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TECHNICAL REPORT

AN ANNOTATED CHECKLIST OF THE COWRIE SHELLS (GASTROPODA: CYPRAEIDAE) OF THE SOLOMON ISLANDS

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M A R I N E S T U D I E S P R O G R A M M E

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**An Annotated Checklist of the Cowrie Shells (Gastropoda:
Cypraeidae) of the Solomon Islands**

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Introduction

The molluscan fauna of the Solomon Islands is one of the richest in Oceania. Shells have always played a major role in the Solomon Island custom in all provinces. Giant clam shells are used to carve money in some parts. In Malaita Province, shell money is made from a variety of bivalves e.g. *Chama*, *Anadara*, *Asaphis*, and *Atrina*. Cowries have been traditionally used to decorate carvings too. However, in the modern days shells are being sold to Westerner shell collectors for money and the one of the most popular gastropod groups is the true cowrie (Cypraeidae).

Schilder and Schilder (1938) listed 55 species of cowries from Solomon Islands. Solem (1953) made a comprehensive list of marine and freshwater molluscs of the Solomon Islands based on a collection by a missionary, Dr. C. E. Fox. Allan (1956) discussed the cowries of the world and included some Solomon records. Abbott (1958) studied the marine mollusca (including cowries) on Rennell Island (South Solomons) and Cernohorsky (1967) discussed some cowries from the Solomon Islands. A study of cowries of the Solomon Islands had also been carried out by Kenworthy (1972). Walls (1979), Burgess (1985), and Lorenz and Hubert (1993) published the worldwide species of cowries. Kengalu (1982, 1991) published shell price lists for the Solomon Island cowries. Both of Kengalu's references (1982 and 1991) were used because they contained first records and he also used some very exotic cowrie names. Rice (1989) listed some cowries from the Solomons in his price list. Hvding (1995) listed some cowries from his dictionary of the Marovo Lagoon. With more deep sea sampling, new species of cowries will be identified in the Solomon Islands and some new records will also be found.

This author lists 83 species of cowries from the Solomon Islands with a additional 3 doubtful species. This author has only used one genus *Cypraea* and subspecies names have not been used. Lorenz and Hubert (1993) in their world listing listed 79 species from the Solomons. They have broken the *Cypraea* into various different genera and named some species into subspecies and forms. This causes more confusion than order for the average novice shell collector. Alternatively, serious exclusive cowrie collectors look for variation within the species and seek variety. Several authors over the past 50 years have used differing genera, subspecies, and forms for the same species. Lorenz and Hubert (1993) are the latest authors to do this. The final cowrie counts in this paper and that in Lorenz and Hubert (1993) are dependent on the treatment of synonyms and subspecies of which this author and the latter do not agree. The *listeri-felina* complex also needs to be resolved.

Lorenz and Hubert (1993) have not listed the following species from the Solomons; *Cypraea cylindrica*, *Cypraea felina* (replaced by *Cypraea listeri*), *Cypraea katsuae*, *Cypraea pyriformis* and *Cypraea teramachii*. They list *Cypraea leviathan*, *Cypraea pulchella* and *Cypraea schilderorum* as new records from the Solomons. *Cypraea leviathan* for many years has been endemic from Hawaii. This author did not find any new cowrie records for the Solomon Islands and have personally seen over 50 cowries from the Solomons in one year (1995-1996).

The various names by different authors vary slightly over time and this has added to the difficulty of learning all the variation in cowrie taxonomy. An example is *Cypraea argus* or the eyed cowrie with variation in the sizes of eyes and blotches on the base. Schilder and Schilder (1938) called it *Talparia argus ventricosa*. Solem (1953) called it *Talparia (Arestoides) argus*. Abbott (1958) called it *Cypraea (Talparia) argus*. Lorenz and Hubert (1993) called it *Lycina argus argus* and *Lycina argus contrastriata*. Many ordinary collectors would rather call it just *Cypraea argus*. However, serious collectors begin to look for varieties when they have collected all the species.

Lorenz and Hubert (1993) break some cowrie subspecies into geographical areas. The sieve cowrie or *Cypraea cribaria* is called *Cibrarula cribaria cribaria* in the Indo-Pacific area from the Red Sea, India, Japan, New Guinea and Polynesia. This is further broken down into 2 forms: *zadela* and *gaspardi*. *Cibrarula cribaria melwardi* is found in Eastern Australia. *Cibrarula cribaria exmouthensis* is found in Western Australia and there is a form called *rottnestensis*. *Cibrarula cribaria comma* is found in Eastern Africa and *Cibrarula cribaria abaliena* is also found in Eastern Africa but over a smaller area. *Cibrarula fallax* is found in South-West Australia and this species closely resembles *Cibrarula cribaria exmouthensis rottnestensis*. *Cypraea fallax* can easily be called *Cypraea cribaria*. The point of this exercise is that it would be easier to list *Cypraea cribaria* from East Africa to Western Polynesia. However, others would differ on this point and can say *Cypraea cribaria*, *Cypraea catholicorum*, *Cypraea esotropia*, *Cypraea gaskoinii*, and *Cypraea cumingii* (all small cowries with white dots over a pale yellow-brown colour with or without darker spots near the base) should be one species only. There should be a balance between clumping and splitting. Recent DNA studies (Paulay, 2000 *pers comm.*) may clarify the issue.

After the author's return to Fiji in 1996, he was informed that the Museum in Honiara has a shell collection and the wife of the Australian Ambassador was cataloguing the shells.

Cowries from Bougainville are also listed in this paper as it is considered a geographical part of the Solomon Island Province even though politically it is in Papua New Guinea. Cowrie species with one asterisk indicates that the author has personally collected or seen it from the Solomon Islands. The author had not included the Solomon Island fossil cowries in this study though he had seen some on Mount Austin behind Honiara. The annotated checklist below is drawn up alphabetically.

