

## Species Status Summary and Information Needs

Sea Duck Joint Venture, May 2015

### Common Merganser (*Mergus merganser*)

**Population Size and Trends:** Size and trends of populations in North America are not reliably known because most aerial surveys do not differentiate between Red-breasted and Common Mergansers, and because large portions of their range are not surveyed. Despite these caveats, the continental population is estimated to be around 1.2 million birds (NAWMP 2012). From Eastern Waterfowl Survey, the trend has been mostly stable for 1990-2014, with the 2010-2014 mean numbers estimated at 204,300 Common Mergansers (CWS Waterfowl Committee, unpubl. data). Data from the Waterfowl Breeding Population and Habitat Survey indicates that merganser populations (Red-breasted and Common combined) in the midcontinent and Alaska regions increased from the early 1970s to mid-1980s and have been relatively stable since then (Bowman et al. 2015). Using the same data, Flint (2012) examined the influence of oceanic regime shifts on sea duck population counts. In this analysis, mergansers populations showed immediate, large increases following a 1977 regime shift followed by a period of slow decline until the 1998 shift, which again resulted in an immediate increase in population size. In the Strait of Georgia, British Columbia, there was no significant trend in abundance during the non-breeding periods of 1999-2011 (Crewe et al. 2012) and there was a non-significant decline of 6.6% for wintering birds in Puget Sound, Washington between 1978-1980 and 2003-2005 (Bower 2009). Christmas Bird Count data for the US and Canada indicate that numbers are stable or increasing (National Audubon Society 2015). Because molting areas are likely composed of multiple breeding populations (Pearce et al. 2009b), using annual surveys at key molting sites is not a useful method for monitoring trends unless birds are classified to breeding population via genetic analyses.

#### Priority Information Needs:

1. Design effective surveys for annually estimating population size in major wintering areas as an index of population status and trends.
2. Obtain appropriate and reliable estimates of population size at important breeding areas.

**Population Delineation:** Genetic data suggests substantial population structure in North America, with limited female-mediated gene flow (Pearce et al. 2009a). A high degree of mtDNA population structure, little differentiation in nuclear microsatellite loci, and mark-recapture data suggest female philopatry and male dispersal (Pearce et al. 2009b). Substantial genetic differences are present between continents from samples in North America, Russia, and Europe (Peters et al. 2012). Additional genetic analyses of North American and Eurasian birds may support species level differences between what are now considered subspecies (*M. m. merganser* and *M. m. americanus*). Additionally, substantial differences were observed among samples from Alaska/British Columbia and more southerly areas of North America (Pacific Northwest US and the Atlantic provinces of Canada), and there is also evidence of female

philopatry to individual river drainages (Pearce and Petersen 2009). Males molting at Kodiak Island appear to come from multiple natal and breeding areas (Pearce et al. 2009b). Population delineation is also suggested by mark-recapture information from the central and eastern US (Pearce et al. 2005). Broad scale patterns in movements are based on fairly small samples of banded birds, but genetic data indicates that during winter, males and females move across phylogeographic boundaries along the Pacific Coast (Pearce et al. 2009a). Juveniles captured on the Kenai Peninsula, Alaska and marked with satellite transmitters remained in the Kenai and Iliamna regions throughout the fall and winter, although some individuals moved to Kodiak Island, Prince William Sound and Seward regions during winter; two individuals survived into the following summer, with one female returning to the natal area and one male moving to the Chukotka Peninsula, Russia, but it was unclear if this was a molt migration or a dispersal event (Pearce and Petersen 2009). Band recoveries indicate that individuals wintering in Oklahoma migrated > 1000 km, to breeding locations in Manitoba, Ontario and Minnesota, while birds in Nova Scotia and Michigan were much less migratory (Pearce et al. 2005). No data are available on the location of major staging areas and on the number of birds using these areas. No differences were noted in linear measurements for males of culmen and tarsus length in North America (Pearce et al. 2015).

**Priority Information Needs:**

1. Obtain information on migratory pathways and linkages between breeding, moulting and winter areas; identify potential major concentration/use areas during these periods.
2. Continue to examine possible morphometric and genetic differences between birds of different breeding and wintering areas.
3. Refine biological and/or genetic relationships between eastern and western wintering populations with additional breeding samples from the interior boreal forest of Canada.
4. Further investigate associations between eastern Russia and North American populations regarding possible species differences.

