Distribution and Biology of the shrimp *Plesionika edwardsii* (Brandt, 1851) off the Azores.


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**Introduction**

Traditional demersal stocks from the Azores (ICES sub-area Xa2) are intensively exploited. Crustaceans are among stocks that may be alternatively resources to explore. The shrimp *Plesionika edwardsii* is considered one of the resources with more commercial potential. However, biological information available for this species is scarce. To address this, a survey, conducted in the Azorean archipelago, with a systematic random stratified design and using two different types of traps (suspended and bottom) was analysed and resumed. The objective of this poster is to resume the distribution and biology of the shrimp *Plesionika edwardsii* population off the Azores.

**Material and Methods**

A systematic stratified random design, covering the range depth between 50 to 1100 m, was used to sample coastal areas and the Princess Alice Bank (in the Azores, ICES Xa2 sub area) (Fig 1). Samples come from crustacean surveys, carried out from 1999 to 2006, targeting the entire crustacean assemblage including shrimps and crabs. Two types of traps were used alternately at the bottom or suspended, about 5 m from the bottom, on the same string: oval plastic traps (Faltrom Plus) and 6 m at the bottom and biodegradable semi-cylindrical traps at the bottom or a suspended 8 m high. Each trap was baited with approximately 1 kg of salted mackerel (*Scomber japonicus*). The fishing gear, with 10 traps each and spaced at 50 m, was deployed parallel to the bathymetric contour and soak time was standardized to about 24 hours. For each set several fishing information was recorded: date, GPS position, depth, bottom type, number of traps, soak time, time of deployment and retrieval, number of individuals and weight of the catch by species. Biological sampling follows Pinho et al. (2001). Individuals from total catch or from a subsample were separated by species, counted and weighted. For each individual biological information was collected, including carapace length, weight, sex, condition (ovigerous/no ovigerous females).

**Results**

**Distribution**

- **By catch:**
  - **Bottom**:
    - Fishes: Heterocarpus ensifer, Chaceon affinis, Plesionika narval, Plesionika edwardsii, Cancer bellianus.
    - Other crustaceans: Plesionika edwardsii, Cancer bellianus, Plesionika narval, Plesionika edwardsii.
  - **Suspended**:
    - Fishes: Saltwater pomfret (Diplodus sargus), Sardinella aurita, Scomber japonicus, Comber japonicus.
    - Other crustaceans: Plesionika edwardsii, Cancer bellianus, Plesionika narval, Plesionika edwardsii.

**Length composition**

- **Males**
  - Carapace length (mm): 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000.
- **Females**
  - Carapace length (mm): 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000.

**Sea ratio**

- **Males**
  - Sex-ratio (%): 30, 40, 50, 60, 70, 80, 90, 100.
- **Females**
  - Sex-ratio (%): 30, 40, 50, 60, 70, 80, 90, 100.

**Reproduction**

- **Eggs stage I**: Length: 1 mm, Width: 0.5 mm.
- **Eggs stage II**: Length: 1.5 mm, Width: 1 mm.
- **Eggs stage III**: Length: 3 mm, Width: 2 mm.
- **Eggs stage IV**: Length: 6 mm, Width: 4 mm.

**Growth**

- **P. edwardsii** growth estimates from Azores. *M* = log k + 2 *log L*
  - Area: Azores, Sex: females, Min. Size: 171 mm, Max. Size: 213 mm.
  - Area: Azores, Sex: males, Min. Size: 160 mm, Max. Size: 190 mm.
  - Area: Azores, Sex: both, Min. Size: 160 mm, Max. Size: 190 mm.

**Discussion and Conclusions**

Off the Azores *P. edwardsii* has been collected from 100 to 600 m, mainly from 200 to 300 m. Results suggested a seasonal movement from deep on winter to shallow waters in summer. Length compositions are timed with a carapace length between 22 mm (CC mm) for males and 25 mm (CC mm) for females. Females predominate in the shallow and deeper strata and almost in all length classes, particularly on the small and larger classes. Ovigerous females were present throughout all the year, with peak spawning activity during spring and summer. Given the seasonal nature of both the distribution and spawning pattern it is possible that vertical movements of the species may be related to the reproduction process. Growth results show that females have greater growth rates than males.

Results suggested that this species has a commercial potential for exploitation. Suspended traps technology seems to be more effective to catch this species and a target fishery can be clean, i.e. with very small by-catch. However, the Azorean region is a discontinuous ecosystem where the habitat available for the species is limited, suggesting that only artisanal fisheries are sustainable. Knowledge of the species distribution and relationship between the different mechanisms around the Azores, including coastal areas and isostasy, are a priority to define a fishing strategy before the development of any fishery.

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**References**