

Some Freshwater Mollusca from Ceylon with Notes on their Distribution and Biology

By

C. H. FERNANDO

INTRODUCTION

Very few records of freshwater molluscs of Ceylon are available in recent publications and although they are of importance as food for fishes and vectors of parasites we know little of their role in these capacities in Ceylon. The present paper is to be considered more as a pointer to the group than as a study of the freshwater molluscs of Ceylon. The author collected freshwater molluscs during surveys made for the study of systematics and distribution of various freshwater invertebrates. Some of this material together with specimens collected by colleagues was sent to Dr. W. S. S. Van Benthem-Jutting formerly of the Rijksmuseum, Amsterdam. This material was thoroughly studied and identified by her. Also some material was sent to the late Dr. L. A. W. C. Venmans of Leiden on whose death the material was deposited in the Rijksmuseum, Leiden. The author was able to examine the records of this material identified by workers in Leiden. Material of freshwater molluscs purchased by the Museum in Leiden and labelled Ceylon was also seen by the author. I have made no serious attempt to sort out synonymy.

During the period 1952-1969 I have made observations on the distribution and abundance of freshwater molluscs in Ceylon. I have included some remarks based on these observations.

The nomenclature used in this paper has been simplified by the omission of sub-generic and sub-specific names. The sub-generic divisions are dealt with critically for the Gastropoda by Wenz (1938-1944) and Zilch (1959-1960). Material identified by Dr. W. S. S. Benthem-Jutting has been deposited in the Freshwater Research Station, Polonnaruwa.

Previous work

Mendis and Fernando (1962) have given a list of freshwater Mollusca recorded from Ceylon and the references to this group. Fernando (1965) recorded 13 species in a survey of 21 irrigation reservoirs. Fernando and Ellepola (1969) found only two species in the littoral zone in two small reservoirs they studied over a period of one year. Costa and Fernando (1967) record only one named species and two genera in a study of a stream. Mendis (1965) found molluscs contributing 91% of the dry weight of the bottom fauna of Horowapotana wewa and 0 to 26% in twenty other lakes he surveyed. Fernando (1965) recorded two species of fish *Heteropreustes fossilus* and *Macrones vittatus* feeding on molluscs. Fernando and Indrasena (1969) found *Etroplus suratensis* feeding on molluscs. They discuss the role of molluscs in freshwater fisheries referring to mollusc feeding fishes in Africa. It is likely that feeding on molluscs may be seasonal as in *Etroplus, suratensis* or if the flesh is extracted from the shell as is done by some fishes mollusc remains may easily be missed in food studies.

Molluscs serve as intermediate hosts for digenetic trematodes. In Ceylon trematode infestations of man have not been recorded thanks to the drastic cooking procedures used locally and the avoidance of exotic and raw foods by the natives. Trematode infestations are however common in wild and domestic vertebrates other than fishes. Fernando (1964) gives only two records of digenetic trematodes from freshwater fishes of Ceylon and one of them is from a fish not recorded in the indigenous fauna. Is it possible that digenetic trematodes are rare because of lack of suitable

* Department of Biology, University of Waterloo, Waterloo, Ont., Canada

intermediate host snails or are records lacking because of an absence of investigators. Bivalve molluscs are of little importance as vectors of trematode infestations but their larval phase the glochidium is a parasite on the gills of fishes.

SPECIES RECORDED

Family : Thiaridae

Faunus ater—(L.)

Represented in the collections examined by material from only one locality Marawila. This species has been collected from brackish water in a number of localities by the author. It occurs on sandy bottoms and appears to be confined to shallow water in brackish marshes.

Melanoides tuberculata (L)

A very common species found in streams, ponds and irrigation reservoirs. It occurs also in brackish water. It was represented in collections from Battuluoya, Giriulla, Marawila, Wahagolle, Bogahakumbura (Nr. Gurutalawa) and Thoduwawa (Nr. Madampe, Chilaw Dist.). It was very common in a number of irrigation reservoirs and abundant shell remains were noted commonly in dry reservoir beds.

Melanoides broti (DOHRN)

Seen only in the Leiden Museum among material labelled "Ceylon".

Thiara scabra MULLER

Was collected from a stream in a terraced paddy field in Welimada and from a rocky stream in Balangoda. In the latter locality it was very abundant. It appears to be restricted to running water at the higher altitudes.

Family : Potamididae

Cerithidea fluviatilis (POTIEZ and MICHAUD)

Collected from a single locality in Uppaveli (Nr. Trincomalee). The actual site of collection was a river mouth opening into a shallow lagoon. This species although called "fluviatilis" is probably a brackish water species like *Faunus ater*.

Family : Paludomidae

According to records this family is represented by 50 species and sub-species in Ceylon (Mendis and Fernando 1962). It is likely however that many synonyms exist among these names. I have given the names on the identified material in the Leiden Museum without change. For example Wenz (1938-1944) mentions that the sub-genus *Tanalia* is monotypic. However, more than one Ceylonese species belongs to this sub-genus.

