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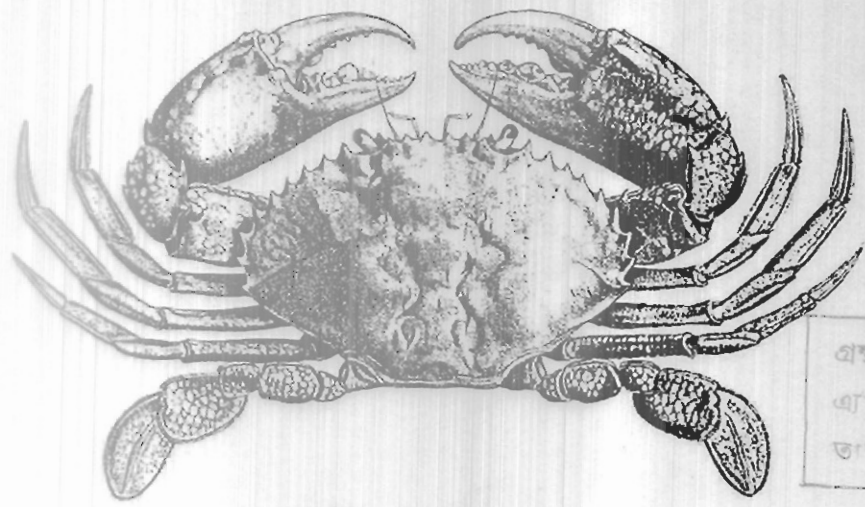
SUNDARBANS BIODIVERSITY CONSERVATION PROJECT

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প্রধান সহকারীর স্বাক্ষর :
সংশ্লিষ্ট শাখা :

GUIDE TO THE SHELLFISHES OF THE BANGLADESH SUNDARBANS

by

Garry Michael Bernacsek



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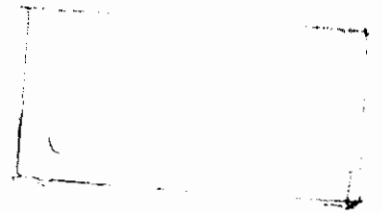
Khulna, Bangladesh
10 December 2001

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Shellfishes of the Bangladesh Sundarbans**
TECHNICAL REPORTS – TR No. 11
By Mr. Garry Bernacsek
Fisheries Management Specialist
ADB: BAN 1643/3158
December 2001

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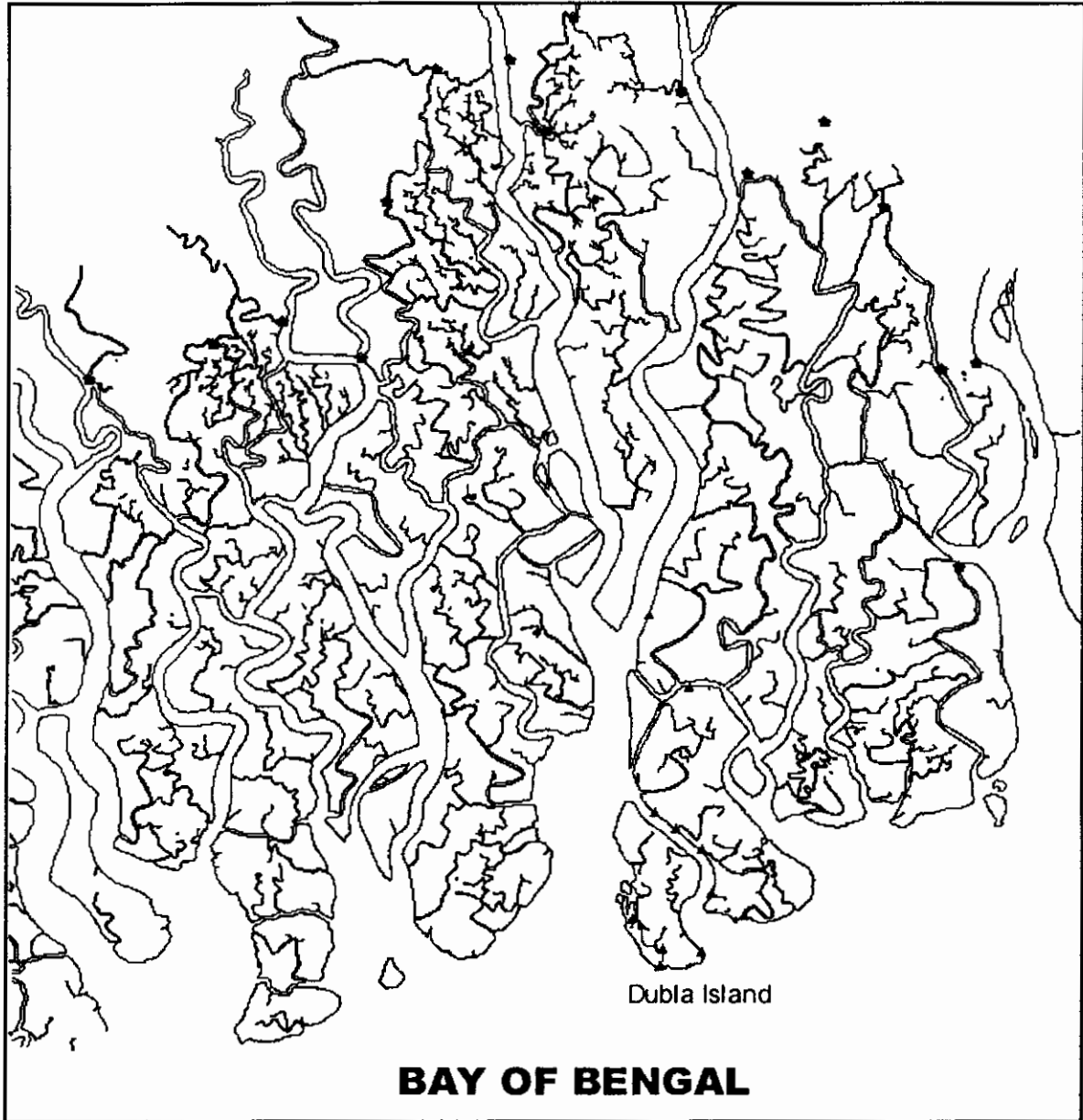
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The Rivers and Khals of the Bangladesh Sundarbans

INTRODUCTION

Environment and Shellfish Biodiversity

The closed canopy expanse of the Sundarbans of Bangladesh, along with the contiguous Sundarbans of India, is the largest mangrove forest in the world. Even though it has lost half of its inland area over the last 200 years through human encroachment, some 10,000 km² of mangrove wilderness still remain. The forest is contained within the lower catchment of one of the largest river basins of the world – the Ganges-Brahmaputra (or Padma-Jamuna as it is called in Bangladesh). The mangroves receive only minor direct affluent flow via the Passur River and some small local catchment streams, but are bathed twice daily by massive tidal flow from the northern Bay of Bengal - low in salinity and heavily laden with suspended sediment. The vigorous scouring action of the tides has formed wide river channels inside the forest with north-south alignment.

