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# Kaicher's *Card Catalogue of World-Wide Shells*: A collation, with discussion of species named therein

**Gary Rosenberg**

The Academy of Natural Sciences  
1900 Benjamin Franklin Parkway  
Philadelphia, PA 19103 USA  
rosenberg@ansp.org

**Richard E. Petit**

806 St. Charles Road  
North Myrtle Beach, SC 29597 USA  
r.e.petit@worldnet.att.net

## ABSTRACT

Kaicher's *Card Catalogue of World-Wide Shells* is a series of cards illustrating gastropod mollusks, with one species being shown on each card. More than 6300 cards illustrating about 5860 species were issued in 60 "packs" between 1973 and 1992. These cards are especially important as many show type specimens. All packs and the range of the cards included in each are collated, as are changes and corrections to the cards made by Kaicher, other authors, and herein. The status of missing card numbers is clarified; some were accidentally skipped, others were removed by Kaicher before publication.

Nine species were inadvertently named in the *Card Catalogue*; all have short descriptions and therefore are not nude names. Type material for eight of these is detailed, with designation of six lectotypes. *Calliostoma vincentae* Kaicher, 1986, probably is a synonym of *Callumbonella suturalis* (Philippi, 1836) (Trochidae); *Natica variolaria* Kaicher, 1981, becomes *Notocochlis variolaria* (Naticidae), **new combination**; *Amaea teramachii* Kaicher, 1980, is *A. (Scalina) sericogazea* (Masahito, Kuroda and Habe, 1971) (Epitoniidae), **new synonym**; *Haus-trum ventricosum* Kaicher, 1980, is *Dicathais orbita* (Gmelin, 1791) (Muricidae), **new synonym**; *Terebra delicatula* Kaicher, 1981, is *T. alba* (Gray, 1834) (Terebridae), **new synonym**; *Conus alexandrinus* Kaicher, 1977 (Conidae) is the valid name for *C. musivus* Trovão, 1975, *non C. musivum* Sowerby, 1833, and its replacement name, *C. tevesi* Trovão, 1978, **new synonyms**; *Conus lineopunctatus* Kaicher, 1977, is the valid name for *C. guttatus* Kiener, 1845, *non Cucullus guttatus* Röding, 1798 (a *Conus*), and its replacement name, *Conus neoguttatus* da Motta, 1991, **new synonyms**; *Conus lobitensis* Kaicher, 1977, is *C. fuscolineatus* Sowerby, 1905, **new synonym**; and *Conus ne-groides* Kaicher, 1977, is the valid name for *C. gabriellae* Rolán and Röckel, 2000, **new synonym**. A first reviser's choice is made for the spelling of *Epitonium oyasiouensis* Ozaki, 1958, which is judged not to be a senior synonym of *Amaea sericogazea*.

## INTRODUCTION

Sally Diana Kaicher (1922–1999) was a professional illustrator and writer who worked at various times at the Academy of Natural Sciences in Philadelphia (ANSP), the National Museum of Natural History at the Smithsonian Institution (USNM), and the United States De-

partment of Agriculture. She authored or illustrated several popular works on natural history, including Kaicher (1956–1957), Reid (1967), Epple (1969) and Reid et al. (2001), which is a revision of Reid (1967). She authored two scientific papers: Kaicher (1972) and Lyons and Kaicher (1978). She also illustrated and in some cases authored about twenty 35 mm filmstrips for classroom instruction, including one on mollusks (Kaicher, 1968). Gernon and Lyons (1999) published a biographical sketch giving details of her career as well as photographs. Petuch (1980) published biographical notes and Lamprell (1999) and Rice (1999) published obituaries.

In 1973 Kaicher began publishing the *Card Catalogue of World-Wide Shells*. The *Card Catalogue* is a series of 3" × 5" (7.6 × 12.7 cm) glossy cards, each card illustrating a single species of gastropod mollusk with one or more black and white photographs. They were issued in "packs" of 97 to 106 cards, most packs being restricted to species of a single family. In addition to the species cards, each pack had a cover card and one or two introductory and acknowledgment cards. Production of the packs was irregular but continued until 1992. A total of 60 packs and 6437 cards were issued, including 6316 cards illustrating specimens, 60 cover cards, 60 acknowledgment cards, and one card, in Pack 31, discussing ovoviviparity in *Nassarius*. All of the species illustrated are prosobranchs, and almost all are marine, exceptions being freshwater or brackish species of *Neritina* (Neritidae), *Clea* (Buccinidae), and *Rivomarginella* (Marginellidae). Callomon (1999a) published on the Internet a list of the species illustrated in each part of the *Card Catalogue* and an index to the specific names (1999b).

About 5860 distinct species are illustrated, the total being less than the number of cards because some subspecies and varieties were illustrated, and because Kaicher reissued cards for some species or corrected their identifications. Kaicher issued replacement cards at different times for a variety of reasons. A small slip enclosed with Pack 16 announced that "some of these cards are unacceptably dark" and that those cards "will be reprinted and sent to you . . . without charge." At least 16 cards in Pack 16 were later replaced and mailed

with Pack 17 (10 cards) and Pack 18 (6 cards). The replacements were noted only by a small typed slip with Pack 17 stating "Muricidae replacements . . . more with next pack." If a card was replaced because of poor image quality, the replacement card bears the same number. If a card was replaced to update the taxonomy or illustrate a better specimen, the replacement card has the original and new numbers separated by a slash [/], sometimes with the addition of "A" to the original number.

Kaicher published the *Card Catalogue* as an aid to both shell collectors and to professional malacologists. It is now routinely used as a tool by molluscan systematists and has been cited in numerous scholarly works. Many of the shells illustrated on the cards are type specimens never before illustrated photographically. Kaicher photographed many thousands of specimens, some in her own collection, others borrowed from private and institutional collections, and many during her travels to numerous major museums, both in America and abroad. Kaicher bequeathed her collection of Nassariidae to ANSP. Her family subsequently donated to ANSP the remainder of her shell collection, and her photographic negatives, notebooks, and correspondence.

As often happens when type material is illustrated or discussed, some lectotype designations were inadvertently made in the *Card Catalogue*. In part because of this, Kabat (1996) petitioned the International Commission on Zoological Nomenclature to suppress the *Card Catalogue* for nomenclatural purposes. Comments on the petition by various workers were published in *Bulletin of Zoological Nomenclature* 53: 273–277 and 54: 39–66, with the result that in Opinion 1905 (1998), the Commission ruled that the *Card Catalogue* is nomenclaturally available. We note that the fourth edition of the *International Code of Zoological Nomenclature* clarifies that lectotype designations made by inference of a holotype have standing only if "the original description neither implies nor requires that there were syntypes" (Article 74.6). Thus in some cases in which Kaicher had been thought to have inadvertently designated a lectotype, it will be found she did not in fact do so.

Because the *Card Catalogue* is available for nomenclatural purposes, it is important to have a collation, so that citations of nomenclatural actions therein can be made accurately. In cover notes that accompanied the packs, Kaicher corrected mistakes made in numbering the cards and others errors, mostly in spelling or identification. As recipients did not necessarily retain these notes, we have detailed them in our collation. Included are all changes suggested by Kaicher in cover notes and elsewhere. We have not attempted to review all nomina or to bring the names up to date although we have noted some necessary changes. The Marginellidae species treated by Kaicher in Packs 1, 26, and 60 have been extensively reviewed and brought up to date by Coovert (1999). Coovert notes that 159 of 308 marginellid cards illustrate type specimens. In the References Cited we give the full citation for each pack, taking into account missing and duplicated numbers.

## RESULTS

### VALIDATED NAMES

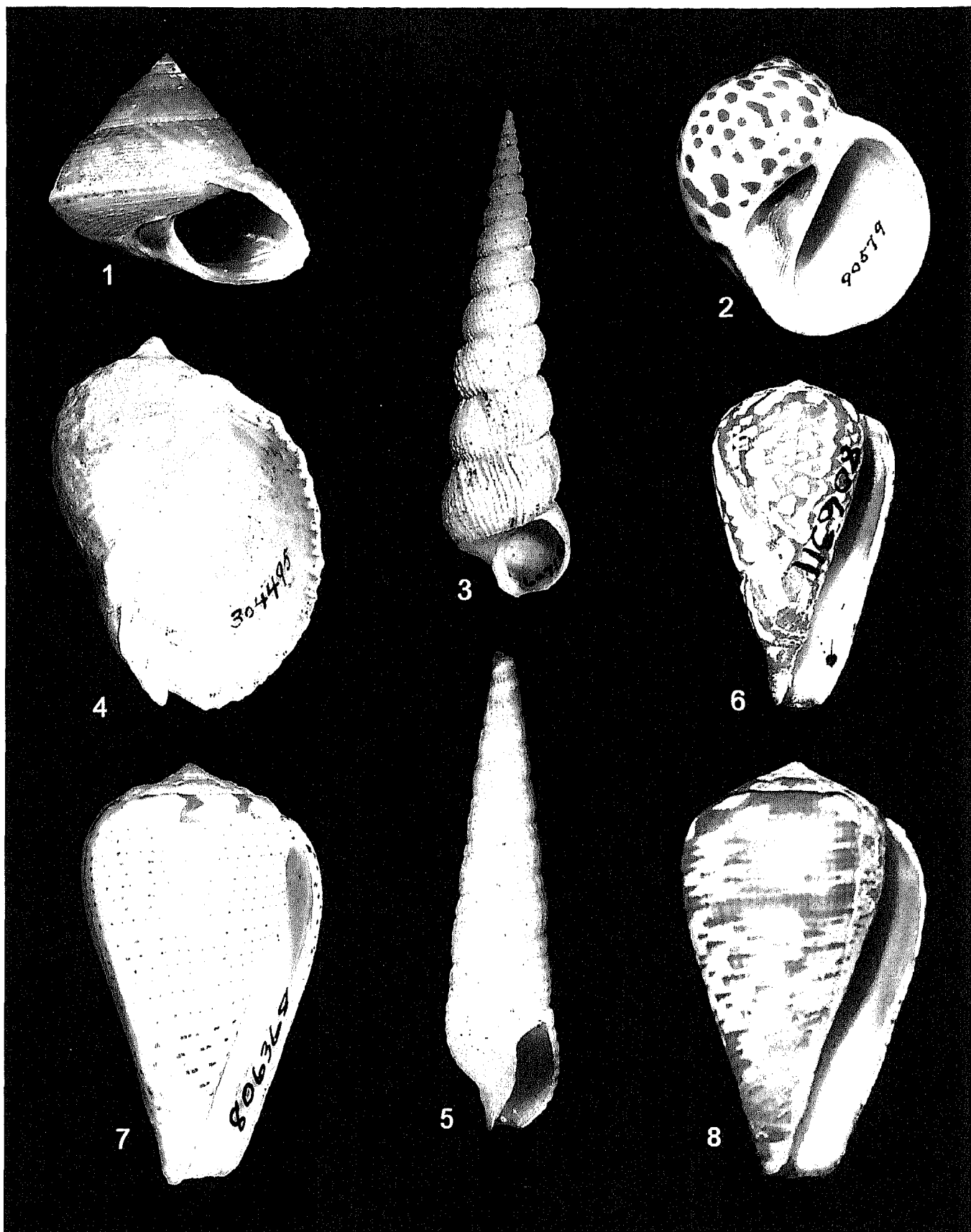
Nine manuscript names attributed to various authors appear to have been inadvertently validated in the *Card Catalogue*. In each case, Kaicher seems to have taken the name from a label in a collection, and in each case she provided a short description. The International Code of Zoological Nomenclature (ICZN, 1999) does not prescribe any minimum length for a description, so these are not nude names as has been maintained by some authors, e.g., Rolán and Röckel (2000), Rolán and Ryall (2000). Also, Kaicher used the *Card Catalogue* to illustrate species that she considered to be valid, thereby fulfilling the requirement of ICZN Article 11.5, that a name be used as valid when proposed. In the context of the *Card Catalogue*, Kaicher provided comparative illustrations of many congeneric or confamilial species for each of the validated names. Although Kaicher was unaware that she was the first to validly introduce these names into the literature, ICZN Article 16.1 does not require that names published before 2000 be explicitly indicated as new. We therefore attribute authorship of these names to Kaicher. We have located type material for eight of the nine names: six at the United States National Museum, Smithsonian Institution (USNM) on August 16, 2000, one in the type collection of The Natural History Museum, London (BMNH) and one at The Academy of Natural Sciences, Philadelphia (ANSP).

