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## AN ANNOTATED LIST OF THE SPECIES OF THE GENUS *CORBICULA* FROM INDONESIA

(MOLLUSCA: CORBICULIDAE) \*

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### ABSTRACT

The species of the genus *Corbicula* known from Indonesia are alphabetically listed and noted. Sixteen out of the 35 described species are considered valid, i.e. *C. gustaviana*, *C. moltkiana*, *C. sumatrana*, *C. tobae* and *C. tumida* from Sumatra; *C. javanica*, *C. pulchella* and *C. rivalis* from Java; *C. bitruncata* and *C. pullata* from Borneo; *C. lindoensis*, *C. loehensis*, *C. matannensis* and *C. subplanata* from Celebes; *C. australis* from Timor and *C. debilis* from New Guinea. A Philippine species, *C. squalida*, is added as a new record.

### INTRODUCTION

Our knowledge of the freshwater clams of the genus *Corbicula* from Indonesia is far from complete,

notwithstanding much work done in the past. The most complete accounts of the genus *Corbicula* are those of Von Martens (1897) and Prashad (1930), but since then a number of contributions on Indonesian *Corbicula* have been published. The present work is an attempt to list all species known from Indonesia which are considered valid, based on the collections of the Museum Zoologicum Bogoriense, Bogor, Indonesia (MZB), the Zoologisch Museum, Amsterdam, the Netherlands (ZMA), the Rijksmuseum van Natuurlijke Historie, Leiden, the Netherlands (RMNH), the British Museum (Natural History), London, England (BMNH) and the Senckenberg Museum, Frankfurt, West Germany (SM). Thirty-six species of *Corbicula* have been described from Indonesia, 16 of which are here considered to be valid, i.e. 5 species from Sumatra, *C. gustaviana*, *C. moltkiana*, *C. sumatrana*, *C. tobae* and *C. tumida*; 3 species from Java, *C. javanica*, *C. pulchella* and

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*C. rivalis*; 2 species from Borneo, *C. bitruncata* and *C. pullata*; 4 species from Celebes, *C. lindoensis*, *C. loehensis*, *C. matannensis* and *C. subplanata*; 1 species from Timor, *C. australis* and *C. debilis* from New Guinea, and a Philippine species, *C. squalida*, which occurs also in West Borneo.

The species of *Corbicula* are at present distributed over the tropical and subtropical regions; in North America (U.S.A.) some species have been introduced. A closely allied genus, *Cyanocyclus*, lives in South America. During late Pliocene and Pleistocene, however, *Corbicula* extended over central and southern Europe and western Britain. In Indonesia the genus is spread nearly over the entire archipelago; it ranges from North Sumatra in the west to New Guinea in the east. According to Van Benthem Jutting (1953) *Corbicula* is absent from the islands of Sumba, Flores, Timor and the majority of the Moluccan islands. In the collection of the Rijksmuseum van Natuurlijke Historie, Leiden, the Netherlands, however, 3 species of *Corbicula* have been found among unidentified specimens, collected by Zijnen Wartel from Flores, Timor and Misool island. The specimens were later on identified as *C. javanica*, *C. rivalis* and *C. pulchella*. Mrs. Van Benthem Jutting also overlooked *C. australis* from Timor.

The majority of the Indonesian *Corbicula* are typical freshwater Bivalvia, but some species can tolerate slightly brackish waters. They inhabit rivers, canals, ditches, lakes, ponds, marshes and other freshwater bodies; they occur in clear, coloured or turbid water, with sandy, muddy or silty bottoms, and even in gravel substrates. *Corbicula* species may flourish in large populations and reach the maximum size in turbid, coloured and stagnant or slowly running waters. Altitude does not affect the distribution of the species of *Corbicula*, they may occur from the lowland up to 2000 m above sea-level, such as *C. javanica* in Segara Anak, Lombok (Rensch, 1934) and in deeper water, as exemplified by *C. sumatrana* at a depth of 50 m in Lake Singkarak, West Sumatra (Von Martens, 1897).

The soft parts of various species of *Corbicula* are consumed traditionally by natives in many parts of the archipelago, either as supply of animal proteins or as a medicine against illness, they are also used as fodder for domestic animals or as fish bait. Fresh, cooked or salted *C. javanica* are

occasionally available at several markets in Java.