Paludomus aculeata GMELIN

Specimens referred to this species in the Leiden Museum were collected in Waga from a torrential stream and from a stream near the Kaluganga ferry near Horana.

Paludomus bicinctus REEVE

The only material referred to this species which was seen is in the Leiden Museum labelled "Ceylon".

Paludomus chilenooides REEVE

This species was collected from Kumbulawela (Nr. Welimada), Welimada and Morawaka. All three sites of collection were fast flowing streams. Material referred to this species labelled "Ceylon" is in the Leiden Museum.

Paludomus clavatus REEVE

A single lot of specimens referred to this species is in the Leiden Museum and is labelled "Ceylon".

Paludomus funiculatus REEVE

Material identified as this species and labelled "Ceylon" is in the Leiden Museum.

Paludomus gardneri REEVE

The museum in Leiden has a collection labelled as belonging to this species from Ceylon.

Paludomus globulosus.—GRAY

This species was collected from a stream in Sivagandhi Estate, Kosgoda Badulla.

Paludomus hanleyi —DOHRN

Material referred to this species is in the Leiden Museum and is labelled "Ceylon".

Paludomus laevis LAYARD

Specimens labelled as this species from Ceylon are in the Leiden Museum.

Paludomus loricatus REEVE

Collected from a torrential stream in Waga. Other material labelled "Ceylon" is in the Leiden Museum. According to Wenz (1938–1944) this species is the monotype of the sub-genus *Tanalia*. It is likely that the Ceylonese material referred to other species in this sub-genus e.g. *P. aculeatu*, *P. torrenticola* etc. really belong to *P. loricatus*.

Paludomus neritoides REEVE

This species was represented in the collections from a stream in Kahawatte and a rocky stream in Balangoda. It is also among material labelled Ceylon in the Leiden Museum.

Paludomus nigricans REEVE

Material referred to this species was collected from a torrential stream in Pattipola. Also represented in material labelled "Ceylon" in the Leiden Museum.

Paludomus palustris LAYARD

Specimens labelled "Ceylon" in the Leiden Museum have been referred to this species.

Paludomus pictus REEVE

The only material seen labelled as this species was in the Leiden Museum from "Ceylon".

Paludomus reevei LAYARD

Material from "Ceylon" labelled as this species is in the Leiden Museum.

Paludomus regalis LAYARD

The only material seen was labelled Ceylon and is in the Leiden Museum.

Paludomus sulcatus REEVE

Was collected from a torrential stream in Balangoda. Also material referred to this species) from Ceylon is in the Leiden Museum. This is the type of the sub-genus *Philopotamis* (Wenz 1938-1944) Probably the material referred to other species in this sub-genus from Ceylon belong in the main to this species.

Paludomus thwaitesei LAYARD

The only material seen was that in the Leiden Museum labelled "Ceylon".

Paludomus torrenticolous DOHRN

Material referred to the species in the Leiden Museum came from a stream in Balangoda.

Family : Paludetrinidae*Mysorella costigera* KUSTER

Specimens collected by the author from an unnamed locality in Ceylon was referred to this species. According to Wenz (1938-1944) this genus is monotypic and recorded from Bangalore and Lake Tanganaika (doubtful record).

Bithynia inconspicua DOHRN

A widely distributed species which was present in collections from a stream in Buttuluoya, paddy fields in Medawachchiya and Nugegoda, a small pond in Mullativi and small reservoirs in Dalukana, Angunuwila and Kurunegala.

Bithynia sternotheroides DOHRN

This species was collected from the Wilpattu MNatural Reserve in three villus (marshes), Mana villu, Borupan villu and Kumbuk villu. Material was also collected from small irrigation reservoirs in Angunuwila and Handapangala and a pond in Ratmale. It was represented in material at the Leiden Museum labelled "Ceylon".

Family : Viviparidae*Bellamaya ceylonica* DOHRN

The only member of this family in Ceylon is very widely distributed and abundant in a variety of habitats. It was collected from Kumbuk villu, Wilpattu Natural Reserve, Thiruvaduvallai and Kallundai and an unnamed locality in the Jaffna peninsula, Balaharuwa (Nr. Tissa), Wahagolle, Bingiriya, Thoduwave, Parakrama Samudra, Horowapotana wewa and Dalukana Wewa.

Family : Pilidae*Pila globosa* SWAINSON

This appears to be a common species and was represented in collections from many localities : Nugegoda, Ambalantota, Kal-Eliya, Ranna, Wahagolle, Chiviyateru and Mandativu, Jaffna peninsula and an unnamed locality in Jaffna.

Pila moesta REEVE

Only a single collection of this species was made from Kottegoda (Nr. Beruwela).