*Calliostoma vincentae* Kaicher, 1986 (Figure 1, 9–11). Attributed to "Ruttelant" on Card 4614. Shells of this species have been sold for many years as "*Calliostoma vicentae* Rutllant", being listed, for example, by Rice (1969, 2000), but had not been formally published before Kaicher's treatment. Dr. Juan Rutllant y Bassets of Melilla, Spanish Morocco, was a member of the Malacological Society of London from 1947 until 1951 or 1952, his name appearing in the membership list published in the Society's *Proceedings* in 1951 (vol. 28, p. 258), but not in the one published in 1953 (vol. 29, pp. 259–265). He distributed specimens with the manuscript name *Calliostoma vicentae*, as noted by Mienis (2002), whose research shows that Rutllant did not publish on mollusks. Rice (2000) spelled the name "vicenta", and Santos Galindo (1977), where it is a nude name, attributed it to "Ruthland."

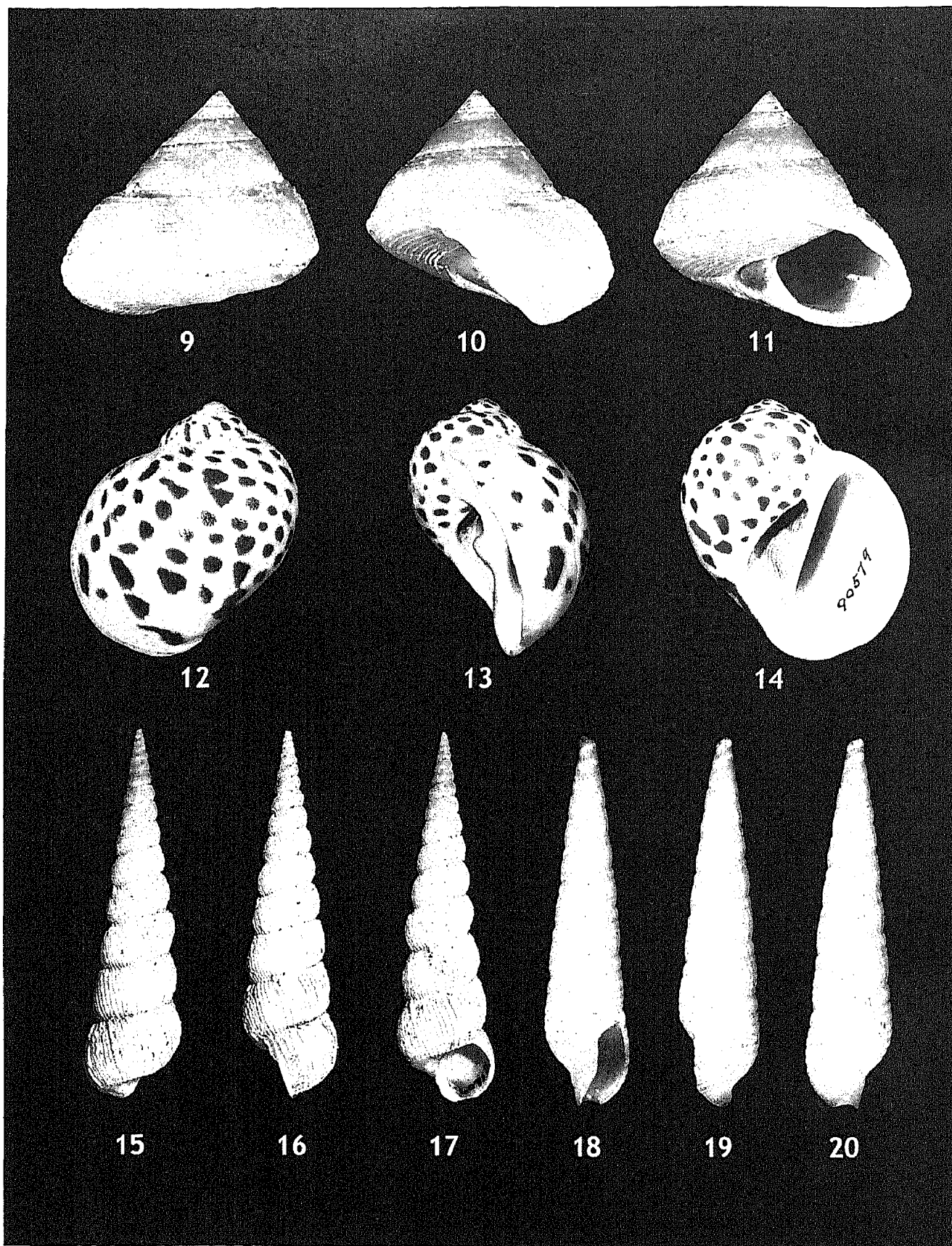
The type lot is ANSP 198989, which is labeled as "*Calliostoma vincentae* Rutllant, Melilla arrastre, J. I. C. Ojeda! 1956 Spanish Morocco". The original label gives the name as "*Calliostoma vicentae* Rutllant". The lot contains two specimens; to fix the identity of the name, we here designate the figured specimen as the lectotype (Figure 1, 9–11), height 13.7 mm; the paralectotype is 13.0 mm in height. Two opercula and crumbled dried animals are also in the lot; but it is not possible to determine what is part of the lectotype and what part of the paralectotype.

Although the manuscript name was "vicentae" Kaicher validated it as "vincentae", a spelling that must stand. Pope and Goto (1991) and Mienis (2002) synonymized it with *Callumbonella suturalis* (Philippi, 1836).

*Natica variolaria* Kaicher, 1981 (Figure 2, 12–14). Attributed to Recluz on Card 2961. Recluz introduced this name in



**Figures 1–8.** Primary type specimens of species named by Kaicher. 1. *Calliostoma vincentae* Kaicher, 1986, lectotype, ANSP 198989, height 13.7 mm. 2. *Natica variolaria* Kaicher, 1981, lectotype, USNM 90579, height 33.4 mm. 3. *Amaea teramachii* Kaicher, 1980, lectotype, USNM 607188, height 43.8 mm. 4. *Haustrum ventricosum* Kaicher, 1980, holotype, USNM 304495, 33.6 mm. 5. *Terebra delicatula* Kaicher, 1981, holotype, BMNH 1911.8.22.273, 8.9 mm. 6. *Conus alexandrinus* Kaicher, 1977, lectotype, USNM 806311, height 23.6 mm. 7. *Conus lineopunctatus* Kaicher, 1977, lectotype, USNM 806368, height 38.1 mm. 8. *Conus lobitensis* Kaicher, 1977, lectotype, USNM 806331, height 19.0 mm.



Figures 9-20. Type specimens of species named by Kaicher. 9-11. *Calliostoma vincentae* Kaicher, 1986, lectotype, ANSP 198989, height 13.7 mm. 12-14. *Natica variolaria* Kaicher, 1981, lectotype, USNM 90579, height 33.4 mm. 15-17. *Amaea teramachii* Kaicher, 1980, lectotype, USNM 607188, height 43.8 mm. 18-20. *Terebra delicatula* Kaicher, 1981, holotype, BMNH 1911.8.22.273, 8.9 mm.

the synonymy of *Natica fanel* Recluz, 1844 (ex Adanson 1757, non-binominal) in the original description of that species. Reeve (1855) and Tryon (1886) listed it as a synonym of *Natica pellistigrina*. Dixon and Ryall (1985, pp. 13–14) stated that “. . . [*Natica variolaria*] has been used correctly in its West African context by several authors within the last twenty years,” but gave no references. Similarly, Verberck (1995) said “About twenty-five years ago, the name *Natica variolaria* Récluz, 1844 was introduced as the valid name for this species.” Correspondence with Verberck (through A. Verhecken, in e-mail to REP, 30 January 2000), failed to reveal a reference of this vintage. The only such use we have found is by Santos Galindo (1977), where *Natica variolaria* is a nude name. Since the name was not used as valid before 1961, it cannot be attributed to Recluz, where it first appeared in synonymy (ICZN Article 11.6). Kaicher (1981) apparently was the first to use the name as valid and provide a description, and therefore must be attributed with the authorship.

The type lot, cited by Kaicher, is USNM 90579 and is labeled as “*Natica pellis-tigrina* Chem. W. Africa. Wesleyan Univ.” and which contains a single specimen. The name “*Natica variolaria*” does not appear on the label; Kaicher may have inferred the name from the position in the USNM collection, where the species is currently filed as *Notocochlis variolaria*, attributed to Recluz, 1844. Kaicher may have seen a second lot, adjacent in the collection: USNM 272979, with USNM label “*Natica variolaria* Rec. Gabon, Africa. Deyrolle” and original label with “*Natica variolaria* Recl. Gabon.” handwritten and “Emile Deyrolle 46, rue de Bac. Paris . . .” typeset. We cannot prove that Kaicher saw this second lot because the naticid collection at USNM was reorganized by Alan Kabat subsequent to Kaicher’s work. To fix the identity of the name, we here designate Kaicher’s figured specimen, USNM 90579, as the lectotype (height 33.4 mm); USNM 272979 contains two possible paralectotypes (heights 18.6 and 15.6 mm). It is not clear to us that these two specimens are conspecific with the lectotype: their spires are lower and have stronger axial ribbing below the suture.

*Natica variolaria* was first published in synonymy of *Natica fanel* Recluz, 1844 (ex Adanson, 1757, non-binominal), which is preoccupied by *Cochlis fanel* Röding, 1798 if the latter is classified as a *Natica*. Fernandes and Rolán (1993) synonymized Röding’s taxon with *Natica hebraea* Martyn, 1784, a non-binominal name conserved in ICZN Opinion 1662 in 1992. *Natica fanel* Recluz, 1844 is a synonym of the West African *Natica rocquignyi* Fischer-Piette, 1942 according to Fernandes and Rolán (1993), but an earlier name, based on Adanson’s taxon, is *Natica multipunctata* de Blainville, 1825, as noted by Verberck (1995) and Kabat, Finet and Way (1997). *Natica variolaria* Kaicher, however, is not conspecific with *Natica multipunctata*, having a sparser pattern and a broader cord in the umbilicus. Alan Kabat (pers. comm. to GR, 21 July 2001) confirms that he considers this species to be a *Notocochlis*, as reflected in the arrangement of the USNM collection.

*Amatea teramachii* Kaicher, 1980 (Figure 3, 15–17). Attributed to Kuroda on Card, 2358, but he did not publish the name: it is not listed by Hanshin Shell Club (1986) or Higo et al. (1999). The name has appeared in print several times as a nude name attributed to Kuroda MS (e.g., Azuma 1960, Higo 1973). Weil et al. (1999) treat the species as valid, attributing the name to Kuroda and Habe, 1955,

but do not provide a bibliographic reference. It is not listed among Habe’s taxa by Okamoto (2001). Specimens have been distributed under this manuscript name for at least 50 years: ANSP 189370, identified as *A. teramachii* on the original label was purchased from Shigeo Hashimoto and catalogued in October 1952. The name must be attributed to Kaicher, the first author to provide a description and illustration.

The type lot, cited by Kaicher, is USNM 607188, with USNM label “*Amatea splendida* de Boury. Tosa, Shikoku, Japan. 100 fms. ex. J. H. Webb. 1033. Acc. 200168” and original label “*Amatea splendida* Boury Tosa 100 fms. Japan”; it contains a single specimen. The name “*Amatea teramachii*” does not appear on the label; Kaicher may have inferred the name from the position in the USNM collection, where the species is currently filed under that name, attributed to Kuroda, 1952. Kaicher likely saw a second lot, also with a single specimen, adjacent in the collection: USNM 605776, with USNM label “*Amatea teramachi* Kuroda. Tosa, Japan. 150 fms. 1348” and original label “*Amatea teramachi* Kur. Tosa 150 fms. vaey [sic] rare”. To fix the identity of the name, we here designate Kaicher’s figured specimen, USNM 607188, as lectotype (height 43.8 mm); USNM 605776 is a paralectotype (height 33.6 mm).

Kaicher compared *Amatea teramachii* to *Amatea cerea* Masahito, Kuroda and Habe, 1971, but that species is currently placed in *Clathroscala* whereas *A. teramachii* belongs in the subgenus *Scalina* Conrad, 1865, of which four species are currently recognized from Japan (Higo et al., 1999). It differs from *A. (S.) gazeoides* Kuroda and Habe in Habe, 1961, in having a less elongate body whorl; from *A. (S.) mathildona* (Masahito, Kuroda and Habe, 1971) in being large, less slender, and having more spiral cords per whorl; and from *A. (S.) splendida* Boury, 1913) in having finer sculpture. It is most similar to *A. (S.) sericogazea* (Masahito, Kuroda and Habe, 1971), from which Weil et al. (1999) distinguish it as having “more numerous spiral cords of varying strengths”. Their illustrations of these species (figs. 242 and 362), however, do not support this difference, nor does examination of eight additional specimens identified as *A. teramachii* (ANSP 189370, 234720, 243251, 243242). We therefore consider *A. teramachii* to be a synonym of *A. sericogazea*.