This report is a part of the effort of the Marine Studies Programme (USP) to increase the knowledge of Marine Biodiversity in the Tropical Pacific region.

Confirmed records.

1.. : **Cypraea annulus* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Monetaria annulus nouméensis* Marie, 1869); Solem, 1953, p. 222 (as *Monetaria annulus annulus*); Solem, 1958, p. 221 (as *Monetaria annulus*); Burgess, 1970, p. 342; Kenworthy, 1972, p. 21; Morton, 1973, p. 517 (as *Moneta annulus*); Kengalu, 1982, p. 3; Burgess, 1985, p. 227; Morton, 1990,

p. 142 (as *Moneta annulus*); Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 204 (as *Erosaria annulus*); Hviding, 1995, p. 75

2. **Cypraea arabica* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Mauritia (Arabica) arabica niger*); Solem, 1953, p. 222 (as *Mauritia (Arabica) arabica arabica*); Abbott, 1958, p. 204 (as *Cypraea (Mauritia) arabica*); Burgess, 1970, p. 215; Kenworthy, 1972, p. 21; Kengalu, 1982, p. 3; Burgess, 1985, p. 66; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 58 (as *Mauritia arabica arabica*)

3. **Cypraea argus* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Talparia argus ventricosa* Gray, 1824); Solem, 1953, p. 222 (as *Talparia (Arestoides) argus*); Abbott, 1958, p. 204 (as *Cypraea (Talparia) argus*); Burgess, 1970, p. 253; Kenworthy, 1972, p. 21; Kengalu, 1982, p. 3; Burgess, 1985, p. 89; Rice, 1989, p. 28A; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, pp. 77, 276 (as *Lyncina argus argus*); Hviding, 1995, p. 76

4. **Cypraea asellus* Linnaeus, 1758

Solem, 1953, p. 222 (as *Palmadusta asellus asellus*); Burgess, 1970, p. 118; Kenworthy, 1972, p. 21; Kengalu, 1982, p. 3; Burgess, 1985, p. 127; Rice, 1989, p. 28A; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 155 (as *Palmadusta asellus*)

5. **Cypraea aurantium* Gmelin, 1791

Boettger, 1916, pp. 287-308 (cited by Solem, 1958) Schilder and Schilder, 1938, p. 215 (as *Callistocypraea aurantium*); Solem, 1953, p. 221 (as *Callistocypraea (Callistocypraea) aurantium*); Abbott, 1958, p. 204, 207 (as *Cypraea (Cypraea) aurantium*); Solem, 1958, p. 220 (as *Callistocypraea (Callistocypraea) aurantium*); Kenworthy, 1972, p. 21; Kengalu, 1982, p. 3; Burgess, 1985, p. 87; Rice, 1989, p. 28A; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 76 (as *Lyncina aurantium*); Gosliner, Behrens and Williams, 1996, p. 131.

C. aurantium, the Golden Cowrie, is not uncommon in the Solomon Islands. It seems that they are more frequently found in the East Guadalcanal, Malaita, Ysabel, Makira and the islands to the East. They are not found in Choiseul and Western Province.

6. *Cypraea beckii* Gaskoin, 1836

Kenworthy, 1972, p. 21; Burgess, 1985, p. 119; Rice, 1989, p. 28B; Kengalu, 1991, p. 5 (as *C. beckii*); Lorenz and Hubert, 1993, p. 209 (as *Erosaria beckii*)

7. **Cypraea bistrinotata* Schilder and Schilder, 1937

Schilder and Schilder, 1938, p. 215 (as *Pustularia bistrinotata mediocris* Schilder & Schilder, 1938); Burgess, 1970, p. 271; Kenworthy, 1972, p. 22; Kengalu, 1982, p. 3 (as *C. bistrinotata*); Burgess, 1985, p. 177; Rice, 1989, p. 28B; Rice, 1989, p. 28G (as *C. mediocris* - a subsp. or form of *C. bistrinotata*); Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, pp. 219, 433 (as *Pustularia bistrinotata mediocris* Schilder & Schilder, 1938)

8. *Cypraea bregeriana* Crosse, 1868

Burgess, 1970, p. 74; Kenworthy, 1972, p. 22; Walls, 1975, p. 248; Eisenberg, 1981, p. 73 (as *Cypraea walkeri bregeriana*); Burgess, 1985, p. 116; Raybaudi, 1989, p. 1 (as *Cypraea pervelata* Raybaudi, 1989); Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 129 (as *Erronea bregeriana*); Lorenz and Hubert, 1993, p. 317 (as *Erronea bregeriana* "pervelata" Raybaudi, 1989)

9. **Cypraea caputserpentis* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Erosaria caputserpentis argentata* Schilder & Schilder, 1938); Abbott, 1958, p. 204 (as *Cypraea (Erosaria) caput-serpentis*); Solem, 1958, p. 221 (as *Erosaria (Ravitrona) caputserpentis*); Burgess, 1970, p. 178; Kenworthy, 1972, p. 22; Morton, 1973, p. 517 (as *Ravitrona caput-serpentis*); Kengalu, 1982, p. 3; Burgess, 1985, p. 205; Morton, 1990, p. 143 (as *Ravitrona caput-serpentis*); Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 207 (as *Erosaria caputserpentis caputserpentis*)

10. **Cypraea carneola* Linnaeus, 1758

Boettger, 1916, pp. 287-308 (cited by Solem, 1958); Schilder and Schilder, 1938, p. 215 (as *Cypraea (Lyncina) carneola propinqua* Garrett, 1879); Solem, 1953, p. 221 (as *Cypraea (Lyncina) carneola*); Solem, 1958, p. 220 (as *Cypraea (Lyncina) carneola*); Burgess, 1970, p. 201; Kenworthy, 1972, p. 22; Kengalu, 1982, p. 3 (as *C. carneola*); Burgess, 1985, p. 80; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, pp. 69, 273 (as *Lyncina carneola propinqua* Garrett, 1879)

Some authors (e.g. Burgess, 1985) make *Cypraea propinqua* a valid species.

