

M. ABBIATI (*), G. SANTANGELO (*)

A RECORD ON *CORALLIUM RUBRUM* (L. 1758)
ASSOCIATED FAUNA:
BALSSIA GASTI (BALSS 1921) (CRUSTACEA, DECAPODA)

Riassunto — *Segnalazione per la fauna associata a Corallium rubrum (L. 1758): Balssia gasti (Balss 1921).* Nell'ambito dello studio di un popolamento di corallo rosso insediato su una falesia situata tra i 30 e i 50 metri di profondità lungo la costa a sud di Livorno sono stati rinvenuti alcuni esemplari del crostaceo *Balssia gasti* (Balss, 1921). Si tratta di un raro paleomonide che vive sui gorgonacei, in prevalenza sul corallo rosso. Questa specie è in grado di adattare la propria colorazione a quella del corallo. Il fatto che gli esemplari allontanati dalla colonia ospite perdano velocemente la loro colorazione fa supporre che questa sia legata al sistema dei cromatofori piuttosto che all'assunzione dei pigmenti del corallo, a differenza di quanto avviene in altre specie che si nutrono di questo alcionario.

Abstract — Some specimens of the crustacean *Balssia gasti* (Palaemonidae, Pontoninae) were found on two *Corallium rubrum* colonies collected at Calafuria (Leghorn) at 42 metres of depth. *B. gasti*, strictly associated with gorgonians, is considered to be a rare species. Its colour matches the coral colonies it dwells in, but unlike other ectoparasites of alcyonarians (*Pseudosimnia carnea*, *Neosimnia spelta*) *B. gasti* does not accumulate the pigment of its host; rather, it adapts its colour to that of red coral, presumably by a neural system control.

Key Words — *Corallium rubrum*, associated fauna, *Balssia gasti*, Tuscan coast.

INTRODUCTION

Some specimens of *Balssia gasti* (BALSS, 1921), a little-known species strictly associated with gorgonians, were found while carrying on a research on *Corallium rubrum* (L. 1758) (SANTANGELO and ABBIATI,

(*) Dipartimento di Scienze dell'ambiente e del territorio, Università di Pisa, Via Volta 6, I-56126 Pisa, Italy.

TI, 1989 a; SANTANGELO *et al.*, 1988). The studied population of *C. rubrum* is located along the Tuscany coast south Livorno (Calafuria, 43° 50' N, 10° 20' E; Fig. 1) and dwells in a vertical cliff emerging from the muddy sea-bed at a depth of thirty-fifty metres. The cliff

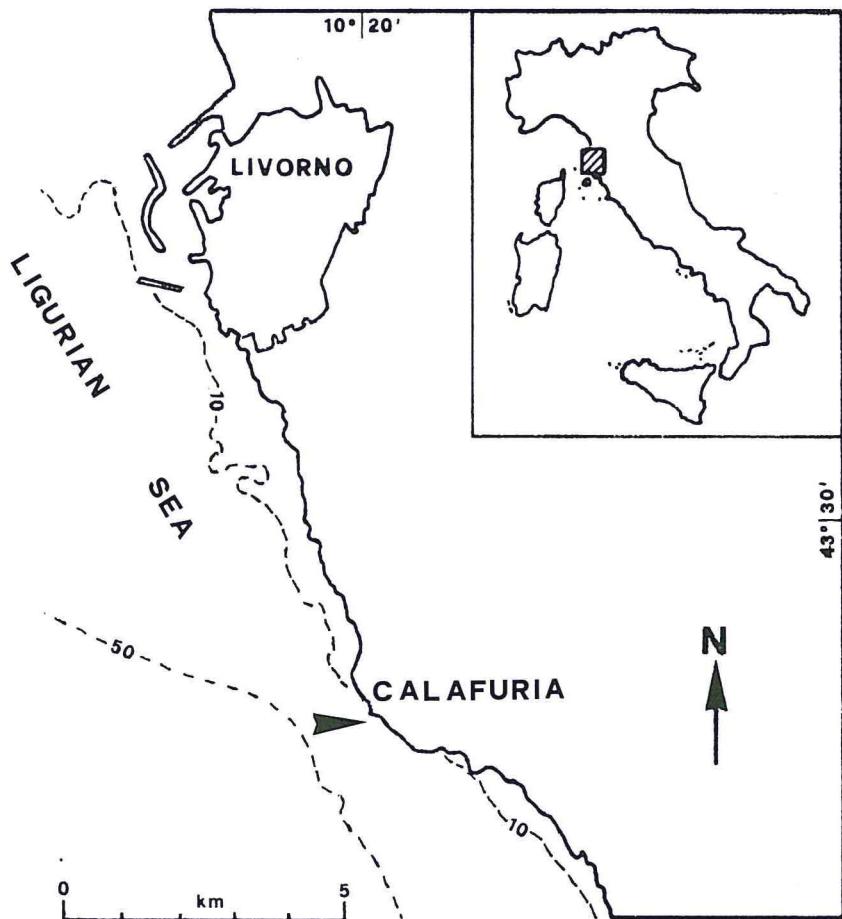


Fig. 1 - The sampling site.

population includes chiefly small, very dense young colonies (SANTANGELO and ABBIATI, 1989 b); larger colonies dwell in isolated rocks at the base of the cliff. Four specimens of *Balssia gasti* (Crustacea, Palaemonidae) (Mori determinavit) were observed on a colony col-

lected in December 1988, which dwelt in isolated rock at a depth of 42 metres. A further specimen was collected at the same depth in April 1989.