Tsuchida (2000) synonymized *A. sericogazea* with *A. oyasionensis* Ozaki, 1958, which was named as a Pliocene fossil. Examination of Ozaki’s illustration of the holotype shows that it has a channeled suture defined by a strong spiral cord with the other cords uniformly weaker. In *A. sericogazea*, the whorls are of uniform strength near the suture, but stronger below the periphery, particularly on the spire, which gives the early whorls an angular profile. *Amatea oyasionensis* also tapers more rapidly than does *A. sericogazea*; the width of the anterior whorl of the holotype is about 3.8 mm; the comparable measurement in *A. sericogazea* of the same height (18.5 mm) and number of whorls (4) would be about 6.7 mm. We therefore reject the synonymy of *A. sericogazea* with *A. oyasionensis*.

The heading of the original description is *Epitonium (Boreoscala) oyasionensis* (Ozaki, 1958, p. 142), but the spelling “*oyasioensis*” is used earlier on p. 142, in the plate caption (pl.15, fig. 23), and in the index (p. 180). The name refers to the Oyasio (or Oyashio) Current. Either specific name is acceptable nomenclaturally. If Oyasio is



latinized, then an "n" is added, following the pattern of Latin words ending in "-io" (e.g., *dictio*, *ditionis*), which yields "*oyasionensis*"; if the word is not latinized, "-ensis" is added directly to the Japanese word, resulting in "*oyasioensis*". We select *oyasionensis* as the correct original spelling, judging it likely to be the better known because of its use by Tsuchida (2000).

*Haustrum ventricosum* Kaicher, 1980 (Figure 4, 21–25). Attributed to Tate on Card 2470, but not described by him; the name does not appear in any of his papers on Australian marine or fossil mollusks in the bibliography by Blake (1902).

The type lot, cited by Kaicher, is USNM 304495; the USNM label says "Purpura ventricosa Tate. G. of Spenser, South Australia. Bednall"; the original label says "Purpura ventricosa, Tate G. of Spenser. Aus". The lot contains a single specimen, height 33.6 mm, which is the holotype.

The operculum is part of the lot (Figure 24–25).

The specimen is *Dicathais orbita* (Gmelin, 1791), a common and highly variable species in southern Australia. This identification was suggested by Dr. Winston F. Ponder, who examined the holotype on 16 August 2000.

*Terebra delicatula* Kaicher, 1981 (Figure 5, 18–20). Attributed to Preston on Card 2752, but Preston did not publish such a name; it is not listed by Adam (1971) or Bratcher and Cernohorsky (1987).

The holotype is in the type collection at BMNH, catalogue number 1911.8.22.273 (cited by Kaicher); the type locality is Martinique.

We consider this name to be a junior subjective synonym of *Terebra alba* Gray, 1834. Gray's name was recognized as valid by Bratcher and Cernohorsky (1987); Kaicher appears to be the first modern author to have recognized the taxon as a good species, although she did not discover the oldest name for it.

*Conus alexandrinus* Kaicher, 1977 (Figure 6, 30–32). Attributed to "Pais-da Franca" [*sic*] on Card 1293. Coomans, Moolenbeek and Wils (1980) stated that name was found on dealers' lists but was not published by Paes-da Franca. They, Rolán and Röckel (2000) and Filmer (2001) considered it a nude name introduced by Kaicher, but Kaicher does provide a brief description.

Kaicher did not cite an institution or catalogue number, however, we found the figured specimen in USNM 806311. The USNM label says "Conus tevesi Trovão, 1978. Caota Bay, Angola. 1976. In sand under rocks, 1–2 m. Acc. 340672." The original, handwritten by Ed Petuch, says "Conus tevesi Trovão, 1978 (= musivus Trovão, 1975, non Sowerby). In sand under rocks, 1–2 m depth, Coato Bay, Benguela, Angola—1976." To fix the identity of the name, we here designate the figured specimen, height 23.6 mm, as the lectotype (Figure 5, 30–31). A second specimen in the lot, height 24.1 mm is a paralectotype (Figure 32).

In the cover sheet to Card Pack 14, Kaicher synonymized the species with *Conus musivus* Trovão, 1975. Trovão (1978) replaced this name with *C. tevesi*, considering it a homonym of *C. musivum* Sowerby, 1833. However, "musivum" is a noun meaning mosaic; it would be a homonym of the adjective "musivus" only in a neuter genus, according to the examples provided in ICZN Article 58, concerning single letter differences between specific epithets. One of us (GR) posted this matter on the

ICZN listserv (<http://lyris.bishopmuseum.org/cgi-bin/lyris.pl?enter=iczn-list>) on 29 August 2002. Replies indicated that commissioners favor amending Article 58 (under Article 78.3.3), which is on the agenda for the next meeting of the International Commission on Zoological Nomenclature. Therefore we consider *Conus musivus* Trovão to be preoccupied by *C. musivum* Sowerby, 1833, *C. alexandrinus* Kaicher, 1977 to be the valid name for the species, and *C. tevesi* Trovão, 1978 to be a junior objective synonym.

Edward J. Petuch (pers. comm. to GR, 26 January 2000) confirms that the specimens of this and the three following species were in his personal collection when Kaicher photographed them. Later he donated his collection of Conidae to USNM.

*Conus lineopunctatus* Kaicher, 1977 (Figure 7, 26–29). Attributed to Trovão on Card 1259, but not published by him; it is not listed by Kohn et al. (1995). Apparently this is a dealer's name; it is listed by Rice (1977).

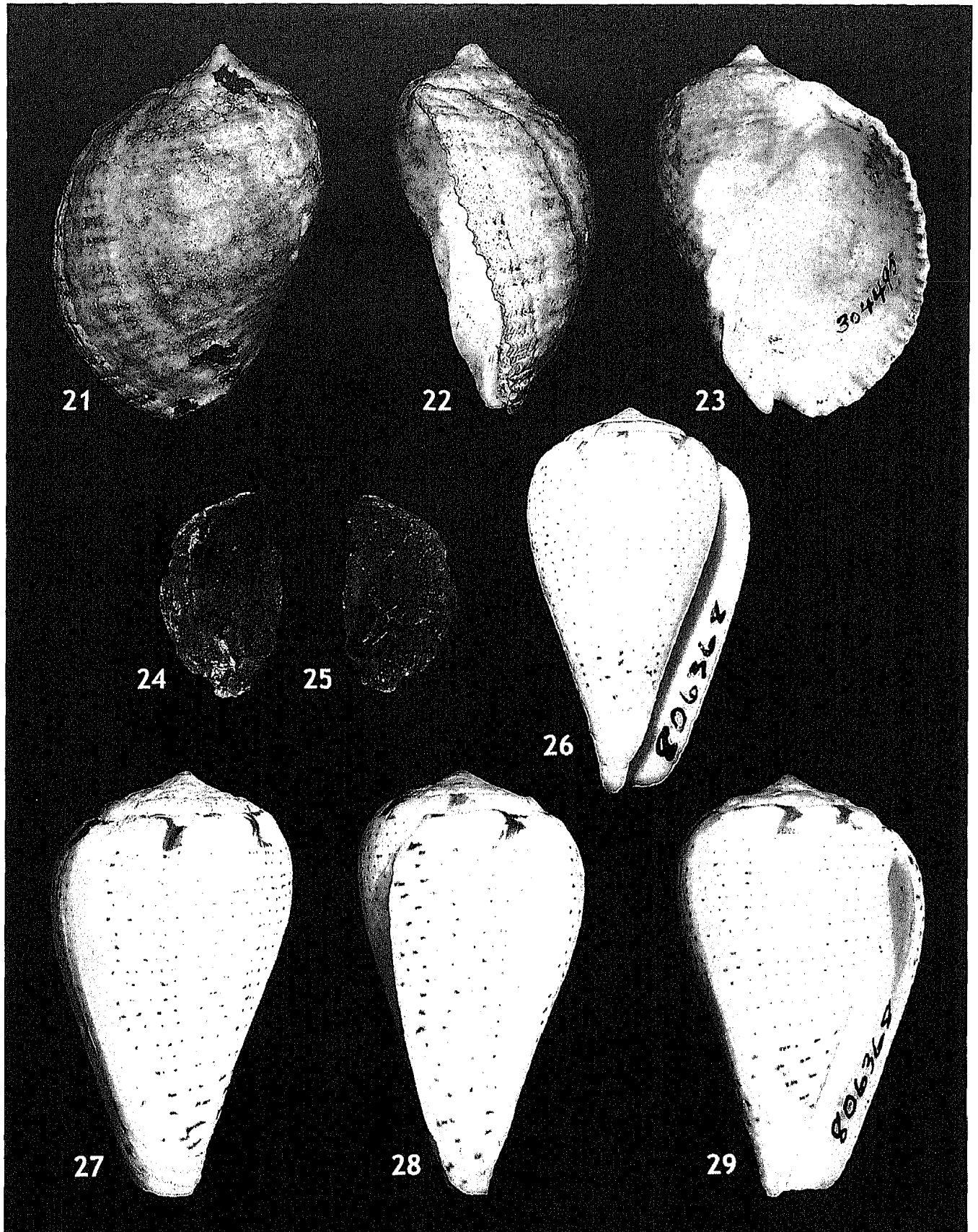
Kaicher did not cite an institution or catalogue number, however, we found the figured specimen in USNM 806368. The USNM label says: "Conus lineopunctatus Trovão, 1976, off Baía dos Elefantes, Angola 1968. 20 m. Acc. 340672"; the original label, handwritten by Ed Petuch says: "Conus lineopunctatus Trovão, 1976 (= guttatus Kiener, 1849 non Roeding, 1798), Trawled 20 m depth off Baía dos Elefantes, Benguela, Angola—1968—sand bottom". To fix the identity of the name, we here designate the figured specimen, height 38.1 mm, as the lectotype (Figure 7, 27–29). A second specimen in the lot, height 34.7 mm, is a paralectotype (Figure 26).

This is a valid species; synonyms are *Conus guttatus* Kiener, 1845, non *Cucullus guttatus* Röding, 1798 (a *Conus*) and *Conus neoguttatus* da Motta, 1991, a replacement for Kiener's name. Rolán and Röckel (2000) and Filmer (2001) considered this a nude name but it had a brief description. The species that Röckel and Fernandes (1982) noted is "known to collectors as '*lineopunctatus*'" is a different taxon named *Conus micropunctatus* Röckel and Fernandes, 2000.

*Conus lobitensis* Kaicher, 1977 (Figure 8, 33–38). Attributed to Pais-da Franca [*sic*] on Card 1311, but she did not publish the name; it is not listed by Kohn et al. (1995). Apparently this is a dealer's name, but not offered recently according to Rice (1999).

