**Sea Duck Joint Venture**
**Annual Project Summary for Endorsed Projects**
**FY 2008 – (October 1, 2007 to September 30, 2008)**

**Project Title (SDJV Project #95):** Lake Ontario January Sea Duck Survey

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**Project Description:**
The Lake Ontario January Sea Duck Survey (LOJSDS) was formally initiated in early January 2007 to obtain better information on annual abundances and distributions of sea ducks on the Canadian side of Lake Ontario. The LOJSDS is conducted as part of the larger Lower Great Lakes January Survey, which is flown annually (2002-present) by Canadian and US agencies along the shorelines of lakes Ontario, Erie, and St. Clair. This survey is flown during the same time frame as the US Midwinter survey. Focal species for the LOJSDS are Long-tailed Duck (primary), White-winged Scoter, Black Scoter, Surf Scoter, Common Merganser, Red-breasted Merganser, Common Goldeneye, and Bufflehead.

The LOJSDS is an aerial survey that is flown with a twin engine aircraft during early January. Two observers estimate abundances of all waterfowl species observed along each side of two transects out to a distance of 0.5 km from a height of 150 m during the mid-day (10:00 – 15:00 EST) period. The nearshore transect is flown parallel to the shoreline 0.5 km offshore and the offshore transect is flown at distance of 2 km offshore. Both transects are divided into 4 segments based on easily identifiable shoreline features, which provide additional data on geographic distribution of waterfowl. Offshore transects are flown before nearshore transects to minimize double counting large numbers of waterfowl in nearshore areas that might relocate offshore due to aircraft disturbance.

**Objective:**
1. Determine annual abundances and distributions of sea ducks on the Canadian side of Lake Ontario during winter.

**Results:**
***2008 Lake Ontario January Sea Duck Survey —*** During 16 January 2008 personnel with the CWS (Don Fillman & Barb Campbell) flew the offshore and nearshore transects in eastern Lake Ontario from the St. Lawrence River near Gananoque, Ontario west to Second Marsh near Oshawa, Ontario (Figure 1). Personnel with the LPWWRF (Shannon Badzinski) and CWS (Barb Cambell) flew offshore and nearshore transects within the 3

western Lake Ontario survey areas from Second Marsh – Oshawa, Ontario to the mouth of the Niagara River on 17 January 2008.

In total, we estimated 118,966 sea ducks on transects over Lake Ontario during mid-January. The Long-tailed Duck was by far the most abundant (>70,000) sea duck encountered on all transects within each survey area. Total numbers of scoter spp, merganser spp, and Common Goldeneye on the Canadian side of Lake Ontario each exceeded 10,000 individuals (Table 1). Bufflehead, were the least abundant sea duck with an estimated winter population of slightly exceeding 3,000 individuals (Table 1).

Nearly 70% of all sea ducks on the Canadian side of Lake Ontario we counted were on the shoreline transect, but species distributions varied by distance from shore and geographic location (Table 2). Nearly all (> 96%) of Common Goldeneye, Bufflehead, and merganser spp were observed on nearshore transects; a large, but lower, percentage of Long-tailed Duck (61%) and scoter (45%) were also counted in nearshore waters. A considerable percentage of scoter (55%) and Long-tailed Duck (39%) were counted on offshore transects with scoters being relatively more common than Long-tailed Ducks (Table 2). During 2008, more than on-half to two-thirds of Common Goldeneye, Bufflehead, and merganser spp were observed in eastern Lake Ontario from the Gananoque, ON to Oshawa 2$^{nd}$ Marsh (Table 2). Long-tailed Ducks were distributed nearly equally between eastern and western Lake Ontario, whereas the majority of scoter spp were located in the western portion of the lake specifically between Hamilton Ontario and the mouth of the Niagara River (Table 2).

