

Blackburn, G. 2004. Ornaments and overflight behaviour of Tufted Puffins (*Fratercula cirrhata*) breeding on Triangle Island, British Columbia. MSc thesis, Centre for Wildlife Ecology, Department of Biological Sciences, Simon Fraser University, Burnaby, BC. 74 pp.

Tufted puffins (*Fratercula cirrhata*) are unusual among seabirds in that they bear multiple colourful ornaments during the breeding season. They also engage in colony overflights when approaching the colony with food for their chicks. In this thesis I investigate the function of these traits since neither one makes any obvious direct contribution to their reproductive success.

Ornaments may serve as displays for gaining mates. Theory predicts that such traits should vary more than non-display traits. I found that tufted puffin ornaments were only slightly more variable in length than non-display traits and they exhibited low length and hue variation compared to putative display traits in other species. Males possessed redder skin traits than females, but variation was similar between sexes. The signaling potential of these ornaments therefore appears low, although it may be realized through detailed mate inspection. Alternatively, other display components such as behaviour may provide display variation during mating interactions. Attributes of the various ornaments were generally uncorrelated in magnitude within individuals, suggesting that any information the ornaments contain is unique between them. No ornament measure predicted condition (size-controlled body mass).

Overflight behaviour of food-bearing puffins might mitigate the risk of kleptoparasitism by gulls. Overflights were correlated with ecological variables (wind, puffin arrival rate, slope, gull presence, and gull pursuit activity) in the manner expected of evasive behaviour, but were positively correlated with kleptoparasitism events when these variables were statistically controlled for. Overflights therefore do not appear to mitigate kleptoparasitism risk, although assessing the role of overflights in kleptoparasite evasion may require an understanding of the individual context for this behaviour, as well as the association between individual overflights and gull pursuit intensity. We need to determine the costs of puffins of potential evasive behaviour before we can clearly evaluate the effect of kleptoparasitism on puffin reproductive success.