RE-INSTATEMENT OF THE NAME *EUBRANCHUS CAPELLINII* (TRINCHESE 1879) (MOLLUSCA: OPISTHOBRANCHIA: NUDIBRANCHIA)

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Abstract *The recovery of the name* Eubranchus capellinii *(Trinchese 1879) is proposed by providing new data on the species. This species is compared with* Eubranchus doriae *(Trinchese 1873) with which it has previously been considered synonymous.*

Eubranchus capellinii *is also compared with two other similar species of* Eubranchus *from the Atlantic,* Eubranchus arci *Ortea 1980 and* Eubranchus telesforoi *Ortea, Caballer & Bacallado 2002, with respect to external features, colouration, radula and jaws.*

Key words Eubranchus capellinii, Eubranchus doriae, *valid name, Iberian Peninsula*

INTRODUCTION

In 1879 Salvatore Trinchese described *Tergipes capellinii* Trinchese 1879 from Genoa, Italy. In the same publication (Trinchese, 1879) he also illustrated the holotype of *Tergipes doriae* (Trinchese 1873). Traditionally *E. capellinii* has been included in the list of synonyms of *E. doriae* (Pruvot-Fol, 1951; Edmunds & Kress, 1969, Thompson & Brown, 1984; Thompson, 1988 and Caballer, 2002), although both species are quite distinguishable by their external anatomy and colouration. Based on the material collected in the Iberian Peninsula and in the illustrations that appear in the literature under the name *E. doriae* (Vayssière, 1913; Edmunds & Kress, 1969; Thompson & Brown, 1984; Thompson, 1988 and Picton & Morrow, 1994) we can say that none of them really correspond to the original illustration of *E. capellini* (Trinchese 1879), to the point that only Just & Edmunds (1985) illustrate specimens that could fit with the description and drawings of Trinchese (1873 and 1879) of *E. doriae*, although the most probable cause is that they are specimens of *E. capellinii* too.

In this work, we propose to recover the name *E. capellinii*, (separate from *E. doriae*) by discussing its features and comparing them with other Atlantic species with whom it can be mistaken by its external characteristics.

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SYSTEMATICS

Family Eubranchidae Odhner 1934

Genus ***Eubranchus*** Forbes 1838

Type species: *Eubranchus tricolor* Forbes 1838

Forbes, 1838: 5. Type locality: Ballaugh, Isle of Man.

Eubranchus capellinii (Trinchese 1879)
(Figs 1b, 2–4, Table 1)

Tergipes capellinii Trinchese 1879: 73, 75–78, Plates XXV–XXVII. Type locality: Genoa, Italy.
Galvina cingulata: Garstang, 1890: 439.
Capellinia doriae: Vayssière, 1913: 303, 305, Plate 17, Fig. 4, Plate. 32, Figs 4–7.
Capellinia capellinii: Vayssière, 1913: 305–306.
(??) *Eubranchus (Capellinia) exigua*: Pruvot-Fol, 1951: 66, Plate IV, Fig. 11.

Eubranchus doriae: Edmunds & Kress, 1969: 903–904, Figs 4c, 5j; Thompson & Brown, 1984: 132, Plate 32e; Thompson, 1988: 290, Fig. 124; Picton & Morrow, 1994: 114, Plate in page 115; Caballer, 2002: 27–29, Fig. 15.

Eubranchus cingulatus: Edmunds & Kress, 1969: Fig. 1c; Ortea, 1978: 115–117, Fig. E; Schmekel & Portmann, 1982: 237–239, Fig. 7.76, Plate 14, Fig.

