Zoosyst. Evol. 95 (2) 2019, 361–372 | DOI 10.3897/zse.95.33707

PENSOFT

MUSEUM FÜR NATURKUNDE BERLIN

Type specimens of Aplysiida (Gastropoda, Heterobranchia) in the Academy of Natural Sciences of Philadelphia, with taxonomic remarks

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http://zoobank.org/AA43756B-4521-4FA3-A9C3-ABB2CFFBCDC6

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Academic editor: *Thomas von Rintelen* ♦ **Received** 15 February 2019 ♦ **Accepted** 30 May 2019 ♦ **Published** 19 June 2019

Abstract

The type specimens of 15 nominal species of Aplysiida (Gastropoda, Heterobranchia) at the Academy of Natural Sciences of Philadelphia are listed and their primary types are illustrated. Type materials described by the following authors are present: Henry A. Pilsbry (9 names), Angelo Heilprin (2), Charles N. E. Eliot (1), William H. Pease (2) and Elizabeth J. Letson (1). Some taxonomic notes are provided. *Aplysia perviridis* (Pilsbry, 1895), **comb. nov.**, *Aplysia pilsbryi* (Letson, 1898), and *Aplysia pulmonica* Gould, 1852 are reinstated as valid.

Key Words

Mollusca, Anaspidea, Aplysiomorpha, morphology, new combinations, biodiversity, Curatorial methods, malacology, nomenclature, type specimens

Introduction

Since the publication of Pilsbry's *Manual of Conchology* (1895, 1896a, 1896b), where a number of new taxa were described, little has been published about the types of Aplysiida (e.g. Valdés and Héros 1998). Systematic revisions of several aplysiidan groups are needed (Gosliner 1994; Valdés et al. 2006; Uribe et al. 2013), and information about type materials is essential for determining the status of species-group taxa. As the aplysiidan material that Pilsbry studied as well as that of other authors is housed at the Academy of Natural Sciences (ANSP), evaluation of the type materials held there is important. We follow Bouchet et al. (2017) for the name of the order; it has also been called Anaspidea and Aplysiomorpha.

Material and methods

To find putative type material of aplysiidans, we searched the ANSP collection database for items indicated as having a type status; this database includes digitized records from the handwritten ledgers. We also searched the dry collection for specimens indicated as type specimens on their labels and relevant literature (e.g. Pilsbry 1896; Eales 1960) for indications of type materials held by ANSP.

Where ethanol-preserved material was verified as part of a type series, the animals were dissected by standard techniques, under a stereomicroscope, with the specimen immersed in ethanol. Digital photography of the whole animals was obtained with the specimen immersed in ethanol an acrylic container with rubber bottom. After

dissections, photographs were taken of the specimen carefully pinned into the container in the desired position.

Digital photographs of shells were made using either a standard digital macro-lens system with single photos of each view for specimens larger than ~10 mm in maximum dimension, or a computer-operated motorized StackShotTM system (Cognisys, Inc.), coupled with Helicon Remote and Helicon Focus software (HeliconSoft Ltd.), allowing digital combination (i.e., "stacking") of multiple individual shots of each view for specimens less than 10 mm.

The figures of shells are not shown to scale, but the maximum dimension of each specimen is given in the corresponding figure legend. The photographs of types published here are also available in the online database for the ANSP Mollusca collection.

Catalogue numbers in the ANSP malacology collection were originally assigned in a single sequence, started in 1889 by Henry Pilsbry. Around 1970, George M. Davis established a separate number sequence prefixed with "A" for alcohol-preserved material. Many samples with catalogue numbers in the original sequence were given new numbers in the A sequence. This renumbering affected all of the nominal taxa of Aplysiida for which ANSP has type material in alcohol. In some cases, the shell is stored under the dry collection under the original number and body from which it was dissected is preserved in the alcohol collection under an "A" number. We have traced these associations to ensure that we have recognized the components of each lot.

The list of nominal taxa is arranged alphabetically by the original epithet (in **bold**) with the taxon name written as in the original description, except that capitalization is adjusted to current standards.

Institutional Acronyms: ANSP, Academy of Natural Science of Philadelphia, USA; CPIC, research collection of the Department of Biological Sciences of the California State Polytechnic University, Pomona, USA; MCZ, Museum of Comparative Zoology, Harvard University, Boston, USA.

Results and discussion

Search of the ANSP collection, the collection database and relevant literature found potential type material of 18 names. Three of these proved to be false leads: a lot of *Dolabrifera maillardi* Deshayes, 1863 (ANSP 114205) from Reunion was erroneously flagged in the database as a type; one was a manuscript name of Pilsbry (ANSP 84337, A7044, currently *Aplysia* sp.) from Zanzibar [we do not mention the name to avoid creating a nude name]; and one labeled as "Cotype?" of *Dolabrifera marmorea* Pease (ANSP 247112), but Sowerby (1868), not Pease introduced this name.

For 15 nominal taxa, we verified the presence of type material in ANSP. This includes holotypes for 3 taxa and syntypes for 11, along with 1 (*Aplysia badistes*) where we could not determine in the specimen was the holotype or a paratype. The names were introduced by Henry A. Pilsbry (9), Angelo Heilprin (2), Charles N. E. Eliot (1), William H. Pease (2), and Elizabeth J. Letson (1). The type localities are Western Atlantic (7), South Pacific Ocean (3), North Pacific Ocean (4), and Indian Ocean (2). Currently 18 valid species with 10 synonyms are recognized for Aplysiida in the Western Atlantic. This catalog is especially important to that region, as it represents 25% of the 28 nominal taxa.

In the following section, the type material and current status of each nominal species is included. Two species were previously considered valid and 13 held as synonymous. *Aplysia perviridis* (Pilsbry, 1895) new comb., *Aplysia pilsbryi* (Letson, 1898), and *Aplysia pulmonica* (Gould, 1852) are herein are reinstated as valid and *Tethys pulmonica* var. *tryoniana* is returned to the synonymy of *Aplysia pulmonica* Gould, 1852 rather than *A. argus* Rüppell & Leuckart, 1830.

Nominal taxa

Aplysia aequorea Heilprin, 1888

Figure 1A, B

Aplysia aequorea Heilprin, 1888: 325–327, pl. 16, figs 2–2b.

