
ESTIMATING NATAL ORIGINS OF MIGRATORY JUVENILE GOLDEN EAGLES USING STABLE HYDROGEN ISOTOPES

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We used stable hydrogen isotope analysis to estimate the natal origins of juvenile Golden Eagles (*Aquila chrysaetos*) captured during fall migration along the Rocky Mountain Front in Montana, U.S.A. We collected feather samples from 50 hatch-year (juvenile) Golden Eagles at several fall migration sites from 2004 – 2007. We analyzed feathers for their ratio of deuterium ($\delta^2\text{H}_f$) described in parts per thousand [‰]. A simple linear regression model was used to calibrate our isotope ratios of migrating eagles to a raptor-specific deuterium base map. This enabled us to make inferences about the natal origins of juvenile Golden Eagles captured during fall migration. Our analysis indicated natal origins ranged from the Brooks Range in Alaska to northern Montana. However, 66% (range 50-76%) of the individuals we sampled likely originated from natal areas located in the Yukon and Northwest Territories, Canada, and a small portion of eastern Alaska ($\leq -140 \delta^2\text{H}_f$). We did not observe any passage date differences regarding gender or natal latitudinal origins. Our study supports that stable isotope analysis is effective in aiding researchers to understand natal origins of migratory, juvenile Golden Eagles captured during fall migration, or found as mortalities on wintering grounds. It may also be a useful tool for linking Golden Eagle migration count and trend data with population status when utilized among multiple migration sites and wintering areas throughout North America.