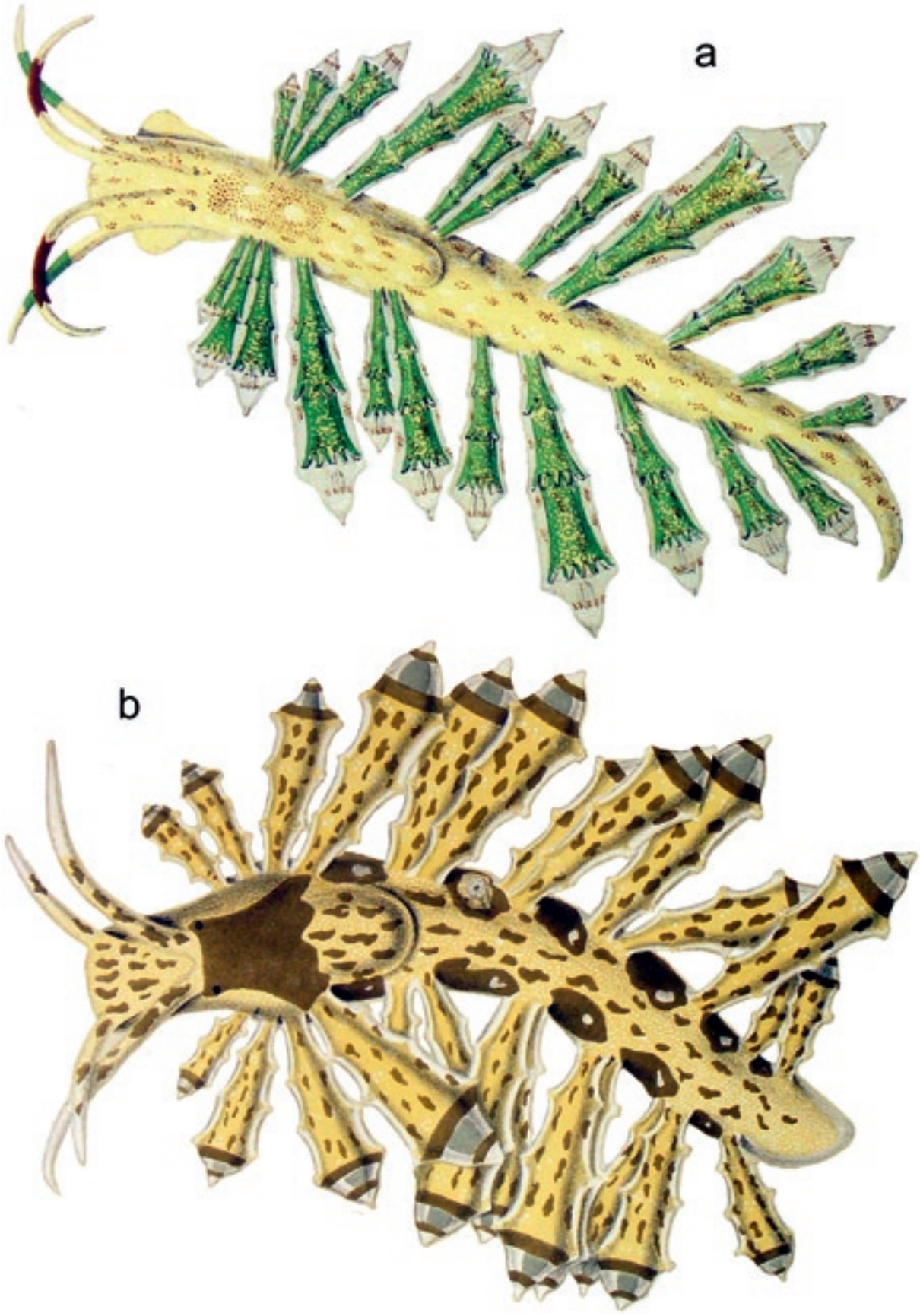

Figure 1 Iconotype of (a) *Eubranchus doriae* (aprox. 15 mm) and Iconotype of (b) *Eubranchus capellinii* (aprox. 16 mm) (both from Trinchese, 1879).