Type locality. South side of Castle Harbor, opposite Tucker's Town, Bermuda.

Type material. Holotype (monotypy), ANSP A7030, 1 specimen (dehydrated but subsequently put back on alcohol, 33.2 mm long preserved); ANSP 66519, 1 shell (35 mm) (A. Heilprin coll. 1888), removed from body of holotype by Heilprin.

Remarks. Heilprin (1888) stated that he examined a single specimen. We do not illustrate the rehydrated alcohol specimen as it is a blackened mass without visible distinguishing features.

Current systematic position. *Aplysia dactylomela* Rang, 1828 (*fide* Valdés et al. 2013).

Aplysia (*Metaplysia*) *badistes* Pilsbry, 1951

Figure 1C–G

Aplysia (*Metaplysia*) *badistes* Pilsbry, 1951: 1–6, figs 1–9.

Type locality. Venetian Causeway, Biscayne Bay, Florida, USA.

Type material. Holotype and paratype: ANSP A7028, 2 specimens (one whole except for removal of buccal mass, measuring 45.8 mm long preserved and the other dissected, measuring 46.7 mm long preserved); ANSP 187712, 1 shell (18.7 mm) and gizzard plates of dissected specimen of A7028 (H. A. Pilsbry coll., iv/1951), 1 slide with radulas of dissected specimens.

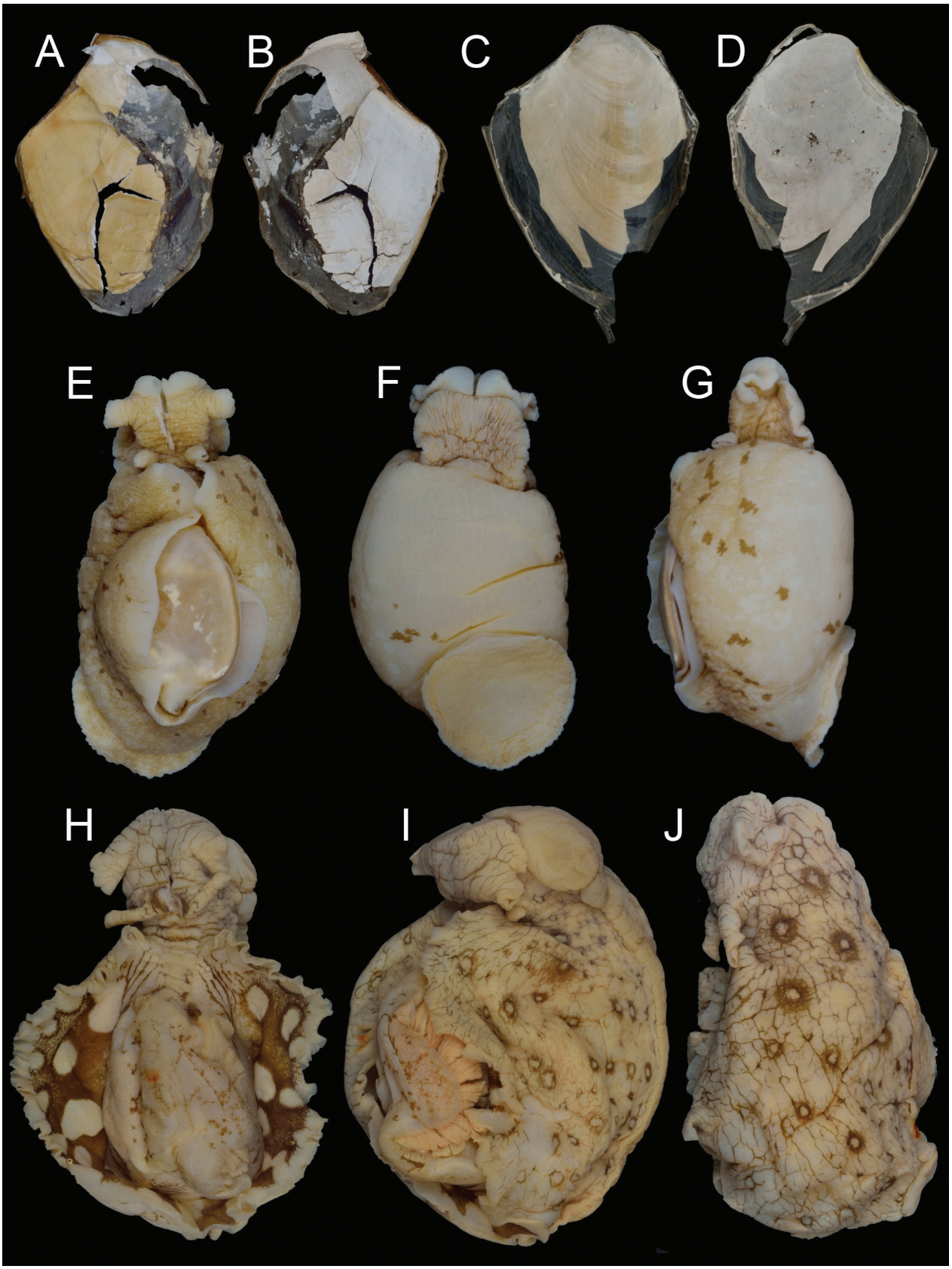

Figure 1. Aplysiida types. **A.** Holotype of *Aplysia aequorea* (=*A. dactylomela*), shell, L 35 mm, ANSP 66519 in dorsal view. **B.** Same, in ventral view. **C–G.** Types of *A. badistes*, **C.** Shell, L 18.7 mm, ANSP 187712 in dorsal view. **D.** Same, in ventral view. **E.** Same species, whole specimen, L 45.8mm, ANSP A7028 in dorsal view. **F.** Same, in ventral view. **G.** Same, in right lateral view. **H–J.** Syntypes of *A. benedicti* (=*Aplysia argus*), whole specimens ANSP A7027. **H.** Specimen L 79 mm in dorsal view. **I.** Same, in right lateral view. **J.** Specimen L 76 mm in right lateral view.