The special environmental conditions of the Sundarbans exert a rigorous ecological regime on its aquatic fauna and flora. Despite the combination of high tidal flow velocities, heavy silt load and low light penetration, a remarkable shellfish biodiversity exists inside the Sundarbans forest and in the adjacent marine zone of the northern Bay of Bengal. The shellfish community is composed of at least 100 species. These are mainly of marine origin, but several freshwater species are able to take advantage of low salinity and freshwater conditions in the northeastern part of the forest.

The objective of this book is to provide an introductory guide to the shellfishes of the Bangladesh Sundarbans. It is aimed at technical specialists who require biodiversity information, but are not professional invertebrate taxonomist. Hopefully, it will also be of utility to members of the public who are interested in the natural resources of the Sundarbans.

Shellfish Material Examined

The most significant historical inventories of shellfishes of the Sundarbans was carried out by the following:

- Jahan et al (1990) and other reports from Rajshahi University: Snails, mussels, clams and squids from the western coastal area.
- Ahmed (1990): Snails and mussels.
- Chantarasri (1994): Shrimps, prawns, crabs lobster, oysters and clams.
- Chaudhuri and Choudhury (1994): Horseshoe crabs (in the Indian Sundarbans)
- Pendred (1995): Snails, mussels and clams in the low salinity part of the forest.
- Khan (1999): Shrimps.

Observations were made by the present author during the period May 2000 to November 2001 of fish catches at Dubla Char (which represents mainly catches from behundi nets in the marine zone) and in the Sundarbans forest (which represent catches from many different types of fishing gears and hand collecting). Specimens were collected from catches and from beaches and the forest floor, and are preserved in the ARD fish collection. Some additional new species records for the Sundarbans have resulted from the contracted field studies of Khulna University

in January, February and July 2001. These are presented in three field trip data reports, with additional information in an inception report and a baseline survey report.

Taxonomic Sources for the Sundarbans Shellfishes

Every effort has been made to present the most current taxonomic nomenclature, and to weed out synonyms. Species identification and updating of nomenclature was carried out by using the excellent FAO regional publications of Carpenter and Niem (1998, 1998a) as the main taxonomic reference. They cover the marine shellfishes of the Western Central Pacific region, but many of the species accounts apply also to the Bay of Bengal. A second reference work that was used is the FAO field guide for the marine fishes of Sri Lanka by De Bruin et al (1994). Also of utility was the FAO fish species catalogue on the lobsters of the world. The book by Quddus and Shafi (1995) on the fishes of the Bay of Bengal was useful for cuttlefishes and squids. Certain website on the internet were also helpful in providing relevant taxonomic information.

Future Shellfish Biodiversity Work, Future Editions of this Book

While some shellfish groups of the Sundarbans appear to be reasonably well known (ie shrimps, snails), other require more work in terms of collecting specimens in the field and identification. This is especially true of the crabs and cuttlefishes and squids.

Future editions of this book will need to include keys for identification, as well as descriptions of diagnostic field characters, biological data and ecological information for each species. The conservation status of each species should also be assessed, and recommendations given for management strategies and measures to preserve the species in the Sundarbans.

Shellfish Biodiversity References

Ahmed, A T A. 1990. Studies on the identity and abundance of molluscan fauna of the Bay of Bengal. Bangladesh Agricultural Research Council, Dhaka.

Carpenter, K E and V H Niem.(eds) 1998. FAO species identification guide for fishery purposes. The living resources of the Western Central Pacific. Volume 1. Seaweeds, corals, bivalves and gastropods. FAO, Rome, p: 1-686.

Carpenter, K E and V H Niem.(eds) 1998a. FAO species identification guide for fishery purposes. The living resources of the Western Central Pacific. Volume 2. Cephalopods, crustaceans, holothurians and sharks. FAO, Rome, p: 687-1396.

Chantarasri, S. 1994. Fisheries resources management for the Sundarbans Reserved Forest (4th draft report). FAO/UNDP, Project BGD/84/056, Integrated resource development of the Sundarbans Reserved Forest, Bangladesh, Khulna, July 1994, 171pp.

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Bangladesh. *Environment & Ecology*, 8 (2): 603-607.

Khan, G. 1999. Life cycle and population dynamics of penaeid shrimps exploited by a multigear fisheries system with special reference to ESN and trammel net at the coast of Bangladesh. Thesis submitted for degree of Doctor of Philosophy, Department of Zoology, University of Dhaka, Dhaka.

Pendred, G. 1995. Activity report on mollusca from the low salinity waters in the Sundarban Reserved Forest (SRF), South West Bangladesh. FAO/UNDP, Dhaka.

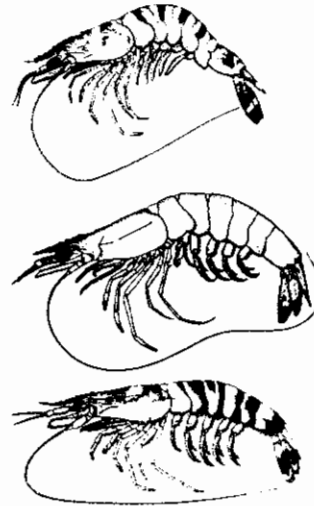
Quddus, M M A and M Shafi. 1995. The fisheries resources of the Bay of Bengal. Bangla Academy, Dhaka.

SHRIMPS

List of Species Recorded in Sundarbans:

Penaeidae
Marine shrimps

Penaeus monodon
Penaeus indicus
Penaeus merguensis
Metapenaeus monoceros
Metapenaeus brevicornis
Metapenaeus affinis
Metapenaeus lysianassa
Metapenaeus spiculatus
Parapenaeopsis sculptilis
Parapenaeopsis hardwickii
Parapenaeopsis stylifera
Parapenaeopsis uncta