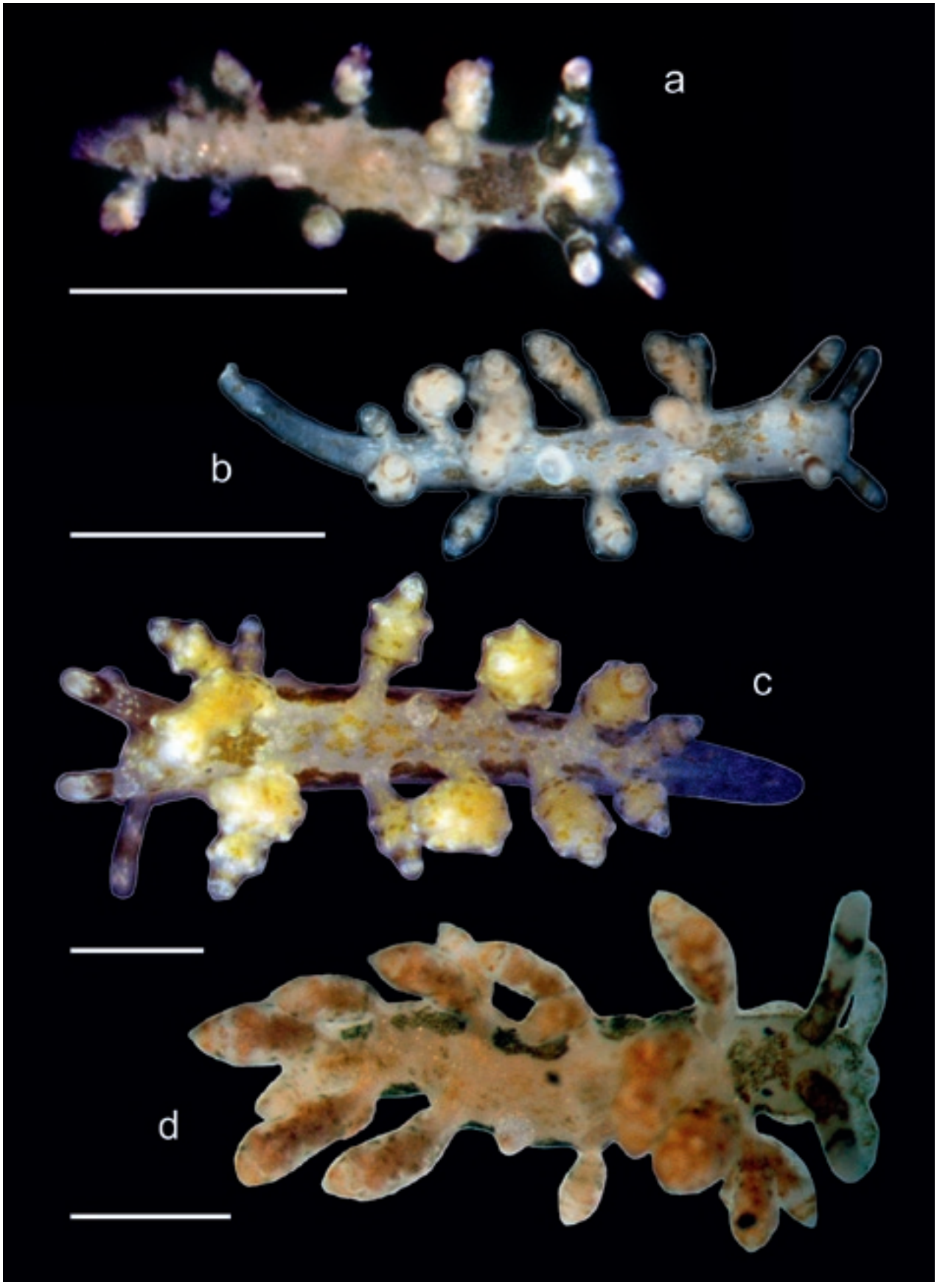

Figure 2 *Eubranchus capellinii* from: a. Cantabria, Spain, b, Murcia, Spain, c y d, Algarve, Portugal. Scale bar=1 mm.