***Inter-annual Comparisons —*** Overall, we counted about 18,000 fewer sea ducks during the 2008 survey than in the previous year (Table 3). Several species showed reduced, whereas some species showed increased, abundances or altered distributions between 2008 and 2007. Most notably, we counted about 25,000 fewer Long-tailed ducks in 2008 as compared to 2007, plus there were relatively fewer birds counted in western section of the lake during the current survey year. Common Goldeneye numbers were higher in all survey sectors during 2008, which resulted in a near doubling of birds counted during the previous year. Bufflehead abundance dropped slightly between 2007 and 2008 and was most pronounced in the extreme western portion of Lake Ontario. Abundances and distributions of scoter and merganser were identical between 2008 and 2007.

**Project status:** The second year of this survey was successful in that it allowed us to meet our main objective. Specifically, it enabled us to estimate numbers of sea ducks on the Canadian side of Lake Ontario thereby providing annual indices to their winter abundances at this important wintering area. We also were able to gain a better understanding of sea duck winter habitat use and geographic distributions on Lake Ontario. Completion of future surveys will give us a better understanding of temporal changes in sea duck distributions and broad-scale habitat use on Lake Ontario during winter, plus enable long-term monitoring of their winter population sizes.


Figure 1. Map of Lake Ontario showing key locales used to divide the Lake Ontario January Sea Duck Survey into geographic areas. Survey transects within each of the four major geographic (1/ Gananoque – Oshawa, 2nd Marsh, 2/ Oshawa 2nd Marsh – Toronto Harbor, 3/ Toronto Harbor – Hamilton Harbor, & 4/ Hamilton Harbor – Niagara River) areas are located 0.5 km (nearshore) and 2 km (offshore) parallel to the Ontario shoreline.

Table 1. Numbers of sea ducks estimated in nearshore (0.5 km) and offshore (2 km) transects along the Ontario, Canada side of Lake Ontario from 16-17 January 2008 during the Lake Ontario January Sea Duck Survey.

| | Gananoque to Oshawa 2nd Marsh | | | Oshawa 2nd Marsh to Toronto Harbor | | | Toronto Harbor to Hamilton Harbor | | | Hamilton Harbor to Niagara River | | | Species |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | 0.5 km | 2 km | Total | 0.5 km | 2 km | Total | 0.5 km | 2 km | Total | 0.5 km | 2 km | Total | Total |
| Long-tailed Duck | 32,901 | 5,614 | 38,515 | 2,400 | 2,751 | 5,151 | 11,209 | 16,660 | 27,869 | 1,156 | 5,456 | 6,612 | 78,147 |
| Scoter spp (total) | 734 | 41 | 775 | 43 | 1 | 44 | 2,679 | 783 | 3,462 | 2,714 | 6,824 | 9,538 | 13,819 |
| Black Scoter | 0 | 0 | 0 | 20 | 0 | 20 | 58 | 0 | 58 | 25 | 0 | 25 | 103 |
| Surf Scoter | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 8 |
| White-winged Scoter | 411 | 0 | 411 | 23 | 1 | 24 | 2,621 | 783 | 3,404 | 1,101 | 3,112 | 4,213 | 8,052 |
| Unidentified Scoter | 320 | 41 | 361 | 0 | 0 | 0 | 0 | 0 | 0 | 1,583 | 3,712 | 5,295 | 5,656 |
| Common Goldeneye | 6,858 | 55 | 6,913 | 740 | 3 | 743 | 2,346 | 0 | 2,346 | 1,077 | 0 | 1,077 | 11,079 |
| Bufflehead | 2,194 | 0 | 2,194 | 681 | 26 | 707 | 836 | 0 | 836 | 154 | 0 | 154 | 3,891 |
| Merganser spp (total) | 8,089 | 19 | 8,108 | 177 | 132 | 309 | 1,215 | 44 | 1,259 | 2,121 | 233 | 2,354 | 12,030 |
| Hooded Merganser | 36 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| Common Merganser | 3,211 | 0 | 3,211 | 56 | 67 | 123 | 732 | 34 | 766 | 1,057 | 178 | 1,235 | 5,335 |
| Red-breasted Merganser | 340 | 2 | 342 | 90 | 65 | 155 | 16 | 10 | 26 | 1,046 | 55 | 1,101 | 1,624 |
| Unidentified Merganser | 4,502 | 17 | 4,519 | 31 | 0 | 31 | 467 | 0 | 467 | 18 | 0 | 18 | 5,035 |
| Total Sea Ducks | 50,776 | 5,729 | 56,505 | 4,041 | 2,913 | 6,954 | 18,285 | 17,487 | 35,772 | 7,222 | 12,513 | 19,735 | 118,966 |

