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CEPHALOPOD INTERNATIONAL  
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## **BOOK OF ABSTRACTS**

**April 2–8 2022**

**Cephalopods in  
the Anthropocene:**  
Multiple challenges in  
a changing ocean



## P6.21

### Seasonal fecundity pattern and spawning dynamics of the common cuttlefish *Sepia officinalis* in Thermaikos Gulf, Aegean Sea

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#### Abstract

The seasonal fecundity pattern of common cuttlefish, *Sepia officinalis* was assessed in Thermaikos Gulf, one of the species' main fishing grounds in the E. Mediterranean. Female samples, collected with coastal fishing gears during the population spawning season - January to July -, were analysed using a combination of histology and whole mount analysis of ovarian tissue. The potential fecundity was shown to vary seasonally, showing the highest values at the beginning of spawning, gradually dropping thereafter. Previtellogenic oocytes ( $<0.5$  mm) were the most prevalent group occurring throughout the spawning period in all maturity stages. Low or null levels of oocyte recruitment during the spawning period in combination with seasonal drop in fecundity and clutch specific egg production suggest that the fecundity pattern of cuttlefish displays similarities with the so-called *determinate fecundity* pattern of fishes. Spent females end-up having small reserves of secondary growth oocytes (pre- and vitellogenic) that will never be spawned. Potential annual fecundity was thus estimated as the difference in total fecundity between pre-spawners and spent females and equalled to 2,569 oocytes/eggs. For a spawning period of four months, the ratio between potential fecundity and clutch size (100-200 eggs) indicated 13 to 25 different spawning events with a mean interval of 5 to 9 days.

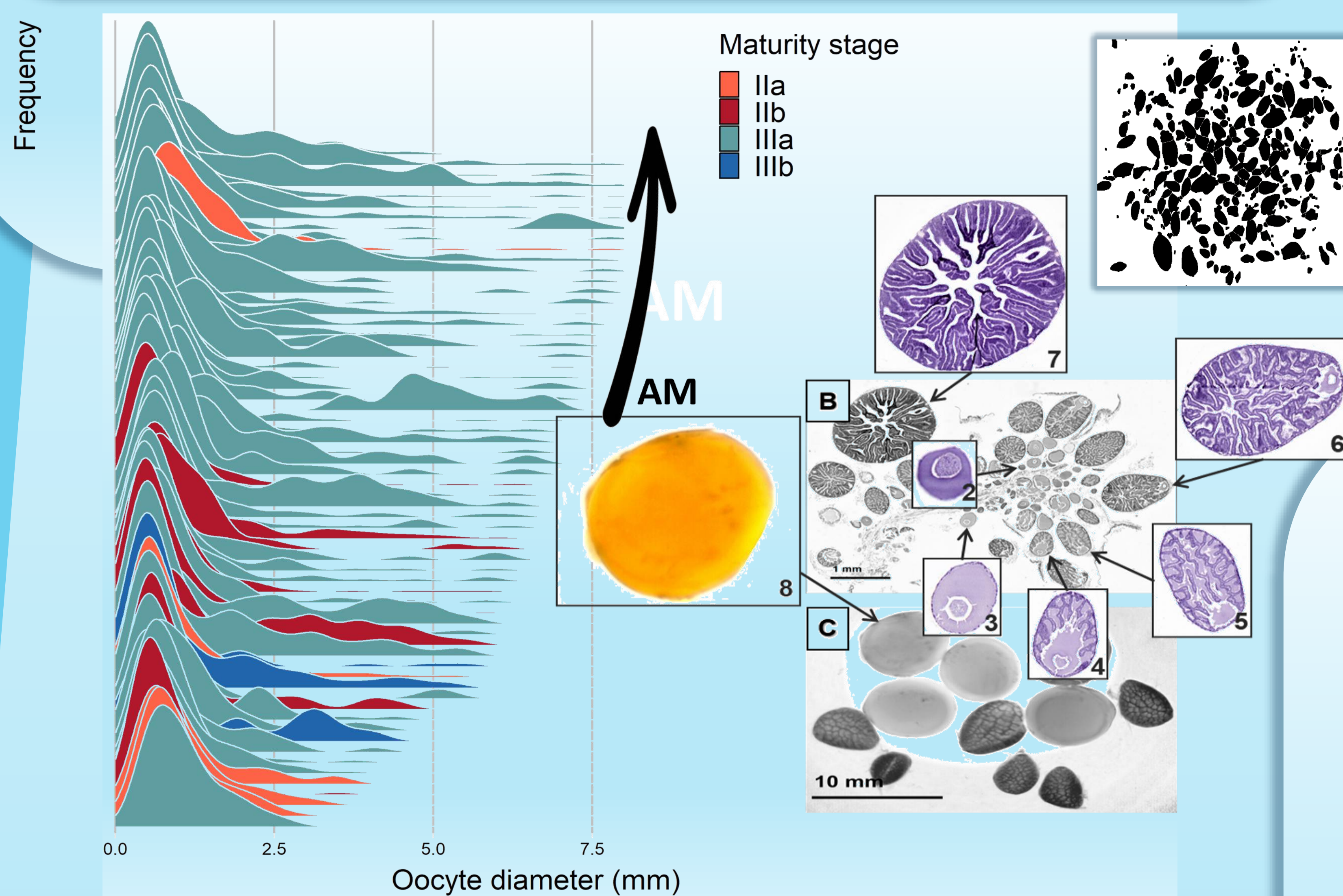


### CONTEXT

The seasonal fecundity pattern of common cuttlefish, *Sepia officinalis* was assessed in Thermaikos Gulf, one of the species' main fishing grounds in the E. Mediterranean.

