

SHORT COMMUNICATIONS

VARIATION IN HYDROGEN STABLE-ISOTOPE RATIOS BETWEEN ADULT AND NESTLING COOPER'S HAWKS

TIMOTHY D. MEEHAN^{1,8}, ROBERT N. ROSENFELD², VIOREL N. ATUDOREI³, JOHN BIELEFELDT⁴, LAURA J. ROSENFELD⁵, ANDREW C. STEWART⁶, WILLIAM E. STOUT⁷ AND MICHAEL A. BOZEK⁵

¹Department of Biology, University of New Mexico, Albuquerque, NM 87131, and HawkWatch International, 1800 South West Temple, Suite 226, Salt Lake City, UT 84115

²Department of Biology, University of Wisconsin, Stevens Point, WI 54481

³Department of Earth and Planetary Sciences, University of New Mexico, Albuquerque, NM 87131

⁴Park Planning, Racine County Public Works Division, Sturtevant, WI 53177

⁵Wisconsin Cooperative Fishery Unit, University of Wisconsin, Stevens Point, WI 54481

⁶British Columbia Conservation Data Centre, Terrestrial Information Branch, Ministry of Sustainable Resource Management, P.O. Box 9993, STN PROV GOVT, Victoria, BC V8W9R7, Canada

⁷Gaylord Nelson Institute for Environmental Studies, University of Wisconsin, Madison, WI 53706

Manuscript received 20 January 2003; accepted 19 March 2003.

⁸E-mail: tdmeehan@unm.edu

Abstract. Hydrogen stable-isotope analysis of feathers is an increasingly popular method for estimating the origins of migrating and wintering birds. Use of this method requires that investigators know which feathers are grown on breeding grounds and how the hydrogen stable-isotope ratios of feathers (δD_f) relate to those of local precipitation (δD_p). In this study, we measured δD_f of adult (primaries 1, 3, and 10) and nestling Cooper's Hawks (*Accipiter cooperii*) in Wisconsin, North Dakota, and British Columbia, Canada. As previously shown, δD_f of nestling feathers were related to δD_p . In contrast, the δD_f of adult feathers grown on the breeding grounds were substantially greater than those of their nestlings, and varied significantly across primary feathers and study areas. Our findings suggest that it is not possible to use hydrogen stable-isotope analysis of feathers to learn the origins of migrating adult Cooper's Hawks (or possibly adults of other large-bodied species with extended molting periods) until more is learned about the physiological or ecological mechanisms underlying these isotopic discrepancies.

Key words: *Accipiter cooperii*, migration, molt, raptor.