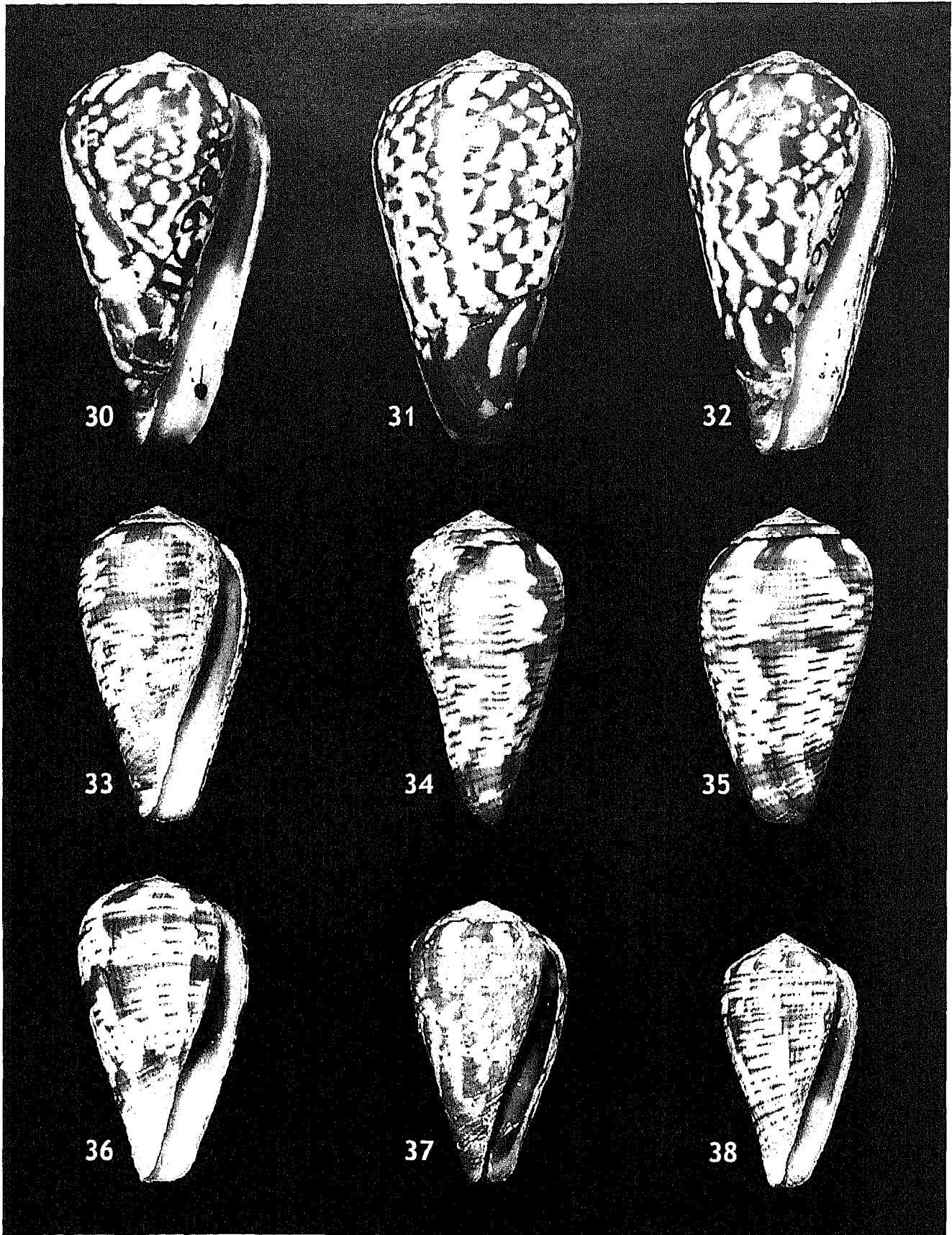
Kaicher did not cite an institution or catalogue number, however, we found the figured specimen in USNM 806331. The USNM label says: "Conus obtusus Kiener, 1849, Armado bay, Angola, 1975, under rocks, low tide. Acc. 340672"; the original label, handwritten by Ed Petuch says: "Conus obtusus Kiener, 1849 Under rocks, low tide, Armado Bay, Mocamedes, Angola—1975." To fix the identity of the name, we here designate the figured specimen, height 19.0 mm, as the lectotype (Figure 8, 33–35). The locality is thus Armado Bay, Angola, not Lobitos Bay, Angola as might be expected from the name. Three other specimens in the type lot, heights 18.7, 17.1, and 15.4 mm, are paralectotypes (Figure 36–38).

Rolán and Röckel (2000) and Filmer (2001) considered this a nude name, but it had a brief description. *Conus lobitensis*, however appears to be a synonym of *Conus fuscolineatus* Sowerby, 1905, as illustrated by Rolán and Röckel.



Figures 21–29. Type specimens of species named by Kaicher. 21–23. *Haustum ventricosum* Kaicher, 1980, holotype, USNM 304495, 33.6 mm. 24–25. Operculum of holotype of *Haustum ventricosum*. 26. *C. lineopunctatus*, paralectotype, USNM 806368, height 34.7 mm. 27–29. *Conus lineopunctatus* Kaicher, 1977, lectotype, USNM 806368, height 38.1 mm.





Figures 30–38. Type specimens of species named by Kaicher. 30–31. *Conus alexandrinus* Kaicher, 1977, lectotype, USNM 806311, height 23.6 mm. 32. *C. alexandrinus*, paralectotype, USNM 806311, height 24.1. 33–35. *Conus lobitensis* Kaicher, 1977, lectotype, USNM 806331, height 19.0 mm. 36–38. *C. lobitensis*, paralectotypes, USNM 806331, heights 18.7, 17.1, 15.4 mm, respectively.

*Conus negroides* Kaicher, 1977. Attributed to Pais-da Franca [sic] on Card 1313, but she did not publish the name; it is not listed by Kohn et al. (1995). Apparently a dealer's name, *Conus negroides* is attributed to Kaicher, 1977 by Rice (1999).

The location of the type material is unknown; we were unable to locate the figured specimen at USNM. The type locality is Angola, as listed by Kaicher.

Rolán and Röckel (2000) and Filmer (2001) considered this a nude name, but it had a brief description. Rolán and Röckel (2000) listed it in the synonymy of their new species *Conus gabriellae*, which is therefore a junior subjective synonym of *Conus negroides*.

For completeness, we note that Kaicher coauthored one species published outside the *Card Catalogue*, *Vexillum (Pusia) chickcharneorum* Lyons and Kaicher, 1978. *Lepticonus hawaiiensis* "Bartsch and Rehder" is a nude name introduced by Kaicher (1956, part 5, pl. 5, fig. 6); it is a synonym of *Conus suturatus* Reeve, 1844 according to Kay (1979) and Filmer (2001). Rolán and Ryall (2000) listed *Conus lucirensis* as a nude name introduced by Kaicher, but that species was described by Paes-da Franca (1957).

#### LIST OF PACKS

Exact dates of publication for the card packs (Table 1) are difficult to determine. Most cover sheets (described below) are dated and we have used this date except where better evidence is available. Kaicher did not mail all packs of a given number at the same time, but posted them in small batches as she collated them. A few of Kaicher's records survive that have been helpful in dating. The cover sheet for Pack 42 is dated August 28, 1985 but it states that the cards would not be received from the printer until September 5. The earliest mailing record we have located for Pack 42 is September 9, and that date is used herein.

#### COVER SHEETS AND ERRATA SLIPS (SHEETS)

Each pack was accompanied by a "cover sheet," indicated by CS herein. These small sheets were of varying sizes (11 to 14 cm wide and 11 to 28 cm long) and were not designed for permanency. The top of each usually had information about planned future packs and sometimes listed changes to be made on cards in previous packs. The bottom was an order form for the next card pack. In addition to the cover sheet, some packs included an "errata slip," listing changes to be made on cards already issued, indicated by ES herein. These slips were of various sizes, sometimes including only a single line of type, and were obviously not intended for retention after the changes had been made. For reference purposes we have assigned them numbers. All are assumed to have been issued with the like-numbered cover sheets unless otherwise stated but some might have been sent with subsequent packs. The following such slips have been identified:

ES5: stapled to CS5 (Mitridae).

ES23: undated (Epitoniidae).

ES29: slip pasted to CS29, with handwritten addition, possibly not to all copies.

ES37: undated (changes in Columbellidae).

ES40: undated, typewritten (magnification of *Corallio-  
phila mansfieldi*).

ES42a: undated slip with CS42.

ES42b: undated slip with CS43 (wrapped around the replacement cards).

ES49a: dated 10 days after CS49 but sent with it.

ES49b: slip pasted to CS49.

ES58: probably issued with CS59.

#### CORRECTIONS AND ANNOTATIONS

We use the following conventions in the list of corrections and annotations:

- 1) Where species cards were not numbered, we assign them numbers that were skipped within the same pack, if Kaicher had not already done so.
- 2) In cases of reidentification, we add authors where Kaicher omitted them and inferred generic names in a few cases where Kaicher did not state them explicitly (e.g., 824); we have given years only if Kaicher gave them, which she sometimes did for recently named species.
- 3) For generic changes we state the combination if the ending of the trivial name or the use of parentheses changed, even if Kaicher omitted this information; otherwise we cite only the genus.
- 4) Underlining is changed to italics in quotations of Kaicher.
- 5) Each error that is corrected is attributed to a source, either a cover sheet [CS#], an errata sheet [ES#], another card [Card #], ourselves [herein] or another published work. For brevity, common errors are assigned the following numbers, to avoid repetitive explanations in the text.

Note 1: Number was inadvertently skipped (96, 145, 146, 369, 744, 1328, 1526, 1542, 2009, 2178, 2303, 3214, 3239, 3289, 3346, 5259, 5437, 5660, 5661, 5842, 6038, 6070, and 6193); in some cases reassigned to an unnumbered card. In addition, Kaicher removed cards 345, 2275, 2687, 2990, 3013 (in some cases), 5047 and 5757 before release.

Note 2: Number duplicated (745, 1540, 3137, 3288, 3770, 3776–3875, 5253, and 6189). Kaicher noted some of these duplications in her cover sheets, but did not recommend solutions. When the duplicates are in separate packs, the one published later can have "[bis]" (Latin for "twice") added to its number to distinguish it if desired. There was no order, alphabetic, taxonomic, or geographic, to the cards within a pack as issued, so for duplicate numbers within packs it cannot be determined which was intended to bear the number.

Note 3: Specific name is misspelled.

**Table 1.** Dates of publication of the *Card Catalogue*, with subject and range of card numbers included in each pack. Most dates were obtained from the cover sheets issued with the card packs; "KR" in brackets after a date indicates that it was obtained from Kaicher's records; "ES" means errata sheet.

Pack	Date of issue	Subject	Card numbers range
1	October, 1973	Marginellidae	1-98
2	December 19, 1973 [KR]	Muricidae I	99-195
3	February 15, 1974	Mitridae I	196-292
4	May 26, 1974	Mitridae II	293-389
5	September 5, 1974	Strombacea	390-497
6	December 14, 1974	Muricidae II	498-594
7	March 28, 1975	Terebridae I	595-691
8	August 15, 1975	Naticidae I	692-797
9	April 13, 1976 [KR]	Mitridae III	798-903
10	July 15, 1976	Volutidae	904-1009
11	November 15, 1976	Conidae I	1010-1115
12	January 10, 1977	Conidae II	1116-1221
13	March, 1977	Conidae III	1222-1327
14	June, 1977	Conidae IV	1329-1434
15	December 9, 1977 [KR]	Mitridae IV	1435-1540
16	March 2, 1978 [KR]	Muricidae III	1540-1646
17	June 1, 1978	Cymatiidae I	1647-1752
18	September 18, 1978 [KR]	Fasciolaridae I	1753-1858
19	December 6, 1978	Cancellariidae	1859-1964
20	April 18, 1979	Muricidae IV	1965-2071
21	November, 1979	Trochidae I	2072-2177
22	April 9, 1980	Trochidae II	2179-2284
23	July 2, 1980	Epitoniidae I	2285-2391
24	August 8, 1980	Thaididae I	2392-2497
25	December 15, 1980	Muricidae V	2498-2603
26	February 27, 1981	Marginellidae II	2604-2709
27	May 20, 1981	Terebridae II	2710-2815
28	July 17, 1981	Haliotidae	2816-2921
29	October 9, 1981	Naticidae II	2922-3027
30	December 23, 1981	Epitoniidae II	3028-3133
31	April 2, 1982	Nassariidae I	3134-3238
32	July 21, 1982	Cymatiidae II and Bursidae	3240-3345
33	November 20, 1982	Olividae I	3347-3452
34	March 27, 1983	Nassariidae II	3453-3558
35	July 27, 1983	Epitoniidae III	3559-3664
36	December 6, 1983	Cassidae and Oocorythidae	3665-3770
37	March 26, 1984	Columbellidae I	3700-3875
38	August 9, 1984	Columbellidae II	3876-3881
39	November 1, 1984	Turridae I	3882-3987
40	January 22, 1985	Coralliophilidae I	3988-4093
41	April 24, 1985	Nassariidae III	4094-4199
42	September 9, 1985 [KR]	Columbellidae III	4200-4305
43	November 6, 1985	Buccinidae I	4306-4411
44	February 20, 1986	Buccinidae II	4412-4517
45	May 23, 1986	Trochidae III	4518-4623
46	September 19, 1986	Fasciolaridae II	4624-4729
47	January 8, 1987	Neritidae I	4730-4835
48	May 10, 1987	Buccinidae III	4836-4941
49	August 15, 1987 [ES:49a]	Olividae II	4942-5046
50	November 30, 1987	Trochidae IV	5048-5153
51	February 20, 1988 [KR]	Olividae III	5154-5258
52	August 10, 1988	Turbinidae I	5260-5365
53	December 15, 1988	Fissurellidae I	5366-5471
54	April 20, 1989 [KR]	Olividae IV	5472-5577
55	October 26, 1989	Turbinellidae I	5578-5685
56	March 27, 1990	Trochidae V	5686-5791
57	August 29, 1990	Buccinidae IV	5792-5897
58	March 12, 1991	Ovulidae I	5898-6003
59	August 17, 1991	Muricidae VI	6004-6109
60	May 14, 1992	Marginellidae III	6110-6215

Note 4: Specific name is a noun and hence invariant.  
 Note 5: Specific name is a genitive and hence invariant.  
 Note 6: Specific name is an adjective in comparative form and hence varies with gender of genus.  
 Note 7: Generic name is misspelled.

