

Foraging behavior of thick-billed murres around St. George Island, Bering Sea

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Annual changes in foraging behavior (e.g. trip duration, diet) have been studied to examine the effects of environmental changes on the ecology of diving seabirds (e.g. Kitaysky et al., 2000). However, only few studies have examined the response of these seabirds to changes in environment at the fine scale. In summers of 2004 and 2006, foraging behavior of thick-billed murres (*Uria lomvia*) was studied using bird-borne data loggers (D2GT, 16g), which can record time-series data of diving depth, temperature and acceleration (flying events), on St. George Island, Bering Sea. We used these data to examine inter-annual variation in ocean conditions and diving behavior of murres. Sea surface temperatures (SST) and vertical temperature profiles obtained from the bird-borne data loggers revealed that the birds used various water masses for foraging, such as stratified, high SST (11.6°C and 9.5°C for 2004 and 2006, on average) water mass far from the island, and well-mixed, low SST (8.1°C and 7.2°C for 2004 and 2006) water mass near the island. This indicates that murres experienced colder ocean conditions in 2006 than in 2004. In 2004, the birds frequently foraged in stratified, high SST water mass and dived just below the thermocline depth (modal dive depth = 20-30m). In contrast, in 2006, the birds foraged in waters of lower SST near the island and diving activities appeared to be independent of thermocline depth (dive depth = 40-50m). Main prey items delivered to chick differed between years: sandlance (53% of observed items) and pollock (23%) in 2004, but squid (23%), flatfish (17%) and pollock (15%) in 2006. These results suggest that the birds targeted on prey associated with thermocline in 2004 with warm ocean conditions, whereas on prey not associated with thermocline in 2006 with cold ocean conditions. Thick-billed murres appeared to adjust their foraging behavior according to inter-annual variation in ocean condition and prey distribution.