

Short communication

Additions to the knowledge of alien Opisthobranchia of Greece

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Abstract

Two alien opisthobranch gastropod species are recorded from Greece in 2003-2004: *Chromodoris annulata* is a new record for the Mediterranean Sea, while *Bursatella leachii* is newly reported from Crete and Saronikos Gulf. *Chromodoris annulata* may have been introduced by shipping, whereas *B. leachii* has long been considered to have immigrated via the Suez Canal.

Key words: Alien Opisthobranchia, *Chromodoris annulata*, *Bursatella leachii*, Aegean, Greece, Mediterranean

Studies of Mediterranean mollusca have shown a great diversity of about 400 species of Opisthobranchia (Cattaneo-Vietti and Thompson 1989) including 21 alien species (Zenetos et al. 2004). Since the early eighties, a small but steadily increasing number of Indo-Pacific opisthobranch species have been reported in the Mediterranean Sea, the latest records by Yokes and Rudman (2004). In Greece the Opisthobranchia have been studied by Thompson and Jaklin (1988); Koutsoumbas and Koukouras (1993); Koutsoubas et al (1993). According to a compilation of alien mollusca, 7 opisthobranch species had been reported by 2004 (Zenetos et al. 2005) whereas their number had risen to 9 by December 2005 (Pancucci et al. 2005). The present work reports the geographic expansion of one alien opisthobranch already known in Greek waters and the finding of one more alien opisthobranch, hitherto unknown in Greek waters.

Recent research by scuba diving and free diving in several coastal localities of the south Aegean Sea has revealed the presence of two

alien opisthobranch species namely *Chromodoris annulata* (Eliot, 1904) and *Bursatella leachii* (de Blainville, 1817). These specimens were photographed and returned to the sea. Details on their localities can be seen in the Annex.

Chromodoris annulata (Eliot, 1904)

Order: Nudibranchia Blainville, 1814

Superfamily: Eudoridoidea Odhner, 1934

Family: Chromodorididae Bergh, 1891 This specimen (Figure 1), is from the coastal area of Salamina Island (Saronikos Gulf), located only 1 nautical mile from the main port of Piraeus. It was found in the area Peristeria (see Annex) at 12m depth (August 2004). Water temperature 21°C. This single specimen was found alive in a rock pool.

Chromodoris annulata is considered to be a tropical species commonly found in both the western and northern Indian Ocean. It is present in the Red Sea (Rudman 1987) with many sightings since 1957 along the Red Sea coasts of



Figure 1. *Chromodoris annulata* (Photo: A. Daskos).



Figure 2. *Bursatella leachii* (Photo: A. Daskos).

Egypt (Gohar and Aboul-Ela 1957, Poddubetskaia 2002, Tov 2003, Mrutzel 2005).

Our specimen is an interesting colour form of *C. annulata* with a purple line joining the two purple rings and only a few yellow spots. This colour form is known only from the Arabian Gulf and the Gulf of Oman at the NW corner of the Arabian Sea (Rudman, 2004, 2005). Through most of its range, including the Red Sea, this species lacks the purple line and has more yellow spots, suggesting the presence of this animal in Greek waters is not the result of Lessepsian migration.

Although its heat tolerance is unknown, it could possibly live in Greek waters since the bottom sea temperature varies: Winter - north: 12-15°C, south: 15-17°C, Summer - north: 14-16°C, south: 15-20°C (Kontoyiannis et al. 2005). The species *Chromodoris annulata* is reported from Greek waters for the first time. Moreover, this is the first sighting of the species in the Mediterranean Sea. Although, the appearance of *Chromodoris annulata* could be one more case of progressive immigration via the Suez Canal, its absence from the Levantine Sea, combined with the finding of the Arabian colour form near a port area (Piraeus), leads to the assumption that the species has been transported via shipping.

Bursatella leachii (de Blainville, 1817)

Order: Anaspidea Fischer, 1883
Superfamily: Aplysioidea Lamarck, 1809
Family: Aplysiidae Rafinesque, 1815

This specimen (Figure 2) is from Cape Balos (Chania, Kriti). It was found at 18m depth. Another specimen was found in the Gulf of Korinthiakos (Milokopi area) at 22m depth. Both specimens were found grazing in soft bottom.

Bursatella leachii is a circumtropical species widespread along the temperate water of the Indo-Pacific and Atlantic Ocean. Due to its absence in the Spanish and Algerian coasts (the westernmost area of the Mediterranean), the penetration of this species in this sea has probably been progressive through the Suez Canal. Very common from the eastern Levantine Sea to the Italian coasts (Zenetos et al 2004). In the western Basin it is only known from Sardinia (Zenetos et al 2004). The species has already been recorded in Northern Greece: Chios isl., Lesvos (Barash and Danin 1986) and in the Thermaikos and Chalkidiki (Koutsoubas 1992) as well as in the Aegean Turkey coasts (Swennen 1961) but it is the first time it has been reported in the Greek south Aegean: Kriti island and Saronikos Gulf.

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Annex. Records of alien opisthobranch gastropod species from Greece in 2003-2004.

Location	Location coordinates		Date of record	<i>Chromodoris annulata</i>	<i>Bursatella leachii</i>	Collector
	Latitude,°N	Longitude,°E				
Peristeria, Salamina, Saronikos Gulf	37°52'38"	23°27'30"	August 2004	1	-	A. Daskos
Milokopi, Korinthiakos	38°03'10"	24°54'25"	May 2003	-	1	A. Daskos
Balos cape, Kriti	35°34'13"	23°35'20"	July 2004	-	1	A. Daskos