#### Pack 1—Marginellidae [and Cystiscidae]

28. *Prunum marginatum*: add "also occurs in the Caribbean" [CS2].
30. *Prunum olivaeforme*, not "*olivaeformis*" [Card 30/6192].
39. *Prunum guttatum*: "ranges in size from 15–25 mm., not 8 mm" [CS2].
47. *Volvarina inepta*: preoccupied name replaced by *Hyalina discors* (Roth) [Card 47/6190].
52. *Bullata matthewsi*, not "*matheusi*" [CS19].
53. *Volvarina tenuilabra*: synonym of *Hyalina pallida* (Linné) [Card 53/6198].
60. *Volvarina rubella*: specimen is *V. cessaci* [Card 60/6195]; see Card 6183.
96. This number was skipped; Kaicher included, at least in some packs sold after the original publication date, a handwritten note about its absence.
97. *Granula pygmaea*: change genus to *Mesoginella* [Card 97/6194].
98. *Granula lavalleana*, not "*lavaleeana*" [CS2, CS19]; specimen represents an undescribed *Gibberula* species [Cards 6189, 98/6197].

#### Pack 2—Muricidae

99. *Murex pecten*: change name to *M. pecten pecten* [Card 99/6040].
100. *Murex acanthostephes*: specimen is *M. scolopax* Dillwyn [Card 105/6048]; see Card 100/6047.
101. *Phyllonotus oculus*, not "*oculus*" [CS3].
102. *Murex ternispina*: specimen is *M. spicatus* Ponder and Vokes [Card 6009]; see Card 102/6049.
105. *Murex scolopax*: specimen is *M. altispira* Ponder and Vokes [Card 6004].
106. *Murex troscheli*: reissued as Card 106/6052 with revised text.
107. *Murex unidentatus*: synonym of *M. trapa* Röding [Card 538/5050].
108. *Murex adumcospinosus*: reissued as Card 108/6041 with revised text.
111. *Murex coppingeri*: reissued as Card 111/6044 with minor changes to text.
114. *Murex brevispina*: change to *M. brevispina brevispina* [Card 114/6043].
126. *Murex macgillivrayi*: change to *M. brevispina macgillivrayi* [Card 120 {sic}/6046].
134. *Chicoreus fulvescens*: change genus to *Hexaplex* [CS10].
143. *Siratus antillarum*: specimen is *S. formosus* [Card 143/2575].
145. This number was skipped; assign to unnumbered *Chicoreus damicornis* [Note 1].

146. This number was skipped; assign to unnumbered *Chicoreus spectrum* [Note 1].
151. *Murex tribulus*: specimen is *M. falsitribulus* Ponder and Vokes [Card 6010]; see 151/6051.

#### Pack 3—Mitridae [and Costellariidae]

225. *Subcancilla flammea*: specimen is *Mitra intersculpta* Sowerby [ES5], i.e., *Ziba intersculpta* (Sowerby) [CS15]; see Card 225A/1529.
232. *Strigatella decurtata*, not "*decurta*" [CS19].
234. *Strigatella gausapata*, not "*gauspata*" [ES5].
245. *Costellaria michau*: specimen is *C. deshayesii* (Reeve) [ES5]; specimen is *C. alauda* (Sowerby) [CS15]; see Cards 245A/1534, 1515, 1516.
261. *Pusia hanleyi*: identification questioned [CS15]; see Card 261A/1536.
266. *Costellaria styliola*: species was transferred to tentatively to *Latiromitra* (Turbinellidae) by Bouchet and Kantor (2000).
269. *Pusia sulcata*: specimen is *P. albocincta* (C. B. Adams) [ES5, CS15]; see Card 269A/1540.
271. *Pusia exigua*: specimen is *Costellaria sykesi* (Melvill) [CS15]; see Card 271A/1539.
284. *Costellaria pulchella*: adult illustrated on Card 284A/1532.
287. *Pusia hendersoni*: change genus to *Costellaria* [CS15]; see Card 287A/1535.
288. *Vexillum dennisoni*: "Delete *taylorianum* Sby. from the synonymy . . . The type of *taylorianum* is a juvenile of another species" [ES5].
290. *Zierliana woldemarii*, not "*woldermarii*" [ES5, CS19].

#### Pack 4—Mitridae [and Costellariidae]

345. Not issued; removed by Kaicher [ES4].
369. This number was skipped; assign to unnumbered *Pusia amabile* [sic, *amabilis*] [Note 1].
370. *Cancilla aegra*: specimen is *C. pia* (Dohrn) [CS15]; see Cards 370A/1533 and 1507.
385. *Strigatella auriculoides*: specimen is *S. assimilis* (Pease) [CS15]; see Cards 385A/1535 and 1438.

#### Pack 5—Strombidae

422. Add this number to the card for *Varicospira crispata* [CS6].
434. *Strombus gibberulus gibbosus*, not "*gibberulis*" [Note 3].
448. *Strombus gibberulus gibberulus*, not "*gibberulis*" [Note 3].
456. *Strombus gibberulus albus*, not "*gibberulis*" [Note 3].
466. Add this number to the card for *Lambis truncata* [CS6].

**Pack 6—Muricidae**

518. *Murex nigrospinosus*: specimen is *M. ternispina* Lamarck [Card 102/6049].
524. *Murex occa*: reissued as Card 524/6042 with minor changes to text.
526. *Murex malabaricus*: see holotype on Card 526/2573.
538. *Murex trapa*: reissued as Card 538/6050 with revised text.
543. *Murex concinnus*: reissued as Card 543/6045 with revised text.
572. *Poirieria zelandica*, not "*Poireria*" [Note 7].
575. *Hexaplex densus*: specimen is *H. pudicus* [Card 575/2579]; see Card 2504.
584. *Favartia gravida*: preoccupied name replaced by *Favartia emersoni* Radwin and D'Attilio, 1976 [Card 584/2577].
591. *Homalocantha oxyacantha*, not "*oxyacantha*" [Note 3].

**Pack 7—Terebridae**

616. *Hastula lauta*: synonymy with *H. matheroniana* by Cernohorsky and Bratcher (1976) questioned, "*H. matheroniana* is considerably smaller than *H. lauta*, proportionally much narrower and has a much smaller protoconch" [CS13]. See Card 678.
658. *Terebra monile*: preoccupied name replaced by *Terebra quoygaimardi* Cernohorsky and Bratcher, 1976 [CS13].

**Pack 8—Naticidae**

726. *Naticarius brunneolinea*, not "*brunneolineus*" [Note 4].
739. *Tectonatica violacea*: change combination to *Natica violacea* (Sowerby) [Card 739A/3027].
744. This number was skipped; see 745 below [Note 1].
745. Two cards have this number, *Naticarius grayi* and *Euspira pallida*; one of them should have been 744, but it cannot be determined which.
773. *Tectonatica tecta*: change to *T. tecta* form *genuana* (Reeve) [CS30]; see Card 2955.
779. *Euspira pulicaris*: change combination to *Natica pulicaris* Philippi; because of white calcareous operculum with three ridges [CS29].
792. *Sinum minus*, not "*minor*" [Note 6].

**Pack 9—Mitridae [and Costellariidae]**

824. *Costellaria laterculata*: syntypes do not match type illustration; use name *C. oriflavens* (Melvill) instead [CS12].
832. *Pusia emiliae*: specimen is *P. micra* (Pilsbry) [CS15]; see Cards 832A/1530 and 1514.
867. *Costellaria radix*: specimen is *C. obeliscus* (Reeve) [CS15]; see Cards 867A/1531 and 248.

873. *Mitra lienardi*: change to *M. ferruginea* form *lienardi* [CS15]; see Card 873A/1537.
900. *Pusia catenata*: better specimen illustrated on Card 900A/1528.

**Pack 10—Volutidae**

904. *Lyria kurodai*, not "*kurodae*" [Note 3].

**Pack 11—Conidae**

1058. *Conus havanensis*: "I now tend to agree with William Old that this is a synonym of *Conus magellanicus* Hwass"; see Card 1367 [CS14].

**Pack 12—Conidae**

1122. *Conus scitulus scitulus*: specimen is *C. algoensis algoensis* Sowerby [CS14].
1156. *Conus cinereus*: author is Hwass [CS19].
1194. *Conus kinoshitai*, not "*kinoshitae*" [Note 3].

**Pack 13—Conidae**

1248. *Conus zeylanicus*, not "*zelanicus*" [CS19].
1257. *Conus sphaecelatus*, not "*sphaecalatus*" [CS19].
1259. *Conus lineopunctatus*, change authorship to Kaicher [see above].
1261. *Conus cyanostoma*, not "*cyanostomus*" [CS19].
1282. *Conus locumtenens* Blumenbach, not "Blumenback" [CS19].
1293. *Conus alexandrinus*: specimen is *C. musivus* Trovao [CS14]; change authorship of *C. alexandrinus* to Kaicher [see above]; Paes-da Franca, not "Pais-da Franca" [herein].
1303. *Conus kintoki*: authors are Habe and Kosuge [CS14].
1311. *Conus lobitensis*: change authorship to Kaicher; is *Conus fuscolineatus* Sowerby [see above]; Paes-da Franca, not "Pais da Franca" [CS14].
1313. *Conus negroides*: change authorship to Kaicher [see above]; Paes-da Franca, not "Pais da Franca" [CS14].

**Pack 14—Conidae**

1328. This number was skipped between Packs 13 and 14 [CS15].
1342. *Conus classiarus*, not "*classarius*" [CS19].

**Pack 15—Mitridae [and Costellariidae]**

1498. *Pusia crocata*, not "*crocatum*" [CS19].
1526. This number was skipped; assign to unnumbered *Mitra carbonacea* [Note 1].

**Pack 16—Muricidae**

1540. This number was used in both Pack 15 (*Pusia albocincta*) and Pack 16 (*Boreotrophon alaskanus*) [CS19].
1542. This number was skipped [CS19].
1590. Specimen illustrated is not *Ocenebra aciculatus* [CS20], but *Pisania dorbignyi* (Payraudeau, 1826) [herein]; see Cards 1590A/2067 for *Ocenebrina aciculata* and 4343 for *Pisania dorbignyi*.
1640. *Evokesia rufonotata*: *Evokesia* misspelled in text [herein].

**Pack 17—Cymatiidae**

1655. *Cymatiella gaimardi*: synonym of *Sassia sexcostata* (Tate) [Card 1655/3337].
1659. *Cabestana spengleri*: change genus to *Cymatium* [Card 1659/3339].
1663. *Fusitriton laudanus*: change to *F. magellanicus laudanus* [Card 1663/3340].
1667. *Gyrineum gyrinum*, not “*gyrniun*” [CS19].
1671. *Cabestana doliarum*: author is Linné [CS19].
1692. *Septa aegrota*: this printed name changed to *Ranularia aegrota* by a self-adhesive label in packs mailed at time of publication. In many packs issued subsequently this card did not receive the corrective label [herein].
1699. ? *Monoplex lignarius*, not “*lignarium*” [Note 4]; probably a *Septa* [CS19].
1702. *Ranularia gutturnium*, not “*gutturina*” [Note 4].
1703. *Fusitriton retiolus*: change to *F. magellanicus retiolus* [CS32].
1706. *Fusitriton murrayi*: change to *F. magellanicus murrayi* [CS32].
1707. *Monoplex parthenopeum parthenopeum*: change genus to *Cymatium* [Card 1707/3342].
1708. *Biplex jucunda*, not “*jacunda*”; magnification is  $\times 2$ , not  $\times 1$  [CS19].
1717. *Fusitriton cancellatus*: synonym of *F. magellanicus magellanicus* (Röding) [CS32].
1726. “Protoconch differences suggest *Cabestana klenei* is a *Septa*” [CS19].
1731. *Negyriina subdistorta*: change genus to *Sassia* [Card 1731/3343].
1732. *Sassia semitorta*: change to *S. nassariformis semitorta* [Card 1732/3328].
1744. *Gutturnium lineatum*: change genus to *Cymatium* [Card 1744/3341].

