

**Gjerdrum, C. 2001. Nestling growth and parental provisioning of Tufted Puffins (*Fratercula cirrhala*) on Triangle Island, British Columbia. MSc, Simon Fraser University, Burnaby, BC. 117 pp.**

***Abstract***

I studied the reproductive performance of tufted puffins (*Fratercula cirrhata*) on Triangle Island, British Columbia during two years when reproduction was successful. Complete reproductive failures are common for this population. I report on the timing of breeding, nestling growth, fledging behaviour, nestling diet, and parental provisioning, and discuss the results in relation to those previously reported for this and other breeding colonies. Nestling growth rate and fledging mass declined seasonally in both years. I found that fast-growing nestlings, and those hatched early, fledged heavier and younger. The results support the hypothesis that individual nestlings adjust their timing of departure according to their own growth rate and hatching date. In striking contrast to the seasonal declines in fledging mass, I found that nestling mass at age 10 days (early in the chick-rearing period) increased significantly with hatch date. Several factors may influence early nestling mass, but egg volume had the only significant effect in this study. I found no evidence that female puffins trade-off between egg size and the timing of reproduction or parental provisioning behaviour.

I used a supplementary feeding experiment to determine if nestling food demand regulates parental provisioning effort in tufted puffins. I found that supplemented nestlings were fed significantly less frequently than were control nestlings, but that the size and prey composition of bill loads did not differ between treatment groups. I tested the hypothesis that nestlings fledge based on the costs and benefits of remaining in the nest by continuing to supplement the nestlings as they approached independence. As predicted, supplemented nestlings fledged older. I also found that the duration of time nestlings remained in the nest losing mass prior to fledging was longer for lighter and younger nestlings. Results suggest that fledging behaviour is influenced by the nestling's expectation of future provisioning.

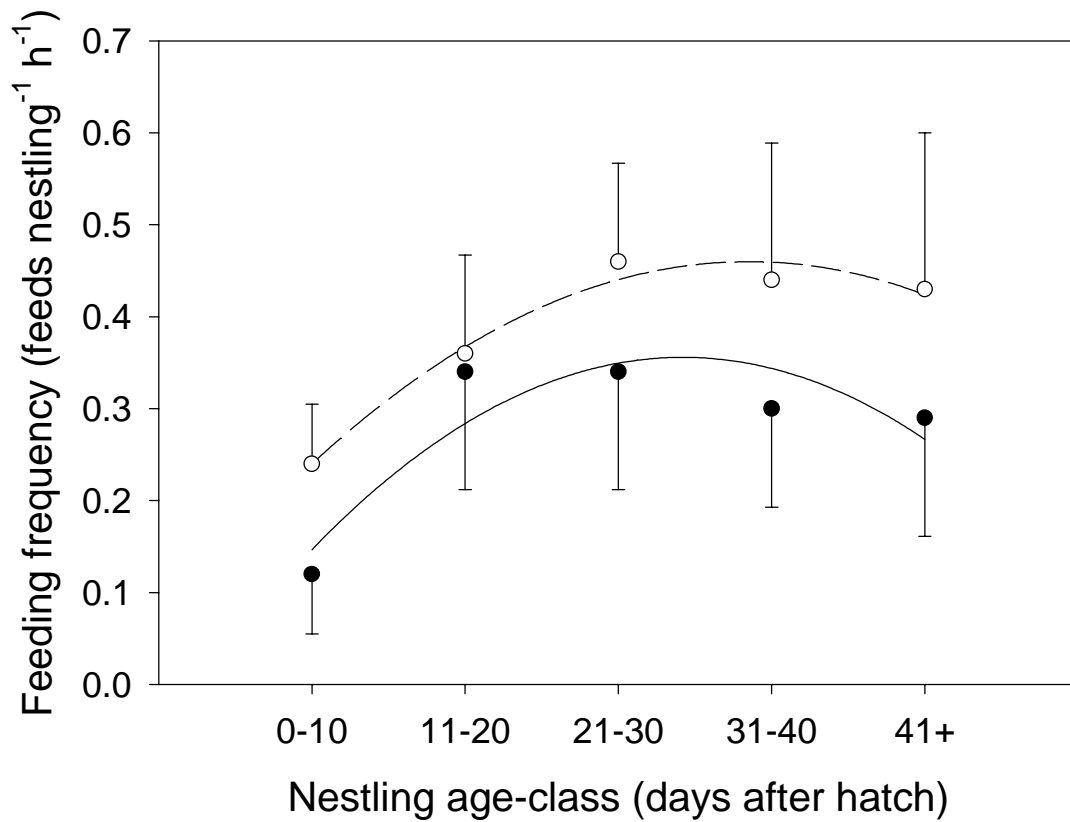


Figure. Supplemented nestlings were fed significantly less often than control nestlings. Mean  $\pm$  95% confidence intervals (unidirectional) feeding frequency during five nestling age-classes for supplemented (solid points,  $n = 15$ ) and control (open points,  $n = 15$ ) nestlings in 2000.