11. **Cypraea catholicorum* Schilder and Schilder, 1938

Schilder and Schilder, 1938, p. 215 (as *Cribaria catholicorum*); Cernohorsky, 1963, no page number; Burgess, 1970, p. 180; Kenworthy, 1972, p. 22; Walls, 1975, p. 229; Kengalu, 1982, p. 3; Burgess, 1985, p. 242; Rice, 1989, p. 28C; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 179, 365 (as *Cibrarula catholicorum*)

12. **Cypraea caurica* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Erronea caurica obscura* Rossiter, 1882); Solem, 1953, p. 221 (as *Erronea (Erronea) caurica caurica*); Burgess, 1970, p. 297; Kenworthy, 1972, p. 22; Burgess, 1985, p. 161; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, pp. 137, 327 (as *Erronea caurica caurica*)

13. *Cypraea cernica* Sowerby, 1870

Burgess, 1970, p. 153; Burgess, 1985, p. 209; Lorenz and Hubert, 1993, p. 194 (as *Erosaria cernica*)

14. **Cypraea childreni* Gray, 1825

Schilder and Schilder, 1938, p. 215 (as *Pustularia childreni childreni*); Solem, 1953, p. 222 (as *Pustularia childreni*); Burgess, 1970, p. 262; Kenworthy, 1972, p. 22; Kengalu, 1982, p. 3; Burgess, 1985, p. 237; Rice, 1989, p. 28C; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 223 (as *Ipsa childreni*)

This cowrie is listed as rare in publications but after storms, they are found in huge numbers with *Cypraea mariae*.

15. **Cypraea chinensis* Gmelin, 1791

Schilder and Schilder, 1938, p. 215 (as *Cribaria chinensis chinensis*); Burgess, 1970, p. 79; Kenworthy, 1972, p. 22; Kengalu, 1982, p. 3; Burgess, 1985, p. 117; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 141 (as *Erronea chinensis amiges* Melvill and Standen, 1904)

16. **Cypraea cicercula* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Pustularia cicercula cicercula*); Schilder and Schilder, 1938, p. 215 (as *P. cicercula margarita* Dillwyn, 1817); Solem, 1953, p. 222 (as *Pustularia cicerula cicerula*); Burgess, 1970, p. 266; Kenworthy, 1972, p. 22; Kenworthy, 1972, p. 26 (as *C. margarita* Dillwyn, 1817); Kengalu, 1982, p. 3; Kengalu, 1982, p. 3 (as *C. margarita*); Burgess, 1985, p. 176; Rice, 1989, p. 28G (as *C. margarita*); Kengalu, 1991, p. 5; Kengalu, 1991, p. 6 (as *C. margarita*); Lorenz and Hubert, 1993, p. 220 (as *Pustularia cicercula*); Lorenz and Hubert, 1993, p. 220 (as *Pustularia margarita*)

Some authors separate *C. margarita* and *C. cicercula* as two valid species.

17. **Cypraea clandestina* Linnaeus, 1767

Schilder and Schilder, 1938, p. 215 (as *Palmadusta clandestina candida* Pease, 1865); Solem, 1953, p. 222 (as *Palmadusta clandestina*); Burgess, 1970, p. 93; Kenworthy, 1972, p. 23; Morton, 1973, p. 517 (as *Palmadusta clandestina*); Kengalu, 1982, p. 3; Burgess, 1985, p. 125; Rice, 1989, p. 28C; Morton, 1990, p. 143 (as *Palmadusta clandestina*); Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 152 (as *Palmadusta clandestina candida* Pease, 1865)

18. *Cypraea contaminata* Sowerby, 1832

Solem, 1953, p. 222 (as *Palmadusta contaminata*); Hinton, 1972 (1980), p. 28; Kenworthy, 1972, p. 23; Burgess, 1985, p. 130; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 156 (as *Palmadusta contaminata*)

19. **Cypraea coxeni* Cox, 1873

Schilder and Schilder, 1938, pp. 164, 215 (as *Blasicrura Blasicrura coxeni*); Steadman and Cotton, 1946, p. 516; Solem, 1953, p. 221 (as *Erronea (Blasicrura) coxeni*); Cernohorsky, 1963, no page number; Burgess, 1970, p. 107; Hinton, 1972 (1980), p. 22; Kenworthy, 1972, p. 23; Walls, 1975, p. 153; Eisenberg, 1981, p. 62; Kengalu, 1982, p. 3; Kengalu, 1982, p. 3 (as *C. hesperina*, Schilder & Summer, 1963); Burgess, 1985, p. 194; Rice, 1989, p. 28C; Rice, 1989, p. 28E (as *C. hesperina* Schilder and Summer, 1963 - a subsp. or form of *C. coxeni*); Kengalu, 1991, p. 5 (includes the sub-species *hesperina*); Lorenz and Hubert, 1993, pp. 158, 367 (as *Blasicrura coxeni coxeni* and *Blasicrura coxeni hesperina*). *C. c. hesperina* is found in Bougainville; Wilson, 1993, p. 355; Hvding, 1995, p. 76

20. **Cypraea cribaria* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Cribaria cribaria melwardi* Iredale, 1930); Solem, 1953, p. 221 (as *Cribaria (Cribaria) cribaria*); Burgess, 1970, p. 190;

Kenworthy, 1972, p. 23; Kengalu, 1982, p. 3; Burgess, 1985, p. 238; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, pp. 176, 363 (as *Cibrarula cribaria cribaria*); Solomon Island Philatelic Bureau Stamp.