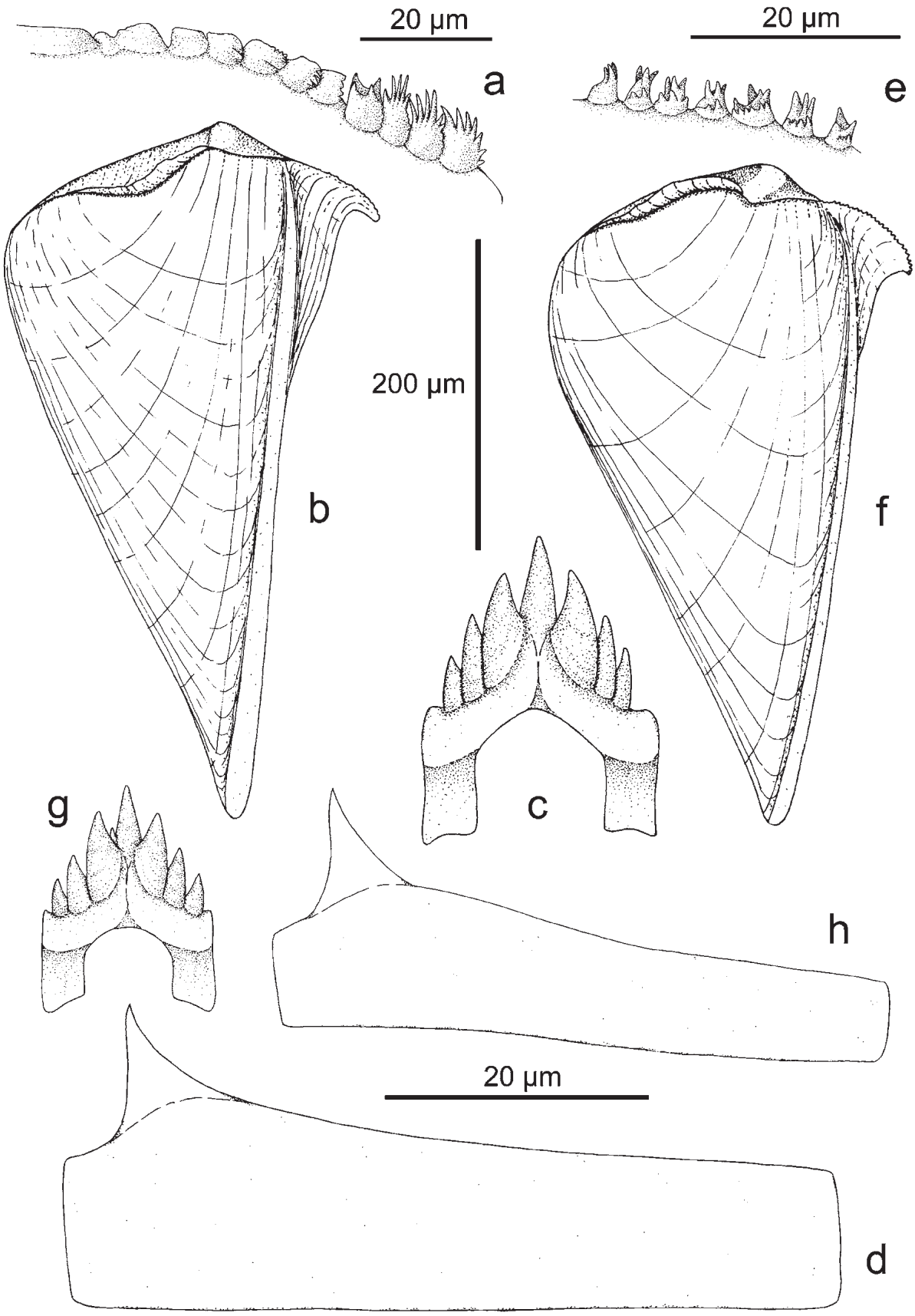

Figure 3 *Eubranchus capellini*, 4 mm specimen from Cantabria, Spain (a–d) and 4 mm specimen from Algarve, Portugal (e–h): (a and e), cutting edge of the jaws; (b and f), jaws; (c and g), rachidean teeth; (d and h), lateral teeth.

