

The Molluscan bycatch from a blue swimming crab fishery at Mandaitivu, Jaffna

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Introduction

In June 2018 a marine fishery scientist working as an advisor to the Seafood Exporters' Association of Sri Lanka, Dr. Steve Creech, delivered a lecture to the WNPS titled 'A new initiative to manage and conserve dugongs in Sri Lankan waters'. The aim of his work in Sri Lanka was "to promote sustainable, socially responsible and economically equitable Sri Lankan seafood" for export. He pointed out that a fishery's ecological impact on non-target species was a critical component of International concern that determined "sustainably sourced seafood" which was acceptable to



western consumers. Dugongs were one of these non-target species that might be affected by a particular fishery in Sri Lanka that was largely export-oriented – namely the blue swimming crab (*Portunus pelagicus*) fishery. He dwelt at length on the various marine species that consisted of the bycatch of this fishery, concluding that dugongs featured very low down in the scale of numbers caught and therefore this fishery was not a significant threat to dugong survival. My concern was aroused by the omission of marine molluscs from the list of species forming the bycatch.

This was not surprising as this group of animals has been largely ignored. Very little attention has been paid to this group in Sri Lanka and very little is known about them. This article is to place on record a list of species of gastropod and bivalve molluscs that are taken as bycatch in the bottom-set nets used for the blue swimming crab fishery at Mandaitivu in Jaffna. I have been visiting this location at long intervals to collect mollusc species from the fishing trash piles to add to our list of species known to occur in Sri Lanka waters. No attempt has been made to quantify the numbers taken but certain species do turn up in large numbers.



Extracting crabs from a net. Unwanted species are thrown away.



A pile of molluscan fishing trash. The spider conchs are the protected species *Lambis lambis*.

List of Gastropod species in alphabetical order of family

Family	
Fasciariidae	<i>Marmarofusus nicobaricus</i> (Röding, 1798)
Muricidae	<i>Chicoreus ramosus</i> (Linnaeus, 1758)
	<i>Chicoreus virgineus</i> (Röding, 1798)
	<i>Haustellum haustellum</i> (Linnaeus, 1758)
	<i>Murex aduncospinosus</i> Sowerby II, 1841
Olividae	<i>Agaronia nebulosa</i> (Lamarck, 1822)
Strombidae	<i>Lambis lambis</i> (Linnaeus, 1758)
	<i>Laevistrombus canarium</i> (Linnaeus, 1758)
	<i>Margistrombus marginatus</i> (Linnaeus, 1758)
Tonnidae	<i>Tonna dolium</i> (Linnaeus, 1758)
Vermetidae	<i>Thylacodes</i> sp.
Volutidae	<i>Melo melo</i> (Lightfoot, 1786)

Altogether 12 species of gastropods in 7 families and 32 species of bivalves in 19 families have been identified. The majority of the species identified are sand bottom dwellers while some have been brought up attached to hard substrates such as coral or sandstone rubble. All species have been identified using available literature and some websites and the current names verified using the World Register of Marine Species (WoRMS.)

A few species are of particular interest. The bivalve *Lamychaena weinkauffi* was the first species in the family Gastrochaenidae found by the author. This is a species of burrowing bivalve occupying bottle-shaped burrows in dead coral. Subsequent searches by cracking rubble from other sites have yielded a total of 5 different species in this family — two species remain unidentified. The two species *Sinonovacula constricta* (Pharidae) and *Atrina inflata* (Pinnidae) have been found only from this site and only on one occasion, suggesting that these were from a fishing site different from the usual fishing grounds. These are likely to be new species records for Sri Lanka.

Marine molluscs in Sri Lanka are known from beached specimens and those found in their habitats by divers - those usually engaged in collecting ornamental fish, sea cucumbers and chanks. Few



target shells in their dives — and then usually look for collectibles. Bivalves are not in this category. Fishing trash is a rich source of species for the scientist, especially as they come from locations not usually visited by divers.

