SPATIAL AND TROPHIC STRATEGY OF HORSE MACKEREL (*TRACHURUS SPP.*) IN WESTERN MEDITERRANEAN SEA

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ABSTRACT

Horse mackerel is a quite exploited resource with important landings in the main fishing ports in the Gulf of Alicante (Spain).
In the Western Mediterranean sea, this genus consists of three species, two of which, *Trachurus trachurus* and *Trachurus mediterraneus* present commercial value, while *Trachurus picturatus* is usually discarded.
This study aims to update the knowledge of their trophic and spatial habits to understand the behaviour and potential niche overlapping in the study area. With this purpose, the role of these three species of Genus *Trachurus* has been studied in marine trophic webs in the Gulf of Alicante.

Fig.1 Species of Genus Trachurus studied

Fig.2 Study area

MATERIAL & METHODS

Samples of *Trachurus mediterraneus*, *Trachurus trachurus* and *Trachurus picturatus* were collected from MEDITS survey and fish market of Altea and Torrevieja in 2015. A total of 323 stomach contents were examined.
T. mediterraneus and *T.trachurus* were split in two ranges of size, resulting in five strata for the three species. Multidimensional scaling (MDS) analysis was carried out and species distribution maps were produced with ARCGIS software. Levin´s and Morisita Indices were studied in order to calculate niche breadth and overlapping .
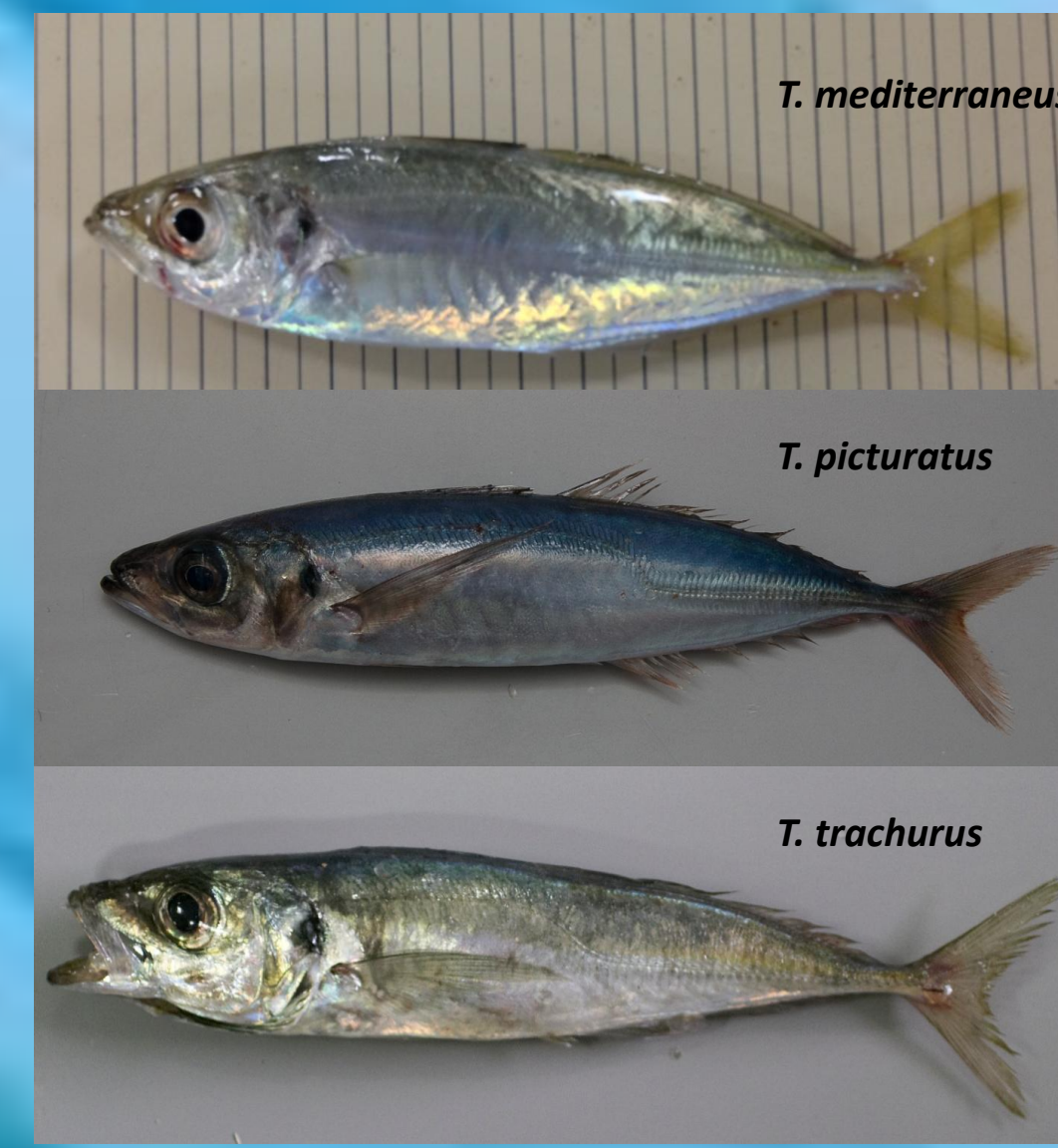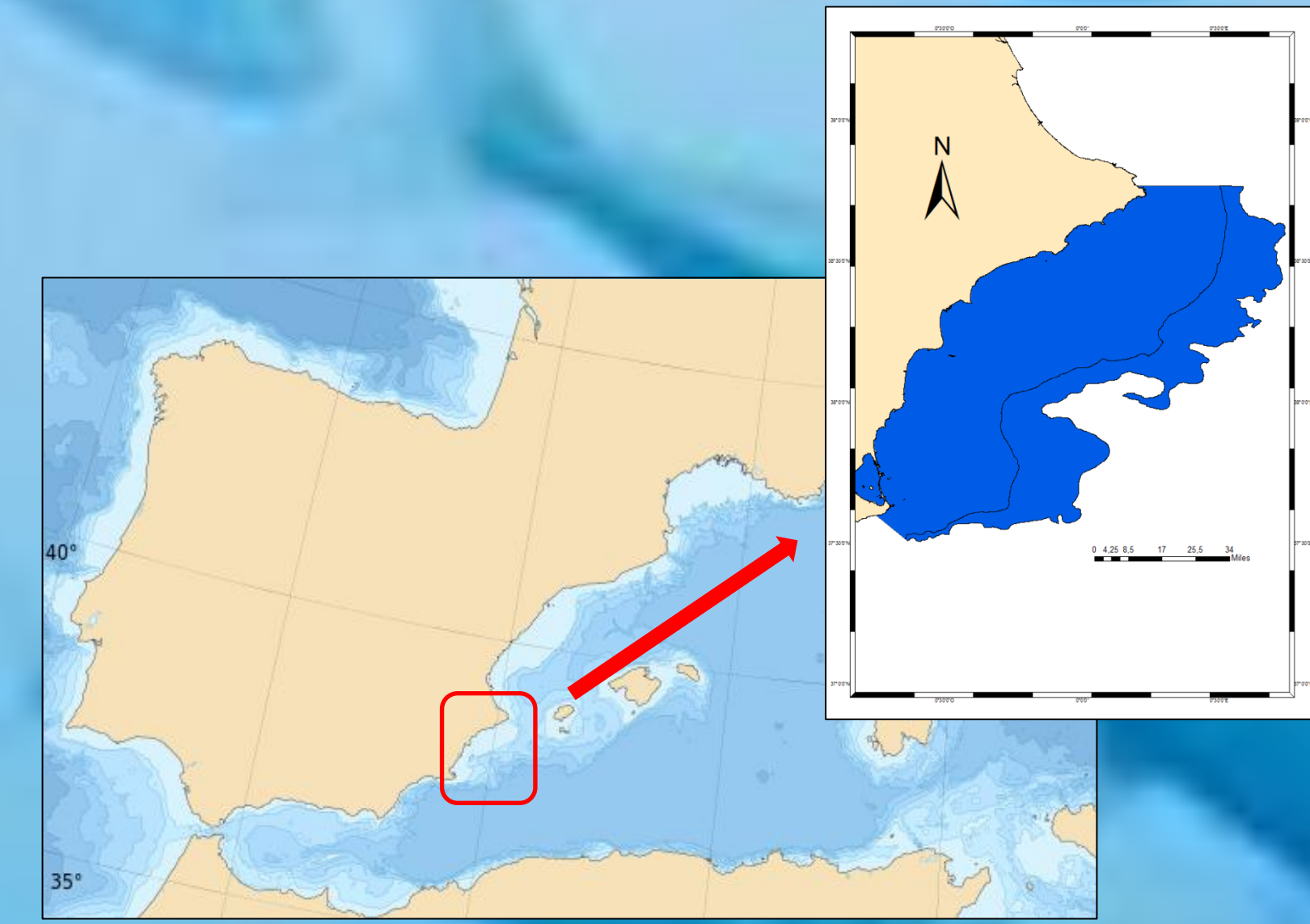

