

FEATURE ARTICLES

MERCURY AND STABLE ISOTOPES IN FEATHERS OF AUDOUIN'S GULLS AS INDICATORS OF FEEDING HABITS AND MIGRATORY CONNECTIVITY

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Abstract. To better understand migratory connectivity between breeding and nonbreeding populations, we analyzed mercury (Hg) and stable isotope signatures of nitrogen ($\delta^{15}\text{N}$), carbon ($\delta^{13}\text{C}$), and sulfur ($\delta^{34}\text{S}$) in Audouin's Gulls (*Larus audouinii*) breeding in two different colonies, the Ebro Delta (northeastern Spain) and the Chafarinas Islands (southwestern Mediterranean). Although abundant information is available on the biology and trophic ecology of this gull's breeding populations, little is known about migration patterns, distribution in winter, or conditions faced during the nonbreeding period. Analyses were carried out on first primary feathers, grown during the summer while gulls are on the breeding grounds, and mantle feathers, grown during the winter. Different isotopic signatures ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$, and $\delta^{34}\text{S}$) in summer (primary) feathers from each area agree with the observed differences in diet between the two colonies. In winter (mantle) feathers, isotopic signatures did not differ, consistent with a common wintering ground and common diet, although the lack of isotopic basemaps in marine systems precludes assignment to a geographical area of reference. Future research is needed to relate isotopic signatures and Hg values in mantle feathers to trophic ecology in wintering areas. Results for Hg indicate that the excretory role played by primary feathers precludes their use as indicators of trophic ecology.

Key words: feeding, *Larus audouinii*, mercury, migration, stable isotopes.