaction between epizootic events and harvest on population dynamics is a key management issue for *S. m. dresseri*. A recent study of nesting ecology on Stratton Island, Maine found that nest success ranged from 58% - 89%, depending on habitat type (Donehower and Bird 2008).

Priority Information Needs:

1. Summarize available information on productivity and its geographic variability.
2. Determine reproductive success for this race in all major nesting areas.
3. Continue mark-recapture studies of adult female survival at multiple locations to determine current survival rates.
4. Estimate the survival rate of other age-sex cohorts of the population.
5. Estimate breeding propensity (percentage of hens attempting to breed in a given year).
6. Estimate duckling survival from hatch through fledging and its geographic variability.

7. Estimate recruitment by marking older (2-6 weeks) ducklings in declining vs. stable populations, if possible.
8. Conduct regular winter surveys to obtain information on the size of the population.
9. Develop a population model to guide harvest regulations and management decisions and hunting on eider numbers.

Population Ecology: Breeding ecology is the most studied aspect of population ecology for this race and additional localized studies have examined the birds on wintering areas. Common Eiders often nest on islands with Herring Gulls and Great Black-backed Gulls and at Stratton Island, Maine nest success was high (>80%), but few ducklings survived to fledge due to predation, mainly by Great Black-backed Gulls and also by Herring Gulls (Donehower and Bird 2008). Increasing populations of River Otters, Great Black-backed Gulls and Bald Eagles may be causing mortality and/or disturbance at American Common Eider colonies in Nova Scotia, New Brunswick and Maine (CWS Waterfowl Committee 2013) and in the Bay of Fundy most of the observed successful predation events on ducklings were by Bald Eagles (Blinn et al. 2008). However, although predation rates can be very high around nesting islands, the rate of successful predation may decrease significantly if ducklings move away from colonies after hatch (Dieval et al. 2011).

Priority Information Needs:

1. Study the molting ecology of adult males (timing, habitat selection, site fidelity, behavior).
2. Study the molting ecology of adult females with and without young.
3. Study the ecology of sub-adults.
4. Study the ecology of wintering birds and its geographic variability.
5. Quantify the impact of predation on eider productivity and evaluate the need to control predators (avian and mammalian) on the most important colonies.

Habitat Requirements: On the coast of Labrador, Chaulk et al. (2007) found a negative relationship between Common Eider nesting density and the number of islands and ice cover; they speculated that more islands may trap ice, increasing access for predators such as Arctic Foxes (Chaulk et al. 2007). On Stratton Island, Maine, females avoided areas of open vegetation and chose nest sites in dense, structurally complex habitat (Donehower and Bird 2009). In the St. Lawrence Estuary, broods preferred mainland sites near nesting islands and their distribution was influenced by food abundance and type but not by human disturbance or shoreline protection (Dieval et al. 2011). After the nesting period, males were positively associated with mussels, non-maternal females with mussels and gammarids, and maternal females and ducklings with periwinkles (Dieval et al. 2011). In the Bay of Fundy, areas with more gradually sloping shoreline and with rockweed were selected for brood-rearing habitat (Hamilton 2001, Blinn et al. 2008). During fall and spring migrations, Common Eiders often use open marine waters near nesting areas while during winter, they are rarely found in sheltered waters, prefer shallow marine waters (<20 m), and may use offshore shoals and islands (Baldassare 2014). The Atlantic Coast Wintering Sea Duck Survey found that Common Eiders tend to be found closer to shore and over steeper slopes than are scoters and Long-tailed Ducks (Silverman et al. 2013). Based on satellite telemetry locations, Common Eiders wintering in coastal southern New England preferred habitats that had shallower water, were closer to shore, with finer sediments, and a higher probability of hard bottom (Beuth 2013).

