

SHORT COMMUNICATIONS

ISOTOPIC EVIDENCE FOR SOURCES OF NUTRIENTS ALLOCATED TO CLUTCH FORMATION BY HARLEQUIN DUCKS

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Abstract. Waterfowl employ a broad array of strategies for acquiring the energy and nutrients needed for egg formation, ranging from storage of endogenous reserves prior to arrival on breeding areas to complete reliance on exogenous food sources available at breeding sites. We used stable isotope analyses ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) to quantify the relative nutrient inputs to Harlequin Duck (*Histrionicus histrionicus*) eggs and, therefore, to identify the strategy of nutrient acquisition and allocation used by females to meet the demands of egg production. Marine-derived endogenous nutrients are isotopically more enriched than freshwater dietary nutrients for Harlequin Ducks that migrate between marine wintering grounds and terrestrial breeding grounds. There was little evidence that endogenous reserves stored on marine wintering areas were allocated to clutch formation. Therefore, Harlequin Ducks relied on food available in streams on breeding grounds for egg formation, and reserves stored on marine areas were likely used during other energetically and nutritionally demanding periods.

Key words: capital breeding, endogenous reserves, income breeding, stable isotope analysis.