Fig.3. Feeding habits of Horse Mackerel

Fig.4 Density map of Trachurus spp.

$$B = 1/ \Sigma p_i^2$$
$$B_A = B\text{-}1/n\text{-}1$$

$$C_H = 2 \, \Sigma p_i p_j / \Sigma p_i^2 + \Sigma p_j^2$$

Fig.5 Levin´s measure of standardized niche breadth
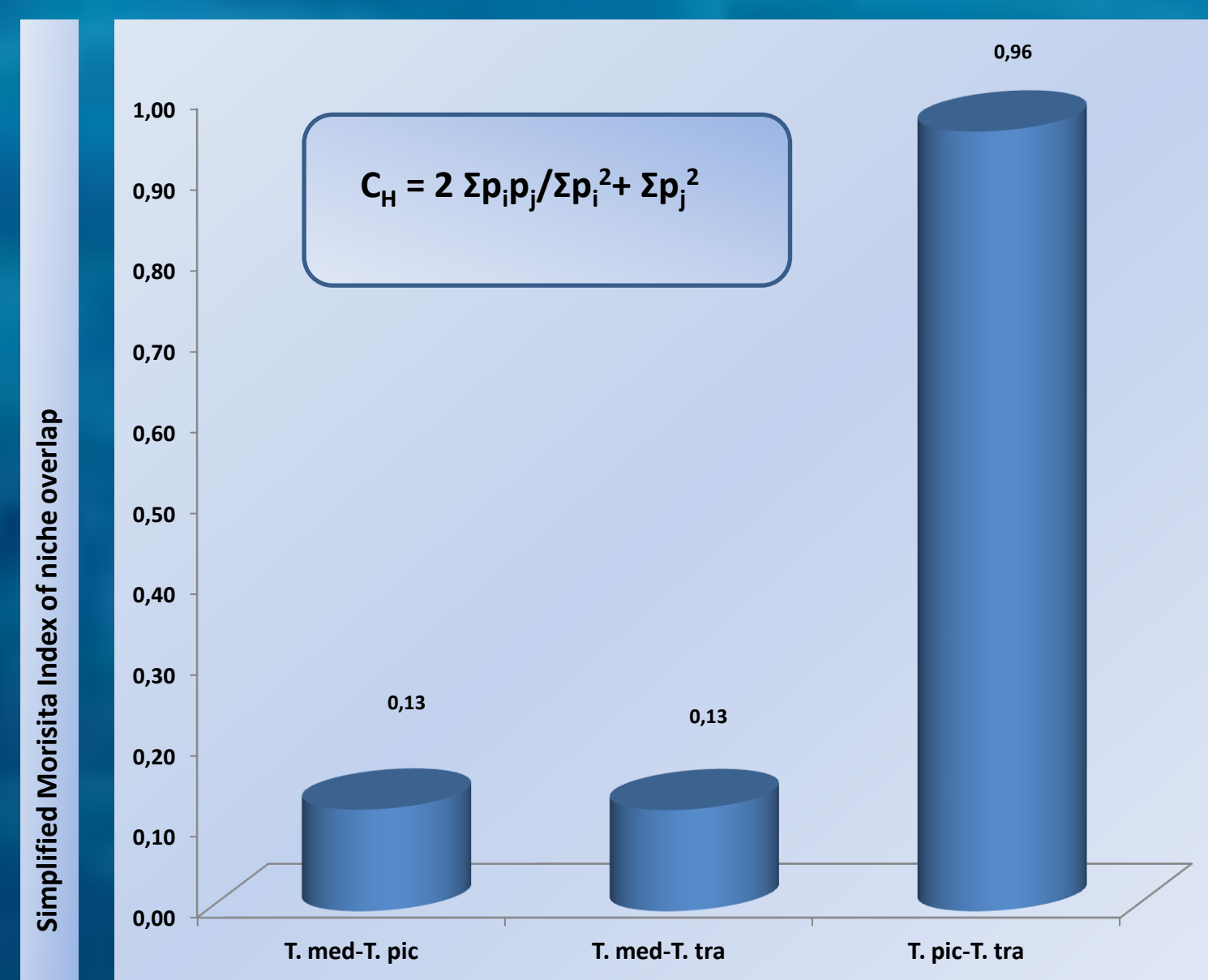
Fig.6 Simplified Morisita Index of niche overlap
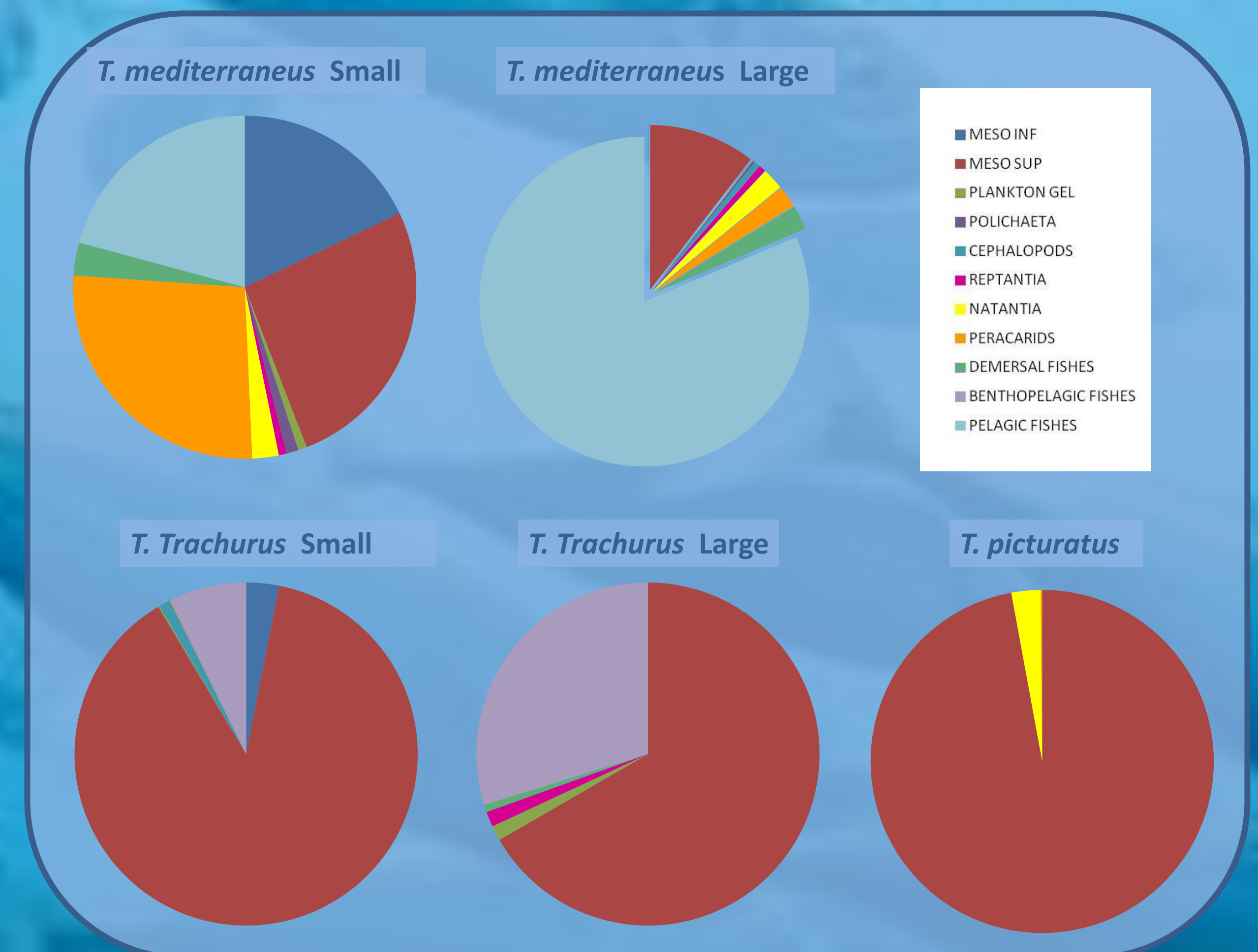
RESULTS & DISCUSSION