From the public health point of view, *Corbicula* clams are considered to play an important rôle in the transmission of helminthic human diseases, such as echinostomiasis, since freshwater clams act as intermediate hosts of parasitic trematode worms. Bonne & Sandground (1939) reported that the inhabitants of the Lake Lindu area in Central Celebes consumed as an important part of their diet, large quantities of *C. lindoensis* which were not thoroughly cooked. About 70% of the population was infected by *Echinostoma lindoensis* Sandground & Bonne, 1940, a parasitic trematode worm causing echinostomiasis. It was then evident, that *C. lindoensis* is the intermediate host of the parasitic worm. As long as the clams are properly cooked, however, there is no danger for infection. According to Pinardi et al. (1972) echinostomiasis is no longer found among the inhabitants of the Lake Lindu area since the introduction into the lake in 1950 of the cultured fish *Tilapia mossambica* Peters, 1852, replacing *C. lindoensis* as protein supply.

#### LIST OF SPECIES

##### *Corbicula australis* (Lamarck, 1818)

*Cyclas australis* Lamarck, 1818: 560.  
*Corbicula australis*; Prime, 1870: 128.  
*Cyrena australis*; Sowerby in Reeve, 1877: 82.

Distribution.- Timor and Australia.

Type-locality.- Timor I., no definite locality mentioned.

Locality of the examined specimens.- Timor I., no date, Peron coll. (RMNH).

This species was considered by many authors as an Australian species. In his description, however, Lamarck stated: "Habite a l'île de Timor. Coquille opaque; largeur, 5-7 millimètres. La variété (2) vient de la Nouvelle Hollande, au port du Roi George, Peron. Elle est aussi petite que la cyclade des fontaines". It is quite clear, that Timor was mentioned as the type-locality for *C. australis* and Australia or "Nouvelle Hollande" for its variety. *Corbicula australis* is thus the first species of *Corbicula* described from Indonesia.

*Corbicula bitruncata* Von Martens, 1908

*Corbicula bitruncata* Von Martens, 1908: 290; Prashad, 1930: 202.

Distribution.- Borneo.

Type-locality.- Sungai Golek, eastern Sangkulirang, East Borneo.

No material seen.

*Corbicula debilis* (Gould, 1850)

*Cyrena debilis* Gould, 1850: 293.  
*Corbicula debilis*; Deshayes, 1854: 234; Prime, 1860: 269; Prime, 1870: 131; Tapparone Canefri, 1883: 287; Bavay, 1908: 291; Prashad, 1930: 203; Van Benthem Jutting, 1933: 73; Van Benthem Jutting, 1963: 512.

Distribution.- Up to the present known only from New Guinea.

Type-locality.- "New Holland (?)"

Localities of the specimens examined.- Bank of the river Idenburg near Prauwenbivak, West New Guinea, Jhr. W.C. van Heurn coll. (MZB); river Membramo, 20-VIII-1962, G.J.M. Gerrits coll. (ZMA); river Sekanto, West New Guinea, date and collector unknown (ZMA).

This is the only species of *Corbicula* known from New Guinea. It is allied to *C. pulchella*, a species from Java and it is one of the smaller sized corbiculid clams of Indonesia.

*Corbicula gustaviana* Von Martens, 1900

*Corbicula gustaviana* Von Martens, 1900: 16; Degner, 1928: 390; Prashad, 1930: 199; Van Benthem Jutting, 1959: 178.

Distribution.- Known only from West Sumatra.

Type-locality.- Danau Baru, West Sumatra.

Localities of the examined specimens.- Danau Di bawah, West Sumatra, III-1954, M. Sachlan coll. (ZMA); Sumatra, without exact locality, 1904, H. B. Preston coll. (RMNH); Danau Baru, West Sumatra, date unknown, G. Schneider coll. (SM).

One of the larger-sized species of *Corbicula* from Indonesia, reaching up to 45 mm in length and 36 mm in height. It is closely related to *C. javanica*, differs only by its subrostrate posterior part and smaller or narrower umbral area. It has sometimes 2 to 3 violet concentric bands on the inner surface of the valves.

*Corbicula javanica* (Mousson, 1849)

*Cyrena orientalis* var. *javanica* Mousson, 1849: 86; Clessin, 1879: 150, 181.

*Corbicula moussoni* Deshayes, 1854a: 227; Adams & Adams, 1858: 447; Prime, 1860: 271; Prime, 1870: 134; Bullen, 1906: 16; Degner, 1928: 390; Paravicini, 1935: 63.

