

THE STUDY CASE OF *PLEUROBRANCHUS LOWEI* WATSON, 1897 (GASTROPODA: NUDIPLEURA: PLEUROBRANCHIDAE), INDEED A SPECIES OF *HALIOTINELLA* (GASTROPODA: NATICIDAE) FROM THE EASTERN ATLANTIC

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Abstract *Pleurobranchus lowei* Watson, 1897 is a pleurobranchid gastropod that was described from Madeira Island and afterwards recorded in the Canary Islands. Its original description was not very detailed, perhaps because it was based on two empty shells, one of them broken. The validity and the taxonomic status of *P. lowei* have been discussed by different authors, but until recently, the actual appearance of the syntype of the species was only known by a drawing. The naticid genus *Haliotinnella* Sowerby, 1875 is composed of medium sized snails with flattened nail-shaped shells. There are two valid species in the world: *Haliotinnella montrouzieri* Sowerby, 1875, from New Caledonia, and *Haliotinnella patinaria* Guppy, 1876, from the Lesser Antilles. As in the previous case, the taxonomic position of the genus *Haliotinnella* has been subject to some controversy given that several authors considered that the shells were indeed shells of *Pleurobranchidae*. In this paper, the synonymy of *P. lowei* is proposed after the comparison of the type specimens of both species and the observation of samples of *H. patinaria* from the Canary Islands and the Caribbean.

Key words *Pleurobranchus lowei*, synonymy, *Haliotinnella patinaria*, controversial species, Canary Islands.

INTRODUCTION

Pleurobranchus lowei Watson, 1897 is a species belonging to the family Pleurobranchidae Gray, 1827, that was described from Abra Bay, Madeira Island, based on two shells (Watson, 1897: 240–241, fig. 19–9) (Fig. 1 A–B), one of them broken. Afterwards, Nobre (1937) recorded *P. lowei* from Madeira, and Nordsieck & García-Talavera (1979) from Madeira and/or the Canary Islands (not specified), providing the latter authors an illustration almost identical to the iconotype of Watson (1897: Fig. 1 A). Malaquias (2004) studied the species described by the reverend Robert Boog Watson, but did not find the type material of *P. lowei*. Cervera *et al.* (1988; 2006), and Segers *et al.* (2009b) included the species in their respective catalogues, and reflect the previous records in Madeira.

Ortea *et al.* (2014) proposed the synonymy of *P. lowei* with *Berthellina edwardsi* (Vayssière, 1896), described from the Azores Islands and common in Madeira, due to the similarities with the shell illustrated by Watson (1897). Contemporaneously,

Goodheart *et al.* (2015a: 34, Table 6) consider the description of *P. lowei* really incomplete and the species unidentifiable. Following Ortea *et al.* (2014), Alvim & Dias Pimenta (2015) consider *P. lowei* a junior synonym of *B. edwardsi*. The same year, Goodheart *et al.* (2015b) published an addendum of their previous work, discussing the synonymy proposed by Ortea *et al.* (2014) and considering *P. lowei* an unidentifiable species of *Pleurobranchus* Cuvier, 1804. However, the latter authors did not consider the publication of Segers *et al.* (2009), in which a ventral photo of the syntype of the species held in the National Museum of Wales (Melvill-Tomlin Collection: n° NMW.1955.158), was provided for the first time (same specimen as in Fig. 1 B).

The naticid genus *Haliotinnella* Sowerby, 1875 is composed of medium sized snails with flattened nail-shaped shells. The type species of the genus, *Haliotinnella montrouzieri* Sowerby, 1875, was described from New Caledonia (in Sowerby & Montrouzier, 1875). Later, Guppy (1876) described a second species, *Haliotinnella patinaria* Guppy, 1876, based on a shell collected in the Lesser Antilles, illustrated by Guppy (1878)

