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## Collections of Freshwater Mussel Shells of *Anodontites* sp. and *Mycetopoda* sp. in Rivers of South-Central Trinidad, West Indies

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Freshwater mussels belong to the family Unionidae (Order Paleoheterodonta, Suborder Unionidea). This family also includes some brackish water species. Their substrate requirements are quite varied and range from soft clays to pebbles and cobble. The family has a worldwide distribution.

Members of the Unionidae family are filter feeders and this makes them quite susceptible to bio-accumulation of many residual compounds such as heavy metals. Pathogenic bacteria also form pools of infections in these filter feeders. Nonetheless, they are very important to the ecology of a river for several reasons. Firstly, the overall filtering effect of colonies decreases turbidity in the river. Secondly, because of their high sensitivity to pollution, they are used worldwide as bio-indicators. Finally, their life cycles are complex and some species rely on host fish to support the newly hatched larvae (Cummings *et al.* 1997).

The shells of freshwater mussels were found during May, 2007 at three separate sites in south-central Trinidad. The sites were: on the bank of the Poole River, (GPS, 1136363 695727); tributary of the Ortoire River, (GPS, 1130116 691795); and the Ortoire River, (GPS, 1131269 699133). At all sites, both valves of an individual were found, (Plate 1: A, B and D). At Poole River and Ortoire tributary, the shell was cracked open, and was collected on the river bank, whilst at the Ortoire River an intact (but dead) specimen was collected from the river bed. The lengths of all specimens were 7.5 cm, 8.0 cm and 7.0 cm respectively.

From the remains collected, two species have been determined. At Poole River and Ortoire tributary, *Anodontites cf. irisans* (Marshall 1926) was collected and at Ortoire River, another species, possibly *Mycetopoda* sp. was collected. Identifications were made by consulting the publication by Simone (2006). Both species have distributions in Venezuela.

Determination of species in this family is somewhat difficult. Very little has been written about the two species in Trinidad. Guppy (1866) described a new species of bivalve, *Anodon leotaudi* collected from south of the Caroni plain. The specimen was described as oval-oblong and covered with a shining dark, olive-brown epidermis. The shell was measured at 8.3 cm in length. Nothing more was heard about *A. leotaudi* until its re-discovery by Bacon *et al.* (1979) in Cuche River, near Plum Mitán, Nariva during May, 1978. In this publication it was noted that the species was found in slow moving,

silted channels and rivers, partially buried in soft sediments. Bacon *et al.* (1979) also noted that they were 'unexpectedly' common. Based on their communications with fishermen from that region, it was reported that the abundance was so high that it was collected then as food. Errol Jaikaransingh (personal communication), the only surviving author of the Bacon *et al.* (1979) publication, stated several hundred were exposed during dredging of the Canque River, Plum Mitán in 1979 and the mussels were quite prevalent in the 'dasheen' fields of Plum Mitán.

Later, in August, 1988, ten specimens were collected by I.W. Ramnarine which were identified by P. Greenhall at the Smithsonian National Museum of Natural History. All shells were collected from dried, dredge spoil from the Nariva Swamp. Of these, eight were identified as *Mycetopoda siliquosa* (Spix 1827), (Smithsonian Catalogue Number: 853930) and two were identified as *Anodontites patagonicus leotaudi* (Guppy 1864), (Smithsonian Catalogue Number: 853931). *Anodon leotaudi* and *Anodontites patagonicus leotaudi* are synonyms for *Anodontites cf. irisans*.

Worldwide, the family is severely threatened through habitat destruction and pollution (Bogan 1993). The complexity of Unionids' life cycle compounded by populations being spatially and genetically isolated from each other is largely responsible for its scarcity. Apart from Cuba, Trinidad is the only other Caribbean island where members of this family are present (Bogan 1993).

Unionids form a large part of the diet for raccoons, otters and turtles in North America (Bogan 1993). There are also representatives of these taxa in Trinidad, and they all have distributions in the south-central area. Two specimens of *Anodontites cf. irisans* appeared to have been forced open by cracking, suggesting that they were preyed upon.