**Pack 18—Fascioliariidae**

1754. *Fusinus leptorhyncus*, not “*leptorhyreus*” nor “*leptohyrncus*” as in CS46 [Note 3].
1757. *Latirus amplustre*, not “*amplustris*” [Note 4].
1766. *Granulifusus rufinodatus*, not “*rufinodis*” [CS46].
1768. *Granulifusus suboblitus*: change to *G. nipponicus suboblitus* [CS46].
1787. *Latirus mediamericus*, not “*mediaamericanus*” [Note 3].

1790. *Latirus bairstowi*: change combination to *Dolicholatus bairstowi* (Sowerby) [CS46].
1798. *Fusinus albinus*: see syntype on Card 1798/4721.
1800. *Dolicholatus ernesti*: change combination to *Teratalatus ernesti* (Melvill) [ES18].
1815. *Fusinus nigrirostratus*: synonym of *F. tuberosus* (Reeve) [CS46].
1820. *Fusinus sandvichensis*, not “*sandwichensis*”: see lectotype on Card 1820/4728. The name was spelled both ways by Sowerby, 1880, the original author; a first reviser's choice establishing the correct spelling was made by Snyder (2003).
1828. *Pleuroploca heynemanni*: change to *P. lugubris heynemanni* [CS46].
1836. *Microcolus dunkeri*: specimen is *M. lincolnensis* (Crosse and Fischer), which is not synonymous [Card 1836/4720]; see Card 4655.
1851. *Fusinus marenensis*: change to *F. dilectus* (A. Adams) [Card 1851/4729].

**Pack 19—Cancellariidae**

1924. *Agatrix agassizii*: catalogue number is USNM 93711, not 73711 [herein].
1940. *Admete microscopica*: catalogue number is USNM 82977, not 32977 [herein].

**Pack 20—Muricidae**

1977. *Evokesia grayi*, not “*Evoksia*” [Note 7].
1983. *Trophon geversianum*, not “*geversianus*” [Note 3].
1985. *Murex chrysostoma*, not “*chrysostomus*” [Note 4].
1989. *Ocenebrina purpuroidea*, not “*Ocenebrina*” [Note 7].
1998. ? *Ocenebrina suga*, not “*Ocenebrina*” [Note 7].
2005. *Attiliosa striata*: change name to *Attiliosa philippiana* (Dall), which is not synonymous [Card 2005/2574].
2009. This number was skipped [Note 1].
2010. *Risomurex schrammi*: specimen is *R. deformis* (Reeve) [Card 6066]; see Card 2010/6053.
2014. *Murexul nothokieneri*, not “*nothokiener*” [Note 3].
2034. *Hexaplex canariensis*, not “*canariensus*” [Note 3].
2038. *Evokesia ferruginosa*, not “*Evoksia*” [Note 7].
2052. *Afritrophon insignis*: specimen with adult aperture shown on Card 2052/2576.
2060. *Ocenebra acanthoplerus* Montrouzier; there is no such name; Houart (2001) considered it an error for *O. acanthophora* Monterosato, 1875, which is a nude name. Kaicher gave no description, so it remains a nude name [herein]. Houart (2001) identified Kaicher's illustrated specimen as *Ocenebrina hispidula* (Pallary, 1904).
- 1590A/2067. *Ocenebrina aciculata*, not “*Ocenebrina*” [Note 7].



**Pack 21—Trochidae**

2138. *Trochus satrapius*: author is von Martens, not "von Maltzan" [herein].  
 2167. *Calliostoma stenomphala*, not "*stenomphala*" [Note 3].  
 2177. *Calliostoma deceptum*, not "*decepulum*" [Note 3].

**Pack 22—Trochidae**

2178. This number was skipped between Packs 21 and 22 [Note 1].  
 2241. *Clanculus omalomphalus*, not "*omalomphorus*" [Note 3].  
 2242. *Calliostoma ornophorus*: change genus to *Clanculus* [CS30].  
 2275. Not issued; removed by Kaicher [CS22].

**Pack 23—Epitoniidae**

2285. *Epitonium alizonae*, not "*alizonum*" [Note 5].  
 2289. *Epitonium bulbulus*, not "*bulbulum*" [Note 4].  
 2292. *Epitonium clathrus*, not "*clathrum*" [Note 4].  
 2303. This number was skipped [ES23].  
 2320. *Epitonium helicornua*, not "*helicornuum*" [Note 4].  
 2325. *Epitonium macromphalus*, not "*macromphalum*" [Note 4].  
 2328. Add this number to unnumbered card for *Cirsotrema hidryna* [ES23].  
 2332. Add this number to unnumbered card for *Epitonium geniculatum* [ES23].  
 2333. *Epitonium melius*, not "*melior*" [Note 6].  
 2342. *Epitonium millecostatium*, not "*millecostum*" [Note 3].  
 2350. *Epitonium rarecosta*, not "*rarecostum*" [Note 4].  
 2358. *Amaea teramachii*, change authorship to Kaicher; is *Amaea sericogazea* Masahito, Kuroda and Habe [see above].

**Pack 24—Thaididae**

2448. *Azumamorula mutica*, not "*Azumorula*" [Note 7].  
 2457. *Morula iostomus*, not "*iostoma*" [Note 4].  
 2470. *Haustrum ventricosum*, change authorship to Kaicher, is *Dicathais orbita* Gmelin [see above].  
 2484. *Morula gemmulifera* (Pease): No such name was introduced by Pease. The specimen illustrated is conspecific with *Engina monilifera* Pease, 1860, which is a synonym of *Morula echinata* (Reeve, 1846) according to Cernohorsky (1979). Therefore, we consider "*gemmulifera*" to be a lapsus for "*monilifera*". The alternative is that, because the card contains a description, Kaicher had inadvertently validated a manuscript name of Pease based on a specimen label in a collection. We reject this possibility because Kaicher cited three locations indicating the geographic range of the species: "Samoa-Tahiti-Hawaii". If she had validated a

manuscript name, in all likelihood she would have cited only a single locality.

**Pack 25—Muricidae**

2507. *Boreotrophon cepula*, not "*cepulus*" [Note 4].  
 2542. *Evokesia paucimaculata*, not "*Evoksia*" [Note 7].  
 2562. *Pterorytis hamatus*, not "*Pteroytis*" [Note 7].  
 2568. *Risomurex idosia*, not "*iodsia*" [Note 3].  
 2588. *Stramonitrophon longstaffi*, not "*Straminotrophon*" [Note 7].  
 2594. ? *Evokesia nitens*, not "*Evoksia*" [Note 7].

**Pack 26—Marginellidae [and Cystiscidae]**

2634. *Cystiscus aphanospira*, not "*aphanospera*" [Note 3]; Covert (1999) erroneously changed it to "*aphanospirus*" [Note 4]; description should read "2 strong columellar folds (trace of smaller one)" [CS26].  
 2662. *Marginella diadochus*: locality should read "supposedly from Indian Ocean (Sunda Strait)." (This correction erroneously referred to Card 2709 on CS26) [CS28].  
 2676. *Glabella reeveana*, not "*reeviana*" [CS26].  
 2686. *Volvarina obscura*: specimen is misidentified and may represent an undescribed species [Card 2686/6191].  
 2687. Not issued; removed by Kaicher [CS26].  
 2709. See 2662 above.

**Pack 27—Terebridae**

2752. *Terebra delicatula*: change authorship to Kaicher; is *Terebra alba* Gray [see above].  
 2768. *Parviterebra separanda*: change family to Columbellidae [Card 2768/4247].  
 2797. *Parviterebra thyraea* Melvill, not "*thyrsaea* Melvin" [herein]; change family to Columbellidae [Card 2797/4248].

**Pack 28—Haliotidae**

2823. *Haliotis ovina*: specimen is *H. cyclobates* Peron [sic; Péron] [CS29].  
 2877. *Haliotis diversicolor*: misprinted as 2977 [herein].

**Pack 29—Naticidae**

2922. *Naticarius lineozona*, not "*lineozonus*" [Note 4].  
 2938. *Amauropsis moerchi*, not "*moerchii*" [herein]; species transferred to Epitoniidae, as *Problitora moerchi*, by Wilson (1993).  
 2955. *Tectonatica tecta*: specimen matches the neotype [CS30]; see Card 773.  
 2958. *Neverita vestita*, not "*castita*" [Note 3].  
 2959. *Eunaticina rhodocheila*, not "*rhodocheilus*" [Note 4].

2961. *Natica variolaria*: change authorship to Kaicher; is a *Notocochlis* [see above].  
 2980. *Amauropsis globulus*: species transferred to Epitoniidae, as *Problitora globula*, by Wilson (1993).  
 2990. Not issued; removed by Kaicher [ES29].  
 3013. *Natica insularum*: A postcard postmarked October 26, 1981 asked that this card be destroyed as the illustrated specimen was misidentified; however, the card was removed from some packs before they were shipped [ES29]. *Natica insularum* is correctly shown on Card 2998.

#### Pack 30—Epitoniidae

3049. *Epitonium acanthopleura*, not "*acanthoplerum*" [Note 3, 4].  
 3062. *Epitonium christyi*, not "*chrystyi*" [Note 3].  
 3070. *Epitonium platypleura*, not "*platypleurum*" [Note 4].  
 3103. *Epitonium labeo*, not "*labeum*" [Note 3].

#### Pack 31—Nassariidae

- Pack cover card. *Nassarius consensus* is not sinistral; negative accidentally "flopped" [CS31].  
 3137. Two cards have this number, *Nassarius brunneostomus* [*sic*, *brunneostoma*] and *N. striatus* [Note 2].  
 3184. *Nassarius luteostoma*, not "*luteostomus*" [Note 4].  
 3214. This number was skipped [CS31].

#### Pack 32—Cymatiidae and Bursidae

3239. This number was skipped between Packs 31 and 32 [Note 1].  
 3288. Two cards have this number, *Bursa granulata cumingiana* and *Argobuccinum proditor*; one should have been 3289, but it cannot be determined which [Note 2].  
 3289. This number was skipped [Note 1]; see 3288 above.

#### Pack 33—Olividae

3346. This number was skipped between Packs 32 and 33 [Note 1].  
 3412. *Amalda novaezealandiae* form *bicolor* Angas: Angas did not introduce the name *bicolor*; it is a misspelling and misidentification of *tricolor* Gray, 1847 by Suter 1904 according to Olson (1956), who lists the name in the synonymy of *Baryspira novaezealandiae*. The illustrated specimen is also mislocalized; the species is endemic to New Zealand [herein].

#### Pack 34—Nassariidae

3458. *Nassarius mustelinus*: "the specimen illustrated, lower right, is the holotype (USNM 24200)" [CS34].

3482. *Nassarius abyssicola*, not "*abyssicolus*" [Note 4].  
 3525. *Nassarius cinctellus*: "the 'life-size' illustration is actually about twice life size" [CS34].  
 3536. *Nassarius leptospira*, not "*leptospirus*" [Note 4].

#### Pack 35—Epitoniidae

3570. *Epitonium echinatocosta*, not "*echinaticostum*" [Note 4].  
 3618. *Epitonium sericifila*, not "*sericiflum*" [Note 4].  
 3626. *Epitonium callipeplum*, not "*calipeplum*" [Note 3].  
 3637. *Epitonium foliaceicosta*, not "*foliaceicostum*" [Note 4].  
 3640. *Epitonium turritellula*, not "*turritellulum*" [Note 4].  
 3653. *Epitonium babylonia*, not "*babylonium*" [Note 4].

#### Pack 36—Cassidae and Oocorythidae [and Harpidae]

3730. *Morum* sp.: is *Morum ninomiyai* Emerson, 1986 [CS46].

#### Pack 37—Columbellidae

3770. This number was used in both Pack 36 (*Echino-phoria carnosa*) and Pack 37 (*Anachis decimdentata*) [Note 2].  
 3778. *Anachis nisitella*: habitat previously unknown; matches shell illustrated as *Anachis catenata* from Puerto Rico in Caribbean Seashells by Warmke and Abbott (1961) [CS44].  
 3779. *Costoanachis fluctuata*, change genus to *Anachis* [ES37b].  
 3781. *Pseudanachis basedowi*, not "*Pseudoanachis*" [Note 7].  
 3812. *Mitrella livescens*: may be a *Euplica* [ES37a].  
 3822. *Columbella turturina*: change combination to *Euplica turturina* (Lamarck) [ES37a].  
 3825. *Columbella varians*: change combination to *Euplica varians* (Sowerby) [ES37a].  
 3863. *Columbella scripta*: change combination to *Euplica scripta* (Lamarck) [ES37a].