21. **Cypraea cylindrica* Born, 1778

Schilder and Schilder, 1938, p. 215 (as *Erronea cylindrica cylindrica*); Burgess, 1970, p. 292; Kenworthy, 1972, p. 23; Burgess, 1985, p. 160; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 439 (as *C. cylindrica-errones* hybrid)

Lorenz and Hubert (1993) say *C. cylindrica* is not found in the Solomons but show a *C. cylindrica-errones* hybrid. Obviously, you need *C. cylindrica* to be present in the Solomons to form hybrids. *Cypraea errones* is found in the Solomon Islands.

22. **Cypraea depressa* Gray, 1824

Kenworthy, 1972 (p. 23); Hinton, 1972(1980), p. 24 (from Bougainville); Kengalu, 1982, p. 3; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 60 (as *Mauritia depressa*)

23. **Cypraea eburnea* Barnes, 1824

Schilder and Schilder, 1938, p. 215 (as *Erosaria miliaris eburnea*); Ladd and Hoffmeister, 1945, p. 365; Burgess, 1970, p. 163; Kenworthy, 1972, p. 23; Kengalu, 1982, p. 3; Burgess, 1985, p. 221; Rice, 1989, p. 28D; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 190 (as *Erosaria eburnea*)

24. **Cypraea eglantina* Duclos, 1833

Schilder and Schilder, 1938, p. 215 (as *Mauritia (Arabica) eglantina eglantina*); Solem, 1953, p. 222 (as *Mauritia (Arabica) eglantina*); Burgess, 1970, p. 218; Kenworthy, 1972, p. 23; Kengalu, 1982, p. 3; Burgess, 1985, p. 69; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 60 (as *Mauritia eglantina*)

25. **Cypraea erosa* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Erosaria erosa chlorizans* Melvill, 1888); Solem, 1953, p. 221 (as *Erosaria (Erosaria) erosa erosa*); Burgess, 1970, p. 175; Kenworthy, 1972, p. 23; Kengalu, 1982, p. 3; Burgess, 1985, p. 202; Rice, 1989, p. 28D; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 189 (as *Erosaria erosa*)

26. **Cypraea errones* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Erronea errones coerulescens* Schröter, 1804); Steadman and Cotton, 1946, p. 514 (as *Erronea errones chrysostoma* Schilder, 1927); Steadman and Cotton, 1946, p. 516 (as *Erronea nimisserans coerulescens* Schröter, 1804); Solem, 1953, p. 222 (as *Erronea (Erronea) errones errones*); Allan, 1956, p. 42 (as *Erronea errones chrysostoma* Schilder, 1937); Allan, 1956, p. 43 (as *Erronea nimisserans coerulescens* Schröter, 1804); Solem, 1958, p. 220 (as *Erronea (Erronea) errones*); Burgess, 1970, p. 339; Kenworthy, 1972, p. 24; Kengalu, 1982, p. 3; Burgess, 1985, p. 248; Rice, 1989, p. 28C (as *C. coerulescens* Schotter, 1804- a subsp. or form of *C. errones*); Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 122 (as *Erronea errones "caeruleascens"* Schröter, 1804); Lorenz and Hubert, 1993, p. 439 (as *Erronea cylindrica-errones* hybrid)

27. **Cypraea felina* Gmelin, 1791

Schilder and Schilder, 1938, p. 215 (as *Palmadusta felina melvilli* Hidalgo, 1906); Solem, 1953, p. 222 (as *Palmadusta felina*); Abbott, 1958, p. 204 (as *Cypraea (Naria) felina*); Burgess, 1970, p. 346; Kenworthy, 1972, p. 24; Kengalu, 1982, p. 3; Burgess, 1985, p. 244; Kengalu, 1991, p. 5; Lorenz and Hubert, 1993, p. 131 (as *Erronea listeri* Gray, 1824);

Most authors put *C. listeri* and *C. felina* together as one species and this author agrees. Lorenz and Hubert (1993) do not list *C. felina* from the Pacific and puts *C. listeri* in the Solomons instead.

28. *Cypraea fimbriata* Gmelin, 1791

Solem, 1953, p. 222 (as *Palmadusta fimbriata*); Burgess, 1970, p. 139; Kenworthy, 1972, p. 24; Burgess, 1985, p. 132; Lorenz and Hubert, 1993, pp. 143, 337 (as *Purpuradusta fimbriata unifasciata* Mighels, 1845)

29. **Cypraea flaveola* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Erosaria labrolineata helenae* Roberts, 1869); Solem, 1953, p. 221 (as *Erosaria (Ravitrona) labrolineata*); Burgess, 1970, p. 143 (as *C. labrolineata*); Kenworthy, 1972, p. 25 (as *C. labrolineata*); Kengalu, 1982, p. 3 (as *C. labrolineata*); Burgess, 1985, p. 223 (as *C. labrolineata*); Kengalu, 1991, p. 6 (as *C. labrolineata*); Lorenz and Hubert, 1993, pp. 194, 407 (as *Erosaria labrolineata*).

Wilson (1993) says *Cypraea flaveola* Linnaeus, 1758 supersedes *C. labrolineata*.