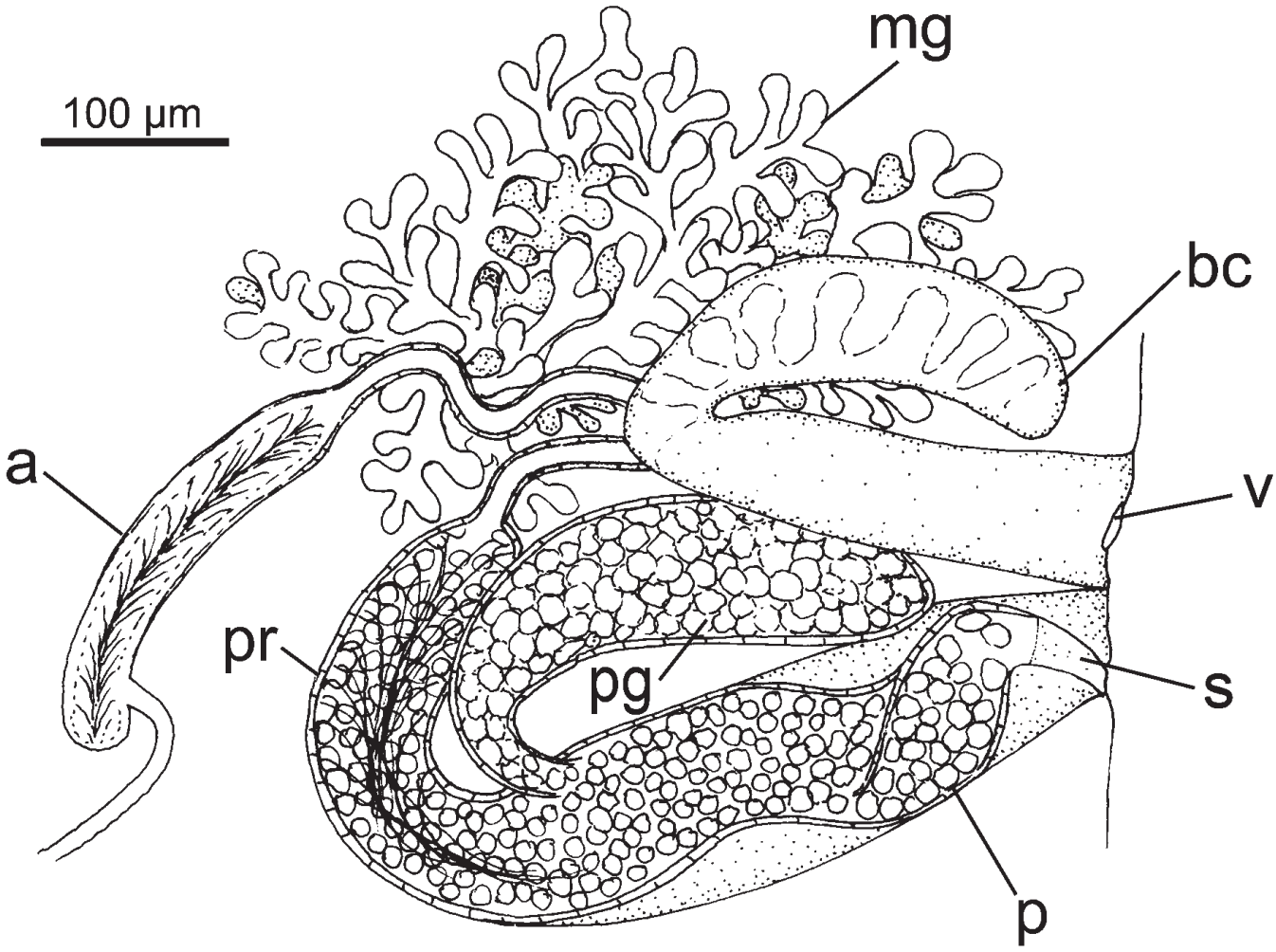

Figure 4 *Eubranchus capellinii* from Portugal, genital of 4 mm specimen. Abbreviations: a – ampulla, bc – bursa copulatrix, mg – female gland mass, p – penis, pg – penial gland, pr – prostate, s – stylet, v – vagina.

5, Plate 27, Fig. 10, Plate 35, Fig. 1.

Material examined One specimen of 2.4 mm alive, north face of Mouro Island, Santander, Cantabria, Spain, 15 m, 26 July 2001. Three specimens of 2 mm alive, (same locality) 15 July 2004. One specimen of 1 mm alive, Caleta del Muerto, Cabo de Palos, Murcia, Spain, 16 April 2007. One specimen of 3 mm alive, Sagres, Algarve, Portugal, 20 m, 3 June 2006. Three specimens of 3–4.5 mm alive (same locality) 4 June 2006. Four specimens of 3–5 mm alive (same locality) 9 May 2006.