Solenoceridae
Mud shrimps

Solenocera crassicornis



Sergestidae
Rice shrimps

Acetes indicus



Squillidae
Mantis shrimps

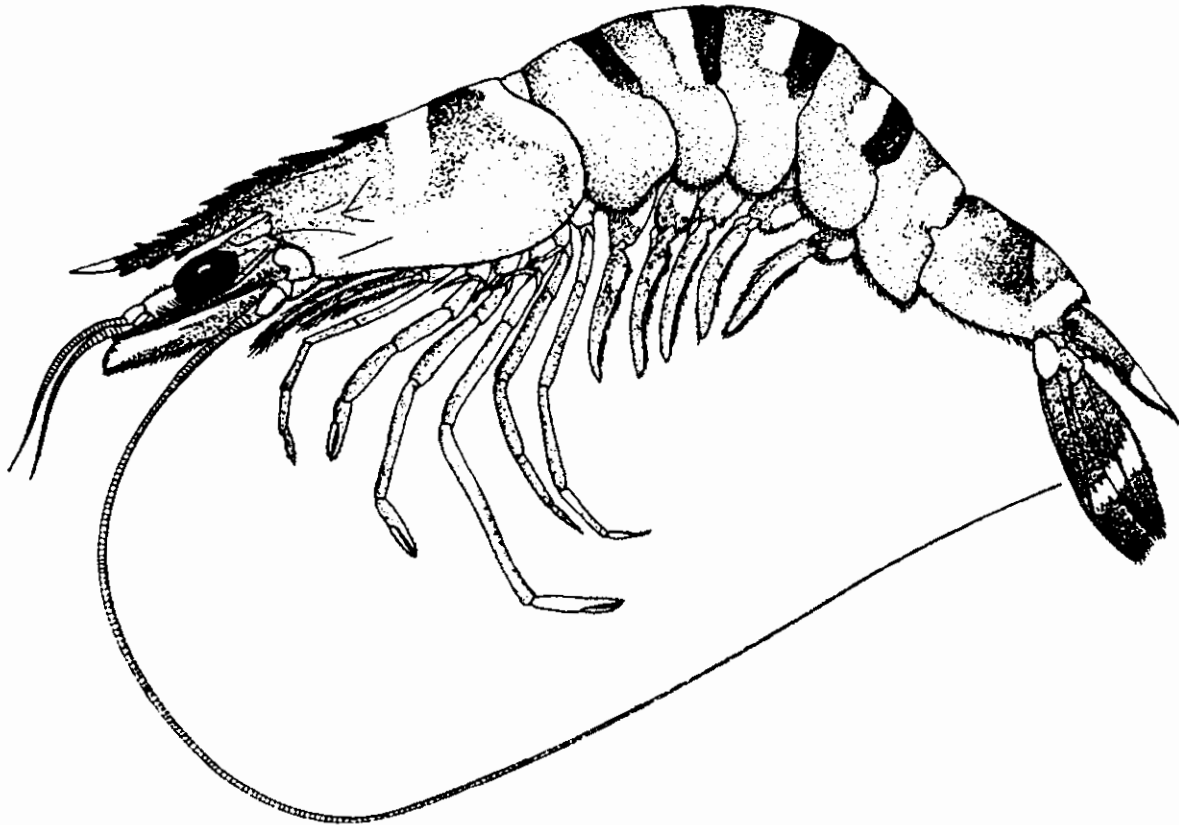
Oratosquilla perpersa



SHRIMPS

Family Penaeidae

Penaeus monodon Fabricius, 1798

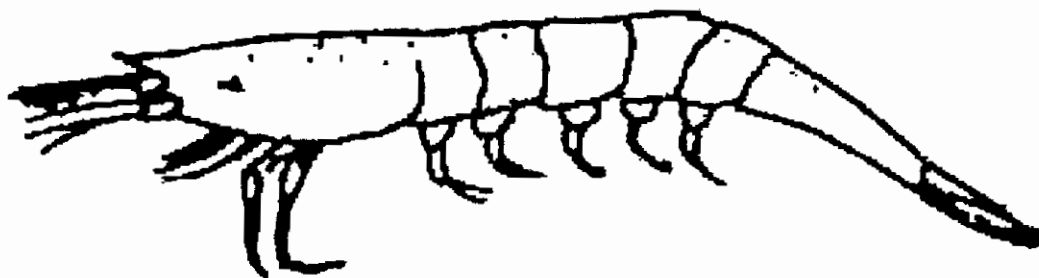


***Penaeus monodon* BAGDA CHINGRI**

Local Names: Bagda chingri. Postlarvae are called pona.

English Names: Tiger shrimp.

This large and commercially important shrimp was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. The author saw several juvenile and subadult specimens, as well as numerous postlarvae. Juvenile and subadults are caught by behundi net in the Dubla Char winter fishery. The postlarvae are caught with mosquito mesh pata jal inside the larger rivers of the Sundarbans forest, and also north of the forest. This latter fishery is very destructive of the larvae of other species and is being phased out by the government.



Above postlarvae (pona) of *Penaeus monodon*

SHRIMPS



Subadult *Penaeus monodon* from Dubla Char

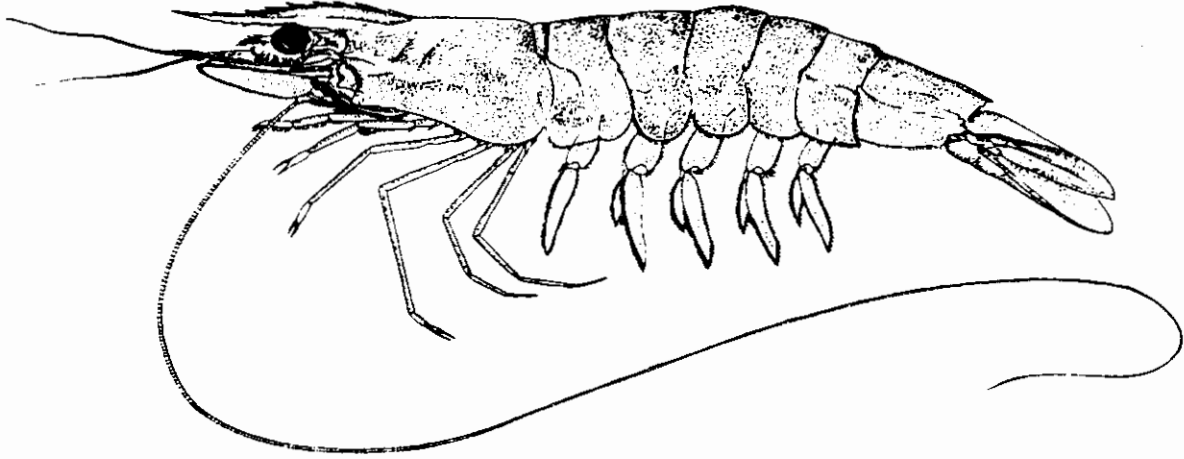


Pata jal used to catch postlarvae of *Penaeus monodon*

SHRIMPS

Family Penaeidae

Penaeus indicus H. Milne Edwards, 1837



***Penaeus indicus* CHAKA CHINGRI**

Local Names: Chaka chingri, chaga chingri, sada chingri.

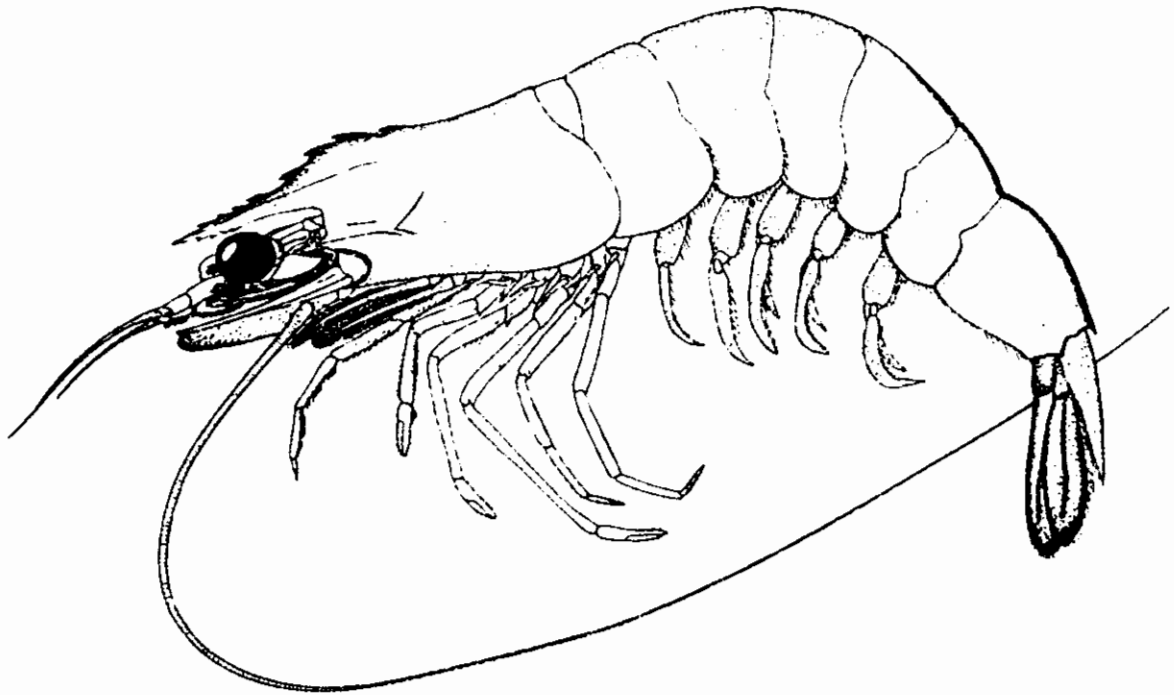
English Names: Indian white shrimp.