Remarks. *Aplysia badistes* Pilsbry, 1951 is the type species of subgenus *Metaplysia* Pilsbry, 1951. Pilsbry stated "Type and another specimen are 187712 ANSP". Pilsbry described the internal anatomy from one specimen but extracted the radula from both. Someone separated the shell and gizzard plates as ANSP 188279, and labeled them "Paratype", a term not used in the publication. We have restored them to the original catalogue number (187712) as it is not possible to tell which specimen Pilsbry intended to be the holotype.

Current systematic position. *A. juliana* Quoy & Gaimard, 1832 (*fide* Eales 1960).

Aplysia (*Tethys*) *benedicti* Eliot, 1900

Figure 1H–J

Aplysia (*Tethys*) *benedicti* Eliot, 1900: 513–515, pl. 19, fig. 2a, b.

Type locality. Apia Harbor, Upolu, Samoa.

Type material. Syntypes: ANSP A7027, 2 specimens + 1 slide with radulae and jaw mounted (leg., C. N. E. Eliot, 19–21/vii/1899) [1 specimen (Eliot 1900: fig 2a), preserved 76 mm long, whole, not dissected; another specimen, preserved 79 mm long, with radula removed].

Current systematic position. *Aplysia argus* Rüppell & Leuckart, 1830 (*fide* Alexander & Valdes, 2013).

Syphonota elongata Pease, 1860

Figure 2A, B

Syphonota elongata Pease, 1860: 24.

Type locality. Sandwich Islands [Hawaii, USA].

Type material. Potential syntypes: ANSP 20686, 1 shell + 2 fragments (11.3 mm long, "ex auct"), ANSP 20687, 3 shells (7.1, 7.2 and 7.5 mm long, "ex auct"), MCZ 31442 and 298486 (Johnson 1994).

Remarks. It is not known whether Pease collected the specimens deposited at ANSP and MCZ before or after the species description was published. Therefore, we consider them potential syntypes.

Current systematic position. *Aplysia parvula* Mörch, 1863 (*fide* Eales 1960).

Tethys floridensis Pilsbry, 1895

Figure 2C–E

Tethys floridensis Pilsbry, 1895: 82–83; 1896a, pl. 37, figs 15–19.

Type locality. Key West, Florida, USA.

Type material. Syntypes: ANSP A7034, 2 specimens (one 90 mm long preserved, with shell, not dissected; other 76 mm long preserved, shell removed, penis everted) (H. C. Machette, leg. 1893) [1 specimen (Fig. 2C, D), penis not everted; another specimen, penis everted (Fig. 2E)]; ANSP 63529, 1 shell (fragmented, ca 45 mm long).

Remarks. Pilsbry (1895) stated that "the types are two well preserved alcohol specimens". We judge the original drawing of a whole animal (Pilsbry 1896a: pl. 37, fig. 19) to be a composite of the two specimens.

Current systematic position. *Aplysia fasciata* Poiret, 1789 (*fide* Medina et al. 2005).

Dolabrifera fusca Pease, 1868a

Figure 2F, G

Dolabrifera fusca Pease, 1868a: 76, pl. 8, fig. 4; 1868b, pl. 12, fig. 27.

Type locality. Polynesia.

Type material. Syntype: ANSP 20710 (Pease 1868b: pl. 12, fig. 27; Valdés et al 2017: fig. 5I, J), 1 shell (7.7 mm long) "ex auct", no locality data. Syntypes, MCZ 297870, 3 shells, from Tahiti (Johnson 1994).

Remarks. Pease (1868a) neglected to state a locality within Polynesia, although he described the habitat as "under stones, in the upper region of the laminarian zone".

Current systematic position. *Dolabrifera dolabrifera* Rang, 1828 (*fide* Valdés et al. 2017).

Dolabrifera jacksoniensis Pilsbry, 1896a

Figure 2H–K

Dolabrifera jacksoniensis Pilsbry, 1896a: 120–121; 1896b, pl. 44, figs 38–41.

Type locality. Port Jackson, New South Wales, Australia.

Type material. Syntypes: ANSP A7040, 2 specimens (one 16.7 and another 11.3 mm long preserved); ANSP 64931 (Pilsbry 1896b: pl. 44, figs 38–41; Valdés et al. 2017: fig. 8E, F), 1 shell (6.7 mm long; ex J. C. Cox 1893).

Remarks. Both alcohol specimens have had the shell removed, but only one shell is present in the corresponding dry lot.

Current systematic position. *Dolabrifera brazieri* G. B. Sowerby II, 1870 (fide Valdés et al. 2017).

Dolabrifera nicaraguana Pilsbry, 1896a

Figure 3A–E

Dolabrifera nicaraguana Pilsbry, 1896a: 124–125; 1896b pl. 63, figs 12–16.

