



Movements, Habitat Use, and Feeding Ecology of Seaducks in Chesapeake Bay and Other Atlantic Coastal Areas

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Collaborators: Chesapeake Bay Program (over 25 Federal Agencies, 6 States, the District of Columbia, and numerous local customers and partners)

Statement of Problem: In the Chesapeake Bay area, seaducks are typically defined as scoters (black, surf, and white-winged) and long-tailed duck (oldsquaw). Eiders and harlequin ducks also are seaducks, but because of their locally low numbers are not typically considered important seaducks of the Bay. Although the common eider is more abundant in New England and the Maritimes, the harlequin duck is very rare and is possibly close to being threatened on the Atlantic coast. The three species of mergansers (common, red-breasted, and hooded), the bufflehead, and the goldeneye (common and Barrow's) are also considered seaducks by the Sea Duck Joint Venture, but often are considered in a separate category for waterfowl surveys of the Chesapeake Bay. On a continental basis there are 15 species that are classified as seaducks (Elliot 1997).

The location of the breeding areas of some species of seaducks is uncertain and in need of further study (K. McAloney, pers. comm). The migrational paths used by seaducks and the critical habitats used on migration are also uncertain. Satellite tracking of surf and white-winged scoters (*Melanitta perspicillata*) and long-tailed ducks (*Clangula hyemalis*) instrumented late in the 2002-03 winter on the Chesapeake Bay will provide new information that will be beneficial to protecting critical migrational, breeding, and staging habitat of these species' and improving future management of their populations. The black scoter (*Melanitta nigra*) is of special concern among the seaducks, because it is both the least common of the three scoter species and the species least studied (Kehoe 1994). The Eastern Technical Team of the Sea Duck Joint Venture has recommended new research on this species to learn more about its movements and the delineation of its breeding and molting areas. Satellite tracking of black scoters instrumented during May in the Restigouche River, a key migration stopover, will provide new information that

will be beneficial towards delineating populations and establishing the affinities among staging, breeding, and molting grounds. These data will assist in future population monitoring and management of populations. Conventional tracking of black scoter in the breeding areas will provide additional information about the habitat requirements of this species, which will be important in understanding factors that might be negatively impacting this species.

Delineating populations and establishing the affinities among staging, breeding, and molting grounds is imperative to assist in future population monitoring and management. When waterfowl managers have a better understanding of these populations then they can have a better understanding of the problems confronting these species.

Objectives:

The study will determine the current distribution of scoters on their breeding and staging areas. Delineating these populations and establishing the affinities among staging, breeding, and molting grounds will assist in future population monitoring and management.

The study will also determine the habitat requirements for surf, black, and white-winged scoters and long-tailed ducks. Specific objectives are:

1. Determine route and destination for these four species when they leave Chesapeake Bay or Restigouche River in the late winter and early fall and migrate to breeding areas.
2. Determine habitat types and requirements used by these four species during the breeding season.
3. Create thematic maps with varying cosmetic layers to better describe the wintering, staging, and breeding areas.

Approach: Ten to fifteen male and female surf and black scoters will be captured alive during March-May 2001-05 with the use of a net capture gun from the bow of a fast moving boat. Other capture techniques will be used to develop capture procedures that are more efficient and less weather dependent. These techniques include standard night-lighting procedures, which use hand nets to capture ducks from the bow of a slowly moving boat with the aid of bright lights powered by generators. Mist nets (Alison 1975, Dau 1976, Briggs 1977) will also continue to be tested as an alternative method. Mist nets will have a mesh size of 121 mm, measure 12 m by 2.6 m, and have two shelves. Mist nets will be set vertically over water on telescopic poles installed in floating support bases. Nets will be continually monitored closely to preclude mortality from drowning. All captured scoters will be banded with USGS bands. Males and female scoters will be used for the telemetry aspect of this study. Males will help delineate molting areas and females are being used to delineate breeding areas and help locate nests.

Captured ducks will be held and transported to the Patuxent Wildlife Research Center's veterinary hospital or local veterinary hospital. Surgical procedures will be conducted by a trained veterinarian who will surgically implant a 39 g PTT transmitter (satellite and VHF capabilities in same transmitter) manufactured by Microwave, Inc., Columbia, Maryland into the duck's abdominal cavity following general procedures outlined in Korschgen et al. (1984) and Olsen et al. (1992). The duty cycle for the transmitters will

vary from 6-8 hours of transmission and 48-60 hours of non-transmission for 100 cycles. This duty cycle will allow total transmission for approximately 7-12 months. The transmitter's antenna will be external (percutaneous) and pass through the back of the duck using a surgical catheter (Korschgen et al 1996). Because of recent problems with extrusion of cylindrically shaped implant transmitters through the antenna perforation, all transmitters used in this study will be as recommended, wide-bodied with no abrupt edges (Mulcahy et al. 1999). Each duck will be held post-surgery for 2-10 days and then released at the site of capture.