Lamychaena weinkauffi and its bottle-shaped burrow

List of Bivalve species in alphabetical order of family

Family	
Arcidae	<i>Arca imbricata</i> Bruguière, 1789
Cardiidae	<i>Acrosterigma impolitum</i> (G. B. Sowerby II, 1834) <i>Vasticardium angulatum</i> (Lamarck, 1819) <i>Vasticardium elongatum</i> (Bruguière, 1789)
Carditidae	<i>Cardites bicolor</i> (Lamarck, 1819)
Chamidae	<i>Chama pacifica</i> Broderip, 1835
Glycymerididae	<i>Glycymeris fulgurata</i> Dunker, 1877
Gastrochaenidae	<i>Lamychaena weinkauffi</i> (Sturany, 1899)
Limidae	<i>Lima vulgaris</i> (Link 1807)
Mactridae	<i>Lutraria rhynchaena</i> Jonas, 1844
Malleidae	<i>Malleus malleus</i> (Linnaeus, 1758)
Ostracidae	<i>Dendostrea cristata</i> (Born, 1778)
Pectinidae	<i>Decatopecten amiculum</i> (Philippi, 1851) <i>Mimachlamys cloacata</i> (Reeve, 1853) <i>Mimachlamys sanguinea</i> (Linnaeus, 1758) <i>Minnivola pyxidata</i> (Born, 1778)
Pharidae	<i>Sinonovacula constricta</i> (Lamarck, 1818)
Pinnidae	<i>Atrina inflata</i> (Dillwyn, 1817)
Placunidae	<i>Placuna placenta</i> (Linnaeus, 1758)
Pteriidae	<i>Isognomon isognomum</i> (Linnaeus, 1758) <i>Isognomon perna</i> (Linnaeus, 1767) <i>Pinctada imbricata radiata</i> (Leach, 1814) <i>Pinctada margaritifera</i> (Linnaeus, 1758)
Solenidae	<i>Solen vagina</i> Linnaeus, 1758
Spondylidae	<i>Spondylus squamosus</i> Schreibers, 1793
Tellinidae	<i>Cyclotellina remies</i> (Linnaeus, 1758) <i>Meropesta nicobarica</i> (Gmelin, 1791)
Veneridae	<i>Callista erycina</i> (Linnaeus, 1758) <i>Circe scripta</i> (Linnaeus, 1758) <i>Lioconcha fastigiata</i> (G. B. Sowerby II, 1851) <i>Paratapes textilis</i> (Gmelin, 1791) <i>Protapes gallus</i> (Gmelin, 1791)

Select Bibliography

- Abbott, R. Tucker 1994. Seashells of Southeast Asia. Graham Brash, Singapore.
- De Bruyne, R. H. 2003. The Complete Encyclopedia of Shells. Rebo Productions, Lisse, The Netherlands.
- Eisenberg, Jerome M. 1989. A collector's guide to seashells of the world. Crescent Books, New York.
- Fernando, Malik 2009. Shells of the Sri Lanka Seashore. Biodiversity Secretariat, Ministry of Environment, Sri Lanka.
- Kirtisinghe, P 1978. Sea shells of Sri Lanka. Tuttle, Tokyo.
- Oliver, A. P. H., 1975. *The Hamlyn guide to shells of the world*, 1989 6th Impression, Hamlyn, London.
- Valentich-Scott, Paul & Grete Elisabeth Dinesen, 2004. Rock and coral boring bivalvia (mollusca) of the middle Florida Keys, U.S.A., *Malacologia*, 2004, 46(2): 339–354.
- Valentich-Scott, Paul & Piyoros Tongkerd, 2008. Coral-boring bivalve molluscs of southeastern Thailand, with the description of a new species, *The Raffles Bulletin of Zoology* 2008 Supplement No. 18: 191-216.

Useful websites

BISHOGAI Database accessed at: http://bigai.world.coocan.jp/pic_book/data12/r001118.html

Hardy's Internet Guide to Marine Gastropods available from:- <http://www.gastropods.com/>

Marine Flora and Fauna of Ranong, Thailand – available at: ranong.myspecies.info/taxonomy/term/277

Picture pages of the Natural History Museum Rotterdam. <http://www.nmr-pics.nl/>

World Register of Marine Species. Available from <http://www.marinespecies.org> at VLIZ

Worldwide Seashells Collection. http://www.idscaro.net/sci/01_coll/index.htm