Priority Information Needs:

1. Identify and protect major nesting islands during the nesting period.
2. Delineate and characterize brood-rearing habitat used by females with broods by geographic area.
3. Identify and characterize the habitats used by non-breeders and sub-adults.
4. Locate and characterize important molting and wintering sites and evaluate the needs and possibility of protecting some sites to ensure the long-term viability of eider populations.
5. Quantify winter habitat use in relation to foods, tides and ice conditions.
6. Locate and characterize important molting and wintering sites and evaluate the needs and possibility of protecting some sites to ensure the long-term viability of eider populations.

Harvest Assessment: The Common Eider is an important game bird in the North-western Atlantic especially in parts of Québec, Newfoundland, Nova Scotia, Massachusetts, and Maine. This species was heavily hunted in the past, and populations rebounded after strict regulations were implemented in the early 1900s; bag limits were then increased but more recent concern about Common Eider populations has led to new restrictions (Rothe et al. 2015). Harvest and parts collection surveys for this race were improved in the U.S. with implementation of the Harvest Information Program in 2001. These data should be adequate to estimate harvests (total, sex, age) and model population effects of regulatory changes. However, similar improvements to the Canadian harvest survey have not been implemented and accuracy of the Canadian harvest estimates is questionable. Harvest of Common Eiders (*S. m. dresseri* and *S. m. borealis* combined) is split fairly evenly between Canada and the US, but in Canada, most of the harvest is composed of *S. m. borealis* individuals while in the US the harvest is almost exclusively of *S. m. dresseri* (Rothe et al. 2015). Between 2002-2011, the adult sex ratio (males:females) was 0.94 in Canada and 2.24 in US; the age ratio (immature birds of both sexes:adult females) was 1.65 in Canada and 0.63 in US (Rothe et al. 2015). It is thought that hunters in the US may target adult males, resulting in a higher sex ratio, while ratios in the Canadian harvest may be more indicative of true ratio in the population (Rothe et al. 2015). The current harvest estimate of 32,000 is higher than the estimated sustainable harvest (CWS Waterfowl Committee 2013). American Common Eiders are harvested for subsistence use in Canada, and are locally important for some Aboriginal communities in Quebec and the Atlantic provinces (CWS Waterfowl Committee 2013); subsistence harvest estimates are imprecise, but may be around 8,000 birds in Canada (SDJV 2007). Across the northern portion of their wintering range *S. m. dresseri* are sympatric with *S. m. borealis*, which makes it difficult to apportion harvest between the sub-species.

Priority Information Needs:

1. Evaluate current surveys for adequacy at estimating harvest rates.
2. Improve harvest estimates in Canada.
3. Conduct periodic evaluations of sub-specific composition of the harvest,

4. Model the population to determine the effect of various harvest rates.
5. Determine if current harvest strategies are appropriate to maintain acceptable harvest rates.
6. Ensure that consumptive use of eiders is sustainable.

Parasites, Diseases, and Contaminants: *S. m. dresseri* experiences irregular outbreaks of avian cholera across the southern portion of their range. These epizootic events can result in die offs of large numbers of breeding females and affect annual production. For example, in 2002 an estimated 6,000 adult females died at breeding colonies in the St. Lawrence Estuary (JWGMCE 2004), but the long-term population-level consequences of this disease remain unknown. However, Decamps et al. (2012) speculated that recent occurrences of avian cholera in Common Eider colonies in the Canadian Arctic could lead to colony extinction within decades. An apparently novel orthomyxovirus, termed Wellfleet Bay Virus, has recently caused die-offs of large numbers of Common Eiders along the coast of Cape Cod, Massachusetts (Allison et al. 2014, Ballard et al. 2014, Gibbs et al. 2014, Sonsthagen et al. 2014). Blood mercury levels were higher in Common Eiders in Plum Island Sound, MA (1.75 µg/g) than at other capture sites in New England, and were nearly three times higher than any other published values for Common Eiders (Meattey et al. 2014). Mussels collected from Plum Island Sound also had higher mercury levels than mussels collected in Maine, indicating a possible correlation between mercury levels in eiders and their prey (Meattey et al. 2014).

Priority Information Needs:

1. Sample birds for contaminants, diseases and parasites.
2. Evaluate the effect of diseases (particularly avian cholera) and parasites.

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