All data from transmitters will be collected from the ARGOS satellite through Service Argos in Landover, MD. The French government owns this satellite, and the U. S. Department of Commerce controls the tariff agreement that provides access to the data. The data will be analyzed at Patuxent Wildlife Research Center by staff with the appropriate techniques for interpreting data. All females will be monitored with aerial and ground telemetry techniques after the general area of breeding has been determined. Once nest is located, number of eggs, stage of incubation, type of vegetation, and relation to water will be measured and recorded. Habitat cover types using GIS (Geographical Information Systems) data, aerial photographs, and collected data will be analyzed to build thematic maps with varying cosmetic layer applications. Number of fixes, type of fixes, and time of day will be analyzed to examine any possible trends in satellite data.

Selected Reports and Other Products:

Perry, M.C., P.C. Osenton, and E.J.R. Lohnes, 2001, Diving duck trends in Chesapeake Bay: *Birdscapes*, Fall 2001:24.

Perry, M.C., 2002, Tracking surf scoters: *Birdscapes*, Spring-Summer 2002:21.

Perry, M.C., and K. McAloney, 2003, On the trail of black scoters: *Birdscapes*, Winter 2003:14.

Perry, M.C., A. M. Wells, D. Kidwell, E.J.R. Lohnes, S.H. Altmann, and P.C. Osenton, In Press, Biotic and abiotic characteristics of freshwater lakes used as breeding habitats for surf and black scoters in Northeastern North America: *Hydrobiologia*.

Lohnes, E.J.R. and M.C. Perry, 2002, Information transfer for the Atlantic Seaduck Project leading to waterfowl conservation [poster]: North American Sea Duck Conference and Workshop, Victoria, British Columbia, Canada, November 7-10.

Olsen, G.H. and M.C. Perry, 2002, Surgery performed to instrument Surf and Black Scoters for satellite telemetry [poster]: North American Sea Duck Conference and Workshop, Victoria, British Columbia, Canada, November 7-10.

Osenton, P.C., and M.C. Perry, 2002, Techniques to capture seaducks in the Chesapeake Bay and Restigouche River [poster]: North American Sea Duck Conference and Workshop, Victoria, British Columbia, Canada, November 7-10.

Wells, A.M. and M.C. Perry, 2002, Nutritional, physiological, and behavioral research on captive seaducks [poster]: North American Sea Duck Conference and Workshop, Victoria, British Columbia, Canada, November 7-10

Presentation: Perry, M.C., 2002, Atlantic Seaduck Project: Technical Section of the Atlantic Flyway Council. Burlington, Vermont (invited), July 23.

Presentation: Perry, M.C., A. M. Wells, D. Kidwell, S.H. Altmann, P.C. Osenton, and E.J.R. Lohnes, 2003, Biotic and Abiotic Characteristics of Freshwater Lakes Used as Breeding Habitats for Surf and Black Scoters in Northeastern North America: Society of International Limnologists, Limnology and Waterbirds Conference, Sackville, New Brunswick, August 5, 2003.

Presentation: Perry, M.C., E.J.R. Lohnes, C. Neufeld, G.H. Olsen, P.C. Osenton, and A.M. Wells, 2003, Tracking of surf and black scoters in the Atlantic Flyway with satellite radio telemetry: Argos Animal Tracking Symposium, Annapolis, Maryland, March 24.

Presentation: Perry, M.C., P.C. Osenton, G.H. Olsen, E.J.R. Lohnes, and A.M. Wells, 2002, Satellite radio telemetry tracking of Surf and Black Scoters in the Atlantic Flyway: North American Sea Duck Conference and Workshop, Victoria, British Columbia, Canada, November 7-10.

Relevance and Benefits: The long-term goal of this research is to determine factors that could be causing population declines in Atlantic Flyway seaduck populations, with emphasis on Chesapeake Bay.

Atlantic Seaduck Project web page is
<http://www.pwrc.usgs.gov/resshow/perry/scoters/>