Natural climatic variability impacts on the marine fishes of the eastern Mediterranean

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Why otoliths?

Fish otoliths have species-specific morphology

Characteristic morphological features used to identify sagittal otoliths (Schwarzhans et al. 2020)
The Mediterranean Sea

Mean annual surface temperature increase relative to the mean global annual surface temperature (Lionello and Scarascia, 2018)

Torfstein and Steinberg (2000)
Proto-Mediterranean fishes

Species only found in the Mesohellenin Basin
- Ariosa mesohellenica n.sp.
- Gnathopis elongatus n.sp.
- Spicara angularis n.sp.

Species also found in the NE Atlantic
- Gnathopis saubriguensis (Steurbaut, 1979)
- Myripristis viridus Steurbaut, 1979
- Apogon moyesi Steurbaut, 1982
- Apogon vigneuxi (Steurbaut, 1984)
- Mullus elongatus Steurbaut, 1984
- Cepola yrieuensis Steurbaut, 1984

Species present in NE Atlantic and North Sea
- Echiodon heinzeli Huyghebaert and Nolf, 1979

Species present in NE Atlantic and the Paratethys
- Arnoglossus holleri Weinfurter, 1952
- Microchirus latior (Schubert, 1906)

Agiadi et al. (2021) Fossil Record
From life to death

In the Eastern Mediterranean siliciclastic shelf, otoliths in TAZ were dated 0 to 8,000 years BP

Albano et al. (2020) *Geology*
Agiadi and Albano (2020) *Holocene*

Agiadi et al. (2021) *Paleobiology*
Past changes in fish production

Agiadi et al. (2021) *Paleobiology*
Climate control on past fish distribution

Agiadi et al. (2018) *Quaternary Science Reviews*