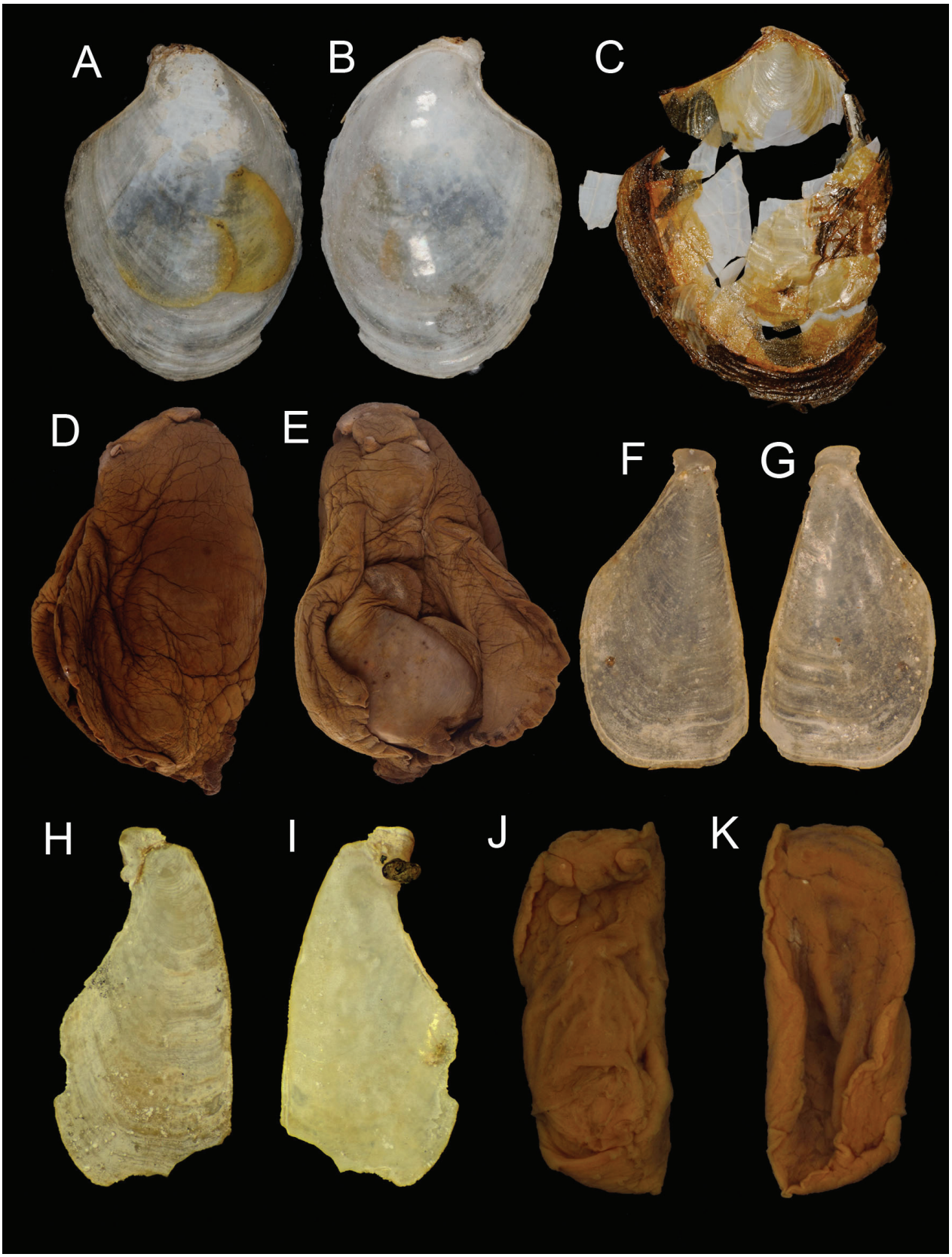

Figure 2. Aplysiida types. **A–B.** Syntype of *Syphonota elongata* (=*Aplysia parvula*), **A.** Shell, L 11.3 mm, ANSP 20686 in dorsal view. **B.** Same, in ventral view. **C–E.** Syntypes of *Tethys floridensis* (=*A. fasciata*), **C.** Shell, L ca 45 mm, ANSP 63529 in dorsal view. **D.** Same species, whole specimen, L ca 90 mm, ANSP A7034 in right lateral view. **E.** Same, in dorsal view. **F.** Syntype of *Dolabrifera fusca* (= *D. dolabrifera*), shell, L 7.7, ANSP 20710 in dorsal view. **G.** Same, in ventral view. **H–K.** Syntypes of *D. jacksoniensis* (= *D. brazieri*), **H.** Shell, L 6.7 mm, ANSP 64931 in dorsal view. **I.** Same, in ventral view. **J.** Same species, whole specimen, L ca 16.7 mm, ANSP A7040 in dorsal view. **K.** Same in ventral view.

