Abundance and feeding ecology of humpback whales (Megaptera novaeangliae) within Stellar sea lion (Eumetopias jubatus) critical habitat in Kodiak, Alaska.

Briana H. Witteveen
University of Alaska Fairbanks - Email address: fbhhi@uaf.edu

ABSTRACT

The presence of a feeding aggregations of humpback whales around Kodiak Island could significantly affect ecosystem dynamics. Estimating abundance and examining foraging ecology of these whales would provide information essential to evaluating ecosystem dynamics and the environment impacts of humpback whales. Estimation of consumption by humpback whales is of particular importance within the Kodiak region, as male humpbacks feeding aggregations have been observed throughout the Gulf of Alaska (LOSA) and Bering Sea within the last 50-60 years. The Bering Sea and other parts of the North Pacific are important humpback whale foraging regions (Sagarin 1993). However, due to the lack of data, current abundance estimates have been based on traditional methods that have required assumptions to be made about the whales’ diet and feeding habits. The historic diet (A) contained surf smelt and general euphausiid species (Figure 6).

METHODS

Study area and period

The study area was limited to the waters of eastern Kodiak Island, including Chickakoo and Memrit Bay. The study period covered the entire period from 1999-2002.

RESULTS AND DISCUSSION

Estimates of consumption were calculated by two methods. Method 1 assumes each humpback whale consumes one ton of food per day. Method 2 accounts for the energy requirements (kilodyes) of whales, the energy density (kcal/g) of their prey based on equations from Perez and McAlister (1993)

Feeding ecology of humpback whales

Feeding aggregations of humpback whales may be quite significant. Therefore feeding aggregations research within Stellar sea lion critical habitat is important. Estimate and prey consumption of both populations began in 2001. Results estimate a current population of 157 humpback whales feeding within the Long Island area and one critical habitat in Kodiak Island. A pre-whaling population of oolitic constituent species may have been observed within the study area and outreach centers of commercially caught whales. Results show that currently, feeding humpback whales may be consuming nearly 24,000 tons of prey annually, including 50% of groundfish, 44% of cephalopods, and 26% of fish (Figure 9).

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