Diagnosis Body with lateral band of brown or dark green pigment between rows of cerata and a trapezoidal blotch of same colour between rhinophores and first row of cerata. Tuberculate cerata arranged in oblique rows, with two sub-terminal greenish-brown or yellowish-green rings separated by a snow-white ring. Anus prominent with white pigment. Rounded tail. Cutting edge of jaws with a simple row of spiny denticles. Rachidean teeth with 3–4 denticles each side of central cusp. Lateral teeth much wider than the rachidean.

Description (Figs 1b, 2) Body wide, robust, transparent white, with numerous snow-white spots that can cover it almost totally. Light brown or greenish-brown blotches are scattered all over body, cerata, rhinophores and oral appendages. These merge to form bands between the rows of cerata and a large trapezoidal blotch between rhinophores and first two rows of cerata. This is characteristic of the species. Anterior edge of foot broad and rounded. Rhinophores and oral appendages cylindrical with blunt apex, the former more or less the same length as largest cerata and a little longer than oral appendages. Rhinophores white with apical and subapical

Table 1 Comparative characters of *E. capellinii, E. doriae, E. arci* and *E. telesforoi*.

	Blotches behind the rhinophores	Cerata colouration	Cerata arrangement in the body	Anal stalk colouration	Cutting edge of jaws	Denticles on the radular tooth each side of cusp	Lateral tooth of radule	Distribution
Eubranchus capellinii	Polyedric brown greened blotch	Big brown greened blotches. White subapical ring outlined up and down with brown greened rings	Oblique rows	Snow white, very conspicuous	Simple row	3–6	Very wide with the denticle next to the internal side	British isles to Italy in the Mediterranean
Eubranchus doriae	Dark orange yellow spots between the first pair of ceratas	Orange yellow spots. Subapical ring same colour	Oblique rows	Any, inconspicuous annus without stalk	Unknown	Unknown	Unknown	Endemic in Genoa, Italy
Eubranchus arci	Heart shaped green blotch	Green blotches. White subapical ring with another green one below	Oblique rows	White	Double row of alternating denticles	4	Very short with the denticle in the internal side	Endemic in Canary Islands
Eubranchus telesforoi	Brown band joining the lateral bands of the body	Many white and some brown spots and a black one in the internal side	First group is an arch and the rest one cerata alone	Snow white	Simple row	4	Wide with an angulated hunp behind the denticle	Endemic in Canary Islands

ring of snow-white and greenish-brown blotches as on the body, these blotches forming a distal ring over the snow-white one and sometimes a broad band ending at the base. Oral appendages with white apex and green-brown subterminal ring, or disperse blotches as in the body.

Cerata robust and relatively short with 2–3 rings of tubercles (up to 6 tubercles per ring). Distal ring on the widest part of the cerata. Tubercles less prominent in small specimens. Cerata transparent with greenish-brown blotches, snow-white subepidermical spots in the tubercles and a subterminal snow-white ring outlined by brown pigment. Snow-white spots can cover the cerata totally. Digestive gland off-white, yellowish- or reddish-brown, tending to fill the cerata totally, although when it is empty, it resembles the inverted cone illustrated for *E. doriae* (Trinchese, 1879) (Fig. 1a). Cnidosac is white, ligthly translucent or yellowish.

Cerata distributed in 5–7 oblique rows, with up to 4 cerata per row. First two rows on each side are paired but the rest alternate. First cerata on second row arises at same level as second cerata of the first and third rows. The last cerata same length or even longer than the tail, which is usually rounded and short.

Anus prominent, conspicuous, always marked with snow-white pigment and located on right side, in near dorsal position between the first and second post-cardiac rows of cerata. Gonopore under the first row of cerata on the right side.

