

Fishery and biology of *Cancer bellianus* off the Azores: Considerations for management

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Crustaceans are one important resource in Azores. The crab *Cancer bellianus* is almost considered a virgin stock, being punctually captured during spring and summer in two islands. However, effort has been made by fishers in order to develop a targeting commercial fishery, including exploratory commercial fishing. Information published until now is scarce and is related with some aspects of the biology and abundance of the species. This work has the objective to characterize the actual fishery, resume the key biological information, assess the potential yield of the resource and discuss the management issues before the development of the fishery. The crabs were caught with traps, in depths between 100 and 600 meters. Traps were baited using different type of species, sardine (*Sardina pilchardus*), conger eel (*Conger conger*) and dolphinfish (*Coryphaena hippurus*). A total of 881 crabs (224 males and 657 females) were sampled. Size ranged from 7 to 190 mm carapace width (CW). The highest abundance occurred at depths from 300 to 500 meters. Females were relatively more abundant at depths 300-400 meters and males relatively more abundant at depths 500-600 meters. Only seven ovigerous females were caught, during September and October. The distribution area of the resource includes coastal areas and seamounts around the Azores EEZ. The species habitat was mapped and potential fishing areas around the EEZ highlighted. The estimated potential yield of the resource suggests that it does not support industrial fisheries. For this reason, artisanal fisheries on a community base management system around the islands are suggested and discussed.



Figure 1. *Cancer bellianus*.

Fishery

Off Azores the crab fishery is recent, thus it is important to understand its impacts on the ecosystem. Improved monitoring of this fishery will provide data of bycatch species to be included in stock assessments.

- Fishery is characterized by small-scale vessels using a set of plastic traps (six trap gears), Phantam Plus, baited with mackerel (*Scomber japonicus*), conger eel (*Conger conger*), dolphinfish (*Coryphaena hippurus*) (fig 2);

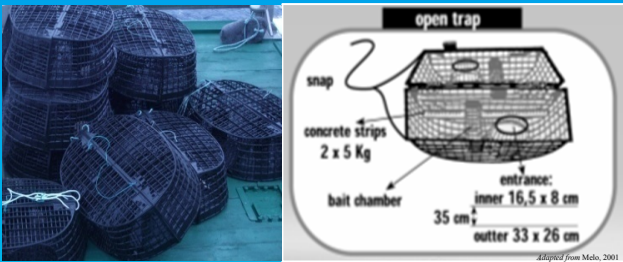


Figure 2. Schematic representation of fishing trap.

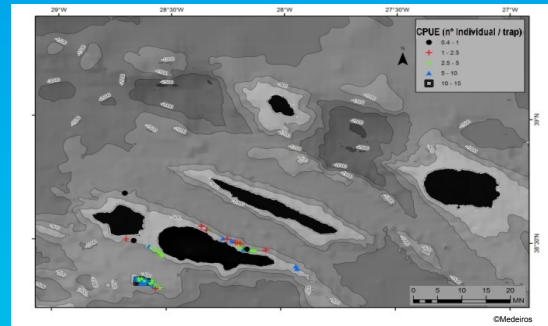


Figure 3. Sampled fishing areas of *Cancer bellianus* from the commercial fishery around Faial/Pico islands.

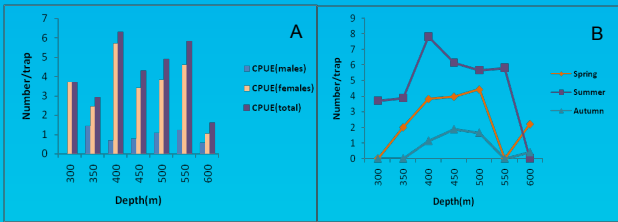


Figure 4. Abundance of *Cancer bellianus* by depths (A) and seasons (B) around Faial/Pico islands.

- The catch is used for local consumption (marketed fresh);
- *C. bellianus* is more abundant around coastal areas, at 300-600m;
- Significant association between season and depth;
- This species constitutes a virgin stock of potential economic value;

Estimated TAC

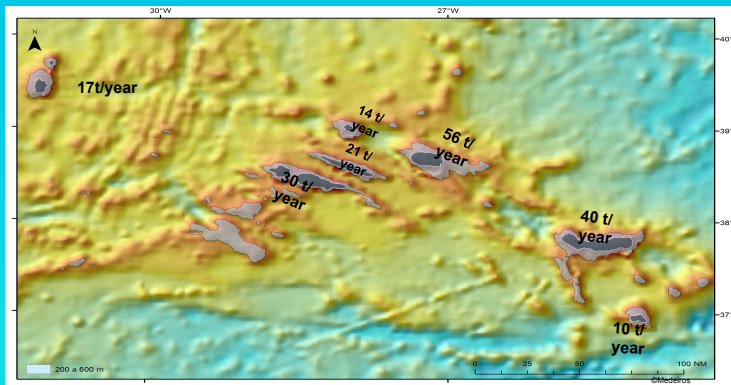


Figure 5. Maximum potential catches of *Cancer bellianus* estimated for the Azores

Estimated potential

- Maximum potential catches – 188 t/year (coastal areas);

Discussion:

Exploitation based on a long term management plan?

Biology

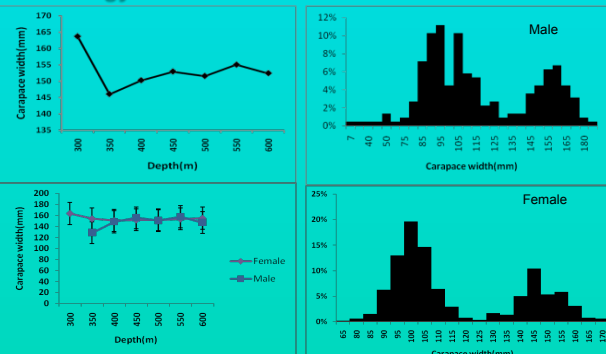


Figure 6. Mean size of *Cancer bellianus* by sex and depth.

Figure 7. Size frequency distribution of *Cancer bellianus* by sex and depth. Male (n=224), Female (n=657).

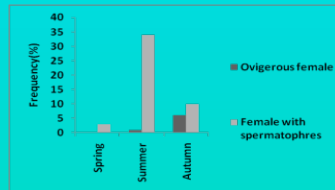


Figure 8. Percentage of females with spermatophores and ovigerous females of *Cancer bellianus* around the Pico and Faial islands.



Figure 9. Ovigerous females of *Cancer bellianus*.

- Significant differences between mean size and sexes, ANOVA (p=0.04);

Spawning → Autumn or Winter