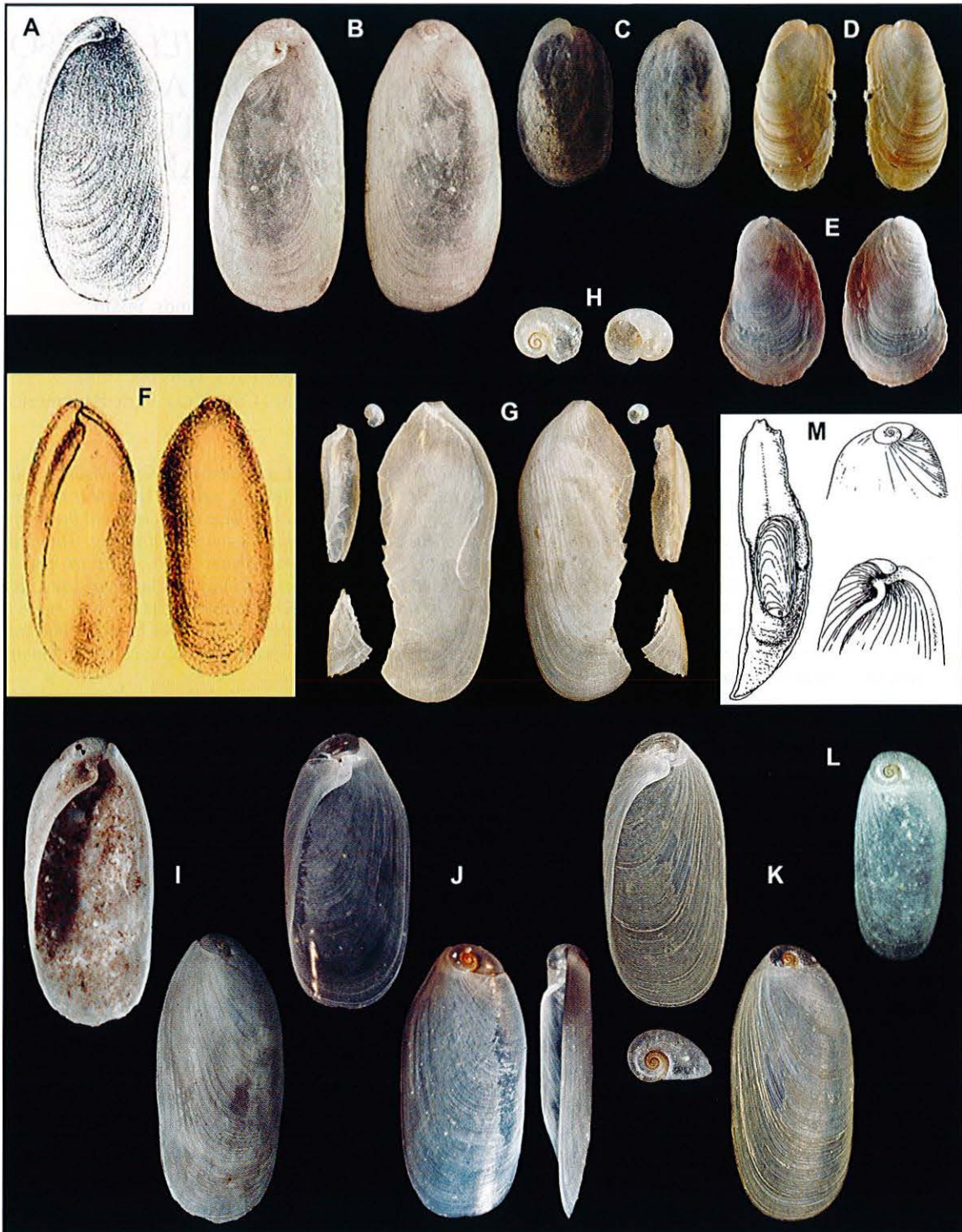


Figure 1 *Pleurobranchus lowei* Watson, 1897: a—b; a Iconotype (Watson, 1897); b Syntype 9mm long, NMW 1955. 158. 24404. c *Berthellina quadridens* (Mörch, 1863): Shell (7.4mm long) from Guadeloupe on ventral and dorsal views. d *Berthellina edwardsii* (Vayssière, 1897): Shell (3.1mm long) from the Canaries on ventral and dorsal views. e *Pleurobranchus crossei* Vayssière, 1896: Shell (4.8mm long) from the Canaries on ventral and dorsal views. *Haliotina patinaria* Guppy, 1976: f—I; f Shell illustrated by Guppy (1978); g Broken syntype 18.5mm long, MNHN-2000-5223; h Detail of the protoconch of the syntype, MNHN-2000-5223; i Shell (9.9mm long) from the Canaries on ventral and dorsal views (both courtesy of Gustavo Pérez-Dionis Molina); j Shell (8.6mm long) from the Canaries on ventral, dorsal and lateral views; k Shell (8mm long) from the Bahamas on ventral and dorsal views (courtesy of Colin Redfern); l Shell (9mm long) from Cuba on dorsal view (courtesy of José Espinosa); m Details of the shell and the preserved specimen (42mm long) illustrated by Marcus & Marcus (1965).

(Fig. 1 F–H). The taxonomic position of the genus *Haliotinella* has been subject to some controversy; first Mörch (1876), and later other authors (Fischer, 1887; Pilsbry, 1896), considered that the shells were indeed shells of Pleurobranchidae (Fig. 1 C–E). Even Guppy (1876), who placed *Haliotinella* in the family Naticidae Guilding, 1834, pointed out the resemblance of the shell with that of *Pleurobranchus*.