*Corbicula ducalis* Prime, 1862: 274; 1866: 225; Clessin, 1879: 184; Schepman, 1880: 17; Von Martens, 1897: 114; Leschke, 1914: 268; Degner, 1928: 389; Prashad, 1930: 195; Oostingh, 1931: 231; Paravicini, 1935: 67; Van Benthem Jutting, 1937: 160; 1941: 321.

*Corbicula gracilis* Prime, 1862a: 389; 1870: 132; Clessin, 1879: 191; Leschke, 1914: 269; Degner, 1928: 389; Van Benthem Jutting, 1929: 88; Prashad, 1930: 195; Rensch, 1934: 339; 1934a: 247; Adams & Leloup, 1939: 67.

*Corbicula colonialis* Prime, 1867: 416; Clessin, 1879: 199.

*Corbicula fluminea* var. *moussoni* Clessin, 1879: 154.

*Corbicula sulcata* Clessin, 1879: 188; Von Martens, 1897: 116; Leschke, 1914: 270; Van Benthem Jutting, 1929: 88.

*Corbicula fluminea* Boettger, 1890: 163.

*Corbicula javanica* Von Martens, 1897: 111; Leschke, 1914: 269; Van Benthem Jutting, 1929: 88; Prashad, 1930: 194; Rensch, 1934: 418; 1934a: 245; Adams & Leloup, 1939: 66; Thieneman, 1951: 535; Van Benthem Jutting, 1953: 59; 1959: 177.

*Corbicula subrostrata* Bullen, 1904: 109; Schepman, 1912: 238; Leschke, 1914: 270; Degner, 1928: 390; Van Benthem Jutting, 1929: 88.

*Corbicula fluminalis* Rolle, 1908: 69.

*Corbicula ovalina* Leschke, 1914: 269; Van Benthem Jutting, 1929: 88.

Distribution.- Malay peninsula, Indonesia and Philippines.

Type-locality.- Tikoja [probably an error for Tjikoja], Java.

Localities of the examined specimens.-

Sumatra: Kroeeng Pendua, Peureula, Atjeh, I-1926, G.L. Smit Sibinga coll. (ZMA); Balawan river, no date, Strubell coll. (SM); Supajang, Sumatra Exped., 1880 (RMNH); Padang Highland, Matur, X-1913 (RMNH); Pagar Alam, date and collector unknown (RMNH); Fort de Kock, 1925, E. Jacobson coll. (ZMA); Songsang, Bukittinggi, 10-XII-1972, M. Jasin coll. (MZB); Way Sekampung, Natar distr., Lampung, 19-I-1975, M. Djajasmita coll. (MZB); Sukadana, Lampung, 8-XI-1974, A. Budiman coll. (MZB).

Banka : Bangka I., no date, J.A. Buddingh coll. (RMNH).

Java : many different localities (MZB, ZMA, RMNH and BMNH).

Lombok : Segara Anak, 15-V-1909, J. Elbert coll. (RMNH); Ampanan, X/XII-1950, F. Willemsse

- coll. (RMNH).  
 Sumbawa: Sumbawa Besar, Rensch Exped., 1927 (MZB).  
 Timor : no specific locality mentioned, no date, Zijnen Wartel coll. (RMNH).  
 Celebes: Samalona near Makassar, no date, Mej. Tribart coll. (RMNH); Makassar, 1920/1921, W.C. van Heurn coll. (RMNH); Lake Tempe, 1888/1889, M. Weber coll. and in 1948, W. Westenberg coll. (ZMA); Rante Pao, Toradja, no date, C. Bonne coll. (ZMA); Leda, Gumbasa near Palu, 27-III-1973, M. Jasin and Sujitno coll. (MZB); river north of Leda, 27-III-1973, M. Jasin and Sujitno coll. (MZB); river Kaliwara, south of Palu, 27-III-1973, M. Jasin and Sujitno coll. (MZB).  
 Moluccas: Ambon I., no date, D. Smith coll. (RMNH); Aru I., no date, Van Rosenberg coll. (RMNH); Misool I., no date, Hoedt coll. (RMNH).  
 Malay peninsula: Perak river, just below the Chenderoh Dam, 25-III-1965, P.F. Busch coll. (ZMA); Lake Chenderoh, near Taiping, 1958, W.S.S. van der Feen coll. (ZMA); river 20 miles south of Kota Baru, Kelantan, 7-V-1965, P.F. Busch coll. (ZMA); Tanjung Rambutan, Ipoh near Tambun, Perak, 16-III-1962, J. Drijver coll. (ZMA).  
 Philippines: Luzon I., Paranaque, 20-XI-1938, J. Knoch coll. (RMNH).