It is interesting to note that all specimens collected belonged to the Poole/Ortoire drainage. All specimens appear to have recently died because they did not lose their internal lustre and showed no signs of sedimentation on the inside of the shells, algal growth or weathering on the interior or exterior. Dried connecting tissue was also seen on both specimens of *Anodontites cf. irisans*. These collections suggest that there are pockets of these bivalves in the drainage. The occurrences of these shells however, are good signals for the overall health of the river ecology. The area the river runs through is mostly

secondary forest with patches of primary forest in south-central Trinidad. There is very little anthropogenic effect in the regions upstream.

There are two independent pieces of anecdotal evidence from individuals living in the south-central villages of Biche and Rio Claro, who both claim to have collected larger live individuals (locally referred to as 'mok') in the forested regions of the Poole River, (personal communication with local recreational fishermen). With this in mind, investigations were made into former 'mok' habitats in the mangroves around the Oropuche and Ortoire Rivers, but these yielded no additional evidence. Shells of *Anodontites* sp. were collected from the banks of the Caparo River during November 2007 and a second during February 2008. One specimen (of length 7.9 cm) was found in a partially closed position embedded in a steep river wall (GPS, 0681134 1159217), (Plate 1: C). This specimen was apparently buried for many years as it was filled with sediment. It had lost its dark brown outer colour and was similar in colour and texture to chalk. The second specimen (of length 5.6 cm) was found downstream (GPS, 0680682 1159834), (Plate 1: E), on the river's edge. This recently died as well, because the specimen was in a similar condition to those found in the Poole drainage in 2007. Again, upstream of both Caparo sites are not impacted severely by humans and have patches of secondary forest.



**Plate 1.** (A) *Anodontites* cf. *irisans* collected on the bank of the Poole River. (B) *Anodontites* cf. *irisans* remains collected on the bank of Ortoire tributary. (C) Fossilised *Anodontites* sp. from Caparo River bank. (D) *Mycetopoda* sp. remains collected on the river bed of Ortoire River. (E) *Anodontites* cf. *irisans* from Caparo River bank.

Based on the literature reviewed, there are at least two species of freshwater mussels in Trinidad and the range for both *Anodontites* and *Mycetopoda* is very limited. Our collections and the appearance of the shells of these two species suggest that they are still present in our environment, but the current rate of land use for various forms of development is placing these species at risk of extinction in Trinidad. The Poole/Ortoire region lies within the Central Block oil reserve, the Caparo sites are within impacted range of the proposed Caparo/Mamoral dam and the Plum Mitán/Nariva area is presently under oil exploration and heavy agricultural use. With this in mind, further investigations would be undertaken to look at the present distributions of these species before there is a total loss of habitat.

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## REFERENCES

- Bacon, P. R., Jaikaransingh, E. and Seeberan, G.** 1979. Notes on some freshwater molluscs from Nariva Swamp, Trinidad. *Living World, Journal of The Trinidad and Tobago Field Naturalists' Club*, 1978 - 1979: 14-15.
- Bogan, A. E.** 1993. Freshwater bivalve extinctions (Mollusca: Unionoida): A Search for a Cause. *The Society for Integrative and Comparative Biology*. Vol. 33, (6). Oxford University Press. 599 - 609.
- Cummings, K. S. and Mayer, C. A.** 1997. Freshwater mussels of Venezuela. *Illinois Natural History Survey, Centre for Biodiversity Report*: 129-145.
- Guppy, R. J. L.** 1866. Additions to the catalogue of the land and freshwater mollusca of Trinidad. 1. *Proceedings of the Science Society*: 135-139.
- Simone, L. R. L.** 2006. Land and freshwater molluscs of Brazil (an iconographic catalogue on the molluscs of the Brazilian land and freshwater ecosystems) EGB. Fapesp. São Paulo. 390 p.
- Smithsonian National Museum of Natural History, Department of Invertebrate Zoology.** 1988. Catalogue Numbers 853930 and 853931.