

Morbey, Y. 1995. Fledging variability and the application of fledging models to the behaviour of Cassin's Auklets (*Ptychoramphus aleuticus*) at Triangle Island, British Columbia. MSc, Simon Fraser University, Burnaby, BC. 128 pp.

A seasonal decline in fledging mass is commonly reported in the Alcidae. The traditional explanation for this phenomenon is a seasonal decline in nestling growth rates, due either to declining food availability or delayed breeding of lower quality parents. An alternative explanation considers the differential growth and mortality rates faced by chicks in the nest and at sea under time-limitation. The appeal of this model is its prediction of a seasonal decline in fledging mass in the absence of a seasonal decline in growth rates. The model also predicts that fast-growing chicks should fledge heavier and younger than slow-growing chicks. My primary objective was to determine whether the mass and age of Cassin's Auklets (*Ptychoramphus aleuticus*) at fledging conformed to both predictions of this fledging model. On Triangle Island, British Columbia during the 1994 breeding season, I observed the natural variation in growth and fledging behaviour and experimentally manipulated the hatching date of a subset of chicks. The data met the second prediction of the fledging model, but fledging mass did not decline over the season as predicted. I conducted sensitivity analyses on the assumptions and parameter values used in Ydenberg's model to determine how robust the prediction of a seasonal decline in fledging mass was. When I modified the model by using Cassin's Auklet parameter values, the predicted fledging mass did not decline over the season, and the predictions of this modified model matched the observed variation in fledging behaviour. The modified model still predicts that fast-growing chicks should fledge heavier and younger than slow-growing chicks.