This large and commercially important shrimp was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. The author saw numerous juveniles and subadults specimens in the Sundarbans forest and at Dubla Char.

SHRIMPS

Family Penaeidae

Penaeus merguinus De Man, 1888



Penaeus merguinus BAGA CHAMA CHINGRI

Local Names: Baga chama chingri, bagda chingri.

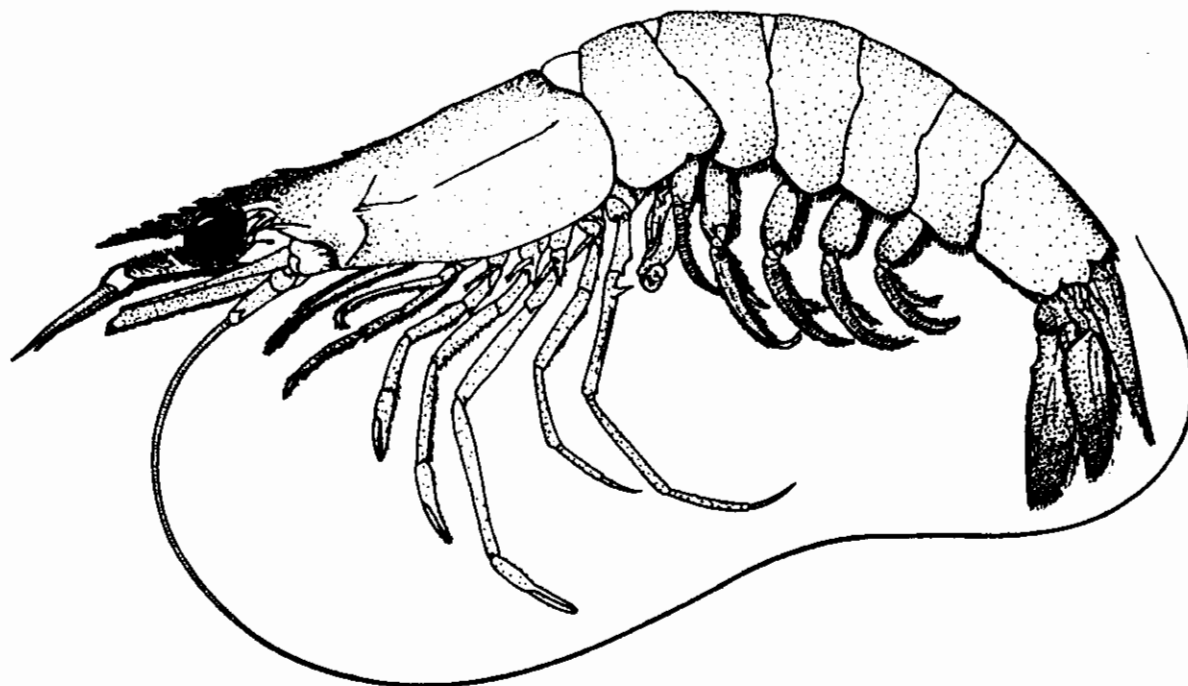
English Names: Banana shrimp.

This large and commercially important shrimp was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Metapenaeus monoceros (Fabricius, 1798)



Metapenaeus monoceros HORINA CHINGRI

Local Names: Horina chingri, loilla, horinna icha.

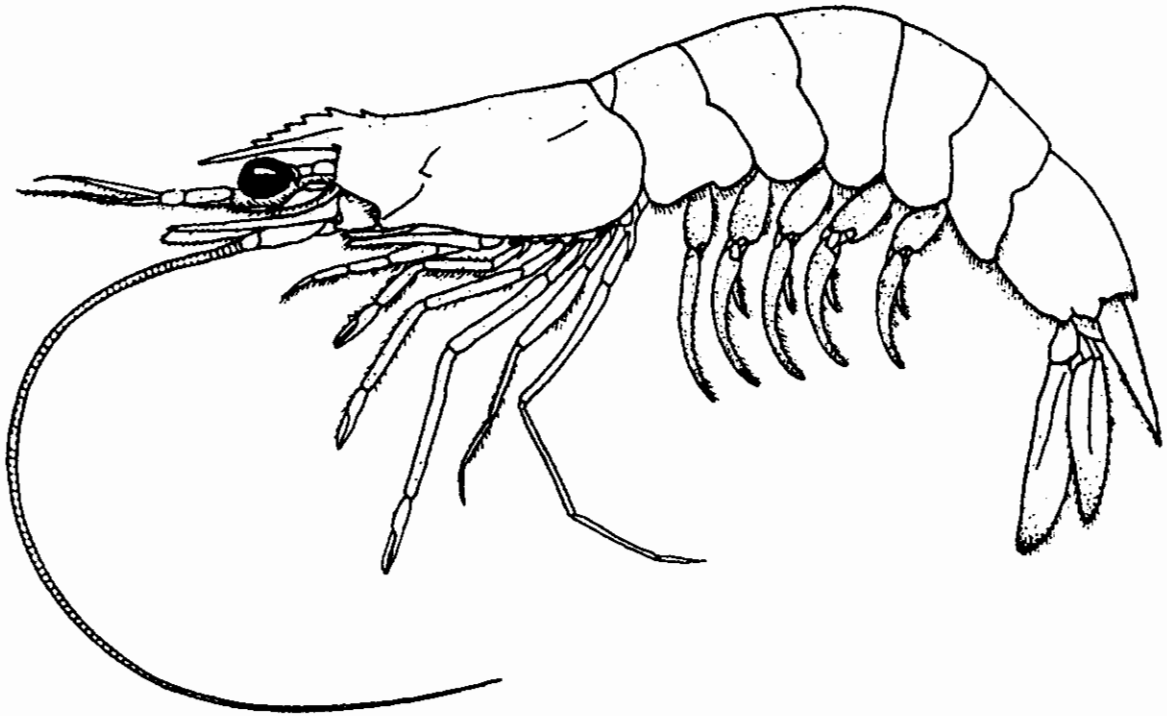
English Names: Speckled shrimp, brown shrimp

This medium size and commercially important shrimp was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Metapenaeus brevicornis (H. Milne Edwards, 1837)



***Metapenaeus brevicornis* LOILLA CHINGRI**

Local Names: Loilla chingri, chamna, chali, honney chingri.