*C. javanica* is the largest species of *Corbicula* known from Indonesia. It may reach up to 50 mm in length and 50 mm in height, and it is the most common species in Java. The species inhabits almost every river, canal, irrigation ditch, lake, pond and it is the only corbiculid species in Indonesia with a wide distribution range.

New to Timor I., Aru I., Ambon I., Misool I., the Malay peninsula and Luzon I.

*Corbicula lindoensis* Bollinger, 1914

*Corbicula moltkiana* var. *lindoensis* Bollinger, 1914: 575.  
*Corbicula lindoensis*; Djajajasmita, 1975: 84.

Distribution.- So far known only from Lake Lindu in Central Celebes.

Type-locality.- Lake Lindu, Central Celebes.

Locality of the specimens examined.- Lake Lindu, III-1939, C. Bonne coll. (ZMA); Lake Lindu 950 m alt., 22-VII-1972, M. Djajajasmita coll. (MZB).

This is a thin-shelled corbiculid clam, with less distinct concentric ribs. It is allied to *C. moltkiana*, a species from Sumatra. The population of this clam is now decreasing, since the introduction of a cultured fish *Tilapia mossambica* into the lake (Djajajasmita, 1975). It is still a question, whether or not the fish has a negative influence on the population of the bivalve.

*Corbicula loehensis* Kruimel, 1913

*Corbicula loehensis* Kruimel, 1913: 232; Djajajasmita, 1975: 84.  
*Corbicula masapensis* Kruimel, 1913: 232.  
*Corbicula subplanata* (partim); Prashad, 1930: 203.

Distribution.- Southeast Celebes.

Type-locality.- Loeha I., in Lake Tawuti.

Localities of the specimens examined.- Loeha I., in Lake Tawuti, 1910/1912, E.C. Abendanon coll. (ZMA); Lake Wawantoa, 1931, R. Woltereck coll. (ZMA); Lake Masapi, 1910/1912, E.C. Abendanon coll. (ZMA); Lake Mahalona, 22-IX-1972, W. Dharmawan S. coll. (MZB).

This thin-shelled corbiculid clam has fine concentric ribs. The adult shell has sometimes an elongate posterior side.

*Corbicula matannensis* Sarasin & Sarasin, 1898

*Corbicula matannensis* Sarasin & Sarasin, 1898: 92; Djajajasmita, 1975: 84.  
*Corbicula possocensis* Sarasin & Sarasin, 1898: 92.  
*Corbicula mahaloensis* Kruimel, 1913: 232.  
*Corbicula towutensis* Kruimel, 1913: 232.  
*Corbicula subplanata* (partim); Prashad, 1930: 203.

Distribution.- Central and East Celebes.

Type-locality.- Lake Matano.

Localities of the specimens examined.- Lake Matano, 1910/1912, E.C. Abendanon coll. (ZMA); Lake Posso, 1901, M. Koppenberg coll. (SM); Lake Posso, 1910, E.C. Abendanon coll. (ZMA); Lake Mahalona, 1910/1912, E.C. Abendanon coll. (ZMA); Kuramei, 7-X-1909, collector unknown (MZB); Tonusu river, Lake Posso area, 26-VI-1972, W.P. Carney coll. (MZB); Lake Matano, 24-IX-1972, W. Dharmawan S. coll. (MZB).

*Corbicula moltkiana* Prime, 1878

*Corbicula moltkiana* Prime, 1878: 41; Schepman, 1880: 17; Degner, 1928: 390; Prashad, 1930: 200;

Van Benthem Jutting, 1959: 179.  
*Corbicula moltkeana* Von Martens, 1897: 111, 1900: 17; Prashad, 1921: 504; Van Heurn & Paravicini, 1922: 32.

Distribution.- Sumatra and Malay peninsula.

Type-locality.- Sumatra, no definite locality mentioned.

