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thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo--phylogenetic-ecological-drivers-beak-shape-cephalopods-sanchez-et-al-2023-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo--phylogenetic-ecological-drivers-beak-shape-cephalopods-sanchez-et-al-2023.jpg{/rokbox}

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[Unravelling the phylogenetic and ecological drivers of beak shape variability in cephalopods.](#)

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Abstract: Cephalopod beaks are essential for prey acquisition and fragmentation during feeding. Thus, it is expected that ecological pressures affect cephalopod beak shape. From a practical perspective, these structures are also used to identify gut contents of marine megafauna, such as toothed whales, sharks, seabirds, and large pelagic fishes. Here, we investigated the relative importance of ecological pressures and phylogenetic relatedness in the evolution of beak shape using a wide range of Mediterranean cephalopod species. Phylogenetic analyses based on complete mitogenomes and nuclear ribosomal genes provided a well-supported phylogeny among the 18 included cephalopods. Geometric morphometric and stable isotope methods were implemented to describe interspecific beak shape and trophic niche variability, respectively. Phylogenetic signal was detected in the shape of both parts of the beak (upper and lower). However, lower beak shape was more distinct among closely related species, in line with the empirical notion that lower beak morphology is more useful as an identification tool in cephalopods. Interestingly, no association between beak shape and trophic niche (stable isotope values) was found. These results suggest that the evolution of cephalopod beak shape as quantified here is mainly driven by phylogenetic relationships, while feeding habits play a minor role.

Keywords: