

SHORT COMMUNICATIONS

**DIET–FEATHER STABLE ISOTOPE ( $\delta^{15}\text{N}$  AND  $\delta^{13}\text{C}$ ) FRACTIONATION IN COMMON MURRES AND OTHER SEABIRDS**

BENJAMIN H. BECKER<sup>1,4</sup>, SCOTT H. NEWMAN<sup>2</sup>, SUSAN INGLIS<sup>3</sup>, AND STEVEN R. BEISSINGER<sup>1</sup>

<sup>1</sup>*Division of Ecosystem Sciences, Department of Environmental Science, Policy and Management, University of California–Berkeley, 137 Mulford Hall #3114, Berkeley, CA 94720-3114*

<sup>2</sup>*Infectious Disease Group/EMPRES, Animal Health Service, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, ITALY 00100*

<sup>3</sup>*School of Fisheries and Ocean Sciences, University of Alaska Fairbanks/ASLC, P.O. Box 7720, Fairbanks, AK 99775*

Manuscript received 6 July 2006; accepted 25 January 2007.

<sup>4</sup>Present address: Pacific Coast Science and Learning Center, Point Reyes National Seashore, Point Reyes Station, CA 94956. E-mail: [ben\\_becker@nps.gov](mailto:ben_becker@nps.gov)

*Abstract.* We measured the fractionation of stable nitrogen ( $\delta^{15}\text{N}$ ) and carbon ( $\delta^{13}\text{C}$ ) isotopes in the breast and primary feathers of 11 Common Murres (*Uria aalge*) maintained on a diet of capelin (*Mallotus villosus*). Diet–feather  $\delta^{15}\text{N}$  fractionation from delipidated capelin muscle to murre feathers was  $3.6\text{‰} \pm 0.2\text{‰}$  in breast feathers and  $3.7\text{‰} \pm 0.2\text{‰}$  in primary feathers. Fractionation of  $\delta^{13}\text{C}$  was  $2.5\text{‰} \pm 0.2\text{‰}$  in breast feathers and  $1.9\text{‰} \pm 0.3\text{‰}$  in primary feathers. Prey–feather fractionation (for delipidated, muscle-only prey samples) for nine other species of seabirds ranged from  $3.0\text{‰}$  to  $4.6\text{‰}$  for  $\delta^{15}\text{N}$  and  $0.1\text{‰}$  to  $2.5\text{‰}$  for  $\delta^{13}\text{C}$ . Studies that did not remove lipids from prey samples showed higher  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$  fractionation, and those that used whole prey items rather than muscle tissue alone showed higher  $\delta^{15}\text{N}$  fractionation. We suggest that: (1) prey samples be delipidated to facilitate interpretation of  $\delta^{13}\text{C}$  fractionation, (2) high interstudy and interspecific variation in  $\delta^{13}\text{C}$  makes species-specific studies essential, and (3) use of muscle tissue rather than whole bodies of fish will minimize unexplained variation in  $\delta^{15}\text{N}$  fractionation.

*Key words:* Common Murre, feather, fractionation, stable carbon isotope, stable nitrogen isotope, *Uria aalge*.