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NOTES

LONG DISTANCE MOLT MIGRATION BY A GIANT CANADA GOOSE FROM EASTERN SOUTH DAKOTA — Molt migrations are summer movements of giant Canada geese (*Branta canadensis*) from their breeding grounds to northerly locations where they molt their flight feathers (Hanson 1965, Kuyt 1966, Davis et al. 1985, Abraham et al. 1999, Nichols et al. 2004). Most molt migrant geese are subadults, nonbreeders, and failed breeders (Sterling and Dzubin 1967, Salomonsen 1968, Lawrence et al. 1998), but some successful nesters that abandon or lose their broods also may embark on a molt migration (Krohn and Bizeau 1979, Zicus 1981, Anderson 2006). Understanding dynamics of molt migrations, delineating migration routes, and identifying possible staging areas that occur between molting areas and breeding areas is important to the management of giant Canada geese (Zicus 1981).

The distance giant Canada geese travel is one of the more variable aspects of their molt migrations (Sterling and Dzubin 1967, Dimmick 1968, Krohn and Bizeau 1979, Abraham et al. 1999, Sheaffer et al. 2004). Formerly, resident giant Canada geese were not believed to make long distance molt migrations from South Dakota (Gleason 1997). However, using banding and radio-telemetry data, Anderson (2006) documented high rates of molt migration and post-molt movements by resident giant Canada geese from eastern South Dakota to North Dakota and Canada.

To reduce crop damage by resident giant Canada geese (Schaible et al. 2005), the South Dakota Department of Game, Fish and Parks (SDGFP) initiated a program to reduce goose nesting success in eastern South Dakota. One management tool used by SDGFP personnel was the destruction of giant Canada goose nests. When a giant Canada goose has its nest destroyed, they are known to initiate a molt migration (Mykut 2002, Luukkonen et al. 2008). We attached Platform Transmitting Terminals (PTT; model ST-19) to document and describe molt migrations of giant Canada geese following nest destruction. We captured 3 adult nesting female giant Canada geese during early incubation with a net-gun (Mechlin and Shaiffer 1980) on 18 April 2003 in Brookings County, South Dakota, USA. These geese were subsequently fitted with a U.S. Fish and Wildlife Service leg band, a PTT, and then released. Personnel from SDGFP destroyed nests after these geese were captured.

Platform transmitting terminals were manufactured by Telonics, Inc. (Mesa, AZ), and were attached to black neck collars made from Rowmark® plastic by Spinner Plastics (Springfield, Illinois, USA; Anderson 2006). Each PTT had a specific ID code recognized by satellites. Platform Transmitter Terminals had a specified battery life of approximately 360 hours that was separated over 4 separate monitoring periods. The PTTs had an “on” period of 8

hours, which allowed transmissions for 45 days during a 365 day period. During the first month after deployment, PTTs transmitted every 10 days, and every 5 days thereafter. Locations of PTT marked geese were received by Service Argos, Inc. (Largo, Maryland, USA). The PTTs transmit signals to the receiver on board satellites during their programmed “on” periods. We received PTT location data through Argos’s Automated Distribution Service. Argos provides 2 location estimates per PTT during each satellite overpass and designates the location with the best frequency continuity as the optimal location. Argos assigned each location a location class (LC) based on their accuracy estimates. Locations with a LC of 3, 2, 1, and 0 were used for analyzing local and migratory movements.

The PTTs on all 3 geese provided consistent location estimates with location classes of 2 and 3. Two geese did not make a molt migration, and both molted within 2 km of their nesting locations. One goose made a long distance molt migration of 2,080 km to Ferguson Lake, Nunavut, Canada. The molt location was 62.93° N latitude and 96.9° W longitude, or approximately 32 km east of Yathkyed Lake. This goose had been incubating 6 eggs when her nest was destroyed on 18 April 2003. The goose initiated its molt migration between 7–12 June and arrived at its molting area during the week of 22–29 June. The goose remained in Canada until at least 26 October, and returned to Brookings County by 7 November where it remained until 23 November before migrating south and wintering in Kansas, USA. The wintering location was within 160 km of the wintering location of the other 2 geese which had their nests destroyed. The goose’s PTT stopped functioning in mid-December 2003.

Molt migration is a behavior now common to most temperate-nesting populations of reintroduced giant Canada geese (Abraham et al. 1999). We documented the first long distance molt migration (2080 km) from South Dakota, which also was one of the longest published molt migrations recorded, and is similar to distances traveled by molting geese from Michigan (Luukkonen et al. 2008). It is apparent from this study and earlier data that resident giant Canada geese from eastern South Dakota are making molt migrations to areas far north of South Dakota (Anderson 2006).

Due to small sample sizes during this study, the proportion of geese with their nests destroyed (33%) that made a molt migration had little significance. However, a large proportion of nonbreeding and unsuccessful nesting females initiate molt migrations from South Dakota (Anderson 2006). Increasing giant Canada goose populations are resulting in more molt migrants on northern brood rearing areas, causing increased competition between populations of giant Canada geese (Abraham et al. 1999). Competition from large numbers of molt migrant giant

Canada geese on Akimiski Island has reduced the number and size of goslings hatched there (Hill et al 2003). This increase in molt migration also complicates management and surveys of some Arctic and subarctic nesting giant Canada goose populations (Abraham et al. 1999), and could have negative effects on northern habitats (Hill et al. 2003). For instance, high populations of giant Canada geese have masked population declines in the Southern James Bay population and the Atlantic population (Hestbeck 1995, Leafloor et al. 1996). Leafloor and Rusch (1997) found molting giant Canada geese in western James Bay and on Akimiski Island, Northwest Territories. Our data indicates that molting giant Canada geese are traveling up to 800 km farther north than James Bay, which consequently may be increasing competition with nesting geese in these areas.

Smith et al. (1999) suggested egg addling to cause nest failure and subsequent molt migration by giant Canada geese, thus alleviating temporary nuisance problems. However, Luukkonen et al. (2008) found that 80% of giant Canada geese that had nests destroyed in Michigan made long distance molt migrations. Destroying eggs in problem areas to induce molt migration may alleviate some localized depredation problems. However, unsuccessful goose pairs could molt elsewhere, possibly contributing to crop depredation or habitat damage in these molting areas.

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