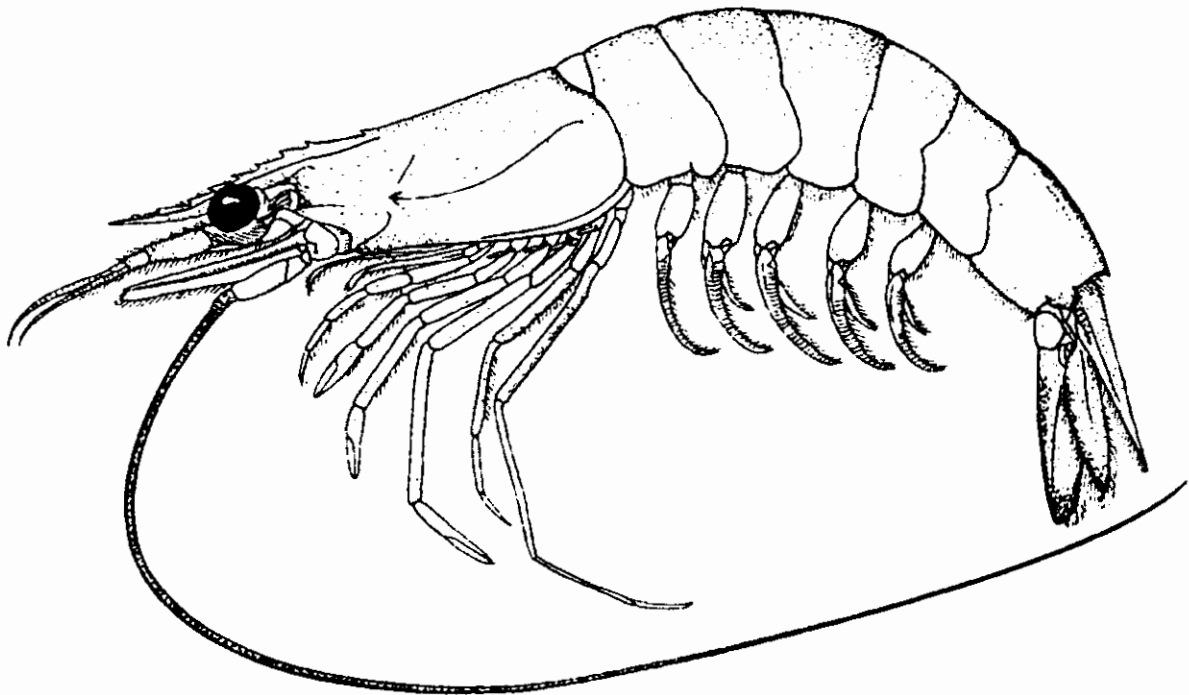
English Names: Yellow shrimp.

This medium size and commercially important shrimp was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Metapenaeus affinis (H Milne Edwards, 1837)



***Metapenaeus affinis* KHORKHORA CHINGRI**

Local Names: Khorkhora chingri.

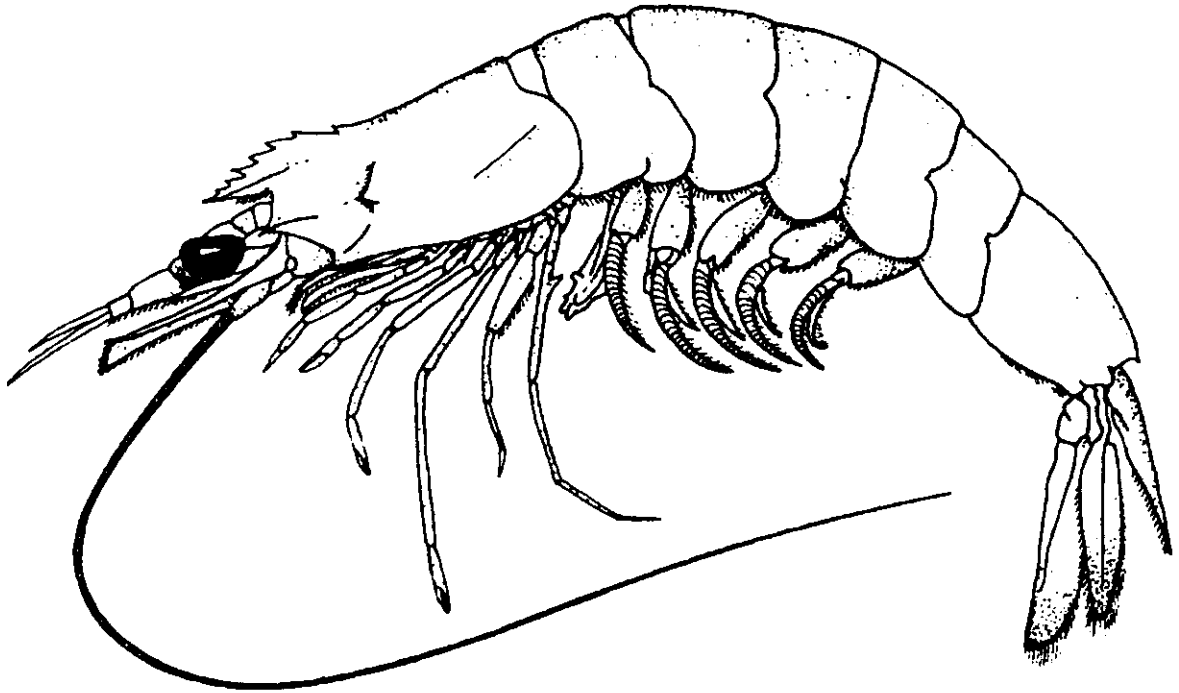
English Names: Jinga shrimp.

This medium size shrimp was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Metapenaeus lysianassa (De Man, 1888)



Metapenaeus lysianassa **HANNY**

Local Names: Hanny.

English Names: Bird shrimp.

This small species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Penaeidae

Metapenaeus spinulatus (Kubo)

Metapenaeus spinulatus **CHAMA CHINGRI**

Local Names: Chama chingri, honney.

