

## Tracking by means of satellite of king eider migration

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The Disko West assessment area is very important for the king eider (*Somateria spectabilis*) population breeding in eastern Arctic Canada. Satellite tracking and surveys of concentration areas have been conducted in recent years to identify key areas, delineate populations and estimate the population size.

Thirty-six king eiders were tracked from their breeding and moulting sites by means of satellite transmitters on their migration to the wintering grounds on the fishing banks off West Greenland (Mosbech et al. 2004c, Mosbech et al. 2006a). The results showed that regardless of the locality where the birds were caught and implanted with a transmitter (eastern Canada or West Greenland), almost half of the tracked birds wintered at Store Hellefiskebanke and the adjacent coast. A single bird was followed for two years where it performed a clockwise migration around Baffin Island on the migration between moulting, wintering and breeding areas (Figure 1).

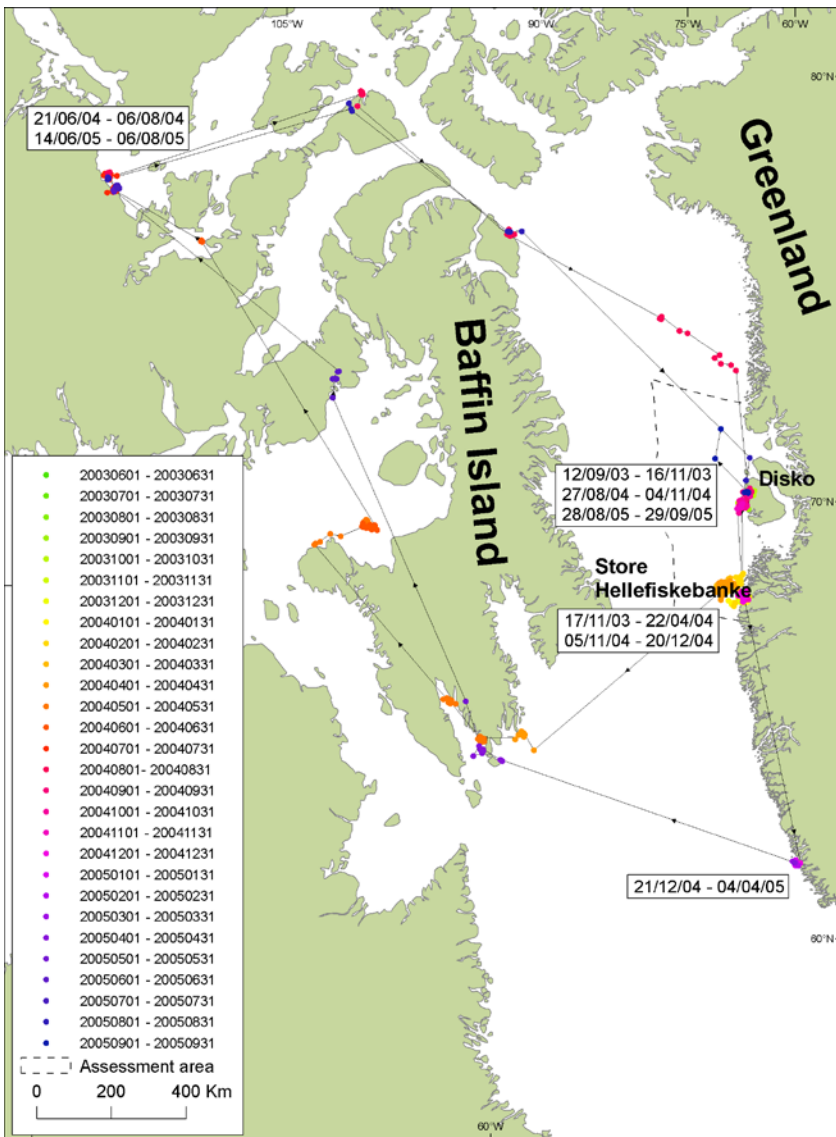
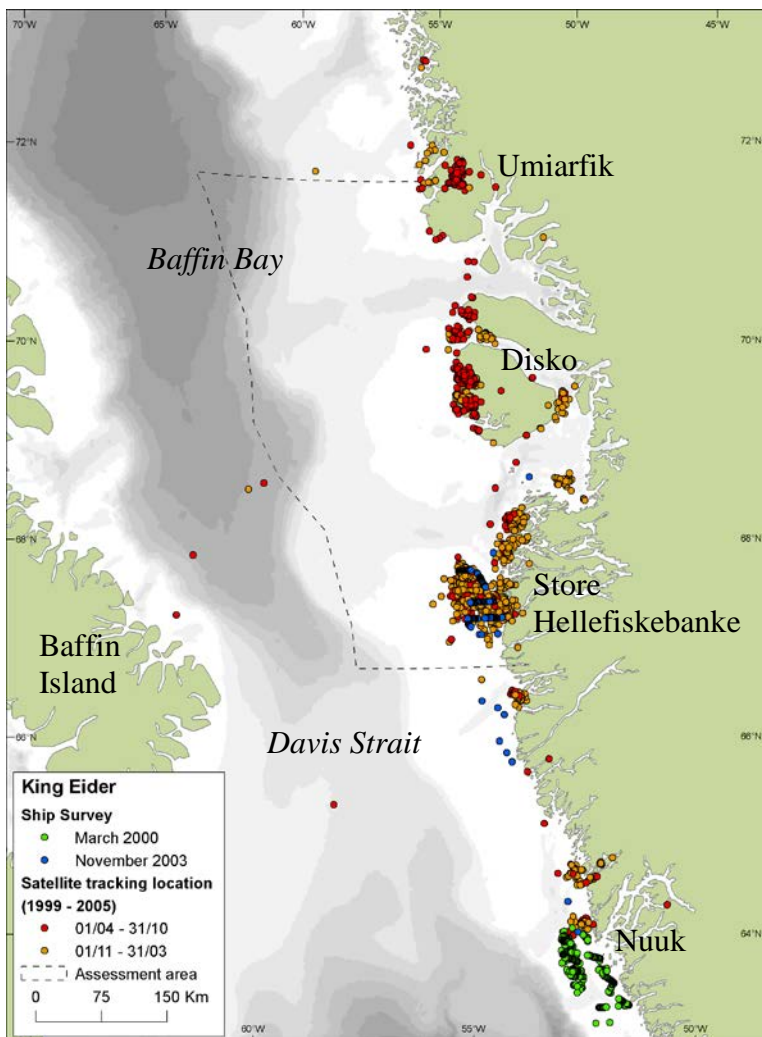