#### Pack 38—Columbellidae

- 3776–3875: These numbers were used in both Pack 37 and Pack 38 [CS39, Note 2].  
 3776. *Nodochila pascua* (Hertlein).  
 3777. *Mitrella denticulata* (Duclos).  
 3778. *Anachis cancellata* (Gaskoin).  
 3779. *Astyris perlucida* Dall.  
 3780. *Mitrella densilineata* (Carpenter).  
 3781. *Anachis cancellata* auct. non Gaskoin.  
 3782. *Mitrella dartevillei* (Knudsen).  
 3783. *Anachis lightfooti* (E. A. Smith).  
 3784. *Astyris vidua* Dall.  
 3785. *Mitrella melvilli* (Knudsen).

3786. *Columbella castanea* Sowerby.  
 3787. *Cosmioconcha nitens* (C. B. Adams).  
 3788. *Anachis adelinae* (Tryon).  
 3789. *Anachis berryi* Shasky.  
 3790. *Anachis emergens* (Fischer-Piette and Nickles).  
 3791. *Anachis emergens* var.  
 3792. *Mitrella verdensis* (Knudsen).  
 3793. *Anachis atramentaria* (Sowerby).  
 3794. *Anachis consanguinea* (Sowerby).  
 3795. *Mitrella parvula* (Dunker).  
 3796. *Columbella paytensis* Lesson.  
 3797. *Mitrella mindorensis* (Reeve).  
 3798. *Anachis gaskoini* Carpenter.  
 3799. *Microcithara cithara* (Reeve).  
 3800. *Mitrella baccata* (Gaskoin).  
 3801. *Mitrella canariensis* (Orbigny).  
 3802. *Mitrella guttata* (Sowerby).  
 3803. *Mitrella xenia* Dall.  
 3804. *Mitrella essingtonensis* (Reeve).  
 3805. *Nassarina tehuantepecensis* (Shasky).  
 3806. *Mitrella tenuis* (Gaskoin).  
 3807. *Strombina paceana* Dall.  
 3808. *Mitrella australis* (Gaskoin).  
 3809. *Anachis descendens* (von Martens).  
 3810. *Mitrella delicata* (Reeve).  
 3811. *Nassarina cruentata* (Morch).  
 3812. *Aesopus paucivolvus*: change combination to *Parviterebra paucivolvus* Pilsbry, since it is the type species of the genus, and the genus is recognized on Cards 2768 and 2797 (see above) [herein].  
 3813. *Mitrella vineta* Tate.  
 3814. *Mitrella loisae* Pitts and Kohl.  
 3815. *Mitrella dictua* (Tenison Woods).  
 3816. *Anachis incerta* (Stearns).  
 3817. *Anachis reedi* Bartsch.  
 3818. *Cosmioconcha palmeri* (Dall).  
 3819. *Nassarina helenae* Keen.  
 3820. ? *Euplica uania* (Duclos).  
 3821. *Mitrella baculus* (Reeve).  
 3822. *Mitrella psilla* (Duclos).  
 3823. *Strombina edentula* Dall.  
 3824. *Anachis kirostra* (Duclos).  
 3825. *Anachis rugulosa* (Sowerby).  
 3826. ? *Pyrene yoldina* (Duclos).  
 3827. *Anachis* (s.l.) *iodostoma* (Gaskoin).  
 3828. *Zafra pulchella* (Blainville).  
 3829. *Parametaria dupontii* (Kiener).  
 3830. *Strombina mendozana* Shasky.  
 3831. *Mitrella conspersa* (Gaskoin).  
 3832. *Mitrella pulla* (Gaskoin).  
 3833. *Astyris appressa* Dall.  
 3834. *Astyris projecta* Dall.  
 3835. *Mitrella venulata* (Sowerby).  
 3836. *Astyris multilineata* Dall.  
 3837. *Mitrella buccinoidea* (Sowerby).  
 3838. *Anachis lentiginosa* (Hinds).  
 3839. *Astyris rosacea* Gould.  
 3840. *Aesopus algoensis* (Sowerby).  
 3841. ? *Pyrene ida* (Duclos).  
 3842. *Anachis albella* (C. B. Adams).  
 3843. *Mitrella pyramidalis* (Sowerby).  
 3844. "*Pyrene*" *kincaidi* Tomlin.  
 3845. *Anachis leptalea* (E. A. Smith).  
 3846. *Mitrella apicata* (E. A. Smith).  
 3847. *Mitrella shepstonensis* (E. A. Smith).  
 3848. *Anachis obesa* (C. B. Adams).  
 3849. *Nassarina bushiae* (Dall).  
 3850. *Amphissa reticulata* Dall.  
 3851. *Euplica bidentata* (Menke).  
 3852. *Astyris amiantis* Dall.  
 3853. *Zafra nebuloza* (Gould).  
 3854. *Mitrella sanctaehelenae* E. A. Smith.  
 3855. *Aesopus chrysaloidea* (Carpenter).  
 3856. *Aesopus hilum* (Hedley), not "*hiliun*" [Note 3].  
 3857. *Aesopus cassandra* (Hedley).  
 3858. *Mitrella yorkensis* (Crosse).  
 3859. *Nassarina plexa* (Hedley).  
 3860. *Aesopus pallidulus* (Hedley).  
 3861. *Mitrella russelli* (Brazier).  
 3862. *Anachis kraussii* (Sowerby).  
 3863. *Zafra divaricata* (Pilsbry).  
 3864. *Zafra alternata* (Gould).  
 3865. *Zetekia gemmulosa* (C. B. Adams).  
 3866. *Aesopus stearnsii* (Tryon).  
 3867. *Zafra consobrina* Rehder.  
 3868. ? *Zafra retiaria* (Tomlin), not "*retiara*" [Note 3].  
 3869. *Anachis burnupi* (E. A. Smith).  
 3870. *Ruthia mazatlanica* Shasky.  
 3871. *Mitrella baileyi* Bartsch and Rehder.  
 3872. *Anachis fusidens* Dall.  
 3873. *Aesopus japonicus* Gould.  
 3874. *Anachis meta* (Thiele).  
 3875. *Parametaria macrostoma* (Reeve).
- Pack 39—Turridae**
3892. *Cochlespira radiata*: specimen is not USNM 421774 but probably ANSP 300563; see Card 3907 [herein].  
 3907. *Cochlespira elegans*: catalogue number 421774 visible on shell is a USNM, not an ANSP, number; see Card 3892 [herein].  
 3939. *Agathotoma castellata*, not "*costellata*" [Note 3].
- Pack 40—Coralliophilidae**
4004. "*Coralliophila*" *kochiana*: change combination to *Lataxiena kochiana*; change family to Muricidae [Card 4004/6054]. See also Buccinidae 4004, below.  
 4080. "*Coralliophila*" *mansfieldi*: magnifications are "×2 and ×4" [ES40].
- Pack 41—Nassariidae**
4103. *Nassarius sinarum*, not "*sinarus*" [Note 5].  
 4117. *Bullia indusica*, not "*indusindica*" [Note 3].

4148. *Cyllene unimaculata*, not "*unimacylata*" [ES41].  
4185. *Bullia otaheiteensis*, not "*othaeiteensis*" [ES41].

#### Pack 42—Columbellidae

4205. *Aesopus spicula*, not "*spiculum*" [Note 4].  
4210. *Pyrene ogasawarana*: removed from Pack 42, reprinted and shipped with Pack 43 [ES42a].  
2768/4247. *Parviterebra separanda*, not "*separtanda*" [Note 3]; author is Tomlin, not Melvill [herein].  
2797/4248. *Parviterebra thyraea* Melvill, not "*thyrsaea* Melvin" [Note 3].  
4297. *Mitrella phylina*: removed from Pack 42, reprinted and shipped with Pack 43 [ES42a]. Other cards that were reprinted, but not first removed are 4211–4216, 4218–4220, 4225, 4273, 4276, 4292, 4294, 4296, 4299, 4304, 4305.

#### Pack 43—Buccinidae

4004. *Nassaria pusilla* form *laevior*, misprint for 4404 [herein].  
4310. *Babylonia canaliculata*: change to *B. spirata valentiana* (Swainson) [Card 4935/4310].  
4339. *Neptunea antiqua*: specimen is *N. despecta despecta* (Linné) [CS45].  
4343. *Pisania dorbignyi* Payraudeau: not "Payrandeau" [herein].  
4345. *Buccinum leucostoma*, not "*leucostomum*" [Note 4].  
4356. *Buccinum linea linea*, not "*lineum*" [Note 4].  
4369. *Phos cyanostoma*, not "*cyanostomus*" [Note 4].  
4373. *Cantharus melanostoma*, not "*melanostomus*" [Note 4].  
4383. *Cantharus erythrostroma*, not "*erythrostromus*" [Note 4].  
4397. "*Cantharus*" *dentatus*: change combination to *Eosipho dentatus* (Schepman) [Card 4941/4397].  
4404. See 4004.

#### Pack 44—Buccinidae

4417. *Metula ellena*: magnifications  $\times 2$  and  $\times 4$ , not  $\times 1$  and  $\times 2$  [Card 4936/4417].  
4440. *Pollia pastinaca*, not "*pastinacea*" [Note 3].  
4460. *Clivipollia pulchra*: change genus to *Engina* [Card 4460/5833].  
4470. *Searlesia dira*, not "*Searlsia*" [Note 7].  
4513. *Cantharus albozonatus*: author is Kosuge, not "Kosuge and Habe" [herein]; preoccupied name replaced by *C. leucotaeniatus* Kosuge, 1985 [Card 4513/5835].

#### Pack 45—Trochidae

4526. *Clanculus berthelotii*, not "*bertheleti*" [Note 3].  
4614. *Calliostoma vincentae*, change authorship to Kaicher; probable synonym of *Callumbonella suturalis* Philippi [see above].

#### Pack 46—Fasciolaridae

4629. *Latirus rhodostoma*, not "*rhodostomus*" [Note 4].  
4651. *Latirus croceus*, not "*crocatu*" [Note 3].  
4655. *Microcolus lincolnsensis*: *M. dunkeri* mentioned in text is Card 4720, not 4719 [herein].  
4665. *Latirus singularis*, not "*cingularis*" [Note 3].  
4671. *Latirus elegans*: author is A. Adams, not "(Gray)" [herein].  
4674. *Latirus mannophorus*, not "*mannophophorus*" [Note 3].  
4680. *Leucozonia ocellata*, not "*ocellifera*" [Note 3].  
4694. *Fusinus fragilissimus*: change genus to *Bayeri*, change family to Buccinidae [Card 4694/5834].  
4710. *Latirus luculentus*: change combination to *Godfreyana luculenta* (A. Adams), change family to Buccinidae [Card 4710/5832].  
4711. *Fusinus rufocaudatus*: change genus to *Exilioidea*, change family to Turbinellidae [CS55]; reissued as Card 5628.  
4715. *Pleuroploca lignarius*, not "*lignaria*" [Note 4]; originally spelled "*ligniarius*" by Linné (1758), but as "*lignarius*" by Linné 1767. Vokes (1971) noted that the latter was correct Latin, but retained the spelling *ligniarius* in accordance with the ICZN rules then in effect. As the later spelling *lignarius* has remained in prevailing use, attributed to Linné, 1758, it is to be maintained (ICZN Art. 33.3.1) [herein].

#### Pack 47—Neritidae

4733. *Dostia lecontei*, not "*leconti*" [Note 3].  
4750. *Clypeolum subauriculatum*, not "*subauritulatum*" [Note 3].  
4756. *Clypeolum tahitensis*: change *N. auriculata* in text to *C. auriculatum* [herein].  
4765. *Theodoxus elongatulus*, not "*elongatus*" [Note 3].  
4773. *Theodoxus guadianensis valentina*: author is Graells, not "Graello" [herein].  
4779. *Theodoxus peloponensis*, not "*peloponnesius*" [Note 3].  
4787. *Nerita birmanica*: author is Troschel, 1878, not Recluz [herein].  
4824. *Neritina vespertina*: change genus to *Clypeolum*, to agree with placement of *C. tahitensis* (Card 4756), with which it is compared [herein].

#### Pack 48—Buccinidae

4851. *Metula* sp.: is *M. africana* Bouchet, 1988 [Card 4851/5888].  
4862. *Cantharus leucozonum*, not "*leucozonus*" [Note 4].  
4885. *Pisania herrmannseni*, not "*herrmanseni*" [Note 3]; A. Adams (1855) spelled the name "*hermannseni*", stating "We have named it after M. Hermannsen, who has contributed so materially towards the natural history of the Mollusca, by his

valuable work on Bibliography and Synonyms". Because it is clear that Adams' intention was to name the species for A. N. Herrmannsen, author of *Indicis Generum Malacozoorum Primordia* (1846-1852), the spelling must be corrected to "herrmannseni" under ICZN Article 32.5.1.

