

P. BERNAT, A. MOLINARI

RSTA srl, Via Granello, 3/18 - 16121 Genova, Italia.
paolo.bernat@tiscali.it

NORTHERNMOST RECORD OF THE ALIEN SEA HARE
APLYSIA DACTYLOMELA RANG, 1828 (OPISTOBRANCHIA,
APLYSIIDAE) IN THE MEDITERRANEAN SEA

PRIMA SEGNALAZIONE DELLA LEPRE DI MARE ALLOCTONA
APLYSIA DACTYLOMELA RANG, 1828 (OPISTOBRANCHIA,
APLYSIIDAE) NEL MEDITERRANEO NORD-OCCIDENTALE

Abstract - *Aplysia dactylomela*, an opisthobranch mollusc originally entered the Mediterranean Sea from the Atlantic Ocean, has been previously recorded only in southern and eastern Mediterranean basin (Malta, Sicily, Greece, Cyprus, Turkey, Israel, Croatia and Montenegro). The present record in Finale Ligure (Ligurian Sea) represents the northernmost occurrence ever registered of this invasive sea hare in the Mediterranean Sea.

Key-words: marine molluscs, alien species, *Aplysia dactylomela*, Ligurian Sea, Mediterranean distribution.

Introduction - The opisthobranch mollusc *Aplysia dactylomela* is a circumtropical Atlantic species and the first report of its arrival in the Mediterranean Sea dates back to 2002 and places it in the Strait of Sicily waters (Trainito, 2003). In the following years, *A. dactylomela* was sighted in the Ionian Sea, off the coast of Turkey, Cyprus, Israel, along the East coast of the Adriatic Sea (Kljajić and Mačić, 2012; Valdés *et al.*, 2013), along the coasts of Calabria (Crocetta and Galil, 2012) and in the Egadi Islands (Mannino *et al.*, 2014). The strong marine currents that run along the coasts of North Africa from West to East probably allow the larval dispersion towards the Levantine basin whose waters have average temperatures closer to those of the origin areas of the spotted sea hare. In June 2015, two specimens of *A. dactylomela* were sighted in Finale Ligure (Savona, Italy), at about 1 m deep, on a beach-rock near to the tourist harbour located East of Capo S. Donato. The body, with typical black-dark rings, makes it easily identifiable from native sea slugs, therefore it was the northernmost notice of *A. dactylomela* in the Tyrrhenian Sea or in other areas of the North-western Mediterranean basin.

Materials and methods - The observation was made during a scuba survey along a beach-rock, situated East of Capo San Donato harbour (Finale Ligure, 44°10'40.7" N 22°00'21.5" E). This marine rock formation is characteristic of this part of the Ligurian coast, where the karst phenomena are quite widespread. The length of the beach-rock is 200 m and its width is 50 m from the coastline, reaching the maximum depth of 3 m. The two molluscs, belonging to the species *A. dactylomela*, were photographed and measured, but not collected.

Results - The individuals observed were approximately 20 cm long with the spotted characteristic body and with dark rings of different sizes, irregularly scattered on a pale greenish-brown background and with a net of blackish lines at the outer edge of the parapodia. The pair of mollusc was on the rocky plateau surface, well colonized by photophilic algae represented mainly by Chlorophyceae (especially *Acetabularia*

acetabulum, *Ulva* sp. and *Flabellia petiolata*), Rodophyceae as *Jania rubens* and Phaeophyceae as *Padina pavonica*.

Conclusions - This first record in the North-western Mediterranean basin confirms the *A. dactylomela* diffusion capacity and may suggest the beginning of a new phase of expansion and spread throughout the whole Mediterranean Sea. The sighting of *A. dactylomela* on a bottom well-colonized by Rodophyceae could confirm the hypothesis of Greco (2006) about the prevalence of these algae in the diet of these molluscs. It is also possible that a sequence of mild winters, in a general context of global climate change, has allowed the survival of veliger of this mollusc that - led by currents in northern waters - have found suitable conditions for their development and for the colonization of new areas. Future observations should eventually test the reproductive success of the species in the North-western Mediterranean Sea and its place in the local food webs.

References

- CROCETTA F., GALIL B.S. (2012) - The invasive spotted sea hare *Aplysia dactylomela* (Mollusca: Gastropoda: Aplysiidae): new records and spread pattern in the Mediterranean. *Vie et Milieu*, **62**: 43-46.
- GRECO A. (2006) - Segnalazione di *Aplysia dactylomela* Rang, 1828 (Opisthobranchia: Aplysiidae) per il Mar Ionio (Sicilia orientale, Taormina). *Boll. Malacol.*, **42** (9-12): 125-128.
- KLJAJIĆ Z., MAČIĆ V. (2012) - The alien sea hare *Aplysia dactylomela* Rang, 1828 (Opisthobranchia) in the Boka Kotorska Bay (Montenegro, Adriatic Sea). In: Thessalou-Legaki M., Aydogan Ö., Bekas P., Bilge G., Boyaci Y.Ö., Brunelli E., Circosta V., Crocetta F., Durucan F., Erdem M., Ergolavou A., Filiz H., Fois F., Gouva E., Kapiris K., Katsanevakis S., Kljajić Z., Konstantinidis E., Konstantinou G., Koutsogiannopoulos D., Lamon S., Mačič V., Mazzette R., Meloni D., Mureddu A., Paschos I., Perdikaris C., Piras F., Poursanidis D., Ramos-Esplá A.A., Rosso A., Sordino P., Sperone E., Steriotti A., Taşkin E., Toscano F., Tripepi S., Tsiakkios L., Zenetos A., New Mediterranean Biodiversity Records (December 2012). *Mediterr. Mar. Sci.*, **13** (2): 319.
- MANNINO A.M., BALISTRERI P., YOKES M.B. (2014) - First record of *Aplysia dactylomela* (Opisthobranchia: Aplysiidae) from the Egadi Islands (Western Sicily). *Mar. Biodiv. Rec.*, **7**, doi: 10.1017/S1755267214000190.
- TRAINITO E. (2003) - *Arlecchini mediterranei. Guida ai molluschi opisthobranchi del Mediterraneo*. Ed. Taphros, Olbia (SS): 60 pp.
- VALDÉS A., ALEXANDER J., CROCETTA F., YOKES M.B., GIACOBBE S., POURSANIDIS D., ZENETOS A., CERVERA J.L., CABALLER M., GALIL B.S., SCHEMBRI P.J. (2013) - The origin and dispersal pathway of the spotted sea hare *Aplysia dactylomela* (Mollusca: Opisthobranchia) in the Mediterranean Sea. *Aquatic Invasions*, **8** (4): 427-436.