ON THE SPECIES OF THE GENUS CORBICULA FROM CELEBES, INDONESIA

(MOLLUSCA: CORBICULIDAE)\(^1\)

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ABSTRACT

Some species of Corbicula from Celebes have been reviewed. Four of these are considered to be valid species: C. linduensis Bollinger, 1914, C. loehensis Kruimel, 1913, C. matannensis Sarasin & Sarasin, 1898 and C. subplanata von Martens, 1897. Each one of these species is redescribed.

INTRODUCTION

Eight species of Corbicula have been described from Celebes. Von Martens (1897) described C. subplanata and C. celebensis. The following year Sarasin & Sarasin (1898) added two more species: C. matannensis and C. possoensis. About 15 years later Kruimel (1913) described four species: C. loehensis, C. mahalonensis, C. masapensis and C. toutensensis. One variety, Corbicula moltkiana var. linduensis, was described by Bollinger (1914).

Prashad (1930) revised the Corbicula's from Sumatra, Java, Borneo, Celebes and West New-Guinea and recognized only two species out of the eight described from Celebes, i.e. C. subplanata and C. celebensis. He did not mention C. moltkiana var. linduensis however, which is considered to be a valid species in this paper.

After examination of type specimens at the Zoologisch Museum Amsterdam, the Netherlands (ZMA), and additional material of these species at the Museum Zoologicum Bogoriense, Bogor, Indonesia (MZB), the conclusion was made that only C. linduensis, C. loehensis, C. matannensis and C. subplanata have to be considered valid species, the others only being synonymous. The original descriptions of these four species are incomplete, hence a re-description of each of the species is presented.

\(^1\) A contribution from the National Biological Institute of the Indonesian Institute of Sciences, Bogor, Indonesia.
Corbicula linduensis Bollinger, 1914

Corbicula moltkiana var. linduensis Bollinger, 1914: 575.

Shell thin, elongated, shining and little inflated. Posterior dorsal margin higher than the anterior one. Anterior part narrowed with rounded margin, posterior part somewhat elongated and wider, with truncated margin. Ventral margin straight or slightly arched, sometimes concave at the centre. Paint obtuse ridge present on posterior part, sloping from umbo. Periostracum yellowish to blackish green, fine and densely plicated on marginal area. Concentrical ribs little distinct. Fine growth lines distinct. Lunula not distinct. Hinge teeth normal. Angle between anterior and posterior lateral teeth wide. Inner surface of valve violet, polished on margin below pallial line. Lateral and cardinal teeth light violet to whitish. Pallial line and muscle scars impressed.

The average measurements of 11 specimens examined: length 23.2 mm; height 18.7 mm; diameter 6.2 mm.

The localities of the specimens examined: Lake Lindu, March 1939, C. Bonne coll. (ZMA); Lake Lindu 950 m, July 22, 1972, M. Eijjasasmita coll. (MZE).

Remarks: This species resembles Corbicula moltkiana Prime, 1878, a species from Suratna, but can easily be distinguished by the shell sculpture and hinge teeth. C. linduensis, which was abundant in Lake Lindu once and an important source of animal protein for Lindu inhabitants (Bonne & Sandground, 1939), is now nearly extinct. Throughout the lake intensive surveys were carried out for collection purposes, but only one area was found in the river head of the Carbana outlet. The decrease of the population in the lake coincided with the introduction in 1951 of the snailfish, Pil疑ia mosaembica Peters, 1852. Whether or not this fish had a negative influence on the population of the bivalves is still a matter of discussion.

Corbicula loehensis Kruimel, 1913


The average measurements of 7 specimens examined of the form formerly called C. masapensis: length 24.7 mm, height 20.5 mm, diameter 11.6 mm. For the 'typical form' C. loehensis these figures for 18 specimens are respectively 19.2, 14.5, and 5.5 mm.

Localities of the specimens examined: Loeha I. in Lake Towuti, 1910/1912, E.C. Abendon coll. (ZMA); Lake Wawantoa, 1931, R. Woltereck coll. (ZMA); Lake Masapi, 1910/1912, E.C. Abendon coll. (ZMA); Lake Mahalona, September 22, 1972, W. Dharmawan s. coll. (MZE).

Remarks.- Prashad (1930) recognized this species as a synonym of C. subplanata and stated that young subplanata have a thin shell, but that fully grown specimens have a solid and quite heavy shell. After examination of the young and fully grown type specimens of C. loehensis it was found that they all had thin shells. Contrary to C. subplanata, C. loehensis has finer concentrical ribs and weaker hinge teeth. It is similar to C. masapensis from Lake Masapi, which has characteristics only slightly different from C. loehensis. The subadult form of C. masapensis is very similar to that of C. loehensis. For that reason C. masapensis and C. loehensis are considered to be one single species.

Corbicula maltamensis Sarasin & Sarasin, 1898

Corbicula maltamensis Sarasin & Sarasin, 1898: 92;
Kruimel, 1913: 231.
Corbicula posoensis Sarasin & Sarasin, 1898: 92;
Kruimel, 1913: 231.
Corbicula mahalomensis Kruimel, 1913: 232.
Corbicula touwutensis Kruiszel, 1913: 232.

*Corbicula subplanata* (part.), Prashad, 1930: 203.