Results show the different trophic strategies of the five strata studied where small specimens of *T. Mediterraneus* feed mainly on mesozooplankton (26.2%) and non-pelagic peracarids (26.8%) whilst larger *T. mediterraneus* feed mainly on fish (83.8%). *T. Trachurus* and *T. Picturatus* feed mainly on superior mesozooplankton.
MDS analysis and overlapping index demonstrate overlap between *T. Picturatus* and small individuals of *T. Trachurus* while *T. Mediterraneus* present different feeding strategy depending on the size.
Spatial distribution analysis shows that *T. trachurus* and *T. picturatus* are distributed mainly in oceanic areas, while *T. mediterraneus* distribution is mainly in neritic areas.
Based on these results, we concluded that horse mackerel present different feeding strategies depending on species and individual size while spatial distribution depends only on species.
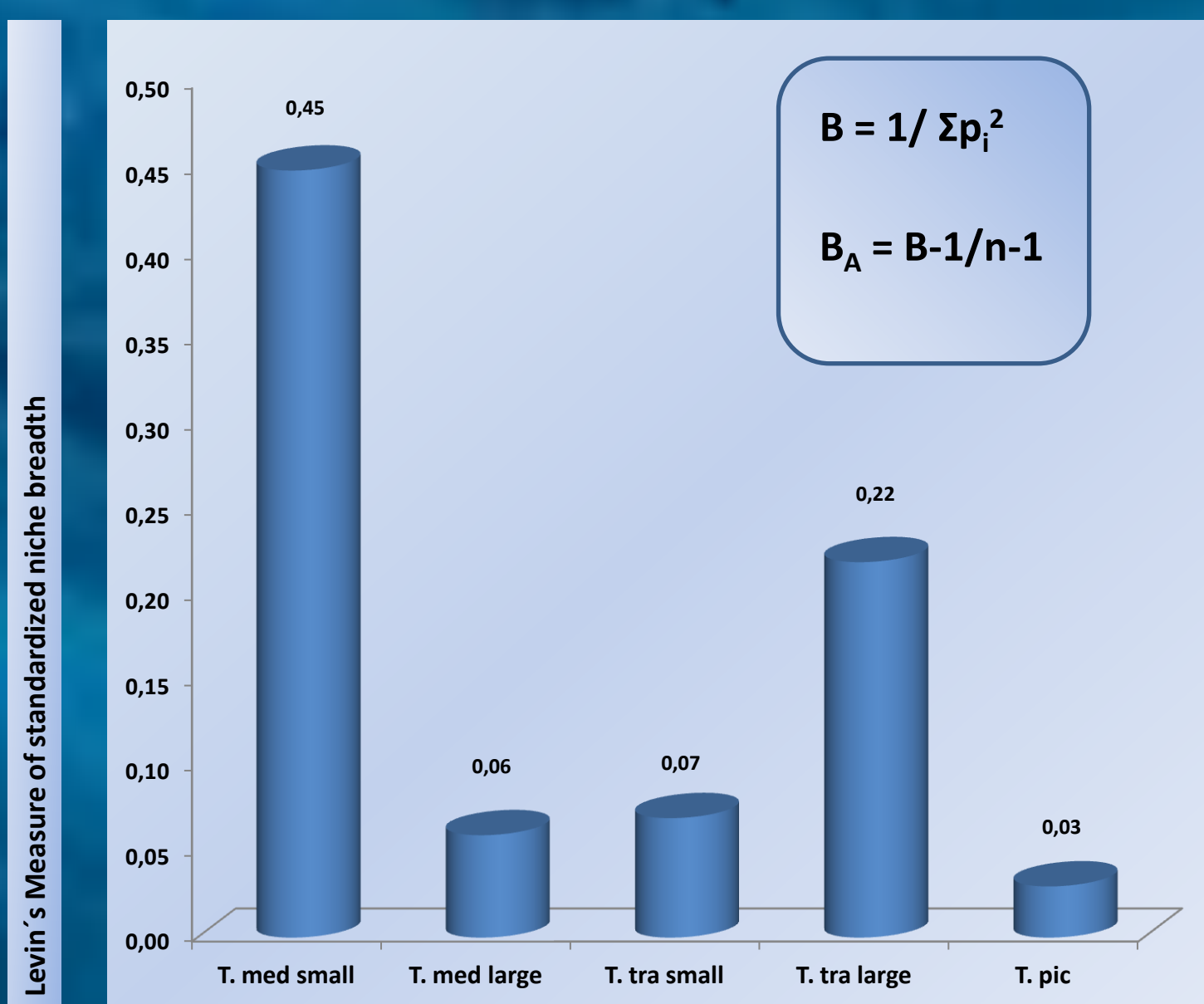