Fig. 2 - A female specimen of *B. gasti* showing a carapace length of 2.9 mm.

MATERIAL EXAMINED

The first sample included two males with a carapace length of 1.4 and 1.8 mm respectively, and two larger females (2.2 and 2.3 mm). The April 1989-specimen was a female, whose carapace measured 2.9 mm in length.

The same colony inhabited by the four *B. gasti* collected in 1988 hosted also a specimen of *Pseudosimnia carneae* (POIRET, 1789). This gasteropod belongs to the Ampheratidae family, which includes highly specialized species, living on gorgonian colonies, where they graze and lay their eggs (SANTANGELO and NAVARRA, 1984). These molluscs are associated with few alcyonarians: *Simnia spelta* lives on *Eunicella singularis*, *E. cavolini* and *Lophogorgia sarmentosa*; *Pseudosimnia carneae* dwells in *Corallium rubrum* only (CARPINE and GRASSHOFF, 1977). Their chromatism is linked to that of the gorgonians on which they feed, probably by direct accumulation of pigments from the host (GHISOTTI and MELONE, 1969). The specimen we found was associated with several hatched ovular capsules.

DISCUSSION

While carrying on our research on coral populations several hundred colonies were analyzed, none of which revealed the presence of *Balssia gasti* and *Pseudosimnia carnea*. These two epibionts were both found on colonies located at the greatest depths, whose dimensions are markedly larger than those of the other colonies.

Balssia gasti is a rare palaemonid, found mainly or uniquely in the Mediterranean sea. Its distribution is closely linked to that of *C. rubrum*, although it has been occasionally observed on other species of gorgonians (GARCIA & RASO, 1984; MANCONI and MORI, in press). This shrimp feeds on the polyps of its host; it mimics the colour of the alcyonarians, to which it is anchored so firmly that it does not leave the colony even when collected and brought to the surface. *Balssia gasti* has been rarely found: f.i., it is not mentioned in the coral-associated fauna of the Alboran sea (TEMPLADO, 1986).

During our laboratory observations, some specimens of *B. gasti* lost their colour becoming pale when detached from the host colony and kept isolated; the pigmentations was restored when the crustacean anchored again to a coral colony. This suggests that, contrary to ZIBROWIUS hypothesis (1984), the mimicry of this species is not due to the accumulation of host pigments, as reported for the gasteropod *Pseudosimnia carnea* (GHISOTTI and MELONE, 1969), but to a quick adaptation to the host colour. This adaptation is presumably achieved through neural control of chromatophores similar to that observed in other crustacean species (LENEL *et al.*, 1978).

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REFERENCES

- CARPINE C., GRASSHOFF M. (1977) - Les Gorgonaires de la Méditerranée. *Bull. Inst. océanogr. Monaco*, **71**, n. 1430: 1-140.
- CHASSARD-BOUCHAUD C. (1965) - L'adaptation chromatique chez les Natantia (Crustacés Décapodes). *Cah. Biol. Mar.*, **6**: 469-576.
- GARCIA RASO J.E. (1984) - Carideos (Crustacea, Decapoda, Caridea) nuevos o interesantes en aguas ibéricas. *Inf. Técn. Inst. Inv. Pesq.*, **48** (1): 45-50.

- GHISOTTI F., MELONE G.C. (1969) - Schede malacologiche del Mediterraneo. *Boll. Malac.*, 19/Ag/01.
- LENEL R., NEGRE-SARDAGUES, CASTILLO R. (1978) - Les pigments carotenoides chez les Crustacés. *Arch. de Zool. exp. et general*, 119: 297-310.
- MANCONI R., MORI M. (in press) - New records of *Balssia gasti* (BALSS, 1921) (Decapoda, Palaemonidae) in the west mediterranean sea. *Crustaceana*.
- SANTANGELO G., ABBIATI M. (1989 a) - A study on a coastal red coral population. *FAO Fish. Rep.*, 413.
- SANTANGELO G., ABBIATI M. (1989 b) - Il popolamento di *Corallium rubrum* di Calafuria: nota preliminare. *Oebalia*.
- SANTANGELO G., ABBIATI M., CAFORIO G. (1988) - Structure of a red coral population. *Rapp. Comm. int. Mer Médit.*, 31 (2): 18.
- SANTANGELO G., NAVARRA E. (1984) - Studio di una popolazione di *Simnia spelta* (L) vivente su *Eunicella singularis* (Esper). *Nova Thalassia*, 6 (suppl.): 675.
- TEMPLADO J., GARCIA-CARRASCOSA M., BARATEC L., CAPACCIONI R., JUAN A., LOPEZ - IBOR A., SILVESTRE R., MASSÒ C. (1986) - Estudio preliminar de la fauna asociada a los fondos coralíferos del mar de Alboràn (SE de Espana). *Bol. Ist. Esp. Oceanogr.*, 3 (4): 93-104.
- ZIBROWIUS H. (1984) - *Gerardia savaglia* (Cnidaria, Anthozoa, Zoantharia) - nouvel hôte de *Balssia gasti* (Crustacea, Decapoda, Pontonina). *Rapp. Comm. int. Mer Médit.*, 29 (5): 349-350.

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