### METHODS

Female samples, collected with coastal fishing gears during the population spawning season - January to July -, were analysed using a combination of histology and whole mount analysis of ovarian tissue.



### OOCYTE DISTRIBUTION

Previtellogenic oocytes (<0.5 mm) were the most prevalent group occurring throughout the spawning period in all maturity stages.

### FECUNDITY TYPE

Low or null levels of oocyte recruitment during the spawning period in combination with seasonal drop in fecundity and clutch specific egg production suggest that the fecundity pattern of cuttlefish displays similarities with the so-called *determinate fecundity* pattern of fishes.

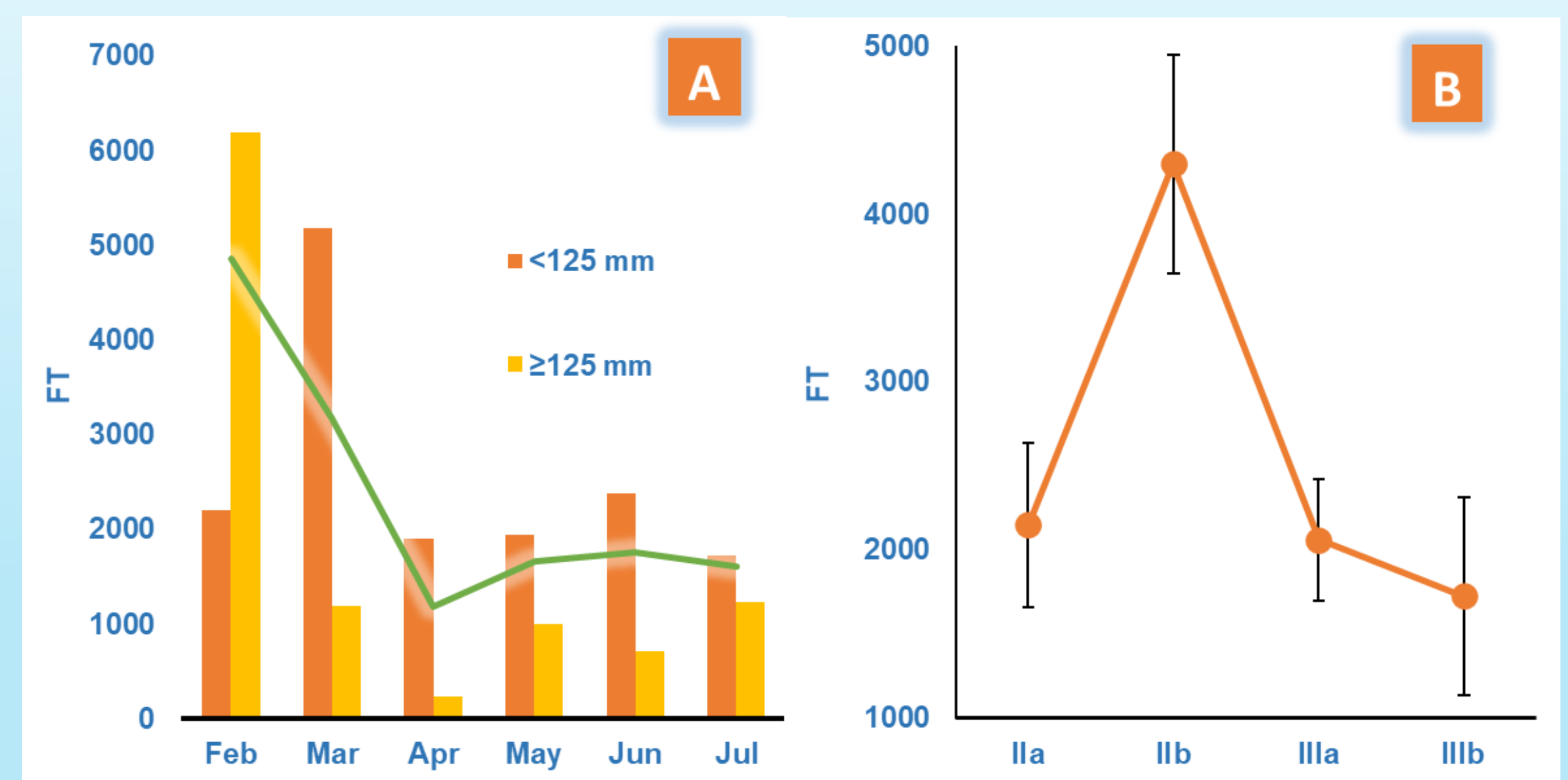
### ESTIMATED POTENTIAL FECUNDITY

Spent females end-up having small reserves of secondary growth oocytes (pre- and vitellogenic) that will never be spawned. Potential annual fecundity was thus estimated as the difference in total fecundity between pre-spawners and spent females and equalled to 2,569 oocytes/eggs. For a spawning period of four months, the ratio between potential fecundity and clutch size (100-200 eggs) indicated 13 to 25 different spawning events with a mean interval of 5 to 9 days.



### SEASONAL FECUNDITY PATTERN

The potential fecundity was shown to vary seasonally, showing the highest values at the beginning of spawning, gradually dropping thereafter.



(A) Monthly variation of total fecundity ( $F_T$ ) values in cuttlefish specimens: solid line: total; bar-graph: per size class; (B) variation of  $F_T$  per maturity stage; vertical bars: standard error.

### ACKNOWLEDGEMENT

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