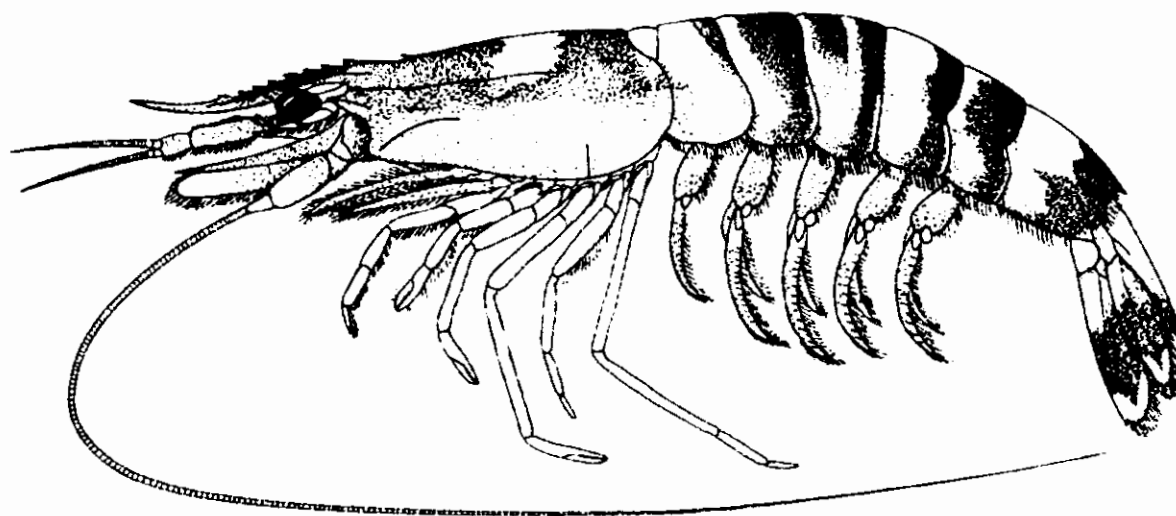
English Names: Spotted brown shrimp.

This species was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Parapenaeopsis sculptilis (Heller, 1862)



***Parapenaeopsis sculptilis* TIGA CHINGRI**

Local Names: Tiga chingri, ruda chingri, gooda.

English Names: Rainbow shrimp.

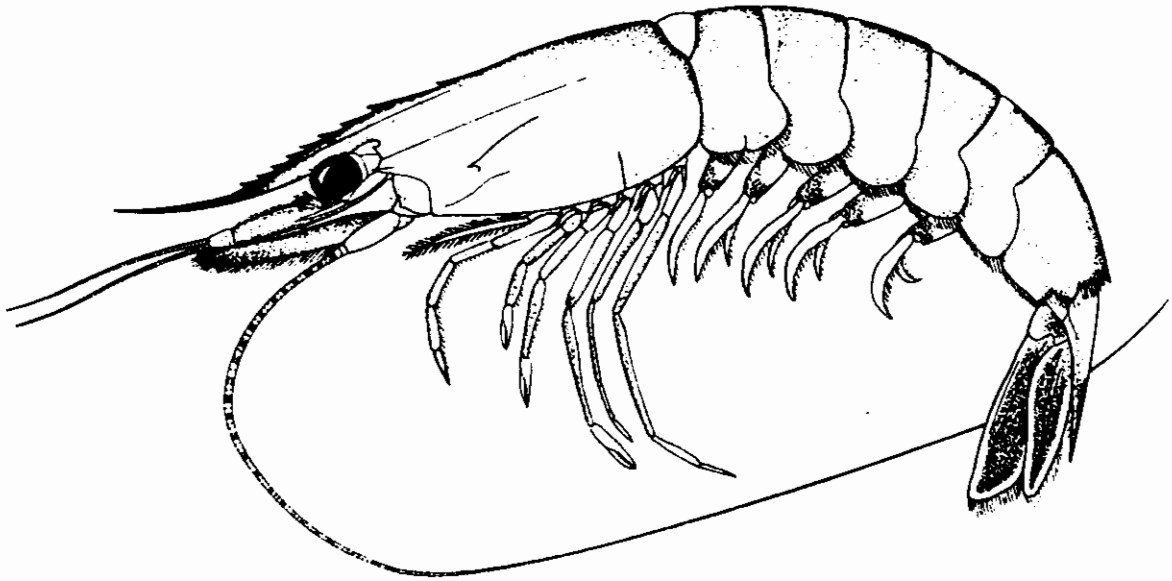
This medium size and commercially important species was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. Many specimens were seen by the author at Dubla Char in December 2000, January 2001 and November 2001. It was also seen in the Sundarbans forest in December 2000.



SHRIMPS

Family Penaeidae

Parapenaeopsis hardwickii (Miers, 1878)



Parapenaeopsis hardwickii **GODDA CHINGRI**

Local Names: Godda chingri, gusha chingri, goodi.

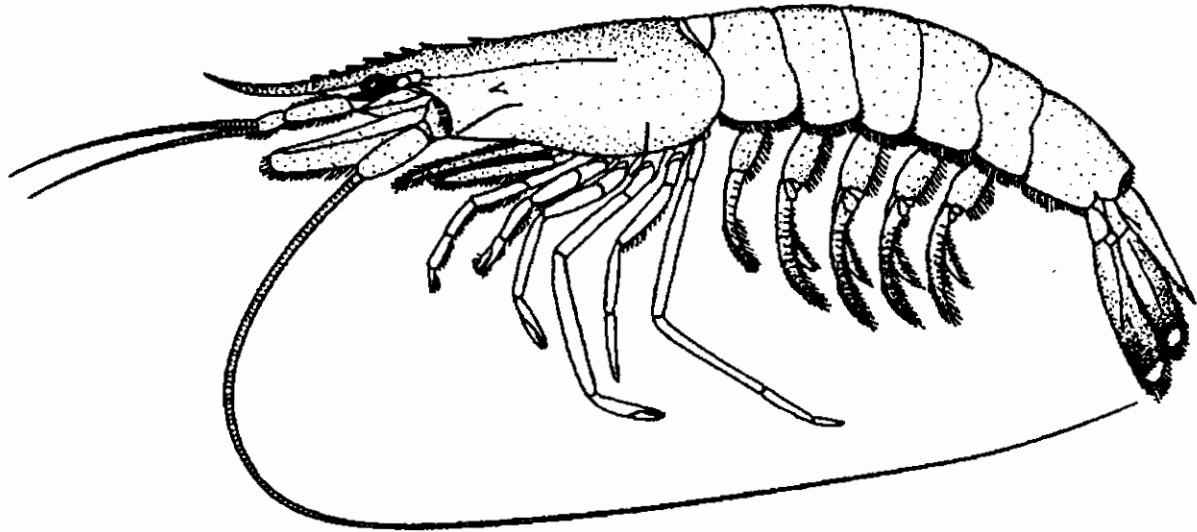
English Names: Spear shrimp.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Parapenaeopsis stylifera (H Milne-Edwards, 1837)



***Parapenaeopsis stylifera* RUDA CHINGRI**

Local Names: Ruda chingri, godda.