Shell thick, ovate to trigonal, usually somewhat inflated. Anterior dorsal margin generally concave, posterior dorsal margin convex, posterior margin truncate-roundish, angular at transition to ventral margin. Anterior margin angular rounded. Dorsal margin sloping steeper in front. Ventral margin strongly arched. Umbo slightly inflated, light violet. Concentrical ribs coarse, generally regular but irregular in the ventral area, closely placed, concentrical growth lines fine. Ligament strong. Lunula small or not distinct. Periostracum olivaceous to blackish green, faintly shining. Inner surface of valve white to dark violet, especially at the ventral part, shiny below pallial line. Hinge teeth normal, lateral teeth straight or somewhat arched.

The average measurements of 30 typical specimens of *C. matannensis* examined: length 26.1 mm, height 23.6 mm, diameter 13.5 mm. One specimen of *C. mahalonensis*: 24.4, 20.2, 11.1 mm, respectively. Of 6 specimens of *C. touwutensis*: 16.5, 14.7, 9.2 mm, respectively, and of 25 specimens of *C. poseoensis*: 17.9, 14.3, and 8.8 mm, respectively.

Localities of the specimens examined: Lake Matano, 1910/1912, E.C. Abendanon coll. (ZMA); Lake Posso, 1910, E.C. Abendanon coll. (ZMA); Lake Mahalona, 1910/1912, E.C. Abendanon coll. (ZMA); Lake Touuti, 1910/1912, E.C. Abendanon coll. (ZMA); Kuramei, October 7, 1909, collector unknown (MBZ); Tana river, Lake Posso area, June 26, 1972, W.P. Carney coll. (MBZ); Lake Matano, September 24, 1972, W. Drauwawen S. coll. (MBZ).

Remarks.-Sarasin & Sarasin (1898) described two species of *Corbicula* from Celebes, *C. matannensis* from Lake Matano and *C. poseoensis* from Lake Posso. A series of each of these two species has been examined. Both show close similarity, only the angle between the anterior and posterior lateral teeth of *C. poseoensis* is wider than that of *C. matannensis*. In comparison to *C. mahalonensis* from Lake Mahalona, *C. matannensis* differs only in the more elongated posterior part and rounded posterior margin. It appears that *C. mahalonensis* is merely a local form of *C. matannensis*. *C. touwutensis* from Lake Touuti, which Prashad considered to be a synonym of *C. subplanata*, has quite a different shell form and sculpture than the latter. *C. touwutensis* is however closer related to *C. matannensis* and *C. poseoensis*. It is also justified to regard *C. mahalonensis* a synonym of *C. matannensis*.

*Corbicula subplanata* von Martens, 1897

*Corbicula subplanata* von Martens, 1897: 112.

*Corbicula celebensis* von Martens, 1897: 113; Prashad, 1930: 203.

*Corbicula subplanata* (part.), Prashad, 1930: 203.

Shell more or less thick, elongated or rounded oval. Posterior part somewhat longer than anterior. Anterior margin rounded, posterior margin rounded and sometimes narrowed. Dorsal margin generally sloping steeper in front of umbo than behind it. Ventral margin arched. Umbo inflated, usually eroded. Ligament strong and lunula not or slightly distinct. Concentrical ribs coarse, low and impressed, somewhat irregular and widely spread. Concentrical growth lines fine. Periostracum brown, finely and densely plicated on ventral part. Inner surface of valve whitish or violaceous white, partially yellowish. Lateral teeth generally violet. Pallial line and muscle scars impressed, sometimes faintly impressed. Hinge normal.

The average measurements of 12 typical specimens of *C. subplanata* examined: length 23 mm, height 18.5 mm, diameter 11.9 mm. For 10 so-called specimens of *C. celebensis* these figures are 16.0, 13.4, and 8.8 mm, respectively.

Localities of the specimens examined: Minralang River near Lake Tempe, date and collector unknown (ZMA); Lake Tempe, 1889, M. Weber coll. (ZMA); Minralang River, 1889, M. Weber coll. (ZMA); Makassar, 1889, von Martens coll. (ZMA); Sanjuk near Palu, April 27, 1973, M. Jasim and Sujito coll. (MBZ); Donggala Reiki, July 1973, M. Jasim coll. (MBZ).

Remarks.-Von Martens (1897) described two species of *Corbicula* from Celebes, *C. celebensis* from lake Tempe, Minralang River near Lake Tempe and Makassar, and *C. subplanata* from Minralang River. The type specimens of *C. celebensis* from Makassar differ from those of Minralang River and Lake Tempe. The former have coarser and more widely spread concentrical ribs, a more elongated
posterior part and they are closely similar to the young shell of C. javanica which is also known from Lake Tempe, Celebes. It is possible that these type specimens are nothing else but young shells of C. javanica. When type specimens from Lake Tempe and Minuralang River are compared to those of C. subplanata the latter show flatter concentrical ribs. Their subadult shells, however, are very closely similar to C. celebensis. It is reasonable to consider C. celebensis to be a subadult of C. subplanata.

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REFERENCES


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Species of *Corbicula* from Celebes, after specimens in the collections of the Zoölogisch Museum, Amsterdam. Drawings made by Mr. J. Zaagman.