30. **Cypraea globulus* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Pustularia globulus sphaeridium* Schilder & Schilder, 1938); Solem, 1953, p. 222 (as *Pustularia globulus*); Burgess, 1970, p. 272; Hinton, 1972 (1980), p. 30; Kenworthy, 1972, p. 24; Kengalu, 1982, p. 3; Burgess, 1985, p. 178; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 221 (as *Pustularia globulus* "sphaerid" Schilder & Schilder, 1938)

31. *Cypraea goodallii* Sowerby, 1832

Burgess, 1985, p. 158 showed this species on the distribution map but did not discuss it in the text; Lorenz and Hubert, 1993, p. 166 (as *Blasicrura goodalli fuscomaculata* Pease, 1865)

32. **Cypraea gracilis* Gaskoin, 1849

Kenworthy, 1972, p. 24; Burgess, 1985, p. 138; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 146 (as *Purpuradusta gracilis macula* Angas, 1867)

33. *Cypraea guttata* Gmelin, 1791

Schilder and Schilder, 1938, p. 215 (as *Erosaria guttata*); Cernohorsky, 1963, no page number; Cernohorsky, 1967 (1971), p. 24 (as *Erosia guttata*); Burgess, 1970, p. 156; Kenworthy, 1972, p. 24; Kengalu, 1982, p. 3; Burgess, 1985, p. 220; Lorenz and Hubert, 1993, p. 192 (as *Erosaria guttata guttata*)

34. *Cypraea hammondae* Iredale, 1939
Kenworthy, 1972, p. 24; Walls, 1975, p. 265 (as *C. hammondae* var. *raysummersi* Schilder 1960); Burgess, 1985, p. 133; Lorenz and Hubert, 1993, p. 148 (as *Purpuradusta hammondae hammondae*)
35. **Cypraea helvola* Linnaeus, 1758
Schilder and Schilder, 1938, p. 215 (as *Erosaria helvola helvola*); Solem, 1953, p. 221 (as *Erosaria (Erosaria) helvola helvola*); Burgess, 1970, p. 155; Kenworthy, 1972, p. 24; Kengalu, 1982, p. 3; Burgess, 1985, p. 216; Rice, 1989, p. 28B (as *C. callista* Shaw, 1909 - subsp. or form of *C. helvola*); Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 201 (as *Erosaria helvola helvola*);
36. *Cypraea hirundo* Linnaeus, 1758
Schilder and Schilder, 1938, p. 215 (as *Blasicrura hirundo rouxi* Ancey, 1882); Solem, 1953, p. 222 (as *Erronea (Blasicrura) hirundo hirundo*); Burgess, 1970, p. 286; Kenworthy, 1972, p. 25; Kengalu, 1982, p. 3; Burgess, 1985, p. 156; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 169 (as *Bistolida hirundo rouxi* Ancey, 1882)
37. *Cypraea humphreysii* Gray, 1825
Burgess, 1970, p. 86, 91 (as *C. yaloka* Steadman & Cotton, 1943); Kenworthy, 1972, p. 25 (as *C. lutea* Gmelin, 1791 subspecies *humphreysii*); Walls, 1975, p. 92; Kengalu, 1982, p. 3 (as *C. humphreysi*); Burgess, 1985, p. 141 (as *C. yaloka*); Rice, 1989, p. 28E; Rice, 1989, p. 107 (as *C. yaloka* - a subsp. or form of *C. humpreysi*); Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 156, 349 (as *Palmadusta humphreysii*)
38. **Cypraea irrorata* Linnaeus, 1758
Schilder and Schilder, 1938, p. 215 (as *Naria irrorata*); Solem, 1953, p. 222 (as *Naria irrorata*); Cernohorsky, 1967 (1971), p. 83 (as *Naria irrorata*); Hinton, 1972 (1980) p. 28; Kenworthy, 1972, p. 25; Burgess, 1985, p. 143; Lorenz and Hubert, 1993, p. 224 (as *Naria irrorata*). Distribution map shows this species to be at the limit of distribution.
39. **Cypraea isabella* Linnaeus, 1758
Schilder and Schilder, 1938, p. 215 (as *Luria isabella lekalekana* Ladd, 1934); Solem, 1953, p. 222 (as *Luria (Basilitrona) isabella isabella*); Kenworthy, 1972, p. 25; Kengalu, 1982, p. 3; Burgess, 1985, p. 184; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 83, 84, 283 (as *Lurida isabella "lekalekana"* Ladd, 1934)
40. **Cypraea katsuae* Kuroda, 1960
Burgess, 1985, p. 199
The author was given a young specimen of this species. Lorenz and Hubert (1993) say this is not found in the Solomons. *C. rabaulensis* and *C. katsuae* is very close and one can be identified as the other.
41. *Cypraea kieneri* Hidalgo, 1906
Schilder and Schilder, 1938, p. 215 (as *Blasicrura kieneri schneiderti* Schilder & Schilder, 1938); Burgess, 1970, p. 285; Kenworthy, 1972, p. 25; Kengalu, 1982, p. 3;

Burgess, 1985, p. 153; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 168, 381 (as *Bistolida kieneri depriesteri* Schilder, 1933)

42. *Cypraea leucodon* Broderip, 1828

Burgess, 1985, p. 96; Lorenz and Hubert, 1993, p. 72 (as *Lyncina leucodon*)

43. *Cypraea leviathan* Schilder and Schilder, 1937

Lorenz and Hubert, 1993, p. 69 (as *Lyncina leviathan titan* Schilder and Schilder, 1962).