During the course of a regular biodiversity survey sampling in the South West of Tenerife Island (Canary Islands, Spain), 2 pleurobranchid-like shells were found in a sand bottom at 20m depth. These shells, deposited in Gustavo Pérez Dionis Collections, were almost identical to the types of *P. lowei* illustrated by Watson (1897) and Segers *et al.* (2009). A more indepth study demonstrated that they were not members of the Pleurobranchidae but of the genus *Haliotinella*, an aberrant form within the family Naticidae. In this paper, the synonymy of *P. lowei* with *H. patinaria* is proposed after the comparison of the types of both species with specimens from the Caribbean, and others from the Canary Islands initially determined as *P. lowei*.

MATERIAL AND METHODS

The specimens were obtained by dredging in a sand bottom in the South West of Tenerife (28°0'23.07"N 16°42'50.41"W), Canary Islands, Spain, at 20m depth. They were found in a sand sample, examined by hand using an Olympus SZ16 stereomicroscope. A Nikon D300 camera with extension tubes was used to take photographs of the shells that were preserved dry. Abbreviations: GPD — Gustavo Pérez Dionis Malacological Collections, Santa Cruz de Tenerife, Tenerife, Canary Islands, Spain; JEMC — José Espinosa Malacological Collections, Havana, Cuba; MNHN — Muséum national d'Histoire Naturelle, 55 rue Buffon, Paris, France; NMW — Amgueddfa Cymru National Museum of Wales, Cathays Park Cardiff, CF10 3NP, UK.

SYSTEMATICS

Family Naticidae Guilding, 1834

Genus *Haliotinella* Souverbie, 1875

Type species: *Haliotinella montrouzieri* Souverbie, 1875, by monotypy.

Haliotinella patinaria Guppy, 1876
(Fig. 1 F–M)

Haliotinella patinaria Guppy, 1876: *Journal de Conchyliologie* 24 (ser. 3, 16): 161–163. Type locality: Saint Kitts Islands, Leeward Islands, Caribbean Sea.

Material examined Syntype (broken), 18.5mm long (shell), collected at Saint Kitts Islands, Leeward Islands, preserved in MNHN (IM-2000–5223). 1 specimen 9mm long (shell), collected in Havana, Cuba, JEMC collections. 2 specimens 9.9 and 8.6mm long (shells), collected in the South West of Tenerife (28°0'23.07"N 16°42'50.41"W), Canary Islands, Spain, 20m depth, GPD collections.

Body and internal anatomy See Marcus & Marcus (1965).

Shell External, thin, fragile, translucent white, slightly calcified, elongate, flattened, nail-shaped (Fig. 1 F–L). Surface covered by a whitish periostracum and ornamented with growth striae (Fig. 1 J). Aperture almost as long as the shell. Interior smooth and glossy. Rear posterior edge of the aperture forms a callus and does not extend over the apex. Edge smooth. Columella callused, concave, elbow-shaped, folded over beneath apex, partly covering small umbilicus. Protoconch 2 and a half whorls, glossy and smooth, orange in first whorl, becoming translucent before teleoconch.

Geographic range Amphiatlantic: Caribbean and Macaronesic Islands (Canaries and Madeira).

DISCUSSION

Ortea *et al.* (2014) established the differences between the 3 genera of Pleurobranchidae present in the Canary Islands using, among other characters, the presence/absence and the type of striae on the internal shell. These authors also stated that within each genus there are two kinds of shells, the scraper-shaped (Fig. 1 E) and those with parallel sides (Fig. 1C–D). The flattened nail-shaped shells of the species of *Haliotinella* show a reasonable general resemblance to the later type of Pleurobranchidae; may be the reason for the initial controversy on the taxonomic position of the genus. On a closer look, the species

of *Haliotina* bear a proportionally bigger protoconch (naticid-like: Fig. 1 H, K) than these of Pleurobranchia, never totally embedded by the teleoconch (usually can be isolated and detached), with a callused rear posterior edge of the aperture that does not extend over the apex, and a callused, elbow-shaped columella, folded over beneath apex. In addition, the shells of Pleurobranchidae are usually wider and usually have the rear posterior edge of the aperture that may extend to form a small "wing", distinct from *Haliotina*.

Marcus & Marcus (1965) found one specimen of *Haliotina patinaria* digging in the mud of a *Thalassia* meadow in Florida. They gave stability to the genus *Haliotina* within the Naticidae by describing and illustrating the soft parts of *H. patinaria* (Fig. 1 M).

The illustrations of Guppy (1878) (Fig. 1 F) and Watson (1897) (Fig. 1 A) are almost identical, the differences observed; Guppy's (1876; 1878) shell slightly more callused, with concave sides, are probably due to intraspecific variability and the difference of size. On the other hand, Redfern (2013) illustrates several shells of *H. patinaria* from Bahamas (Fig. 1 K) that show an almost identical shell architecture to the shells of similar size collected in Madeira and the Canary Islands.

Based on this evidence, the synonymy of *P. lowei* with *H. patinaria* is proposed, and the distribution of the latter species is widened from the Caribbean to the Eastern Atlantic.

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