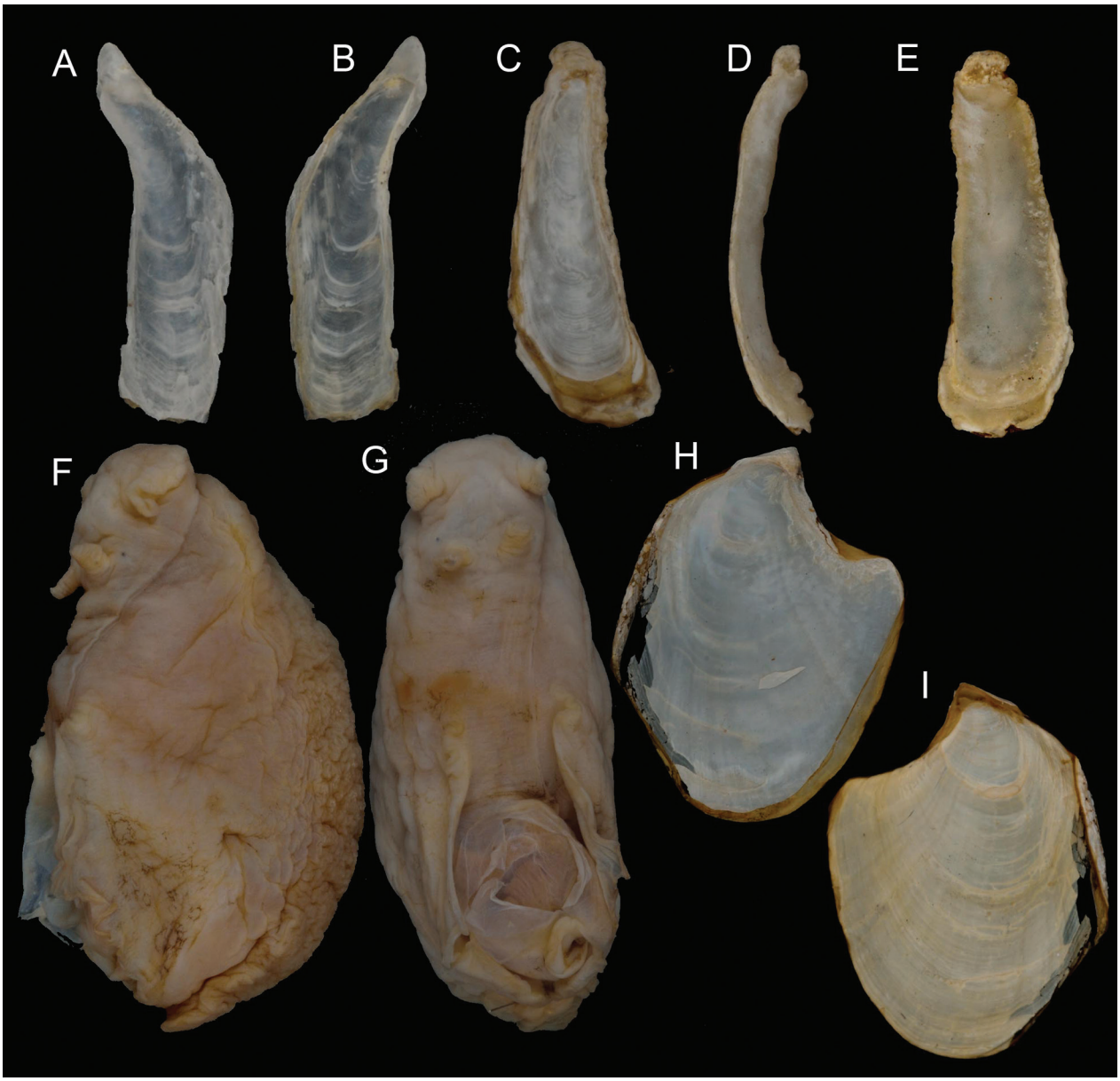

Figure 3. Aplysiida types. **A–E.** Syntypes of *Dolabrifera nicaraguana*, **A.** Shell, L 8.2 mm, ANSP 67518 in dorsal view. **B.** Same, in ventral view. **C.** Same species, shell, L 9.2 mm, ANSP 67517 in dorsal view. **D.** Same in lateral view. **E.** Same in ventral view. **F–I.** Syntypes of *Tethys panamensis* (= *A. dactylomela*), **F.** whole specimen, L ca 52 mm, ANSP A7042 in right lateral view. **G.** Same in dorsal view. **H.** Shell, L 16 mm, ANSP 20693 in ventral view. **I.** Same in dorsal view.

Type locality. San Juan del Sur, Nicaragua.

Type material. Syntypes (all leg. J. E. Bransford): ANSP A7048, 2 specimens (both dry, one ca 25.5 mm long preserved with shell 7.8 mm long and another ca 24.6 mm long preserved, shell removed); ANSP 67517 (Pilsbry, 1896b: figs 12–14; Valdés et al 2017: fig. 15A, B), 1 shell (9.2 mm long), taken from body in A7048; ANSP 67518 (Pilsbry 1896b: fig. 15), 1 shell (8.2 mm long), corresponding alcohol specimen missing.

Remarks. Pilsbry (1896a) gave measurements for two specimens preserved in ethanol, but three shells and two bodies are present in the ANSP collection. The ANSP ledger lists 63517 from "San Juan Del Sur Nicaragua" (the type locality) as containing two alcohol specimens and one dry and 63518 from "Nicaragua" as having one alcohol and one dry. These were catalogued on 21 January 1896 and so are part of the material that Pilsbry examined as the description was published on 13 March 1896. The ledger lists 63517 as "Types" but does not list 63518 as a "type". The original ANSP label for 63517 says "Shell of the TYPE"; whereas that for 63518 does not mention type status. Although Pilsbry intended 63517 to be the holotype, he did not designate a holotype in the original description, so we consider all of the material to be syntypes.

ANSP A7048 contains a note saying, "August 1969 badly dried" and the back of the most recent Academy label says "Treated with Tri-sodium phosphate and stepped up to 70% ETOH. Unfortunately, the sample subsequently dried out again, and so has been combined with the dry lot.

Current systematic position. *Dolabrifera nicaraguana* Pilsbry, 1896 (fide Valdés et al. 2017).

Tethys panamensis Pilsbry, 1895

Figure 3F–I

Tethys panamensis Pilsbry, 1895: 88–89; 1896b, pl. 60, figs 45–48

Type locality. Panama.

Type material. Syntype: ANSP A7042 (Pilsbry 1896b: fig. 45), 1 specimen (52 mm long preserved), ANSP 20693 (Pilsbry, 1896b: figs 46–48), 1 shell (16 mm long; J. A. McNeil coll.).

Remarks. Recently, the Caribbean species *Aplysia dactylomela* was genetically differentiated from Indo-Pacific ones (Alexander and Valdés 2013), while the East Pacific remains unsampled (Uribe et al. 2013). *Aplysia panamenis* (Pilsbry, 1895) is the representative synonym of this area.

Current systematic position. *Aplysia dactylomela* Rang, 1828 (*fide* Eales 1960).

Tethys willcoxi var. *perviridis* Pilsbry, 1895

Figure 4A–E

Tethys willcoxi var. *perviridis* Pilsbry, 1895: 81–82; 1896b, pl. 55, figs 1–4.

Type locality. Cape May, New Jersey [USA].

Type material. Holotype (monotypy): ANSP A2250 (ca 105 mm long preserved, shell 60 mm long; H. Lemon coll., 25/x/1894). Pilsbry stated that he examined a single specimen.

Remarks. Aplysiidans possess a large gland near the mantle floor, called the opaline gland (or gland of Bohadsch), that produces a milky liquid when the animal is disturbed (Gosliner 1994). The gland can be multiporous (e.g. *A. depilans*, *A. juliana* and *A. parvula*) or uniporous (e.g. *A. dactylomela* and *A. fasciata*) (Beeman 1968; Cunha and Simone 2019; pers obs.). The opaline gland in *Aplysia perviridis* is unique in having both conditions, uniporous and multiparous (figs 32, 33). Pilsbry (1895) described the opaline gland as "projecting externally as a pedunculated oval body", but that appears to be the result of contraction upon fixation, as suggested by Pilsbry: "but perhaps evaginated, in which case it would have one large orifice".

The opaline gland of a single young specimen collected in 1950 from Sea Isle City, New Jersey, which is about 35 km north of the type locality was dissected to confirm this condition (ANSP A2235, ~60 mm long preserved). Despite the lack of a "pedunculated oval body" the condition of gland is the same (Fig. 4B, C). The multiporous part is more developed in the holotype than in the young specimen.

Aplysia perviridis (Pilsbry, 1895) was accepted as a synonym of *A. willcoxi* Heilprin, 1886 by Eales (1960). However, with the anatomical differences of the opaline gland, we treat it as a valid species herein.

Current systematic position. *Aplysia perviridis* (Pilsbry, 1895) comb. nov.