44. **Cypraea limacina* Lamarck, 1810

Burgess, 1970, p. 260; Kenworthy, 1972, p. 25; Burgess, 1985, p. 233; Lorenz and Hubert, 1993, p. 213 (as *Staphylaea limacina limacina*)

45. *Cypraea lisetae* Kilburn, 1975

Burgess, 1985, p. 260; Lorenz and Hubert, 1993, p. 109 (as *Nesiocypraea lisetae*)

46. **Cypraea lynx* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Cypraea (Lyncina) lynx caledonica* Crosse, 1869); Solem, 1953, p. 221 (as *Cypraea (Lyncina) lynx lynx*); Abbott, 1958, p. 204 (as *Cypraea (Cypraea) lynx*); Solem, 1958, p. 220 (as *Cypraea (Lyncina) lynx*); Burgess, 1970, p. 241; Kenworthy, 1972, p. 25; Kengalu, 1982, p. 3; Burgess, 1985, p. 83; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 67 (as *Lyncina lynx*)

47. *Cypraea maculifera* Schilder, 1932

Kengalu, 1982, p. 3; Lorenz and Hubert, 1993, p. 61 (as *Mauritia maculifera*).

48. **Cypraea mappa* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Mauritia mappa viridis* Kenyon, 1902); Solem, 1953, p. 222 (as *Mauritia (Leporicypraea) mappa mappa*); Burgess, 1970, p. 249; Kenworthy, 1972, p. 26; Kengalu, 1982, p. 3; Burgess, 1985, p. 75; Rice, 1989, p. 28G; Lorenz and Hubert, 1993, pp. 63, 255 (as *Leporicypraea mappa panerythra* "rewa" Melvill, 1888); Hviding, 1995, p. 76; Solomon Island Philatelic Bureau. Stamp.

49. **Cypraea mariae* Schilder and Schilder, 1927

Schilder and Schilder, 1938, p. 215; Hinton, 1972 (1980), p. 30; Kenworthy, 1972, p. 26; Kengalu, 1982, p. 3; Burgess, 1985, p. 179; Rice, 1989, p. 28G; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 222, 435 (as *Annepona mariae*)

50. *Cypraea martini* Schepman, 1907

Schilder and Schilder, 1938, p. 215 (as *Notadusta martini superstes* Schilder, 1930); Kenworthy, 1972, p. 26; Burgess, 1985, p. 197; Lorenz and Hubert, 1993, p. 185 (as *Notadusta martini*)

51. **Cypraea mauritiana* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Mauritia (Mauritia) mauritania calcequina* Melvill-Standon, 1899); Solem, 1953, p. 222 (as *Mauritia (Mauritia) mauritania*); Abbott, 1958, p. 204 (as *Cypraea (Mauritia) mauritiana*); Burgess, 1970, p. 247;

Kenworthy, 1972, p. 26; Morton, 1973, p. 517 (as *Mautitia mauritiana*); Kengalu, 1982, p. 3; Burgess, 1985, p. 73; Morton, 1990, p. 143 (as *Mauritia mauritiana*); Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 55 (as *Mauritia mauritiana*); Hviding, 1995, p. 76 (as *Cypraea mauretania*)

52. *Cypraea microdon* Gray, 1825

Schilder and Schilder, 1938, p. 215 (as *Palmadusta microdon granum* Schilder & Schilder, 1938); Solem, 1953, p. 222 (as *Palmadusta microdon*); Burgess, 1970, p. 131; Kenworthy, 1972, p. 26; Burgess, 1985, p. 134; Rice, 1989, p. 28G; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 149 (*Purpuradusta microdon*)

53. **Cypraea miliaris* Gmelin, 1791

Solem, 1953, p. 221 (as *Erosaria (Erosaria) miliaris*); Lorenz and Hubert, 1993, p. 389 (as *Erosaria miliaris*). They did not show it in their map on page 190.

54. *Cypraea minoridens* Melvill, 1901

Schilder and Schilder, 1938, p. 215 (as *Palmadusta minoridens*); Burgess, 1970, p. 132; Kenworthy, 1972, p. 26; Burgess, 1985, p. 135; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 150, 339 (as *Purpuradusta minoridens*)

55. **Cypraea moneta* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Monetaria moneta barthélémyi* Bernardi, 1861); Solem, 1953, p. 222 (as *Monetaria moneta moneta*); Abbott, 1958, p. 204 (as *Cypraea (Monetaria) moneta*); Burgess, 1970, p. 343; Kenworthy, 1972, p. 26; Morton, 1973, p. 517 (as *Monetaria moneta*); Kengalu, 1982, p. 3; Burgess, 1985, p. 228; Morton, 1990, p. 143 (as *Monetaria moneta*); Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 205, 416 (as *Erosaria moneta*); Hvding, 1995, p. 76

56. **Cypraea nucleus* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Staphylaea Nuclearia nucleus*); Solem, 1953, p. 222 (as *Nuclearia nucleus*); Burgess, 1970, p. 261; Kenworthy, 1972, p. 26; Kengalu, 1982, p. 3; Burgess, 1985, p. 235; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 216, 429 (as *Staphylaea nucleus nucleus*)

57. *Cypraea onyx* Linnaeus, 1758

Cernohorsky, 1963, no page number (as *C. onyx melanesiae*); Burgess, 1970, p. 82; Kenworthy, 1972, p. 26 (as the sub-species *melanesiae* Schilder and Schilder, 1937); Eisenberg, 1981, p. 68 (as *C. onyx melanesiae*); Kengalu, 1982, p. 3; Burgess, 1985, p. 59; Kengalu, 1991, p. 6 (as the sub-species *melanesiae*); Lorenz and Hubert, 1993, p. 135 (as *Erronea succincta melanesiae* Schilder, 1937)

Lorenz and Hubert (1993) say *C. onyx* is not found in the Solomons but *Cypraea succincta melanesiae* Linneaus, 1758 (a close relative) is.