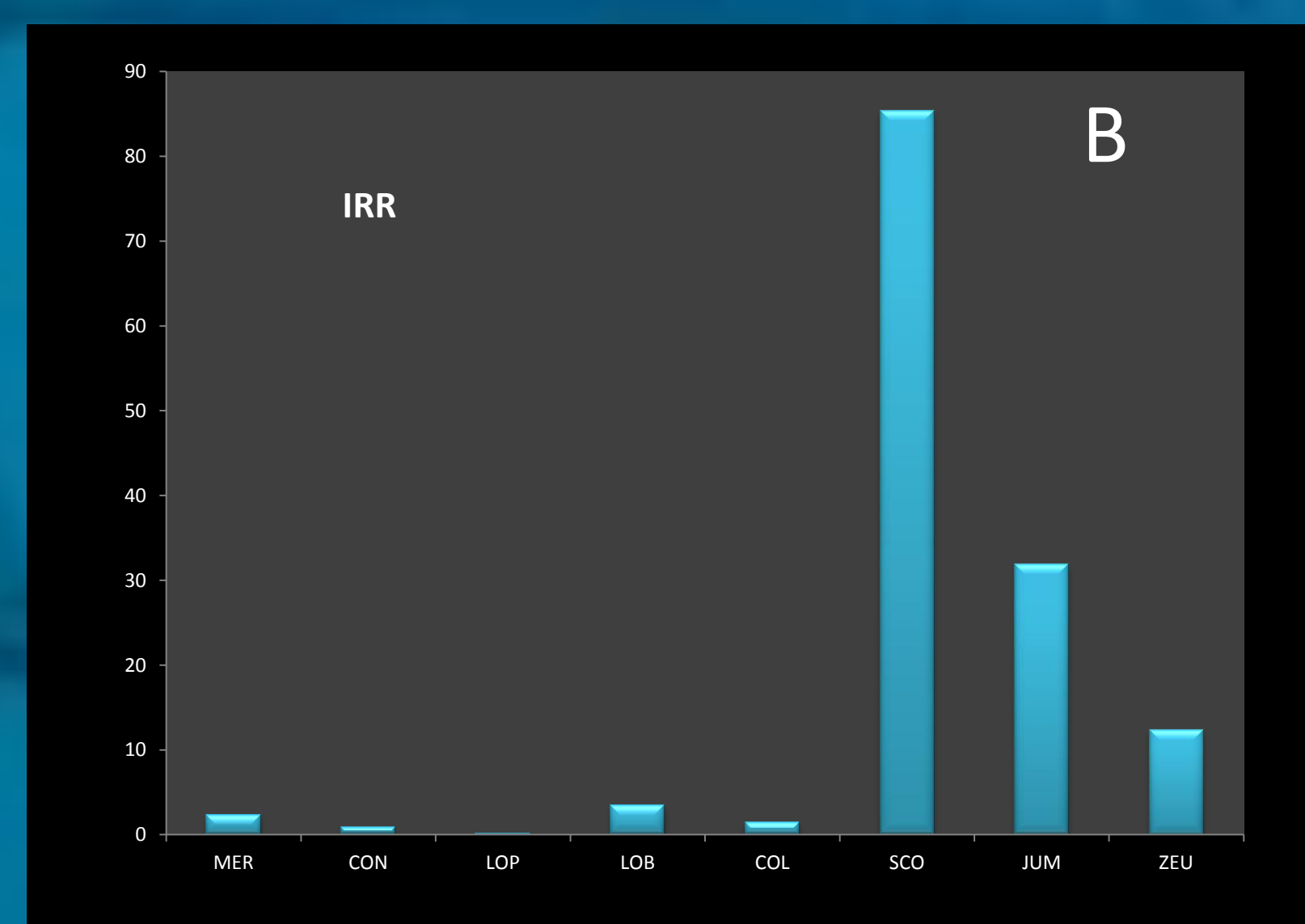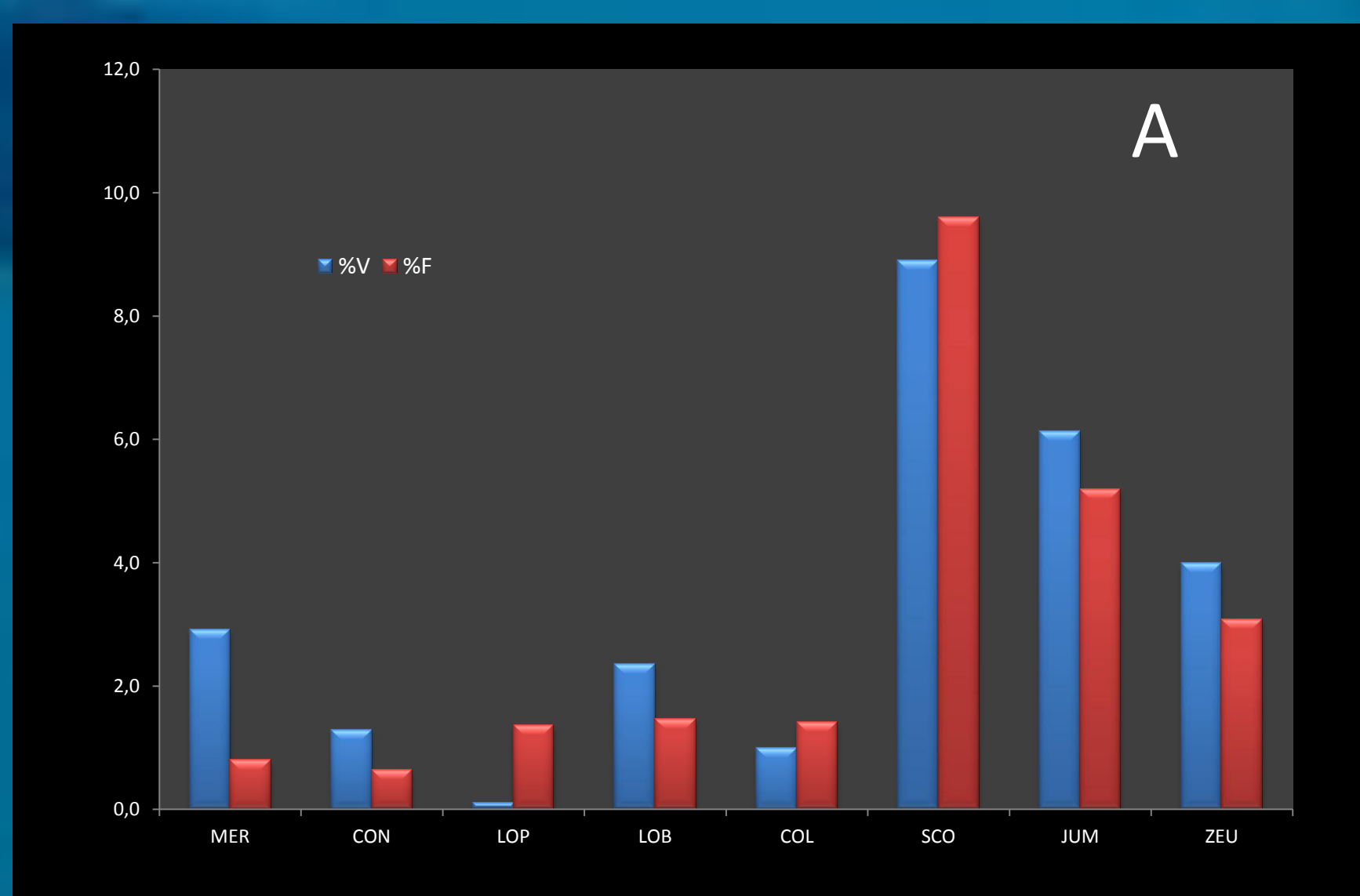*Fig 7. Role of Horse Mackerel as prey. A: Volumetric (%V) and Frecuency (%F) Index. B: IRR Index (IRR = V*F)*
MER Merluccius merluccius; CON Conger conger; LOP Lophius piscatorius; LOB Lophius budegasa; COL Scomber colias; SCO Scomber scombrus; JUM Trachurus mediterraneus; ZEU Zeus faber