Family : Lymnaeidae*Lymnaea pinguis* (DOHRN)

This is the commonest species of the genus in Ceylon. Unlike in many temperate regions Lymnaeidae are not common in Ceylon. According to Hubendick (1951) *L. pinguis* = *L. luteola* Lamark a widely distributed species in S. E. Asia.

L. pinguis was collected in the Wilpattu Natural Reserve from three villus namely Borupan villu, Mana villu and Kumbuk villu. The only other record was from Bingiriya.

Lymnaea ovalis (GRAY)

Only a single collection of this species was made in a pond near the University of Ceylon, Colombo.

Family : Planorbidae*Indoplanorbis exustus* (DESH.)

The commonest species of freshwater mollusc in Ceylon. It occurs in all parts of the island except in the hills. It is one of the few species abundant in the soft waters of the Western and Southern provinces. It is represented in the collections from the following localities: Wilpattu Natural Reserve, Thiruvaduvallai, Jaffna; Battuluoya, Nugegoda, Chilaw, Polonnaruwa, Pottuvil, Opatha, Angunuwila, Kandhapola (Nr. Kurunegala), Handapangala (Nr. Hambantota), Bingiriya, Lahugala, Medawachchiya, Kurunegala and Minneriya.

Planorbis sp.

Some specimens from Wilpattu Natural Reserve and an unnamed locality were identified as belonging to this genus. According to the list given by Mendis and Fernando (1962) there are ten species of this genus in Ceylon. The validity of the specific status of these however has yet to be determined by the application of criteria acceptable by present standards of nomenclature.

Gyraulus saigonensis.(CROSSE and FISCHER)

This species is relatively common in small bodies of standing water. It is also found in streams. Because of its small size and greatly flattened shape it is often missed among the vegetation. The only material seen was from Ratmale.

Lamellidens marginalis (LAMARK)

This large species is widely distributed in the low country reservoirs, ponds and marshes. It is not however found in areas with soft water. The author has collected it from Marawila, Chilaw, Polonnaruwa, Minneriya, Tabbowa tank and the Fisheries Department ponds in Polonnaruwa. It occurs only in muddy situations and may reach enormous numbers in some habitats. The shells are often found on dry reservoir beds.

Parreysia corrugata (MULLER)

Collected only from one locality namely Angamedilla (Nr. Polonnaruwa). It was found in a sandy bank of a fast flowing stream.

ACKNOWLEDGEMENTS

Dr. W. S. S. Van Benthem-Jutting identified many of the species recorded in this paper. The late Dr. L. A. W. C. Venman's interest in freshwater molluscs was instrumental in my collecting for him the specimens now in the Leiden Museum. The authorities of the Rijksmuseum Van Natuurlijke provided me with facilities for work and gave me access to their records.

REFERENCES

- COSTA, H. H. and FERNANDO, E. C. M. 1967. The food and feeding habits of the common meso and macrofauna in the Maha Oya, a small mountainous stream at Peradeniya, Ceylon. *Ceylon J. Sci. (Bio. Sci.)* 7, pp. 74-90.
- FERNANDO, C. H. 1964. A guide to the freshwater fauna of Ceylon Supplement 2. *Bull. Fish. Res. Stn. Ceylon* 17, pp. 177-211.
- FERNANDO, C. H. 1965. A preliminary survey of 21 Ceylon lakes-Parasites and predators, food of fish and marginal fauna. *Bull. Fish. Res. Stn. Ceylon* 18, pp. 17-28.
- FERNANDO, C. H. and ELLEPOLA, W. B. 1969. A preliminary study of two village tanks (Reservoirs) in the Polonnaruwa area with biological notes on these reservoirs in Ceylon. *Bull. Fish. Res. Stn. Ceylon* 20. 3-13
- FERNANDO, C. H. and INDRASENA, H. H. A. 1970. The Freshwater fisheries of Ceylon. *Bull. Fish. Res. Stn. Ceylon* 20.
- HUBENDICK, B. 1951. Recent Lymnaeidae, their variation, taxonomy, nomenclature and distribution. *K. Svenska Vetensk. Acad. Hand. 3*, pp. 1-223.
- MENDIS, A. S. 1965. A preliminary survey of 21 Ceylon lakes-2 limnology and fish production potential. *Bull. Fish. Res. Stn. Ceylon* pp. 7-16.
- MENDIS, A. S. and FERNANDO, C.H. 1962. A guide to the freshwater fauna of Ceylon. *Bull. Fish. Res. Stn. Ceylon* 12, pp. 1-160.
- WENZ, W. 1938-1944. Gastropoda, Allgemeiner Teil und Prosobranchia. *Handbuch der Palaozoologie* 6 (1), pp. 1-834 Borntraeger, Berlin.
- ZILCH. 1959-1960. Gastropoda, Euthyneura. *Handbuch der Palaozoologie* 6 (2), pp. 1-834 Borntraeger, Berlin.