Localities of the specimens examined.-

Sumatra: Belawan river, Deli, no date, Schneider coll. (SM); Pajakumbuh, no date, Ouwens coll. (RMNH); Danau Diatas, VI-1914, E. Jacobson coll. (RMNH); Alahan Pandjang, Sumatra Exped., 1880 (RMNH); Bedar Alam, Sumatra Exped., 1880 (RMNH); Lake Manindjau, 1936, collector unknown (ZMA); Lake Manindjau, XI-1955, W. Meyer coll. (ZMA); river Timbang Langkat, 18-VII-1917, Jan den Doop coll. (ZMA); Talang Jumar, Palembang, 20-III-1947, J.E. Willemse coll. (MZB); Lake Ranau, ± 500 m alt., 27-I-1929, E. Ruttner coll. (MZB).

Malay peninsula: a ditch near a hot spring at Tandjung Rambutan (RMNH).

At first sight this species resembles *C. lindoensis*, a species from Celebes, but the shell is thicker and the concentric ribs are more impressed. On some shells the ribs are irregular and sometimes the lunula is lighter or darker than the shell colour. The posterior side of some shells is more rostrate. The occurrence of *C. moltkiana* in Tandjung Rambutan is a new record for the Malay peninsula.

*Corbicula pulchella* (Mousson, 1848)

*Cyrena pulchella* Mousson, 1848: 269; 1849: 88; Prime, 1870: 135.

*Corbicula pulchella* Deshayes, 1854: 228; Adams, 1858: 447; Prime, 1860: 272; Clessin, 1879: 181; Von Martens, 1897: 120; Leschke, 1914: 269; Van Benthem Jutting, 1929: 88; Prashad, 1930: 196; Rensch, 1934a: 246; Paravicini, 1935: 175; Van Benthem Jutting, 1953: 63.

Distribution.- Java, Flores and Timor.

Type-locality.- Tjikoja, Java.

Localities of the specimens examined.- Botanical Garden Bogor, Java, 1939, C. Bonne coll. (ZMA); Curug Luhur, southern Sukabumi, W. Java, 7-XI-1972, G.G. Hambali coll. (MZB); Kali Besek, near Sulang, Rembang, C. Java, 1949, F. Willemse coll. (ZMA); Larantuka, Flores, Semmelink coll., no date (RMNH);

Timor, no date, Zijnen Wartel coll. (RMNH).

This species is one of the smaller-sized shells from Indonesia. It is distantly related to *C. debilis* from New Guinea. The specimens from Curug Luhur, West Java, differ somewhat from the typical specimens, in having a pinkish yellow outer surface and a pink inner one, which is lighter toward the basal margin.

*Corbicula pullata* Philippi, 1851

*Corbicula pullata* Philippi, 1851: 110; Deshayes, 1854a: 232; Adams, 1858: 448; Prime, 1860: 272; 1870: 135; Von Martens, 1897: 117; Leschke, 1914: 269; Prashad, 1921: 505; Degner, 1928: 390; Prashad, 1930: 201; Oostingh, 1931: 232; Van Benthem Jutting, 1959: 179.  
*Corbicula dayakorum* vars. *olivacea* and *inaequilatera* Issel, 1874: 473.

Distribution.- Sumatra and Borneo.

Type-locality.- Danau Luar, West Sumatra.

Localities of the specimens examined.-

Sumatra: Rumbai river near Limbang plantation, Langkat, East Deli, 31-III-1927, C.H. Oostingh coll. (SM); Lake at Kampong Djupara, Lampung, S. Sumatra, no date, Van Hasselt coll. (ZMA); Raman river, Lampung, S. Sumatra, 29-XII-1968, Julian-to coll. (MZB); Metro Lampung, S. Sumatra, 22-VI-1973, A. Budiman & A. Munandar coll. (MZB); river Candigirang, Kalianda distr., Lampung, S. Sumatra, 24-VI-1973, S. Wargasasmita coll. (MZB).

Borneo: Lake Panggang, 1959, M. Sachlan coll. (ZMA); lake area Mahakam, 1959, M. Sachlan coll. (ZMA); Pleyharie, 1910, Semmelink coll. (RMNH); Pontianak, 1892, O. Staudiger coll. (SM); Limbang river, Brunei, 1893, Staudiger coll. (SM).

*C. pullata* generally has an eroded umbo. Compared with the Sumatran specimens, those from Borneo have somewhat irregular concentric ribs and a coarser shell. The shells from Mahakam are somewhat inflated, slightly arched at the ventral margin and have coarser concentric ribs. The sub-adult shells are very similar to *C. rivalis*.

*Corbicula rivalis* (Philippi, 1850)

*Cyrena rivalis* Philippi, 1850: 110.  
*Corbicula compressa* Deshayes, 1854a: 227; Adams & Adams, 1858: 447; Prime, 1860: 269; 1870: 129;

Clessin, 1879: 165.