58. **Cypraea ovum* Gmelin, 1791

Schilder and Schilder, 1938, pp. 152, 215 (as *Erronea erronea ovum chrysostoma* Schilder, 1927); Cernohorsky, 1967 (1971), p. 88 (as *Erronea ovum*); Burgess, 1970, p. 340; Kenworthy, 1972, p. 27; Kengalu, 1982, p. 3; Burgess, 1985, p. 249; Rice,

1989, p. 28H; Kengalu, 1991, p. 6 (including a dark form); Lorenz and Hubert, 1993, pp. 123, 315 (as *Erronea ovum chrysostoma* Schilder, 1927)

59. **Cypraea pallidula* Gaskoin, 1849

Schilder and Schilder, 1938, p. 215 (as *Blasicrura pallidula rhinoceros* Sowerby II, 1865); Burgess, 1970, p. 121; Kenworthy, 1972, p. 27 (including the sub-species *rhinoceros* Souverbie, 1865); Burgess, 1985, p. 192; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 158, 369 (as *Blasicrura pallidula pallidula*)

Lorenz and Hubert (1993) say *Blasicrura pallidula rhinoceros* is found only in North-East Australia.

60. **Cypraea poraria* Linnaeus, 1758

Schilder and Schilder, 1938, p. 215 (as *Erosaria poraria scarabaeus* Bory, 1827); Solem, 1953, p. 221 (as *Erosaria (Ravitrona) poraria*); Burgess, 1970, p. 152; Kenworthy, 1972, p. 27; Kengalu, 1982, p. 3; Burgess, 1985, p. 225; Rice, 1989, p. 28H; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 203 (as *Erosaria poraria*)

61. *Cypraea porteri* Cate, 1966

Burgess, 1985, p. 262; Lorenz and Hubert, 1993, p. 75 (as *Lyncina porteri porteri*)

62. *Cypraea pulchella* (Swainson, 1823)

Lorenz and Hubert, 1993, p. 125 (as *Erronea pulchella pulchella* Swainson, 1823). This is from Bougainville.

63. **Cypraea punctata* Linnaeus, 1771

Schilder and Schilder, 1938, p. 215 (as *Palmadusta punctata iredalei* Schilder & Schilder, 1938); Solem, 1953, p. 222 (as *Palmadusta punctata*); Burgess, 1970, p. 104; Kenworthy, 1972, p. 27; Walls, 1975, p. 37; Kengalu, 1982, p. 3; Burgess, 1985, p. 201; Rice, 1989, p. 28F (as *C. iredalei* Schilder & Schilder, 1938 a subsp. or form of *C. punctata*); Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 184, 329, 359 (as *Notadusta punctata punctata*)

64. *Cypraea pyriformis* Gray, 1824

Kenworthy, 1972, p. 27; Burgess, 1985, p. 114

Lorenz and Hubert (1993) put *Erronea pyriformis "smithi"* in the distribution map as being found very near the Solomons.

65. **Cypraea quadrimaculatus* Gray, 1824

Schilder and Schilder, 1938, pp. 164, 215 (as *Blasicrura Blasicrura quadrimaculata garretti* Schilder & Schilder, 1938); Cernohorsky, 1967(1971), p. 99 (as *Blasicrura quadrimaculata*); Lorenz and Hubert, 1993, p. 159 (as *Blasicrura quadrimaculata*)

66. *Cypraea rabaulensis* Schilder, 1964

Kenworthy, 1972, p. 27; Burgess, 1985, p. 198; Rice, 1989, p. 28I; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 186 (as *Notadusta rabaulensis*)

This species is very close to *C. katsuae*.

67. *Cypraea saulae* Gaskoin, 1843
 Burgess, 1985, p. 137; Lorenz and Hubert, 1993, p. 157 (as *Palmadusta saulae*)
68. *Cypraea schilderorum* (Iredale, 1939)
 Lorenz and Hubert, 1993, p. 71 (as *Lyncina schilderorum*)
69. **Cypraea scurra* Gmelin, 1791
 Schilder and Schilder, 1938, p. 215 (as *Mauritia (Arabica) scurra retifera* Menke, 1829); Burgess, 1970, p. 225; Kenworthy, 1972, p. 27; Kengalu, 1982, p. 3; Burgess, 1985, p. 72; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 56 (as *Mauritia scurra indica* Gmelin, 1791)
70. **Cypraea staphylaea* Linnaeus, 1758
 Schilder and Schilder, 1938, p. 215 (as *Staphylaea staphylaea*); Burgess, 1970, p. 259; Kenworthy, 1972, p. 28; Kengalu, 1982, p. 3; Burgess, 1985, p. 232; Rice, 1989, p. 28J; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 213, 427 (as *Staphylaea staphylaea consobrina* Garrett, 1879)
71. **Cypraea stolidia* Linnaeus, 1758
 Burgess, 1970, p. 290; Hinton, 1972 (1980), p. 22; Kenworthy, 1972, p. 28 (as the sub-species *crossei* Marie, 1869); Kengalu, 1982, p. 3; Burgess, 1985, p. 154; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 173 (as *Bistolida stolidia stolidia* and *Bistolida stolidia crossei* Marie, 1869); Gosliner, Behrens and Williams, 1996, p. 133.
72. *Cypraea subviridis* Reeve, 1835
 Kenworthy, 1972, p. 28; Burgess, 1985, p. 165; Lorenz and Hubert, 1993, p. 125 (as *Erronea subviridis subviridis*)
73. **Cypraea talpa* Linnaeus, 1758
 Boettger, 1916, pp. 287-308 (cited by Solem, 1958); Schilder and Schilder, 1938, p. 215 (as *Talparia talpa saturata* Dautzenberg, 1903); Solem, 1953, p. 222 (as *Talparia (Talparia) talpa*); Solem, 1958, p. 221 (as *Talparia (Talparia) talpa*); Burgess, 1970, p. 200; Kenworthy, 1972, p. 28; Kengalu, 1982, p. 3; Burgess, 1985, p. 90; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 78 (as *Talparia talpa*)
74. *Cypraea teramachii* Kuroda, 1938
 Burgess, 1985, p. 174
- Lorenz and Hubert (1993) say this species is not found in the Solomon Islands.
75. *Cypraea teres* Gmelin, 1791
 Schilder and Schilder, 1938, p. 215 (as *Cribaria teres subfasciata* Link, 1807); Solem, 1953, p. 221 (as *Cribaria (Talostolida) teres teres = punctulata* Hidalgo, 1907); Burgess, 1970, p. 109; Kenworthy, 1972, p. 28; Kengalu, 1982, p. 3; Burgess, 1985, p. 146; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 162 (as *Blasicrura teres* and *Blasicrura teres pellucens* Melvill, 1888)