Jaws triangular (Figs 3 b,f): 425–455 µm long by 226–266 µm wide in 2 specimens of 2 and 2.4 mm length from Santander; 506 µm long by 245 µm wide in a specimen of 4 mm length from Sagres; 405 µm long by 190 µm wide in a specimen of 2.5 mm length from Murcia. Cutting edge rounded and simple.

Most external denticles (4–8) with thick spines slightly curved to the back and the rest are irregular.

The radular formula of 2 specimens 2 and 2.4 mm long from Santander was 54 and 75×1.1.1. respectively; 56×1.1.1. in a specimen 4 mm long from Sagres and 54×1.1.1. in a specimen 2.5 mm long from Murcia.

The length and breadth of rachidian teeth increases from 12.4 by 12.4 to 17.4 by 14.6 along the length of the ribbon in a 2 mm long animal. The length and breadth of the biggest rachidean teeth of the ribbon (Fig. 3 c,g) measures 12.4 by 12.4 µm long in a specimen 4 mm long, 16 by 13 µm long in a specimen 2.5 mm long, and 23.8 by 18.6 µm long in a specimen 2.4 mm long. All rachidean teeth have 3 denticles each side of the central cusp, although can be a smaller fourth on the base of this cusp.

Lateral tooth very wide, with anterior edge short; it ranges 30 to 60 µm wide in the studied specimens, 3 to 4 times the width of the rachidean tooth.

Genital apparatus can be seen in Fig. 4. Penis has a slight stylet (52 µm long in a 4 mm specimen) that is difficult to differentiate from the surrounding tissue and not very conspicuous.

According to Trinchese (1879) and Vayssière (1913) illustration's, the spawn is a cup shaped flat ribbon, coiled one or one and a quarter turns, with white eggs concentrated in the interior perimeter.

Habitat Found on rocky bottoms on hydrozoans such as *Kirchenpaueria pinnata* (Edmunds & Kress, 1969: as *E. doriae*), *Plumularia setacea* (Thompson & Brown, 1984: as *E. doriae*; Thompson, 1988: as *E. doriae* and our material) and *Obelia geniculata* (Schmekel & Portmann, 1982: as *E. cingulatus*).

Geographic range It is certainly distributed throughout the British Isles (Garstang, 1890: as *Galvina cingulata*, Edmunds & Kress, 1969: as *E. doriae* and Thompson & Brown: 1984: as *E. doriae*) to the south of the Iberian Peninsula and in the Mediterranean to Italy (Trinchese, 1879: as *Tergipes capellinii*; Vayssière, 1913: as *C. doriae* and *C. capellinii* and Schmekel & Portmann, 1982: as *E. cingulatus*). This is the first record of the species in the Iberian Peninsula.

Discussion

The controversy with the name *E. capellinii* started 72 years after the original description when Pruvot-Fol (1951) synonymised it with *E. doriae*. She stated that they were a variety of each other, giving both the name *Eubranchus (Capellinia) exigua* (Alder & Hancock 1848) and illustrating one specimen that probably corresponds to *E. capellinii*.

The synonymy *capellinii-doriae* is accepted by most of the modern authors (Edmunds & Kress, 1969; Thompson & Brown, 1984; Thompson, 1988

and Caballer, 2002). The problem increased when Edmunds & Kress (1969), Thompson & Brown (1976) and Schmekel & Portmann (1982) published illustrations of *E. capellinii* under the name *E. cingulatus*, despite the fact that these species are perfectly distinguishable from each other, since *E. cingulatus* presents smooth cerata with 3 rings of green pigment and the pair *capellinii-doriae* has tuberculate cerata with different colouration. Thompson & Brown (1984) pointed out this mistake but assumed that the species was *E. doriae*.

Based on our specimens, the original descriptions and the illustrations of *E. doriae* and *E. capellinii* (Trinchese, 1873; 1879) (Fig. 1), we can observe the truly diagnostic characteristics to easily separate both species (Table 1). *E. doriae* presents dark orange yellow spots dispersed all over the body, but diffusely concentrated at the dorsum between the first groups of cerata, although not forming bands laterally among the rows. In contrast, brown-greenish blotches over the body and between the cerata rows can be observed in *E. capellinii*. A distinctive characteristic of this species is one polyhedric brown-greenish blotch located behind the rhinophores.

