in neglect actually occurred (Gaston and Powell in press).

We believe that the sharp increase in mass just before the start of incubation, as well as the subsequent decline during incubation, is an adaptive response by Ancient Murrelets to the demands of breeding. However, inter-year variation in mean mass at clutch completion probably reflects the effect of inter-year differences in the availability of food during the period just before the start of incubation.

ACKNOWLEDGMENTS

We thank all those who assisted with the trapping of adult murrelets at Reef Island: Andrea Lawrence, Pierre Mineau, David Noble, David Powell, Steven Smith, Yves Turcotte, and Louise White. Thanks also to Gary Kaiser and Moira Lemon for advice and assistance with logistics. Timothy Birkhead, James Briskie, Hugh Boyd, Vernon Byrd, George Hunt, David Noble, and Kathy Winnett-Murray made useful comments on the manuscript. The study was funded by the Canadian Wildlife Service.

LITERATURE CITED

- ASKENMO, C. 1977. Effects of addition and removal of nestlings on nestling weight, nestling survival, and female weight loss in the Pied Flycatcher *Ficedula hypoleuca* (Pallas). Ornis Scandinavica 8: 1–8
- BRYANT, D. M. 1979. Reproductive costs in the house martin (*Delichon urbica*). J. Anim. Ecol. 48: 655– 675.
- FREED, L. A. 1981. Loss of mass in breeding wrens: stress or adaptation? Ecology 62: 1179–1186.
- GASTON, A. J., I. L. JONES, & D. G. NOBLE. 1988. Monitoring Ancient Murrelet breeding populations. Colon. Waterbirds 11: 58–66.
- ———, & D. W. POWELL. 1989. Natural incubation, egg neglect and hatchability in the Ancient Murrelet. Auk 106: 433–438.
- Hails, C. J., & D. M. Bryant. 1979. Reproductive energetics of a free-living bird. J. Anim. Ecol. 48: 471–482.

- Hussell, D. J. T. 1972. Factors affecting clutch size in arctic passerines. Ecol. Monogr. 42: 317–364.
- JONES, G. 1987. Parent-offspring resource allocation in swallows during nestling rearing: an experimental study. Ardea 75: 145–168.
- JONES, I. L. 1985. Structure and function of vocalizations and related behavior of the Ancient Murrelet Synthliboramphus antiquus. M.S. thesis, Toronto, Univ. Toronto.
- Murray, K. G., K. Winnett-Murray, & G. L. Hunt Jr. 1980. Egg neglect in Xantus' Murrelet. Proc. Colon. Waterbird Group 3: 186–195.
- ——, Z. A. EPPLEY, G. L. HUNT JR., & D. B. SCHWARTZ. 1983. Breeding biology of the Xantus' Murrelet. Condor 85: 12–21.
- NORBERG, R. A. 1981. Temporary weight decrease in breeding birds may result in more fledged young. Am. Nat. 118: 838–850.
- NUR, N. 1984. The consequences of brood size for breeding Blue Tits: I. Adult survival, weight change and the cost of reproduction. J. Anim. Ecol. 53: 479–498.
- RICKLEFS, R. E. 1974. Energetics of reproduction in birds. Pp. 152-297 in Avian energetics (R. A. Paynter Jr., Ed.). Cambridge, Massachusetts, Nuttall Ornithological Club.
- ———, & D. J. T. HUSSELL. 1984. Changes in adult mass associated with the nesting cycle in the European Starling. Ornis Scandinavica 15: 155–161.
- SAS. 1985. SAS/STAT guide for personal computers, 6th ed. Cary, North Carolina, SAS Inst. Inc.
- SEALY, S. G. 1975. Feeding ecology of the ancient and marbled murrelets near Langara Island, British Columbia. Can. J. Zool. 53: 418–433.
- ——. 1976. Biology of nesting Ancient Murrelets. Condor 78: 294–306.
- VERMEER, K. 1984. The diet and food consumption of nestling Cassin's auklets during summer, and a comparison with other plankton-feeding alcids. Murrelet 65: 65–77.
- ——, S. G. SEALY, & G. A. SANGER. 1987. Feeding ecology of the Alcidae in the eastern North Pacific Ocean. Pp. 189–228 in Seabirds: feeding ecology and role in marine ecosystems (J. P. Croxall, Ed.). Cambridge, United Kingdom, Cambridge Univ. Press.

ERRATUM

In "Natural incubation, egg neglect, and hatchability in the Ancient Murrelet" by Anthony J. Gaston and David W. Powell (1989, Auk 106: 433-438), the degrees of freedom of the Chi-square values on p. 435 should read: " $\chi^2 = 1.01$, df = 1, P > 0.10" and " $\chi^2 = 16.4$, df = 1, P < 0.01."