

## Common Eider Satellite Tracking Study

The Pacific race of Common Eider has declined dramatically in numbers in recent years throughout most of its breeding range in North America. Counts during spring migration at Point Barrow, Alaska suggest that numbers of Common Eiders nesting in northern Alaska and the western Canadian arctic may have declined by >50% from 156,100 in 1976 to 72,600 in 1996 (Suydam et al. 2000). Waterfowl breeding surveys on the Yukon-Kuskokwim Delta indicate an even steeper decline of 90% from 51,000 during 1957-70 (King and Lensink 1971) to 5,000 during 1996-99 (Bowman et al. 1999). The reasons for the decline are unknown partly due to a lack of information including their distribution while at-sea during migration, moult and winter.

Resource development activities in the arctic such as offshore oil and gas in the Beaufort Sea and mining in central arctic Canada have accelerated in recent years adding urgency to the need for information on key offshore areas for Common Eiders. Hence this study was initiated in 2001 by the US Fish and Wildlife Service and Canadian Wildlife Service as a Sea Duck Joint Venture project to locate the staging, moulting and wintering areas used by the Common Eiders that nest in central arctic Canada. This study is also providing information on affiliations between moulting, wintering, and breeding areas, thereby helping to define population units. Such information is essential to effectively manage a harvested species.



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We used satellite telemetry to monitor movements of Common Eiders. This technology has proven cost effective and has yielded critical life history data for other sea ducks not practically attainable by other means (Petersen et al. 1999; Dickson et al. 2000).



Photo Courtesy Lynne Dickson

Satellite transmitters were successfully implanted in 14 Common Eiders in 2001 (8 males and 6 females), 17 in 2002 (9 males and 8 females), and 16 in 2003 (8 males and 8 females). All were captured just prior to nest initiation in mid June, at Nauyak Lake about 130 km southwest of Cambridge Bay, Nunavut.

We used a large mist net 90 m long and 6 m high strung across a narrow opening between two cliffs where a creek from Nauyak Lake entered the ocean. This site was recommended by local residents who knew that in spring eider pairs travel back and forth through the narrows between a nesting colony on the lake and areas of early open water at sea. The eiders avoided the net during the day, but were relatively easy to catch between midnight and 4 am when wind speed usually dropped and the sun dipped behind cliffs making the net less visible.



A veterinarian and two assistants surgically implanted the transmitters in the ducks following the technique described by Korschgen et al. (1996). Isoflurane administered with compressed air was used as anaesthetic. The transmitter was

placed in the abdominal cavity of the bird with the antenna exiting the back near the base of the tail. Prior to surgery, the transmitter was fitted with a sleeve of surgical mesh so that during surgery the whole unit could be secured in place by stitching the mesh to the ventral body wall (Mulcahy 2001). The transmitter was further anchored by stitching the eider's skin to a dacron collar fitted around the base of the antenna. Each bird was held in captivity for 2 to 3 h following surgery to recover from the anaesthesia, then released near the capture site.

The transmitters were programmed to send signals to Argos satellites at variable rates. Transmission cycles were more frequent during periods of anticipated movement. In 2001 and 2002, the transmitters were programmed to send signals every 2 to 8 days. In 2003, the rate ranged from 3 times a day (every 8 h with a 4



h on, 4 h off duty cycle) during migration across the Beaufort Sea, to once every 4 days while on the moulting and nesting areas, and once every 8 days while on the wintering grounds. This variable rate was selected to preserve battery life while ensuring significant data on staging areas and migration corridors in the Beaufort Sea.

The eider locations provided by Argos satellites were plotted on maps using ArcView software. Maps showing the movement of individual eiders tagged in June of 2003 are posted here. These maps will be periodically updated to allow anyone interested to track the eiders as they move from their nesting grounds in central arctic Canada to their moulting and wintering areas. Also posted here are maps that show moulting and wintering areas of Common Eiders tagged in the previous 2 years of the study.

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