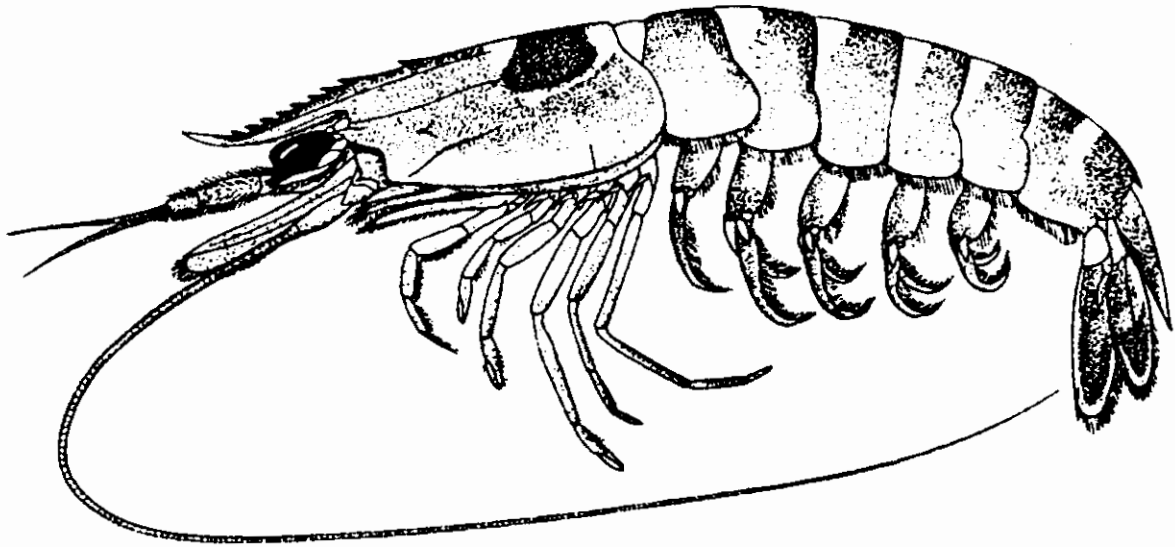
English Names: Kiddi shrimp.

This medium size species was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Penaeidae

Parapenaeopsis uncta Alcock, 1905



Parapenaeopsis uncta TIGA

Local Names: Tiga.

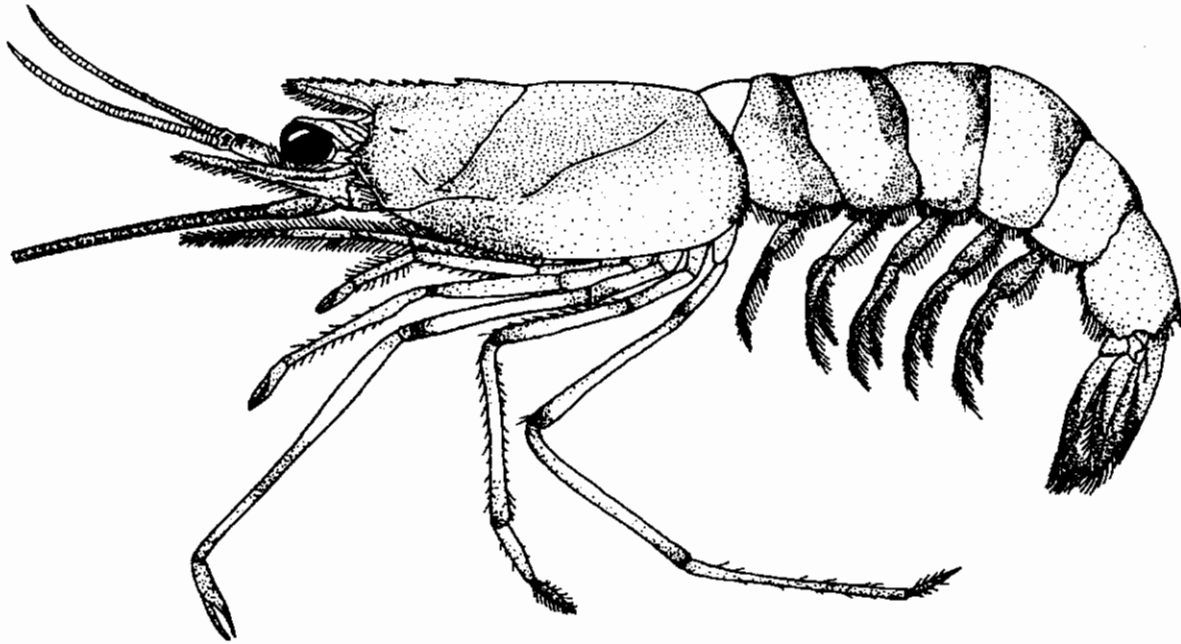
English Names: Uncta shrimp.

This medium size species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

SHRIMPS

Family Solenoceridae

Solenocera crassicornis (H Milne-Edwards, 1837)



Solenocera crassicornis **CHAMA CHINGRI**

Local Names: Chama chingri, sura chingri.

English Names: Coastal mud shrimp.

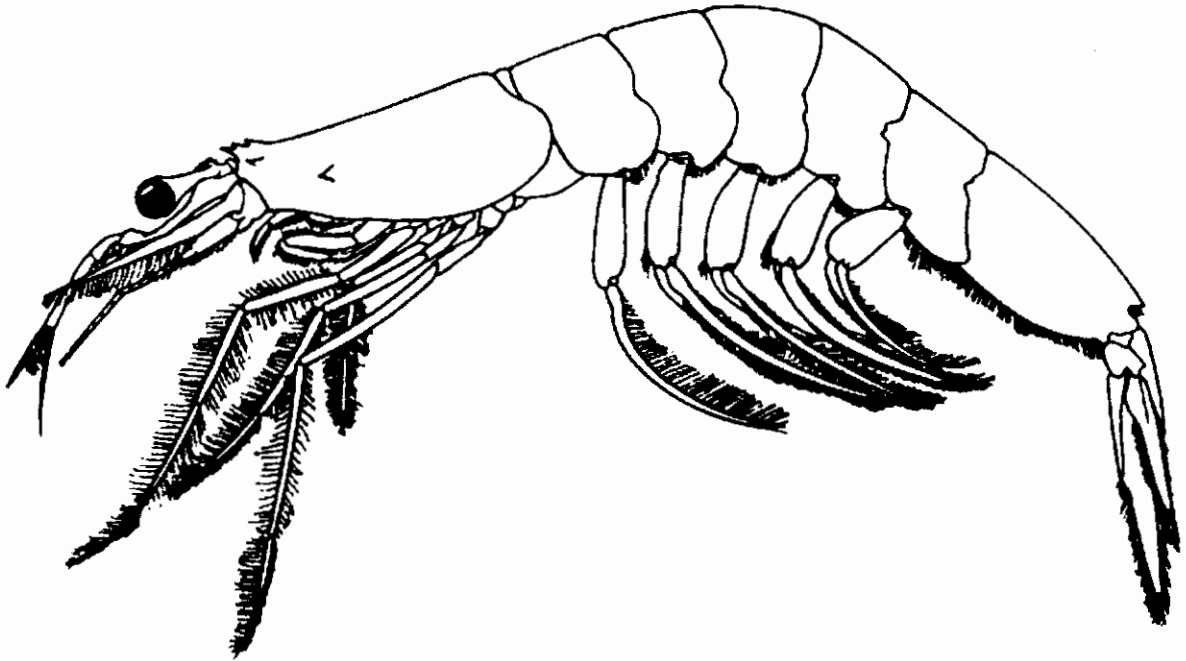
Synonyms: *Solenocera subnuda*.

This medium size species was recorded by Chantarasri (1994) from the Sundarbans as the synonym *Solenocera subnuda*. No specimens were seen by the author.

SHRIMPS

Family Sergestidae

Acetes indicus H Milne Edwards, 1830



Acetes indicus BHATI CHINGRI

Local Names: Bhati chingri, gura icha, lotia icha.