Tethys pilsbryi Letson, 1898

Figure 4F–H

Tethys pilsbryi Letson, 1898: 193, pl. 8, figs 1–4.

Type locality. Silam, north coast of Yucatan, Mexico.

Type material. Syntypes, ANSP A7036, 2 specimens (one 97 mm long preserved with shell and other 94 mm long preserved with shell removed, both dissected and radula removed) + 1 slide with radulae and jaw mounted (Heilprin Expedition, 1890) [one specimen (Letson 1898: figs 2–3), whole, lacking the left rhinophore (added in the figure), dissected ventrally, shell and radula not removed; other specimen, shell and radula removed].

Remarks. Eales (1960) synonymized this species with *A. cervina* Dall & Simpson, 1901 because of general morphological similarity, but it differs in having an upturned edge to the rim of the mantle where the purple gland lies (Fig. 4H: ed). This remarkable characteristic is unique in the genus *Aplysia*. Letson (1898) also described the presence of "a few inconspicuous scattered warts" on the integument, not reported by Eales (1960). However, both features were confirmed in juvenile specimens from Yucatan (ANSP A1993, 10 specimens measuring 25–50 mm). Additionally, *A. pilsbryi* has a shorter shell (ca 1.2 times long as wide), while the shell of *A. cervina* is more elongated (ca 1.6 times long as wide) (MacFarland 1909).

Current systematic position. *Aplysia pilsbryi* (Letson, 1898). Kobelt (1897: 240) introduced the combination to the genus *Aplysia*.

Tethys robertsi Pilsbry, 1895

Figure 5A–D

Tethys robertsi Pilsbry, 1895: 89; 1896b, pl. 55, figs 5, 6.

Type locality. West coast of Mexico.

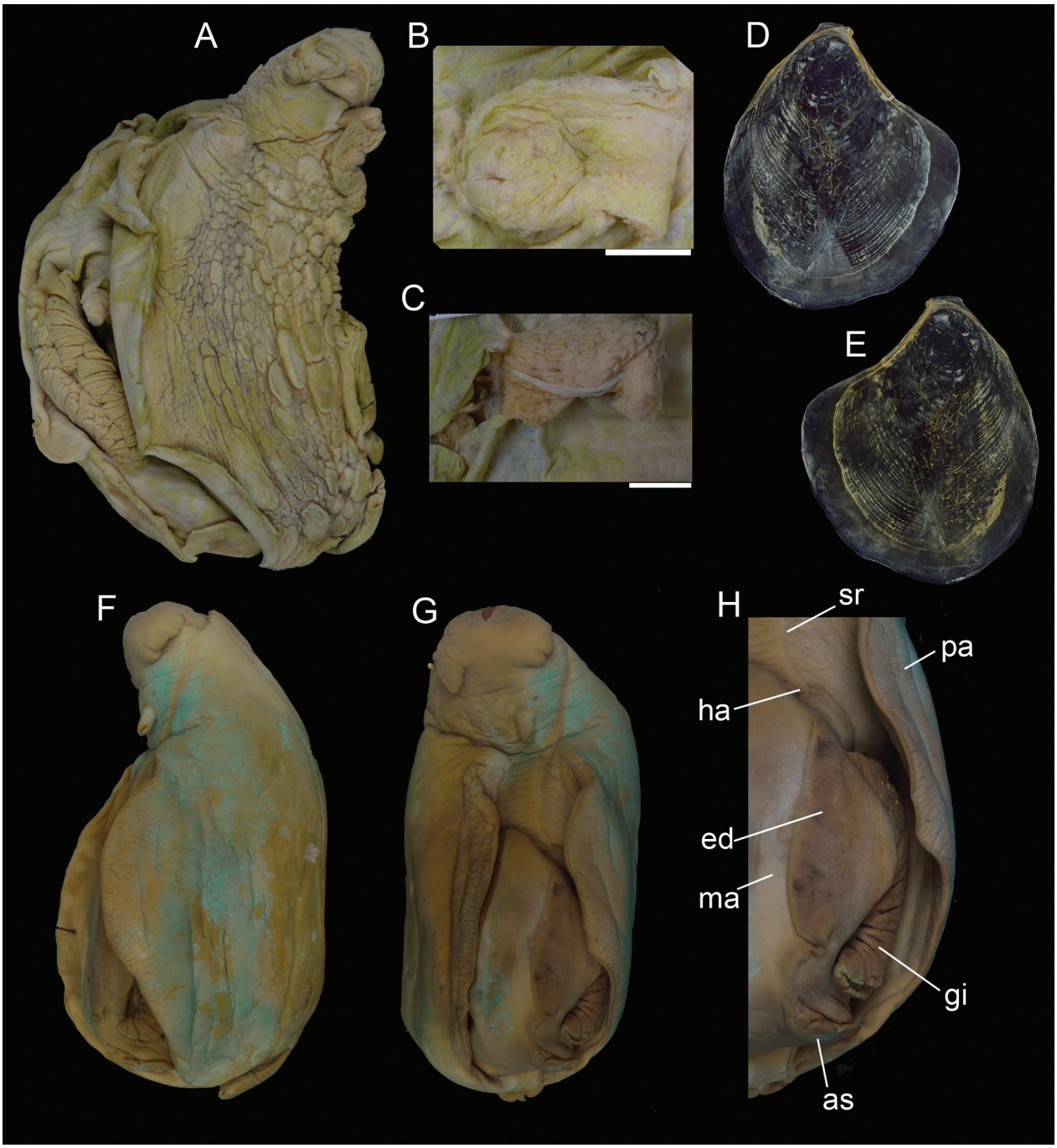

Figure 4. Aplysiida types. **A–E.** Holotype of *Tethys willcoxi* var. *perviridis* (=*A. perviridis*), **A.** Whole specimen, L. ca 105 mm, ANSP A2250 in right lateral view. **B.** Same, detail of opaline gland in dorsal view showing the uniporous and multiparous apertures. **C.** Same, opaline deflected showing the opaline gland spread on the roof of haemocoel. **D.** Shell of the same, L 60 mm, in ventral view. **E.** Same in dorsal view. **F–H.** Syntype of *Tethys pilsbryi* (= *A. pilsbryi*). **F.** Whole specimen, L 97 mm, ANSP A7036 in right lateral view. **G.** Same in dorsal view. **H.** Same, detail of pallial cavity showing the upturned edge to the rim of the mantle border (ed); legend: pa - parapodium, sr - seminal groove, ha - hermaphrodite aperture, ed - upturned edge, ma - mantle; gi - gill, as - anal siphon. Scale bar: 5 mm.