*Corbicula rivalis* Deshayes, 1854a: 228; Adams & Adams, 1858: 448; Prime, 1860: 273; 1870: 136; Clessin, 1879: 159; Von Martens, 1897: 120; Leschke, 1914: 269; Van Benthem Jutting, 1929: 88; Prashad, 1930: 197; Van Benthem Jutting, 1937: 160; Bonne, 1941: 177; Van Benthem Jutting, 1953: 63; 1959: 179.

*Cyrena compressa*; Sowerby in Reeve, 1877: pl. 2 fig. 58.

*Corbicula javana* Clessin, 1879: 180.

Distribution.- Sumatra, Java, Bawean I. and Flores.

Type-locality.- Java, no definite locality mentioned.

Localities of the specimens examined.-

Sumatra: Takengon, Atjeh, IV-1920, Jhr. F.C. van Heurn coll. (ZMA); Kroeeng, Pendawa, Peureula, Atjeh, I-1926, G.L. Smith Sibinga coll. (ZMA); Raja Vorberge near Pasumbu, 1957, G. Schneider coll. (ZMA); river Balawan, Deli, 1957, Schneider coll. (ZMA); Tandjung Djati, Langkat, III-1917, J.E.A. den Doop coll. (ZMA); Ambulutu Estate near Kisaran ± 50 m alt., in muddy rice field, X-1952, J.P. van Niel coll. (ZMA); river Tuan, 7-III-1920, Jhr. F.C. van Heurn coll. (ZMA); Lake Korintji, date and collector unknown (RMNH).

Java : Tjisarua, 950 m alt., VI-1939, C. Bonne coll. (ZMA); Tjiandjur, 16-II-1947, L.J. M. Butot coll. (ZMA); Botanical Garden Bogor, 1939, C. Bonne coll. (ZMA); irrigation canal at Cibalagung, Bogor, 11-X-1971, M. Djajasasmita coll. (MZB); Rarahan, Tjibodas, 1450 m alt., 14-XII-1970, Sunarja coll. (MZB); Singaparna, 17-VII-1968, Ali Purnomo coll. (MZB); Zuider Gebergte, 500 m alt., Pasuruan Res., 1891, Fruhstorfer coll. (SM); Kali Besek near Sulang, Rembang, 20-IV-1949, Willemse coll. (ZMA); Surabaya, 1933, W.C. van Heurn coll. (ZMA); Bawean I., V-1928, Dammerman coll. (MZB).

Flores : no definite locality mentioned on the label, no date, Zijnen Wartel coll. (RMNH).

Most shells of *C. rivalis* have a whitish oval ring on the inner surface below the umbo, especially in young shells. The shape of the shell is somewhat variable, rarely inflated; the concen-

trical ribs are coarse in some shells. Shells from the irrigation canal at Cibalagung, Bogor, are small specimens and have two colour variations, pinkish orange and violet; some shells have a truncate posterior margin.

New to Flores.

*Corbicula squalida* Deshayes, 1854

*Corbicula squalida* Deshayes, 1854: 342; 1854a: 233; Prashad, 1929: 67.

*Corbicula cumingii* Deshayes, 1854a: 228; Prime, 1860: 269; 1866: 127; 1870: 130; Clessin, 1879: 164.

*Corbicula notata* Prime, 1861: 127.

Distribution.- Philippines and Borneo.

Type-locality.- unknown.

Localities of the specimens examined.-

S.E. Borneo: F. Grosbosky coll. (RMNH).

Philippines: Akra, N.W. Luzon, 1899, C. Moellendorff coll. (SM); Lake Buli, Prov. Albay, Luzon, no date, Jagor coll. (SM); Antipolo river, 700 ft. alt., Luzon, 1908, collector unknown (BMNH).

A common species in Luzon island. Compared with the measurements given by Prime (1866), the Borneo shell is a big specimen, 32.2 mm long and 30.2 mm high.

New to Borneo.

*Corbicula subplanata* Von Martens, 1897

*Corbicula subplanata* Von Martens, 1897: 112; Prashad, 1930: 203 (partim); Djajasasmita, 1975: 85.

*Corbicula celebensis* Von Martens, 1897: 113; Prashad, 1930: 202.

Distribution.- Celebes.

Type-locality.- Minlarang river, S. Celebes.

