

## Species Status Summary and Information Needs

Sea Duck Joint Venture, July 2015

### Hooded Merganser (*Lophodytes cucullatus*)

**Population Size and Trends:** There are no reliable data on the continental population size or trend of Hooded Mergansers, mostly because data from traditional breeding pair and winter waterfowl surveys combine all merganser species, confounding interpretation of species-specific population estimates and trends; the species prefers wooded habitats where detection is difficult from fixed-wing aircraft, but adequate from helicopter. Despite this, the North American Waterfowl Management Plan (NAWMP) gives an estimate of 1.1 million in its latest revision (NAWMP 2012). Good population size and trend data come from the helicopter component of the Eastern Waterfowl Survey (conducted by Canadian Wildlife Service in Ontario, Québec and the Atlantic Provinces) which adequately covers the entire breeding area in Eastern Canada: the 2010-2014 population estimate was 182,000 pairs (CWS Waterfowl Committee 2014); the 1990-2014 trend showed an increase in the overall surveyed area, with the 2005-2014 mean estimates being 47% higher than the 1990-1999 mean estimates (CWS Waterfowl Committee, unpubl. data). In prime habitat like the Boreal Softwood Transition in Québec, Hooded Mergansers have been showing a significant increase of 7%/yr since 1990 (Lepage et al. in press). Surveys in interior British Columbia found 10,500 total indicated birds (2006-2012) (A. Breault, CWS, unpubl. data in Bowman et al. 2015). Audubon Christmas Bird Count data also indicate increasing populations (National Audubon Society 2015).

#### Priority Information Needs:

1. Obtain reliable estimates of population size, trends and density in major breeding areas, particularly in western North America.

**Population Delineation:** Although the breeding distribution of Hooded Mergansers is disjunct, with separate eastern and western segments, banding data and genetic analyses indicate that these two geographical areas are inter-related through juvenile dispersal and some adult emigration (Pearce et al. 2008). Band recovery data suggest that juvenile birds may migrate long distances following fledging. Birds banded in the Atlantic, Mississippi, and Pacific Flyways winter in their respective and adjacent flyways.

#### Priority Information Needs:

1. Obtain information on migratory pathways and linkages between breeding, molting and winter areas; identify potential major concentration/use areas during these periods.

**Population Dynamics:** There are no data on demographic parameters of Hooded Mergansers nesting in natural cavities. There are limited data from nest box studies in the mid-western U.S., Quebec, and Ontario to describe productivity and survival patterns for the species. An estimate of true adult survival averaged 72% (Pearce et al. 2008). As expected, estimates of apparent annual adult survival were lower (Dugger et al. 2009), but within the range of other cavity nesting waterfowl species. Clutch size and reproductive information are available from multiple

sources across North America (Dugger et al. 2009), mostly from birds nesting in artificial cavities. Sources of natural mortality are mainly predation on incubating females.

**Priority Information Needs:**

1. Determine sub-adult and juvenile survival rates throughout the year in different geographic locations.
2. Determine reproductive parameters, such as clutch size, hatch success, nest success, breeding propensity, fledging success, etc., in various geographic locations.
3. Obtain estimate of age and sex ratios at various staging and wintering areas.

**Population Ecology:** Relatively few studies have been done on the breeding and wintering ecology of Hooded Mergansers. Competition may occur with other cavity-nesting species. Availability of suitable nesting cavities increased by 300% since 1965 at Mingo NWR, Missouri and by 900% since 1973 at Shiawassee NWR, Michigan but did not change significantly since the 1980s at Muscatatuck NWR, Indiana or Mead State Wildlife Area, Wisconsin and the authors found no evidence that cavity availability is a limiting factor in this region (Denton et al. 2012). Conversely, in the boreal forest of Quebec, a high nest box occupancy rate may indicate a lack of natural cavities (Sénéchal et al. 2008). The effects of trophic relationships and competition in northern habitats are unknown. In southern breeding areas, annual changes in floodplain habitats may affect use and productivity by Hooded Mergansers. Logging removes natural cavity trees and affects breeding success.

**Priority Information Needs:**

1. Identify major factors affecting reproductive success.
2. Describe food habits throughout the year, foraging behavior, and factors related to prey availability.

**Habitat Requirements:** Habitat use patterns during nesting and brood-rearing appear to be very diverse, but this type of information is derived only from a few local studies. Little is known about characteristics of habitats used during migration. Only general patterns of habitat use are known for wintering areas. The effects of habitat alteration, such as acid rain, logging, and floodplain modification are unknown. In the boreal forest of Quebec, breeding Hooded Mergansers selected connected ponds, isolated ponds, open wetlands and flooded swamps, and avoided rivers, nearshore areas of lakes, small islands and forested shorelines; on streams, they were more likely to use stretches of shoreline with open wetland, shrub swamp, or flooded swamp, rather than forest and they were more likely to use wetlands with area of < 8 ha (Lemelin et al. 2010).

**Priority Information Needs:**

1. Determine which seasonal habitats are the most limiting.
2. Characterize breeding areas and nest site availability across the range.
3. Identify important characteristics of habitats used during migration.
4. Identify important characteristics of habitats used during winter.

5. Identify important molting areas, and determine whether males and females use the same areas.
6. Assess the impacts of logging on breeding density and productivity.

**Harvest Assessment:** Hooded Mergansers are the third most commonly harvested sea duck, after Bufflehead and Common Goldeneye, but they are probably most often taken opportunistically during hunts for dabbling and/or diving ducks (Rothe et al. 2015). Continental sport harvest averaged 102,000 birds/year during 2002-2011 (Rothe et al. 2015). The Canadian subsistence harvest was estimated at 6,000 for the eastern region, with no subsistence harvest occurring in western Canada or the US (SDJV 2007). If harvest estimates are accurate, then populations are likely larger than noted above, considering that the population is increasing continentally despite this level of harvest. For the 2002-2011 sport harvest, adult sex ratios (males:females) averaged 2.44 in Canada and 2.34 in the US and age ratios (immatures of both sexes:adult females) averaged 3.40 in Canada and 3.22 in the US (Rothe et al. 2015). Age ratios of harvested birds indicate recent annual production has been relatively high (Rothe et al. 2015).

**Priority Information Needs:**

1. Evaluate the reliability of current surveys to estimate harvest.
2. Continue to improve estimates of harvest rates.

**Parasites, Disease, Contaminants:** The occurrence and effects of parasites and disease for this species are poorly known; duck plague, avian influenza, West Nile virus, *Plasmodium* sp. (avian malaria), *Hemoproteus* sp., and avian botulism have been detected in this species (Hollmén and Franson 2015). As carnivorous predators, Hooded Mergansers are exposed to contaminants in the food chain and may serve as indicator species in regions where water quality is poor. They may also be affected by acid rain in the east. Mercury was detected in 100% of Hooded Mergansers (n = 70) sampled across Canada, with values ranging from 0.147-1.23 mg/kg (Braune and Malone 2006).

**Priority Information Needs:**

1. Determine contaminant levels in various parts of their breeding and wintering range.
2. Determine the levels at which contaminants begin to affect the survival and productivity of Hooded Mergansers to assess the impacts of levels detected throughout their range.
3. Assess the nature and effects of disease and parasites.

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