In *E. doriae* the cerata are crystalline but have orange-yellow spots dispersed as in the rest of the body, and aggregated in a subapical ring over the snow-white cnidosac. This does not occur in *E. capellinii,* whose cerata have irregular brown-greenish blotches and a snow-white subapical ring outlined by two brown-greenish rings with cnidosac translucent white or yellowish.

Digestive gland inside cerata of *E. doriae* is brilliant green with the shape of 3 inverted cones inserted within each other (Fig. 1a) but in *E. capellinii* it is off-white, yellowish or reddish brown and tends to fill up the cerata.

Finally, the anus is inconspicuous and unpigmented in *E. doriae*, whilst *E. capellinii* has a prominent anal stalk with snow-white pigment.

The internal anatomy of *E. doriae* is unknown, but its external anatomy and colouration (Trinchese, 1873 and 1879) clearly separate it from *E. capellinii*, whose internal anatomy is well known thanks to the exhaustive work of Trinchese (1879).

Taking all these facts into consideration, we propose the recovery of *E. capellinii* as a valid name.

All the records of *E. doriae* reported in the literature are actually related to *E. capellinii* with the possible exception of Just & Edmunds (1985) who illustrate specimens that could be closer to the description and drawings of *E. doriae* by Trinchese (1873 and 1879), although the description of their specimen showed a conspicuous annus and bands of pigment between the cerata. Therefore, the distribution of *E. doriae* should be restricted to Genoa, Italy.

Ortea (1978) cited *E. cingulatus* in Asturias, Spain, but he illustrated one animal with tuberculated cerata and the annus totally covered with white pigment, which are typical characteristics of *E. capellinii*.

Picton & Morrow (1994) in the British Isles, published one photo of *E. capellinii* as *E. doriae*. Probably the confusion was due to the transparency of the cerata and the shape of the digestive gland inside them, similar to the description of *E. doriae* (Trinchese, 1873 and 1879), but other characteristics as the lateral bands of pigment between the rows of ceratas are related to *E. capellinii*.

The drawings of Trinchese (1879: Plate XXVI, Figs 8 and 9) of *E. capellinii* show rachidean teeth with 4–6 denticles each side of the central cusp, not 3–4 as in our specimens, but this may be explained by the difference of size; our biggest animal was 5 mm long and the one that Trinchese studied was approximately 16 mm long. However, the proportions of the lateral teeth, their width and the position of the denticle are identical to the original description (Trinchese, 1879: Plate XXVI, Figs 7 and 12).

Genital structure in our specimens show only slight differences with those observed by Edmunds & Kress (1969) and Schmekel & Portmann (1982) although Edmunds & Kress (1969) observed a stylet of 10 µm in an immature specimen 4–5 mm long, while we observed a 52 µm long cuticular stylet in our 4 mm specimen. In the original description a larger stylet can be seen in the 16 mm specimen (Trinchese, 1879: Plate XXVI, Fig. 15). These variations may reflect different levels of maturity or different size ranges across the species' range.

Two other species in the Atlantic, endemic to the Canary islands, seem to be related to *E. capellinii* in the shape of their cerata and by their colouration: *Eubranchus arci* Ortea 1980 and

Eubranchus telesforoi Ortea, Caballer & Bacallado 2002**.**

E. arci is distinguished from *E. capellinii* because it has a green heart-shaped blotch behind the rhinophores, cerata with a subapical white ring and another green ring below and fragmented arches of green pigment between the rows of cerata. Moreover, its internal anatomy is totally different; the jaws having a cutting edge with a double row of alternating, garlic shaped denticles, very short and narrow teeth with the denticle attached to the internal side, and an unarmed penis.

E. telesforoi is distinguishable from *E. capellinii* by having the first group of cerata arranged in an arch, the body covered by thick snow-white spots, the digestive tube brown-coloured and visible through the dorsum, a black spot on the internal side of most of their cerata, the shape of the denticles of the cutting edge of the jaws and the lateral tooth of the radula with an angulated hump behind the denticle.

A comparison of characters of the four species can be seen in Table 1.

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