

# THE IMPACT OF SCAVENGERS ON THE CREEL FISHERY FOR *NEPHROPS NORVEGICUS* IN THE CENTRAL ADRIATIC SEA

Monica Panfili \*, Elisabetta B. Morello and Carlo Frogliola

CNR-ISMAR, Sezione Pesca Marittima Ancona, Largo Fiera della Pesca, 60125 Ancona, Italy - m.panfili@an.ismar.cnr.it

## Abstract

Scavenging activity in the western Pomo pit fishing grounds (Adriatic sea) was studied by means of baited funnel traps with the aim of evaluating its impact on a hypothetical creeling activity for *Nephrops*. The isopod *Natatolana borealis* was the main responsible for bait consumption, which took place completely within 24 hours of trap deployment. Amphipods arrived later, not before 12 h.

**Keywords :** Adriatic Sea, Crustacea, Fisheries, Food Webs.

## Introduction

In Mediterranean waters, Norway lobster (*Nephrops norvegicus*) is mainly targeted by bottom trawlers. The selectivity of bottom trawls with respect to this species is very poor and large quantities of discards are produced [1, 2]. The reduction of discards and incidental by-catch is a priority in the Common Fishery Policy of the European Union. For these reasons, an alternative fishing method targeting *Nephrops* was sought through the use of baited creels.

The western Pomo pit (200 - 250 m depth, central Adriatic Sea) is an area intensively exploited for *Nephrops* by the Adriatic trawling fleet and thus all experimental work was carried out there. This area has been reported to be characterised by conspicuous numbers of benthic scavengers that could considerably affect creel catches [1]. This paper summarises the results of an investigation into the species composition and activity of scavenging invertebrates living in the area, with the aim of evaluating their impact on a hypothetical creeling activity for *Nephrops*.

## Materials and methods

In order to identify benthic scavengers, baited funnel traps made from PET bottles (volume = 1 litre; entrance Ø= 18mm) were deployed in the same area as *Nephrops* creels within the western Pomo pit. The traps were baited with salted sardine (3 fish per trap), exactly in the same manner as were the creels. On two occasions (20/08/2004 and 23/08/2004), four separate fleets of traps (n = 10 traps per fleet) were laid at the same time (sunrise) and lifted after 3 h, 6 h, 12 h and 24 h. The contents of each trap were kept and the remaining bait weighed. The species caught were identified, measured and weighed in the laboratory. Differences between soak times in terms of bait consumed, scavenger species, number, weight and length were investigated by means of analysis of variance, following appropriate transformations where necessary. Any significant differences resulting from ANOVA tests were investigated using Student-Newman-Keuls (SNK) a-posteriori pairwise comparisons.

## Results and discussion

A very high scavenger activity was found in the area, with over 30% of bait consumed within 12 h and up to 100% within 24 h (Fig. 1). The organisms responsible for this were the cirrolanid isopod, *Natatolana borealis*, which arrived at the bait shortly after the traps were deployed, and the Lysianassid amphipods, *Scopelocheirus hopei*, *Tnentonyx similis* and *Hippomedon bidentatus* (Fig. 1). A few Decapods (*Munida intermedia*, *Processa canaliculata*) were found in the 24 h deployments.

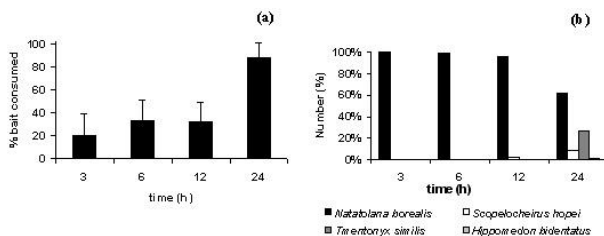


Fig. 1. (a) Bait consumed (+ SD) and (b) individual rates (% number) of occurrence by scavengers over 24 hours.

*Natatolana borealis* always numerically dominated trap catches (Fig. 1) and marked effects of soak time were revealed, with traps of the 12 h deployments catching significantly higher numbers of individuals (mean

= 75.95 ± 13.94 animals per trap) (Fig. 2). In general, arrival time of *N. borealis* tended to be longer for larger individuals: mean size and mean individual biomass were significantly higher at 24 h of soak time (Fig. 2). In the 24 h deployments, the number of isopods significantly decreased implying that the smaller individuals were able to exit the traps. Amphipods arrived later than isopods and were absent in the 3 h and 6 h deployments, whilst they comprised 4% of catch in the 12 h deployments and 38% in the 24 h deployments (Fig. 2).

The results revealed a very intense scavenging activity in the western Pomo pit with very high consumption of bait. This factor, together with the prevalence of small *Nephrops* individuals in the catches, would severely decrease the fishing potential of a hypothetical creeling activity for *Nephrops* in the area, rendering it not feasible economically.

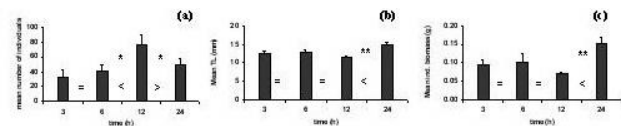


Fig. 2. (a) Mean total number (+SE), (b) mean total length (TL) (+SE) and (c) mean individual biomass (+SE) of *Natatolana borealis* individuals caught in traps over 24 hours, with an indication of analysis of variance and SNK pairwise comparison results (a) F= 5.06; \* = p<0.05); (b) F= 8.02; c) F = 7.20 ; \*\* = p<0.01).

## References

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