**Population Dynamics:** Little is known about the factors contributing to population regulation of Common Mergansers in North America (Pearce et al. 2015). Using banding data from 1938-1998, annual survival was estimated to range from 0.21 to 0.82, depending on location (Pearce et al. 2005).

**Priority Information Needs:**

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

**Population Ecology:** Relatively few studies have been done on the breeding and wintering ecology of Common Mergansers. The species preys on fish and is often in apparent conflict with fisheries management initiatives.

**Priority Information Needs:**

1. Characterize breeding locations and identify areas of concentration.
2. Quantify the impact of Common Mergansers on fish populations.

**Habitat requirements:** Common Mergansers are typically cavity nesters and usually breed along rivers and in coastal areas where trees are large enough to provide cavities. In the boreal forest of Quebec, breeding Common Mergansers selected nearshore areas of lakes, connected ponds, isolated ponds, rivers, open wetlands and small islands and avoided flooded swamp and offshore areas of lakes; 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 > 8 ha (Lemelin et al. 2010). In southeast Alaska, wintering mergansers (Red-breasted and Common) were more likely to be present in areas closer to streams and with rocky shoreline and less likely to be in areas with more exposed shoreline and wider intertidal area (Gunn 2009).

**Priority Information Needs:**

1. Identify habitat types and quantify their use/selection by birds at areas throughout their breeding range.
2. Identify and characterize important molting sites on both fresh and salt water.
3. Identify and characterize important wintering sites.

**Harvest Assessment:** Harvest is distributed across the continent, and in most areas is regulated under general duck hunting seasons and bag limits, rather than under special sea duck rules (Rothe et al. 2015). Although not heavily hunted, Common Mergansers may be important locally and during the 1900s, bag limits were liberal. As mergansers were viewed as fish predators competing with humans, hunting regulations were used to encourage increased harvest of these species (Rothe et al. 2015). However, targeted hunting of mergansers is likely uncommon, and they are mostly taken opportunistically during hunts for diving and/or dabbling ducks (Rothe et al. 2015). During 1999-2008, the average sport harvest was 19,797 in the US and 7,127 in Canada, with about half occurring in the Atlantic Flyway (Baldassare 2014). Of birds harvested during 2002-2011, adult sex ratios (males:females) were 0.82 in Canada and 0.97 in the US and age ratios (immatures of both sexes:adult females) were 3.28 in Canada and 2.06 in the US (Rothe et al. 2015). Subsistence harvests are likely small (e.g., < 1,000 mergansers/year in northern Canada, 1,558 mergansers/year in Alaska [Rothe et al. 2015]). Data on harvest rates and age ratios indicate that productivity is high enough to sustain current levels of hunting (Rothe et al. 2015). Since Common Mergansers are fish eaters, they are often considered undesirable and both legal and illegal control occurs on some fish-bearing streams. They may be vulnerable to incidental take from gill net fisheries.

**Priority Information Needs:**

1. Improve harvest surveys.

2. Estimate magnitude of legal (permitted) harvest for depredation purposes.
3. Estimate magnitude of illegal shooting.

**Parasites, Disease, Contaminants:** Common Merganser mortalities linked to duck plague (caused by duck herpesvirus 1), avian cholera, avian botulism, and *Erysipelothrix rhusiopathiae* infection have been reported (Hollmén and Franson 2015). West Nile virus, *Aspergillus fumigatus*, *Plasmodium* sp. (avian malaria), *Leucocytozoon* sp., and *Hemoproteus* sp. have also been detected in this species (Hollmen and Franson 2015). As a predator, they are vulnerable to contaminants as a result of biomagnification. Thus, they are a good bioindicator for fish-bearing streams and lakes. In some local areas, concentrations of mercury in mergansers are a source of concern for human health and for the reproductive success of the birds themselves. Mercury was detected in 100% of Common Mergansers (n = 95) collected across Canada, with levels ranging from 0.083-1.52 mg/kg (Braune and Malone 2006). In heavily fished rivers, lead poisoning from ingestion of fishing sinkers has been suspected (Scheuhammer and Norris 1995).

**Priority Information Needs:**

1. Determine contaminant levels in various parts of their breeding and wintering range.
2. Determine the impact of contaminants on reproductive success.

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