

**Isotopic niche variation in European plaice *Pleuronectes platessa*: diet, habitat or metabolic effect?**

**TIMMERMAN Charles-André <sup>1\*</sup>, DAY Louise <sup>2</sup>, BRIND'AMOUR Anik<sup>2</sup>, CRESSON Pierre<sup>1</sup>**

1 : Ifremer, Laboratoire Ressources Halieutiques Manche Mer du Nord, Centre Manche - Mer du Nord, BP 669, F-62 321 Boulogne-sur-Mer,

2 : Ifremer, Laboratoire Ecologie et Modèles pour l'Halieutique, Centre Atlantique, Rue de l'Île d'Yeu. F-44 000 Nantes,

\*: contact author, [charles.andre.timmerman@ifremer.fr](mailto:charles.andre.timmerman@ifremer.fr)

Understanding trophic interactions structuring ecosystem is needed to improve our knowledge of marine ecosystem functioning and to implement the Ecosystemic Approach to Fisheries. Several confounded factors may alter fish diet. For example, assessing how diet varies with ontogeny is necessary to understand the ecology of species. Most studies so far focused on the modal size of several species. Including individuals from the whole size range of a few species would allow detecting ontogenetic dietary shift. Similarly, ontogenetic habitat change may alter diet, as prey communities vary with habitats.

Stomach content analysis is commonly used in trophic ecology to assess species diet but provides a snapshot of feeding. Coupling stomach content and carbon and nitrogen isotopic analyses in several tissues with different turnover rates can efficiently inform past diets over different period of time. Isotopic integration is also driven by metabolism of each individual and tissue.

This work focuses on European plaice *Pleuronectes platessa*, a benthic species with major ecological and economic interest in the English Channel. Several factors leading to differences in isotopic signatures are investigated: (1) habitat, by comparing trophic patterns in a nursery (Bay of Seine) and adult habitat, (2) diet switch between juveniles and adults and (3) metabolism, by measurements of individuals' growth rate. Finally, sampling in the same area at different seasons will highlight seasonal differences. This combination of markers will help ascertaining the relative contribution of each factor in the observed patterns and will provide some crucial data that are needed to manage the species.

**Keywords:** stables isotopes, turnover rates, ontogenetic shifts, individual diet variation