4899. *Buccinum kinukatsugi*, not "*kinokatsuge*" [Note 3].  
 4900. *Prodotia iostoma*: change name to *Prodotia* sp. "A" [Card 4900/5831], wrong protoconch illustrated; see Cards 5826 and 5846 for *P. iostoma* and 5858 for *P. cf. P. iostoma*.

#### Pack 49—Olividae

4994. *Olivella formicacorsii*, not "*formicacorsi*" [Note 3; named for Dr. A. Formica Corsi].  
 5034. *Olivella guildingi*: type locality is St. Vincent [ES49a].  
 5036. *Olivella nivea*: specimen is from Espirito Santo, Brazil; wrong protoconch illustrated [ES49a].  
 5047. Not issued; removed by Kaicher [ES49b].

#### Pack 50—Trochidae

5053. *Cantharidella tessellata*: compare to syntype shown on Card 5791/5053; see Card 5712.  
 5067. *Bathybembix aeola*: specimen is *B. cf. aeola* [Card 5687/5067]; see Card 5688.  
 5080. *Micrelenchus sanguineus sanguineus*, not "*Michrelenchus*" [Note 7].  
 5095. *Minolia holdsworthana*: authorship is Nevill and Nevill, not "Nevill" [herein].  
 5120. *Micrelenchus tenebrosus*, not "*Michrelenchus*" [Note 7].  
 5123. *Micrelenchus sanguineus cryptus*, not "*Michrelenchus*" [Note 7].  
 5147. *Micrelenchus rufozona*, not "*Michrelenchus rufozonus*" [Notes 3, 6].  
 5149. *Micrelenchus dilatatus*, not "*Michrelenchus*" [Note 7].  
 5152. *Astele pulcherrimus*: synonym of *Coralastele punctocostatus* [Card 5686/5152].

#### Pack 51—Olividae

5253. Two cards have this number, *Oliva cf. aniomina* and *O. arctata* [Note 2].  
 5259. This number was skipped [Note 1].

#### Pack 52—Turbinidae

5317. *Guildfordia triumphans*, not "*Guilfordia*" [Note 7].  
 5320. *Guildfordia yoka*, not "*Guilfordia*" [Note 7].  
 5323. *Micrastrea rutidoloma*, not "*rutidiloma*" [Note 3].  
 5326. *Guildfordia aculeata*, not "*Guilfordia*" [Note 7].  
 5329. *Guildfordia monilifera*, not "*Guilfordia*" [Note 7].

#### Pack 53—Fissurellidae

5381. *Medusafissurella salebroso*: "type species of *Medusafissurella*" [CS53].  
 5411. *Dendrofissurella scutellum*: "type species of *Dendrofissurella*" [CS53].  
 5420. *Diodora elizabethae*, not "*elixabethae*" [Note 3].  
 5437. This number was skipped; assign to unnumbered *Diodora calyculata* [Note 1].  
 5451. *Fissurella pulchra*: not that species; identity not determined [CS54].

#### Pack 54—Olividae

5502. *Oliva miniacea*, not "*mineacea*" [Note 3].

#### Pack 55—Turbinellidae

5660. This number was skipped [Note 1].  
 5661. This number was skipped [Note 1].

#### Pack 56—Trochidae

- 5686/5067. *Coralastele punctocostatus*: number should be 5686/5152 [herein]; see next item and 5152 above.  
 5687/5152. *Bathybembix cf. aeola*: number should be 5687/5067 [herein]; see previous item and 5067 above.  
 5712. *Cantharidella tessellata*, not "*tesselata*" [Note 3].  
 5716. *Rossiteria nucleus*, not "*nuclea*" [Note 4].  
 5721. "*Minolia holdsworthana*": authorship is Nevill and Nevill, not "Nevill" [herein].  
 5757. Not issued; removed by Kaicher [CS56].  
 5791/5053. *Cantharidella tessellata*, not "*tesselata*" [Note 3].

#### Pack 57—Buccinidae

5795. *Crassicantharus norfolkensis*: size is about 10 mm, not "40+ mm" [herein].  
 5819. *Searlesia fuscolabiata*, not "*Searlsia*" [Note 7].  
 5833. *Engina pulchra*: note catalog number is 1966608 not 196608 on original card (4460) [herein].  
 5842. This number was skipped; assign to unnumbered *Colubraria tortuosa* [Note 1].  
 5848. *Colubraria bayeri*: transferred to *Tritonoharpa* (Cancellariidae) by Harasevych, Petit and Verheken (1992).

#### Pack 58—Ovulidae

5914. *Cyphoma signatum*: museum number is USNM 599386 [ES58].  
 5920. *Galera aenigma*: change genus to *Galeravolva* [ES58].  
 5926. *Pseudocypraea exquisita*: in text discussion, change *P. adamsi* to *P. adamsonii* [ES58].  
 5943. *Spiculata barborensis*: change "Dall" to "(Dall)" [ES58].

5944. *Phenacovolva bartschi*: museum number is USNM 429178 [ES58].
5951. *Xandarovula formosana*: change "Azuma" to "(Azuma)" [ES58].
5955. *Phenacovolva loebbekeana*: museum number is USNM 219894 [ES58].
5964. *Primovula rutherfordiana* Cate, not "(Cate)" [ES58].
5965. *Habuprionovolva choshiensis*, not "*Habuprionovolva*" [ES58].
5968. *Phenacovolva wakayamaensis*: specimen is *P. yoshioi* (Azuma and Cate) [CS59].
5970. *Phenacovolva clenchi*: museum number is USNM 282618 [ES58].
5971. *Hiatavolva depressa*, not "*Hiatovolva*" [ES58].
5985. *Cyphoma mcgintyi*, not "*macgintyi*" [ES58].
5986. *Crenavolva serrula*: museum number is USNM 735736 [ES58].
5988. *Pseudosimnia sphoni*: specimen figured is the holotype [ES58].
5989. *Crenavolva "striatula" tinctura*: museum number is AMS C.64070 [ES58].
5992. *Stohleroma fumikoae*: change "Azuma and Cate" to "(Azuma and Cate)" [ES58].
5999. *Sinnialena uniplicata*: museum number is USNM 590065 [ES58].
6000. *Lacrima simulans*: museum number is USNM 284921 [ES58].

#### Pack 59—Muricidae

- 6004–6052: Magnification, omitted from many *Murex* s.s. cards, is  $\times 1$  [CS59].
6007. (?) *Pygmaeapterys aliciae*, not "*Pygmaeapterys*". Unnumbered *Poirieria kopua* erroneously assigned to this number on CS59; on some copies of CS59, Kaicher crossed out 6007 and wrote in 6038, which see.
6016. *Poirieria primanova*, not "*Poiriera*" [Note 7].
6017. *Pygmaeapterys adensis*, not "*Pygmaeapterys*" [Note 7].
6038. This number was skipped; assign to unnumbered *Poirieria kopua* [Note 1]; see 6007 above.
6098. *Pygmaeapterys richardbinghami*, not "*Pygmaeapterys*" [Note 7].
6070. This number was skipped; assign to unnumbered *Risomurex withrowi* [CS59].
6096. *Typhis oclusus*, not "*occlusus*" [Note 3].

#### Pack 60—Marginellidae [and Cystiscidae]

6108. *Homalocantha dovpeledi*, not "*Homalacantha*" [Note 7].
6111. *Canalispira attentia*, not "*Canalspira*" [Note 7].
6130. *Dentimargo smithii*: museum number is MCZ 207389, switched with Card 6171 (see below) [herein].
6141. ? *Prunum pyrulum*: change genus to ? *Persicula* [CS60].
6171. *Dentimargo idiochila*: museum number is ANSP

219511, switched with Card 6130 (see above); Coovert (1999) erroneously changed the ending to agree with *Dentimargo* [Note 4].

6185. *Canalispira replicata*, not "*Canalspira*" [Note 7].
6189. Two cards have this number: *Gibberula lavalleeana* of authors and *Volvarina perrieri* [Note 2].
6193. This number was skipped [Note 1].
6204. *Canalispira minor*, not "*Canalspira*" [Note 4].

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# Reproduction of *Crepidula navicula* Mørch, 1877 and *Crepidula aphysioides* Reeve, 1859 (Caenogastropoda) from Morrocoy and La Restinga Lagoon, Venezuela

Patricia Miloslavich  
E. Klein

Departamento de Estudios  
Ambientales and INTECMAR  
Universidad Simón Bolívar  
P.O. Box 89.000  
Caracas, 1080  
VENEZUELA  
pmilos@usb.ve

P. E. Penchaszadeh

Facultad de Ciencias Exactas y  
Naturales  
Universidad de Buenos Aires  
Museo Argentino de Ciencias  
Naturales-CONICET  
Av. A. Gallardo 470, Buenos Aires  
ARGENTINA  
penchas@bg.fcen.uba.ar

## ABSTRACT

Brooding specimens of *Crepidula aphysioides* and *Crepidula navicula* were collected from La Restinga Lagoon, Margarita Island and Las Luisas Bay, Morrocoy, Venezuela at a depth of 0.5–1 m. Individuals of *C. aphysioides* were attached to mangrove oysters and mussels that were attached to the roots of *Rhizophora mangle*, while those of *C. navicula* were attached to the gastropod *Modulus modulus*.

Brooding females of *C. aphysioides* measured 9.4–18.2 mm shell length and each female brooded  $23.4 \pm 4.5$  egg capsules. The egg capsules had a triangular shape, with one corner extending to form a stalk that attached the egg capsule to the substrate. The capsule walls were thin and transparent. Egg capsules measured 0.5–2.1 mm length (without the stalk), 0.7–2.7 mm width, and the stalk 0.6–3.3 mm length. The number of eggs per capsule varied from 3 to 18. The uncleaved egg measured about 300  $\mu\text{m}$  and all eggs developed. Nurse eggs were not observed. Cannibalism, however, was observed among sibling embryos and the number of hatchlings was significantly lower (by one individual) than the number of eggs. Hatching occurred as crawling juveniles measuring about 600  $\mu\text{m}$  in shell length.

Brooding females of *C. navicula* measured 4.9–7.4 mm shell length and each female brooded  $8.5 \pm 2.2$  egg capsules. The egg capsules were very similar to those of *C. aphysioides* but smaller (between 0.5 and 1.3 mm lengthwise) and contained 3–6 eggs each. The uncleaved eggs measured around 330  $\mu\text{m}$ . All eggs develop; cannibalism was observed and the number of hatchlings was significantly lower than the number of eggs. Between 2–4 individuals hatched per capsule as pediveligers measuring 550–1172  $\mu\text{m}$  shell length.

Female size determined fecundity, in terms of juvenile production, on both species. This is accomplished through two different strategies, the first an increase in the number of hatchlings per female at larger female sizes (*C. aphysioides*) and the second that larger females produced larger egg capsules with more hatchlings (*C. navicula*).

## INTRODUCTION

The shells of *Crepidula* Lamarck, 1799 are limpet-like, flat or cap shaped, with a coiled apex at the posterior end, the interior has a shelly platform which is attached to the shell by both sides and covers about half of the internal area (the posterior portion of the soft body), and they have no opérculum (Abbott, 1974; Díaz and Puyana, 1994).

Calyptraeids in the genus *Crepidula* are very common throughout the North and South American coasts both in the Pacific and the Atlantic. Abbott (1974) reported 13 species from North America, and Hoagland (1986) reported other additional six species. In the Caribbean, Díaz and Puyana (1994) and De Jong and Coomans (1988) reported 3 species from Colombia, the West Indies, Aruba, Curaçao, and Bonaire; these are *Crepidula aculeata* Gmelin, 1791, *Crepidula convexa* Say, 1822, and *Crepidula plana* Say, 1822. Warmke and Abbott (1961) reported three other species for the Caribbean, *Crepidula glauca* Say, 1822, *Crepidula protea* d'Orbigny, 1845, and *Crepidula riisei* Dunker, 1877. The taxonomic allocation of species is difficult solely on the basis of conchological characters given the impressive plasticity that these shells have when growing on different substrates. Hoagland (1986) made an advance in the systematics of the genus through the study of egg capsules, larval development, electrophoresis, and anatomy. Collin (2000a) stated that the taxonomy of the species of *Crepidula* with pale, flattened, concave, or recurved shells is particularly difficult and uncertain; she separated the *Crepidula plana* complex from North America into three different species based on morphological, developmental, and molecular (mitochondrial cytochrome oxidase I) data.

Information regarding reproductive patterns of some species has proved to be very helpful in determining the