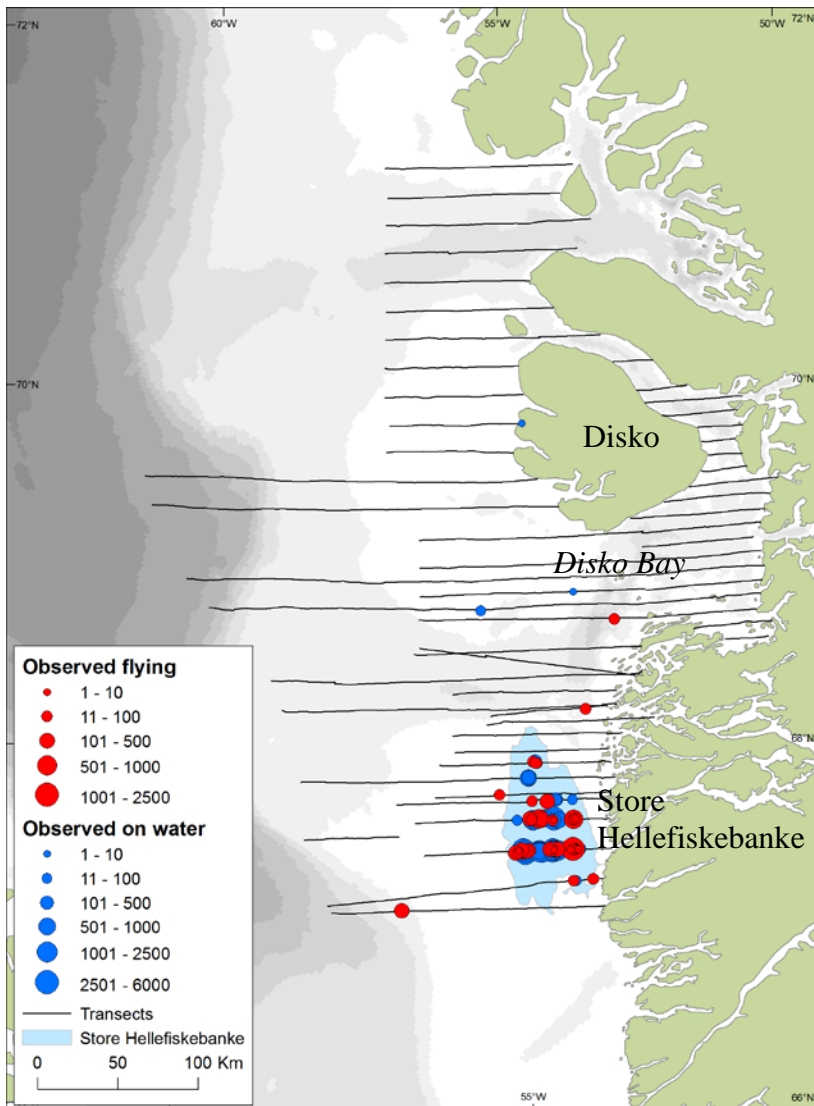
Figure 1. A single king eider tracked with satellite transmitter (No. e41195) from the moulting area at Disko Island in September 2003 and the following two years through two full migration cycles to the breeding grounds in Arctic Canada. Two sites in the assessment areas were of particular importance to this bird: the waters west of Disko Island and the shallow part of Store Hellefiskebanke. Based on DCE/GINR data, Mosbech et al. (2006c).

