Ovarian dynamics, batch fecundity and spawning phenology of the lessepsian migrant *Etrumeus golanii* DiBattista, Randall & Bowen, 2012 (Clupeidae: Dussumieriinae)

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Length-frequency distributions of *Etrumeus golanii* sampled in Crete

![Length frequency distributions of fish collected by the different gears. OTB: bottom trawl. PS: purse seine. PT: pelagic trawl. SB: beach seine. GTR: trammel net.](image)

**Fig. S1:** Length frequency distributions of fish collected by the different gears. OTB: bottom trawl. PS: purse seine. PT: pelagic trawl. SB: beach seine. GTR: trammel net.

**Macroscopic maturity stages**

Table S1. *Etrumeus golanii*. Descriptions of macroscopic maturity stages adopted for *Etrumeus golanii*.

| Macroscopic maturity stage | Females | Males |
|----------------------------|---------|-------|
| M1: Resting/virgin         | Ovary pinkish/translucent; no opaque oocytes visible to naked eye; size ≤1/3 of body cavity. | Thin and whitish/pinkish testis; size ≤1/3 of body cavity. |
| M2: Recovering             | Ovary pinkish-reddish/translucent; no opaque oocytes visible to naked eye; size 1/3 – 1/2 of body cavity. | Whitish/pinkish testis; size 1/3 – 1/2 of body cavity. |
| M3: Developing             | Ovary yellowish and firm; visible opaque oocytes; size about 2/3 of body cavity. | Whitish to creamy testis; size about 2/3 of body cavity. |
| M4: Ripe                   | Ovary with hyaline appearance, reddish with high vascularization. Hyaline oocytes visible; size: 2/3 to full length of body cavity. | Whitish-creamy and soft testis; size: 2/3 to full length of body cavity. |
| M5: Spent                  | Flaccid ovary and with blood; small size (about 1/2); remnants of opaque oocytes still visible. | Bloodshot and flabby testis; small size (about 1/2). |
Simulation of the hydrodynamic-biogeochemical model

In order to obtain more insights into the annual cycle of mesozooplankton in the study area (main food of small pelagic fish) and its relation to the spawning period and the monthly changes in fecundity and somatic condition of Golani’s herring, a basin-scale Mediterranean coupled hydrodynamic-biogeochemical model, building on the currently operational model within the POSEIDON forecasting system (www.poseidon.hcmr.gr; Korres et al., 2007; Kalaroni et al., 2020a, b), has been setup and implemented over the 2016-2019 period, forced by the POSEIDON operational atmospheric model output (Papadopoulos et al., 2008).

The POSEIDON hydrodynamic model is based on the Princeton Ocean Model (POM, Blumberg & Mellor, 1983), which is a three-dimensional, sigma-coordinate, free surface and primitive equation model. The vertical eddy viscosity/diffusivity coefficients are computed us-

\[\text{Fig. S2: Time series (2016-2019) of monthly mean SST and Chl-\alpha (satellite and model-simulated). The lower panel shows the model simulated mesozooplankton concentration.}\]
showing that the seasonal mesozooplankton and copepod peak succeeds the Chl-α maximum with a lag of approximately 1 - 2 month (Berline et al., 2012; Fullgrabe et al., 2020).

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