Table 2. Percentages of sea duck species counted on nearshore (0.5 km) and offshore (2 km) transects and within four geographic survey areas on the Ontario, Canada side of Lake Ontario from 16 – 17 January 2008 during the Lake Ontario January Sea Duck Survey.

| | Transect | | Geographic Location | | | |
|---|---|---|---|---|---|---|
| Species | Nearshore | Offshore | Gananoque to Oshawa 2nd Marsh | Oshawa 2nd Marsh to Toronto Harbor | Toronto Harbor to Hamilton Harbor | Hamilton Harbor to Niagara River |
| Long-tailed Duck | 61% | 39% | 49% | 7% | 36% | 8% |
| Scoter spp (total) | 45% | 55% | 6% | <1 % | 25% | 69% |
| Common Goldeneye | 99% | 1% | 62% | 7% | 21% | 10% |
| Bufflehead | 99% | 1% | 56% | 18% | 21% | 4% |
| Merganser spp (total) | 96% | 4% | 67% | 3% | 10% | 20% |
| Total Sea Ducks | 68% | 32% | 47% | 6% | 30% | 17% |

Table 3. Total numbers of sea ducks estimated annually since 2007 during the January Lake Ontario Sea Duck Survey.

| | Gananoque to Oshawa 2nd Marsh | | Oshawa 2nd Marsh to Toronto Harbor | | Toronto Harbor to Hamilton Harbor | | Hamilton Harbor to Niagara River | | Species Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| Species | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 |
| Long-tailed Duck | 28,003 | 38,515 | 7,968 | 5,151 | 5,162 | 27,869 | 61,652 | 6,612 | 102,785 | 78,147 |
| Scoter spp (total) | 429 | 775 | 176 | 44 | 276 | 3,462 | 10,458 | 9,538 | 11,339 | 13,819 |
| Black Scoter | 2 | 0 | 0 | 20 | 0 | 58 | 0 | 25 | 2 | 103 |
| Surf Scoter | 0 | 3 | 0 | 0 | 0 | 0 | 75 | 5 | 75 | 8 |
| White-winged Scoter | 0 | 411 | 169 | 24 | 259 | 3,404 | 8,383 | 4,213 | 8,811 | 8,052 |
| Unidentified Scoter | 427 | 361 | 7 | 0 | 17 | 0 | 2,000 | 5,295 | 2,451 | 5,656 |
| Common Goldeneye | 4,247 | 6,913 | 422 | 743 | 1,264 | 2,346 | 823 | 1,077 | 6,756 | 11,079 |
| Bufflehead | 2,158 | 2,194 | 525 | 707 | 972 | 836 | 976 | 154 | 4,631 | 3,891 |
| Merganser spp (total) | 9,983 | 8,108 | 143 | 309 | 475 | 1,259 | 700 | 2,354 | 11,301 | 12,030 |
| Hooded Merganser | 159 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 159 | 36 |
| Common Merganser | 4,973 | 3,211 | 82 | 123 | 416 | 766 | 481 | 1,235 | 5,952 | 5,335 |
| Red-breasted Merganser | 3,430 | 342 | 61 | 155 | 59 | 26 | 219 | 1,101 | 3,769 | 1,624 |
| Unidentified Merganser | 1,421 | 4,519 | 0 | 31 | 0 | 467 | 0 | 18 | 1,421 | 5,035 |
| Total Sea Ducks | 44,820 | 56,505 | 9,234 | 6,954 | 8,149 | 35,772 | 74,609 | 19,735 | 136,812 | 118,966 |