Common space

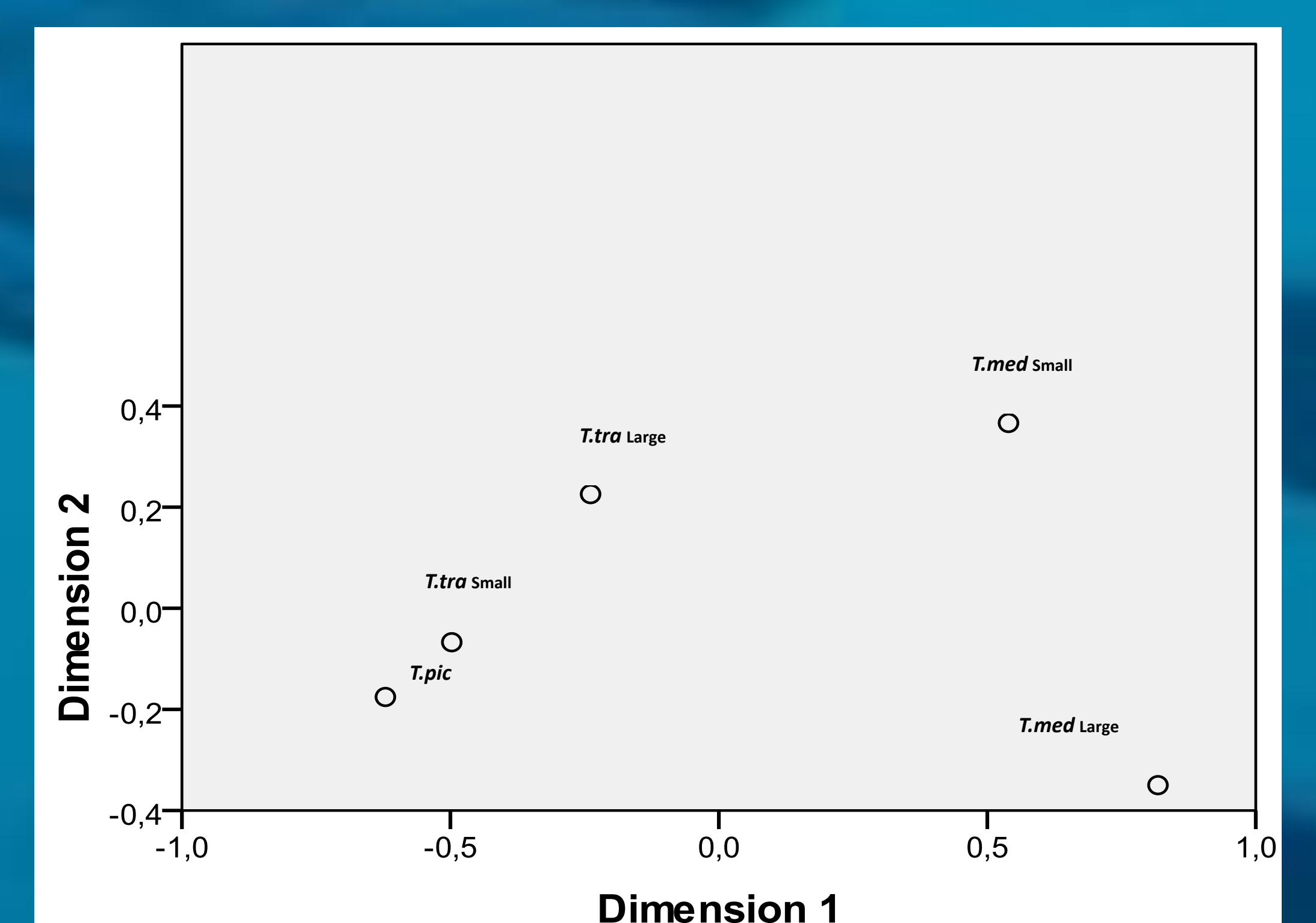*Fig .8 Multidimensioanl Scalling Analysis*