Type material. Holotype (original designation, "the type"): ANSP A7029, 1 specimen (ca 92 mm long preserved; W.H. Jones, leg.) [shell removed and figured by Pilsbry (1896b: pl. 55, fig. 5) but not found, should be ANSP 66307].

Remarks. Pilsbry (1895) cited plate 55, figures 4 and 5, but when the plate was published the next year, the captions showed figures 5 and 6, the latter being correct. The specimen has the sole covered by small black dots (Fig. 5D), which is not mentioned in the original description nor by Eales (1960).

Figure 5. Aplysiida types. **A–D.** Holotype of *Tethys robertsi* (= *A. robertsi*), **A.** Whole specimen, L ca 92 mm, ANSP A7029 in dorsal view. **B.** Same in right lateral view. **C.** Same in ventral view. **D.** Same, detail showing the sole covered by small black dots. **E–G.** Syntype of *Dolabrifera swiftii* (=*D. dolabrifera*), **D.** Shell, L 10.5 mm, ANSP 67519 in dorsal view. **F.** Same in ventral view. **G.** Same in lateral view. **H–L.** Syntype of *Tethys pulmonica* var. *tryoniana* (=*A. pulmonica*), **H.** Whole specimen, L ca 122 mm, ANSP A7037 in right lateral view. **I.** Same in dorsal view. **J.** Same in ventral view. **K.** Shell, L ca 58 mm, ANSP 66306, in dorsal view. **L.** Same in ventral view. Scale bar: 5 mm

Current systematic position. *Aplysia robertsi* (Pilsbry, 1895) (*fide* Eales 1960).

Dolabrifera swiftii Pilsbry, 1896a

Figure 5E–G

Dolabrifera swiftii Pilsbry, 1896a: 125; 1896b, pl. 67, figs 19, 20.

Type locality. West Indies.

Type material. Syntype: ANSP 67519 (Valdés et al 2017: fig. 12K, L), 1 shell (10.5 mm long, donated by Robert Swift).

Remarks. In the plate caption, which was published later than the description (September 23 vs March 13), Pilsbry suggested the name may be a synonym of *D. ascifera* Rang.

Current systematic position. *Dolabrifera ascifera* (Rang, 1828) (*fide* Valdés et al. 2017).

Tethys pulmonica var. *tryoniana* Pilsbry, 1895

Figure 5H–L

Tethys pulmonica var. *tryoniana* Pilsbry, 1895: 96–97; 1896b, pl. 57, figs 24–27.

Type locality. Upolu, Samoa Island.

Type material. Syntype, ANSP A7037 (Pilsbry, 1896b: pl. 57, fig. 27), 1 specimen (ca122 mm long preserved), ANSP 66306 (Pilsbry, 1896b: pl. 57, figs 24–26), 1 shell (fragmented, ca 58 mm long; ex G. W. Tryon from Dr Gräffe, Museum Godeffroy).

Remarks. In 1895 Pilsbry cited plate 57, figures 54–57, but when the plate was published the next year, the captions showed figures 24–27, the latter being correct. The specimen was purchased by G. W. Tryon from the Godeffroy Museum Catalogue. Pilsbry cited "Aplysia sp.? Museum Godeffroy, Catalog IV, p. 105, No. 1107a", but apparently examined only one specimen. Pilsbry did not dissect the specimen but removed the shell.

Current systematic position. According to Pilsbry (1895), *A. pulmonica* and *Tethys pulmonica* var. *tryoniana* (both from Samoa) are similar, differing just in that *A. pulmonica* lacks black maculations and has a more extensive posterior junction of the parapodia. We follow Eales (1960), keeping *Tethys pulmonica* var. *tryoniana* as a synonym of *A. pulmonica* until more material is available.

According to a recent study by Alexander and Valdes (2013), suggesting that "the ring doesn't mean a thing", *A. pulmonica* Pease, 1860 is a synonym of *A. argus* Rüppell & Leuckart, 1830. The photographs of Hawaiian specimens identified as *A. dactylomela* and *A. pulmonica* in their paper (Alexander and Valdes 2013: fig. 2) suggest that the material of *A. pulmonica* has rings in the color pattern, although it is supposed to lack them. Photographs of live specimens of the main material used in that publication (*A. dactylomela*, CPIC 00297 and *A. pulmonica*, CPIC 00313) confirm that both possess black rings in the body color. The black rings are more evident in the material they identified as *A. dactylomela* (paler) than in the ones they identified as *A. pulmonica* (darker).

Their Hawaiian material does belong to a single species, as they concluded based on their molecular data. The dark morph is consistent with the description of *A. grandis* Pease, 1860 (type locality Hawaii), which was not cited by the authors, in having a purplish-brown color, pale along the flanks, everywhere above densely crowded with minute white dots, and foot projecting posteriorly, where it is rounded. The dark morph is not consistent with the original description and illustration of *A. pulmonica*, which differs in being coarsely reticulated with black veins, lacking white dots, having oral tentacles short, and the posterior junction of the parapodia producing a sac-like structure. Bebbington (1977) included *A. grandis* in the synonymy of *A. dactylomela*, and not of *A. pulmonica*. In synonymizing *A. pulmonica* with *A. argus*, Alexander and Valdes (2013) ignored that most previous authors regarded *A. dactylomela* and *A. pulmonica* in the Indo-Pacific as distinct species. We regard their use of *A. pulmonica* for their Hawaiian material as a misidentification, and resume use of *A. pulmonica* as a valid species.

Aplysia willcoxi Heilprin, 1887a

Figure 6A–D

Aplysia willcoxi Heilprin, 1887a: 364; Heilprin 1887b: 20, pl. 19.

Type locality. Little Gasparilla Bay, west coast of Florida, USA.

