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## Role of prey abundance and geographical variables in a demersal top predator's feeding habits (*Merluccius merluccius*)

Lucia Lopez-Lopez<sup>1,\*</sup>, Valerio Bartolino<sup>2</sup>, Izaskun Preciado<sup>1</sup>

<sup>1</sup>Spanish Institute of Oceanography, C.O. Santander, Promontorio de San Martín, s/n 39004 Santander, Spain

<sup>2</sup>Institute of Marine Research, Department of Aquatic Resources, Swedish University of Agricultural Sciences, PO Box 4, 453 21 Lysekil, Sweden

\*Corresponding author: lucia.lopezlopez@st.ieo.es

**ABSTRACT:** Demersal predators can take advantage of a large pool of potential prey including benthic, demersal and pelagic species; therefore disentangling the variables that influence their diet is of key relevance for food web ecologists. To this aim, we analysed a large dataset of the stomach contents of European hake *Merluccius merluccius*, a top predator in the demersal food web of the Cantabrian Sea. We combined 2 modelling approaches: a zero-truncated generalised additive model targeting fullness variability, and a multinomial model on the probability of consumption for each prey. Predator size, geographical variables (i.e. longitude and depth), and abundance of prey were considered as independent variables, and had significant effects on predator stomach fullness. We also documented a positive effect of continental shelf width on predator stomach fullness. The hake's main prey, blue whiting *Micromesistius poutassou*, had the strongest effect on predator feeding success. However, in the absence of this prey species, consumption of all other prey items increased. Consumption was highly influenced by prey abundance, but predator density dependence was only evident in instances of cannibalism. Both the full/empty ratio and stomach fullness decreased during ontogeny, and a change from low-energy demersal to high-energy pelagic prey was documented, matching the onset of maturity. While the abundance of prey significantly affected feeding success, a large diet breadth rather than prey surrogates seemed to act as an effective buffer, ensuring feeding at low abundance of specific prey.

**KEY WORDS:** European hake · Prey abundance · Diet · Multinomial regression · Generalised additive models · Cannibalism

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