Local Survival Rates of Common Murres Breeding in Wittless Bay, Newfoundland

GREGORY J. ROBERTSON,1 Canadian Wildlife Service, Mount Pearl, NF A1N 4T3, Canada
ANNE E. STOREY, Department of Psychology, Memorial University of Newfoundland, St. John’s NF A1B 3X9, Canada
SABINA I. WILHELM, Canadian Wildlife Service, Dartmouth, NS B2Y 2N6, Canada

(Keywords: adult survival, bycatch, common murre, Newfoundland, sex bias, Uria aalge.)

The common murre (Uria aalge) is the largest living auk and one of the most abundant marine birds breeding in the north Atlantic and Pacific Oceans (Nettleship and Evans 1985). Humans have a long history of using murres (both common and thick-billed U. lomvia) as an important source of eggs and meat; more recently, murre populations have been threatened by a variety of anthropogenic activities (Ainley et al. 2002). Current pressures on common murre populations in the Northwest Atlantic include legal hunts in Canada and Greenland (Elliot 1991), being killed by chronic oil pollution along the shipping routes off Newfoundland (Wiese and Robertson 2004), and incidental capture in various types of fishing gear (Piatt and Nettleship 1987). The hunt of murres (locally called turrs) in Newfoundland and Labrador, Canada, is unique in North America, as the only nonaboriginal hunt of a seabird. This hunt was retained in the province as part of the terms of joining Canada in 1949 on the basis that the murres were an important winter protein source for rural Newfoundlanders (Elliot 1991). Recent amendments to the Migratory Birds Convention Act make provisions for the Newfoundland and Labrador murre hunt to be regulated as any other game bird harvest in Canada.

In spite of harvests and other threats faced by common murres, little demographic information is available for this species outside of Europe (Ainley et al. 2002). The purpose of our study was to estimate local adult survival rates of common murres breeding in a large colony in Newfoundland from 1996–2003. We collected data from a small study plot of marked birds that was monitored as part of in-depth behavioral studies (Wilhelm 2004, Moody et al. 2005). As all marked individuals could be sexed behaviorally, we were able to examine possible sex differences in local survival rates.

Study Area

We conducted our study on Great Island (47°11′N, 52°49′W), 1 of 4 islands in the Witless Bay Islands Ecological Reserve, an internationally important seabird-breeding colony in southeastern Newfoundland. Great Island, measuring 1.4 km × 0.7 km, is a rugged island. Central areas are still forested, whereas around the periphery, grasses, exposed peat, and small, flowering plants are present. This vegetation edge gives way to steep, rocky slopes and vertical cliffs, surrounding numerous deep coves. Peak elevation is approximately 83 m, occurring on 1 of Great Island’s 3 high, north–south ridges. Weather tends to be cool, windy, and wet in spring (May: 5–15°C), which usually improves by July (15–25°C); although, fog and cool weather can occur at any time of year. Great Island harbors large populations of breeding Atlantic puffins (Fratercula arctica; 123,000 pairs; Rodway et al. 2003) and Leach’s storm-petrels (Oceanodroma leucorhoa; 270,000 pairs; Stenhouse et al. 2000), with smaller numbers of breeding black-legged kittiwakes (Rissa tridactyla), herring gulls, (Larus argentatus), great black-backed gulls (L. marinus), razorbills (Alca torda), and northern fulmars (Falmarus glacialis; Robertson et al. 2001, 2004). An estimated 7,400 pairs of common murres breed on Great Island, a small fraction of the breeding population in Witless Bay, as nearby Green Island likely supports over 100,000 nesting pairs (Robertson et al. 2004).

Methods

Starting in 1996, murres were banded on a plot with triangular metal U.S. Fish and Wildlife Service bands designed specifically for murres and unique combinations of 3 plastic color bands. Previous banding also occurred at this site during the mid–1980s (D. Cairns, Department of Fisheries and Oceans, Burlington, Ont., Canada, personal communication), and 6 of those murres (3 males and 3 females) were still present and incorporated into our study.

We captured adult murres from an observation blind with a pole that had a noose attached at the end. We caught most during the chick-rearing period (Jul) when chicks were about 2 weeks old. We banded some adults before egg-laying at the beginning of the breeding season (May). From 1997–2003, we monitored the attendance of banded individuals almost daily during the pre-lay period (May) and at intervals of every 2 to 3 days during the chick-rearing period. All murres monitored in this study were easily viewed with the naked eye from the blind where catching occurred. We determined the sex of all birds by observing copulation and which parent left with the chick. We observed copulations of most birds across a number of years, and the sex assigned was always consistent. Sex was further confirmed in 10 individuals using DNA analysis (M. Cameron-MacMillan and C. Walsh, Memorial University of Newfoundland, St. John’s, Newfoundland, personal communication). Forty male and 33 female adults were available to use in our analysis. After a number of years of breeding on the plot (3.25 years on average), 3 birds were seen but did not breed due to the

1 E-mail: greg.robertson@ec.gc.ca