Type material. Syntypes (ex Heilprin 1887): A2262, 5 specimens with radula associated and 3 loose shells; ANSP 64260, SEM stub with fragment of radula.

Remarks. The ledger entry for ANSP 64260 says six specimens in alcohol. Heilprin (1887b: 20) noted that a half dozen specimens were collected with dip-nets by Joseph Willcox and the expedition cook (Moses Natteal, p. iii), so one syntype is currently missing. The alcohol lot was subsequently renumbered as A2262, but we retained the dry number for an SEM stub with a radular fragment. All specimens were previously dissected, with the radula having been removed and kept with the specimens.

ANSP 63628 contains shells (and fragments) of about seven individuals collected by Willcox, from Marco, Florida donated by Joseph Leidy. We do not consider these parts of the type series as the locality was not mentioned in the original description.

Current systematic position. *Aplysia fasciata* Poiret, 1789 (*fide* Medina et al. 2005; Rosenberg et al. 2009).

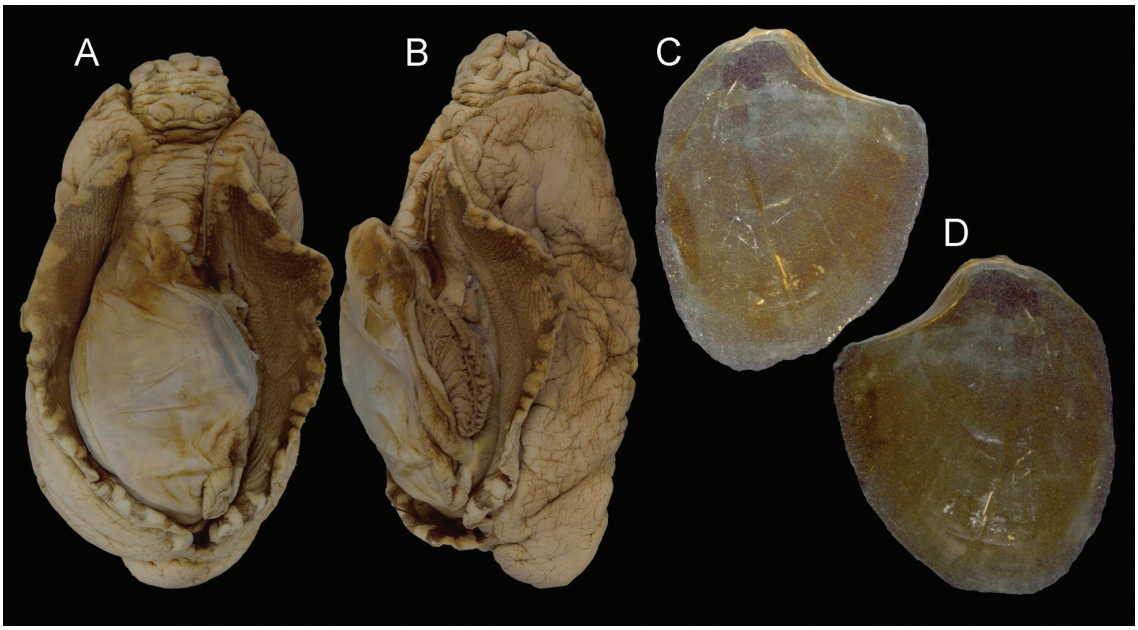

Figure 6. Aplysiida types. **A–D.** Syntype of *Aplysia willcoxi* (=*A. fasciata*). **A.** Whole specimen, L = ca 114 mm, ANSP A2262, in dorsal view. **B.** Same in right lateral view. **C.** Shell in ventral view, L = 50 mm. **D.** Same, in dorsal view.

List of taxa by species-group names

Here is presented a list of the species whose types can be found in the ANSP collection, arranged alphabetically by specific epithet. Species appear first in their original generic allocation and then in their current systematic position.

aequorea*, *Aplysia Heilprin, 1888. ***Aplysia dactylomela* Rang, 1828**

badistes*, *Aplysia (*Metaplysia*) Pilsbry, 1951. ***Aplysia juliana* Quoy & Gaimard, 1832**

benedicti*, *Aplysia (*Tethys*) Eliot, 1900. ***Aplysia argus* Rüppell & Leuckart, 1830**

elongata*, *Syphonota Pease, 1860. ***Aplysia parvula* Mörch, 1863**

floridensis*, *Tethys Pilsbry, 1895. ***Aplysia fasciata* Poiret, 1789**

fusca*, *Dolabrifera Pease, 1868. ***Dolabrifera dolabrifera* Rang, 1828**

jacksoniensis*, *Dolabrifera Pilsbry, 1896. ***Dolabrifera brazieri* G. B. Sowerby II, 1870**

nicaraguana*, *Dolabrifera Pilsbry, 1896. ***Dolabrifera nicaraguana* Pilsbry, 1896**

panamensis*, *Tethys Pilsbry, 1895. ***Aplysia dactylomela* Rang, 1828**

perviridis*, *Tethys willcoxi var. Pilsbry, 1895. ***Aplysia perviridis* Pilsbry, 1895**

pilsbryi*, *Tethys Letson, 1898. ***Aplysia pilsbryi* (Letson, 1898)**

robertsi*, *Tethys Pilsbry, 1895. ***Aplysia robertsi* (Pilsbry, 1895)**

swiftii*, *Dolabrifera Pilsbry, 1896. ***Dolabrifera ascifera* (Rang, 1828)**

tryoniana*, *Tethys pulmonica var. Pilsbry, 1895. ***Aplysia pulmonica* Pease, 1860**

willcoxi*, *Aplysia Heilprin, 1887. ***Aplysia fasciata* Poiret, 1789**

Acknowledgements

We thank Amanda Lawless, Francisco Borrero, and Paul Callomon (ANSP) for help with photography and in determining the type status of the specimens and Dr Angel Valdes (California State Polytechnic University) for sending the pictures of *Aplysia dactylomela*, CPIC 00297 and *A. pulmonica*, CPIC 0031. This work was supported by Capes Foundation, Bolsista da CAPES proc. no. 8739/13-7 (C.M. Cunha) and by National Science Foundation grant DBI 1203605, to G. Rosenberg, for digital imaging of type specimens at ANSP.

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