On Store Hellefiskebanke most birds were found in areas with water depths less than 50 m and up to 70 km from the coast (Figure 2). Previous surveys had shown that up to 300,000 king eiders could be wintering in this area in March (Mosbech & Johnson 1999). An aerial survey carried out in late April 2006, as a part of the marginal ice zone project (Frederiksen et al. 2008), resulted in an estimate of about 400,000 king eiders (75 % confidence intervals: 227,000 – 709,000) staging in the shallow parts of Store Hellefiskebanke (Figure 3). Based on a ship survey in November 2003 an abundance of 500,000 king eiders (75% confidence intervals: 529,000 – 1,083,000) was estimated for the Store Hellefiskebanke in November. This probably encompass the entire population of king eiders wintering in West Greenland, and this fact makes this shallow part of Store Hellefiskebanke extremely sensitive to oil spills.

A tracked king eider equipped with a depth transducer recorded 43 m as maximum dive depth and it showed a diurnal diving pattern with preference during daylight, even in midwinter, with only a few hours of twilight (Figure 4) (Mosbech et al. 2006a), indicating the importance of these few hours for foraging. It also indicates that there are plenty of benthic mussels at the site, since the birds are able to find sufficient food during these few hours.



*Figure 2. King eider satellite tracking locations from year round tracking of birds implanted at moulting localities in Umiarfik and the fjords at the west coast of Disko and at a breeding locality in Arctic Canada (outside the map). The scattered dots in the central Baffin Bay and on Baffin Island are from bird migrating to and from breeding localities in Arctic Canada west of the map border. Observations from two ship based surveys (March 2000 and November 2003) are also indicated on the map. The importance of the waters west of Disko Island and on Store Hellefiskebanke (at c. 68° N) is apparent. Based on DCE/GINR data, Mosbech et al. (2006a).*



*Figure 3. Distribution of king eiders ( $n = 57100$ ) observed on aerial transects in April and May 2006. Their estimated abundance is based on the blue area corresponding to the 50 m isobath of Store Hellefiskebanke, see text for further information.*

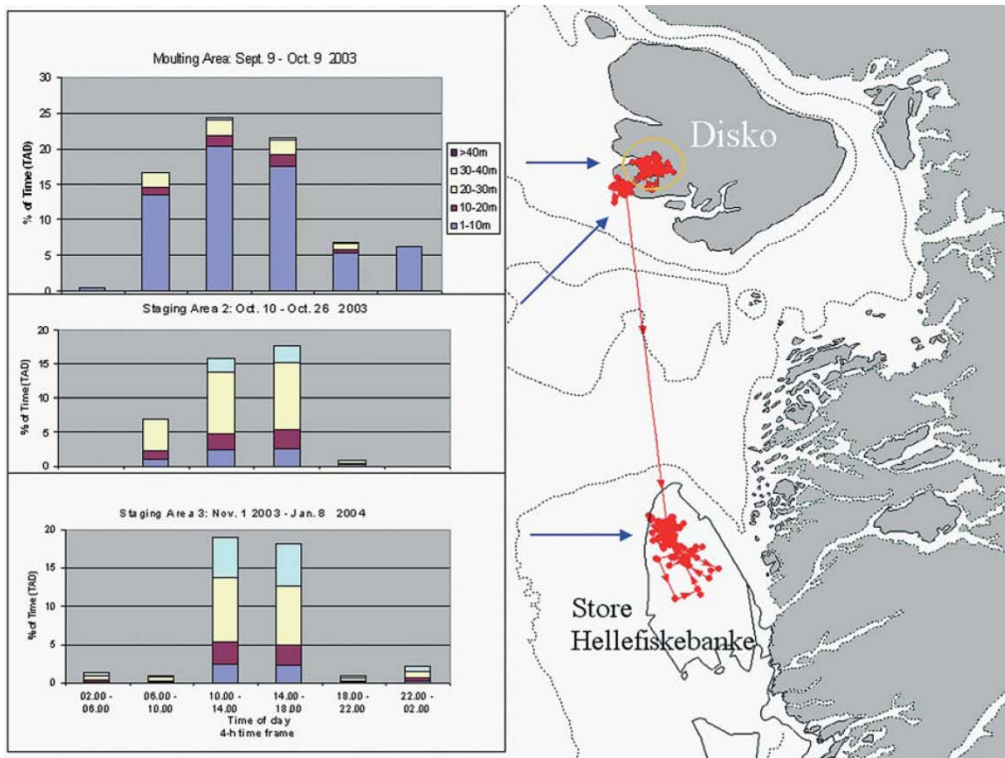


Figure 4. Satellite tracked locations and track-line for a female king eider using three distinct staging areas from 7 September to 8 January and diurnal diving behaviour in these three areas. The columns show the time spent in different depth intervals (Time At Depth, TAD) as percentage of the time in each four-hour time frame and averaged for the staging period. The diving data covered 75 %, 79 % and 54 % of the time spent in the three staging areas, respectively (reproduced from Mosbech et al. 2006b).

## Referencer

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