76. **Cypraea testurdinaria* Linnaeus, 1758
 Schilder and Schilder, 1938, p. 215 (as *Callistocypraea testurdinaria testudinosa* Perry, 1811); Solem, 1953, p. 221 (as *Callistocypraea (Chelycypraea) testudinaria*); Burgess, 1970, p. 250; Kenworthy, 1972, p. 28; Kengalu, 1982, p. 3; Burgess, 1985, p. 97; Rice, 1989, p. 28J; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 54, 243 (as *Chelycypraea testudinaria*)
77. **Cypraea tigris* Linnaeus, 1758
 Schilder and Schilder, 1938, p. 215 (as *Cypraea (Cypraea) tigris lyncichroa* Melvill, 1888); Solem, 1953, p. 221 (as *Cypraea (Cypraea) tigris*); Burgess, 1970, p. 230; Kenworthy, 1972, p. 28; Morton, 1973, p. 517; Kengalu, 1982, p. 3; Burgess, 1985, p. 76; Morton, 1990, p. 143; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 65
78. **Cypraea ursellus* Gmelin, 1791
 Schilder and Schilder, 1938, p. 215 (as *Blasicrura ursellus amoeba* Schilder & Schilder, 1938); Solem, 1953, p. 222 (as *Erronea (Blasicrura) ursellus*); Burgess, 1970, p. 288; Kenworthy, 1972, p. 29; Burgess, 1985, p. 157; Rice, 1989, p. 28J; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, pp. 171, 379 (as *Bistolida ursellus*)
79. *Cypraea valentia* Perry, 1811
 Kenworthy, 1972, p. 29; Burgess, 1985, p. 88; Lorenz and Hubert, 1993, p. 63 (as *Leporicypraea valentia*); Solomon Island Philatelic Bureau. Stamp.
80. *Cypraea ventriculus* Lamarck, 1810
 Schilder and Schilder, 1938, p. 215 (as *Cypraea (Lyncina) ventriculus*); Burgess, 1970, p. 199; Kenworthy, 1972, p. 29; Eisenberg, 1981, p. 72; Burgess, 1985, p. 92; Lorenz and Hubert, 1993, p. 76 (as *Lyncina ventriculus*)
81. **Cypraea vitellus* Linnaeus, 1758
 Schilder and Schilder, 1938, p. 215 (as *Cypraea (Lyncina) vitellus polynesiae* Schilder & Schilder, 1939); Solem, 1953, p. 221 (as *Cypraea (Lyncina) vitellus*); Burgess, 1970, p. 206; Kenworthy, 1972, p. 29; Kengalu, 1982, p. 3; Burgess, 1985, p. 84; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 73 (as *Lyncina vitellus*)
82. *Cypraea walkeri* Sowerby I, 1832
 Lorenz and Hubert, 1993, p. 129 (as *Erronea walkeri continens* Iredale, 1935)
83. **Cypraea ziczac* Linnaeus, 1758
 Schilder and Schilder, 1938, p. 215 (as *Palmadusta ziczac vittata* Deshayes, 1831); Solem, 1953, p. 222 (as *Palmadusta ziczac*); Burgess, 1970, p. 95; Kenworthy, 1972, p. 29; Kengalu, 1982, p. 3; Burgess, 1985, p. 143; Kengalu, 1991, p. 6; Lorenz and Hubert, 1993, p. 153 (as *Palmadusta ziczac*) and p. 352 (as *Palmadusta ziczac "vittata"*)

Doubtful species

1. *Cypraea gangranosa* Dillwyn, 1817
 Solem, 1953, p. 221 (as *Erosaria (Ravitrona) gangranosa*)

Burgess (1985) says this species is found in Western New Guinea to Thailand, Red Sea and East Africa. Lorenz and Hubert (1993) say this species is not found in the Solomon Islands.

2. *Cypraea interrupta* Gray, 1824

Solem, 1953, p. 222 (as *Erronea (Blasicrura) interrupta*)

Lorenz and Hubert (1993) say this species is not found in the Solomons.

3. *Cypraea subteres* Weinkauff, 1881

Kenworthy, 1972, p. 28 (who noted that this is probably *teres* and *subteres* is probably not found in the Solomon Islands). Burgess (1985) says this is an Eastern Pacific species. Lorenz and Hubert (1993) say this is found just outside the Solomon Islands in the Central Pacific.

Discussion

The eighty-three species of cowries listed for the Solomon Islands is believed by this author to be slightly on the low side. Fiji, which is much further to the east, already has 73 recorded species of cowries (Seeto, 2001). Very little deep-sea sampling has occurred in the Solomons and the author suspect that other unrecorded cowries species are present in the Solomons. This author disagrees with some of the name treatment of cowries by Lorenz and Hubert (1993). They have tended to split the species whereas this author tended to clump them together. The National Museum of Solomon Island has started cataloguing their shell collection and this may add to this checklist. DNA work may resolve some of these identity crises.

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