Localities of the specimens examined.- River Minralang near Lake Tempe, 1889, M. Weber coll. (ZMA); Lake Tempe, 1889, M. Weber coll. (ZMA); river Minlarang, 1889, M. Weber coll. (ZMA); Makassar, 1889, Von Martens coll. (ZMA); Teteadjie, no date, Wichman coll. (ZMA); Sanjuk near Palu, 27-IV-1973, M. Jasin and Sujitno coll. (MZB); Leda, Gumbasa south of Palu, 26-III-1973, M. Jasin and Sujitno coll. (MZB); Donggala Ketjil, VII-1973, M. Jasin coll. (MZB).

*C. subplanata* is the most common and widely spread corbiculid clam in Celebes.

*Corbicula sumatrana* Clessin, 1887

*Corbicula sumatrana* Clessin, 1887: 78; Prashad, 1930: 198; Rensch, 1934a: 245; Thieneman, 1951: 569; Van Benthem Jutting, 1959: 178.

*Corbicula verbeeki* Clessin, 1887: 79.

*Corbicula trapezoidea* Von Martens, 1897: 115; Prashad, 1921: 404; Degner, 1928: 390.

*Corbicula angulifera* Von Martens, 1897: 116; Prashad, 1921: 505; Degner, 1928: 289.

*Corbicula gibba* Von Martens, 1897: 121; Degner, 1928: 389.

*Corbicula lacustris* Von Martens, 1897: 118; Degner, 1928: 390; Prashad, 1930: 200; Van Benthem Jutting, 1959: 179.

Distribution.- So far known only from West Sumatra.

Type-locality.- Lake Singkarak, West Sumatra.

Localities of the specimens examined.- Lake Singkarak, 1880, Verbeek coll. (SM); Fort de Kock, 930 m alt., 1925, E. Jacobson coll. (ZMA); Danau Diatas, West Sumatra, 1888, M. Weber coll. (ZMA); Danau Dibawah, 1880, M. Weber coll. (ZMA); Kroe-eng, Pendawa, Atjeh, date and collector unknown (ZMA); Musi river, Palembang, S. Sumatra, VII-1928, J.E. Mollema coll. (MZB); Tandjung Djati, Langkat, 29-III-1927, J.A. den Doop coll. (ZMA).

Two species of *Corbicula* have been described from Lake Singkarak, *C. sumatrana* and *C. lacustris*. The two species are very similar. The latter differs from the former by its slightly coarser concentric ribs and a somewhat rostrate posterior part. *C. lacustris* was found at a depth of 50 m and *C. sumatrana* at 28 m (Rensch, 1934). It is quite reasonable to consider these two forms as one species.

*Corbicula tobae* Von Martens, 1900

*Corbicula tobae* Von Martens, 1900: 17; Degner, 1928: 390; Prashad, 1930: 200; Van Benthem Jutting, 1959: 180.

Distribution.- Known only from Lake Toba, North Sumatra.

Type-locality.- Lake Toba.

Localities of the specimens examined.- Lake Toba, X-1920, Jhr. W.C. van Heurn coll. (ZMA); Lake Toba, 1957, G. Schneider coll. (ZMA); Lake Toba, Mevr. H. Becking coll. (RMNH); Lake Toba, 1893, H. Fruhstorfer coll. (SM).

A small species, similar to *C. pulchella* from Java.

*Corbicula tumida* Deshayes, 1854

*Corbicula tumida* Deshayes, 1854: 343; 1854a: 229;

Prime, 1860: 274; 1866: 219; 1870: 137; Issel, 1874: 410; Clessin, 1887: 137; Von Martens, 1897: 113, 1908: 265; Degner, 1928: 390; Prashad, 1930: 202; Van Benthem Jutting, 1959: 180.

*Corbicula pisidioides* Clessin, 1887: 69.

Distribution.- Sumatra and Borneo.

Type-locality.- Borneo, no precise locality mentioned.

Localities of the specimens examined.- Serawak, no date, J. Hewitt coll. (BMNH); E. Borneo, X-1963, S.S. Liem coll. (MZB); branch of river Wampopo, bottom of gravel, Kampong Selajang, E. Langkat, E. Sumatra, 17-III-1927, C.H. Oostingh coll. (SM).

*C. tumida* was the first species of *Corbicula* described from Borneo. Its young shells are closely similar to the type-specimens of *C. celebensis*, from Makassar, S. Celebes.

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