

RECAPTURES OF TAGGED DEEP-SEA SHRIMPS *ARISTEUS ANTENNATUS* (RISSO, 1816) IN THE MEDITERRANEAN

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Abstract

A tagging experiment on *Aristeus antennatus* was carried out in the Ionian Sea during May 1998-September 2000. A total of 693 shrimps were tagged and released, 23 recaptured, two of which 1 and 9 months later. A displacement of about 10 and 8 nm respectively was recorded. A growth rate of 1 mm/month in the CL range 29-38 mm was observed in the specimen recaptured after 9 months.

Key words: *Aristeus antennatus*, tagging, displacement, growth, Mediterranean Sea

Introduction

Tagging experiments provide useful information on displacement, growth rate and population abundance of the marine living resources (1). Such experiments have been extensively carried out on crustacean species living in coastal waters (2; 3) while most probably the first case of tagging the deep water shrimp belonging to Natantia regards the stock of *Aristeus antennatus* (Risso, 1816) in the Ionian Sea, along the Calabrian coast (4; 5). One month after tagging 45 shrimps, one female specimen was recaptured at about 10 nautical miles from the release point. Its carapace length was unchanged. Further tagging experiments on *A. antennatus* were conducted both in the Ionian and Ligurian Sea until September 2000. As part of one of them a second specimen was recaptured 9 months after the tagging and releasing. New information on its displacement and growth is reported in this note.

Material and methods

The tagging experiment was carried out in the Ionian Sea, along the Calabrian coast, off Roccella Ionica (Fig. 1), an area where vertical displacements of *A. antennatus* occur during night hours (6). Sampling was conducted during the night in shelf waters (150-200 m), when smaller thermic and light changes occur from water to air, in order to reduce the impact of the capture on the specimens. A commercial vessel equipped with an otter-trawl net with 40 mm stretched mesh in the cod-end was hired. The catch was rapidly sorted and all live specimens were put in a tank containing cooled sea water. After half an hour in the tank, all swimming individuals were measured, sexed and tagged. The tag was a green streamer 4S HALLPRINT 95x4 mm, narrower in the middle (20x2 mm) placed through the pleon. Each tagged specimen was replaced in the tank and left from half an hour to two hours to allow the vessel to reach the release site. This time lag was also useful to evaluate vitality after tagging. Each tagged specimen was released in a segment of PVC tube (40 cm length and 10 cm in diameter) full of water, closed and ballasted at the lower end. The tube was gently released over-board with the ballasted end down, so that it descended to the bottom in a

vertical position and then lay down on it, allowing the shrimp to swim out (4). During May 1998-September 2000 a total of 693 individuals of *A. antennatus* were tagged and released in the study area.

Results and discussion

Twenty-one specimens tagged and released were recaptured shortly after by the same vessel used for the experiment. One individual was captured and released on 22.05.98 and recaptured after one month (4). One specimen captured and released on 22.11.99 at 159 m depth (38°16.76N-16°26.98E) was recaptured on 5.08.00, 9 months later, during daylight fishing at depths between 500 and 600 m (haul starting point 38°18.19N-16°34.00E; haul ending point 38°19.13N-16°38.31E). This specimen was recaptured at a distance between approximately 5.7 and 9.4 nm from the releasing point (Fig. 1). It was a female whose size at capture and recapture were 29 and 38 mm carapace length, respectively. The presence of spermatophores on the *thelycum* was only recorded during the recovery.

This second result confirms the feasibility of the technique for this deep water living resource even though taking into account the high mortality rates estimated for this species as part of stock assessment studies, the number of tagged specimens must be large.

The present result also confirms the displacement capacity of *A. antennatus* both vertically and horizontally. Furthermore, considering the difference in carapace length between release and recovery, the specimen recaptured grew according to a mean growth rate of 1 mm/month. This agrees with the slowest growth performance proposed (7) based on the study of a very abundant cohort followed for three years in Ligurian Sea. Although this pattern comes from only one specimen, it provides the first direct measure of the growth in *A. antennatus*.

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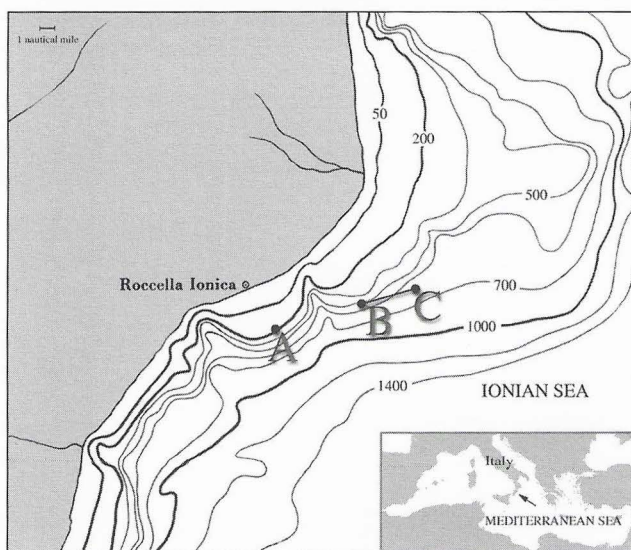


Fig. 1. Release point and area of recapture (haul route) of the specimen caught after 9 months.