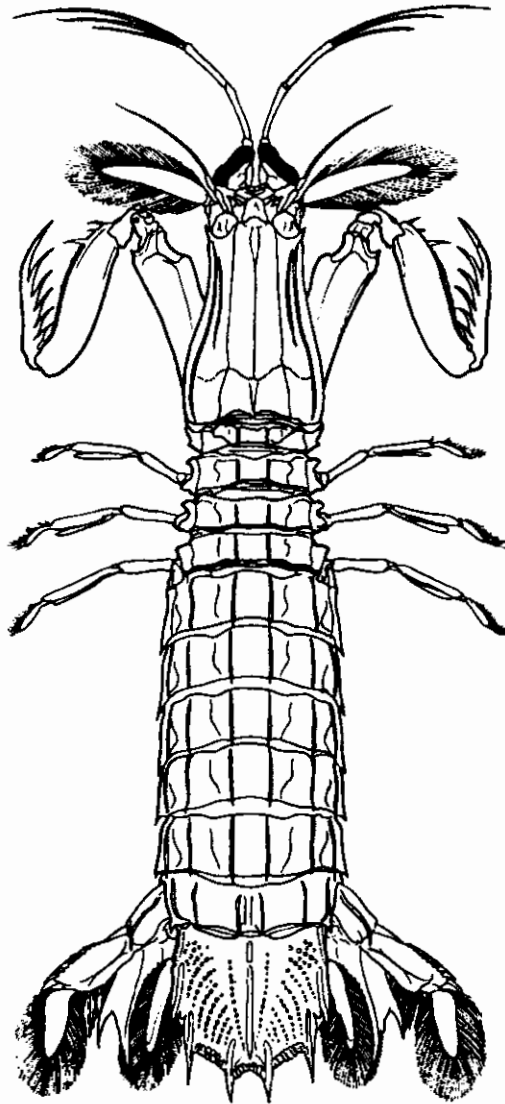
English Names: Rice shrimp, Indian paste shrimp, jawla paste shrimp.

This diminutive species was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. Many specimens were seen by the author in the Sundarbans forest in December 2000.

SHRIMPS

Family Squillidae

Oratosquillina perpensa (Kemp, 1911)



Oratosquillina perpensa

English Names: Common mantis shrimp.

This species has not previously been recorded from the Sundarbans. One specimen was seen by the author at Dubla Char in January 2001, which is provisionally identified as *Oratosquillina perpensa*.

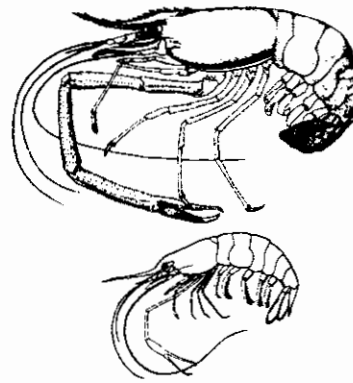
PRAWNS

PRAWNS

List of Species Recorded in Sundarbans:

Palaemonidae
River prawns

Macrobrachium rosenbergii
Macrobrachium rude
Macrobrachium mirabile
Macrobrachium birmanicus
Macrobrachium lamarrei
Macrobrachium villosimanus
Exopalaemon styliferus



Alpheidae

Alpheus euprosyne

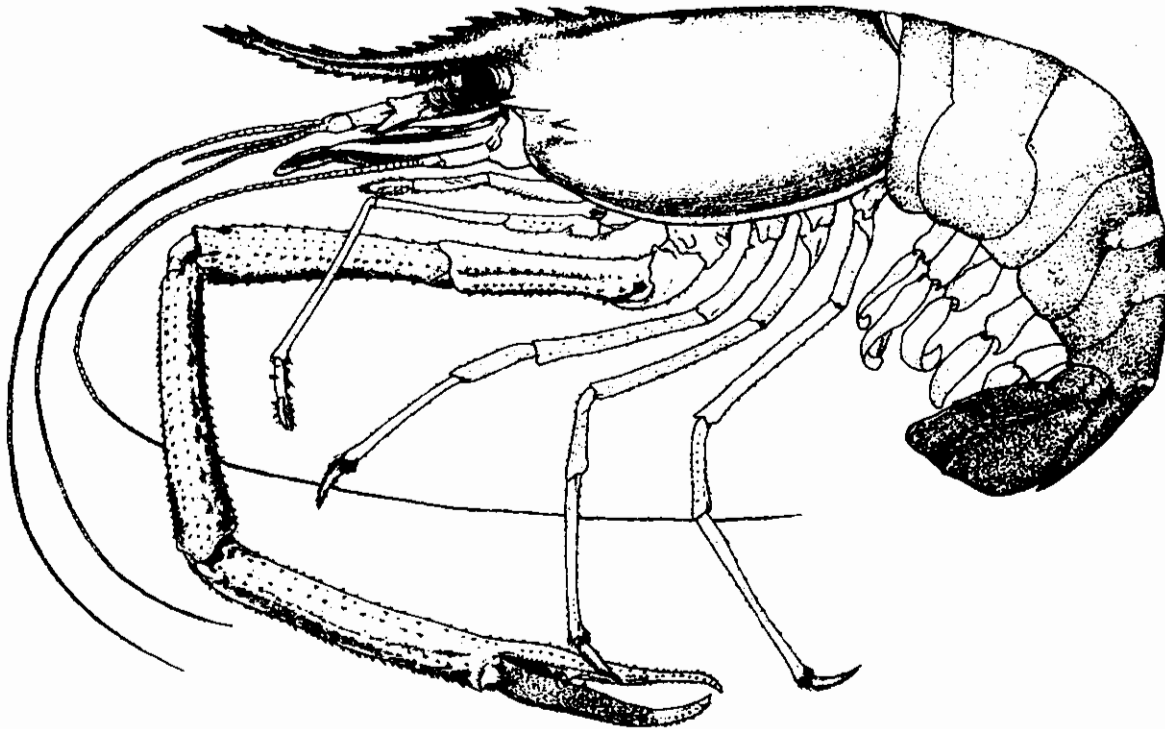


(example)

PRAWNS

Family Palaemonidae

Macrobrachium rosenbergii (De Man, 1879)



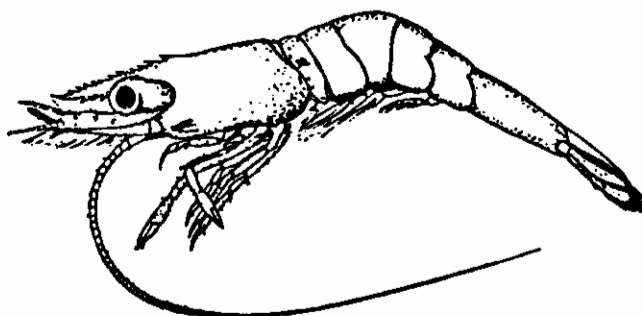
***Macrobrachium rosenbergii* GOLDA CHINGRI**

Local Names: Golda chingri.

English Names: Giant freshwater prawn.

This large and highly commercially important species was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans. The adults are caught by various gears (charpata jal, khalpata jal, castnet, angling). The larvae are caught with pata jal as a secondary target species to *Penaeus monodon*. Many specimens were seen by the author in the Sundarbans forest in June 2000, December 2000, January 2001 and November 2001.

Below: larva (left) and 'blue claw' adult male (right)



PRAWNS

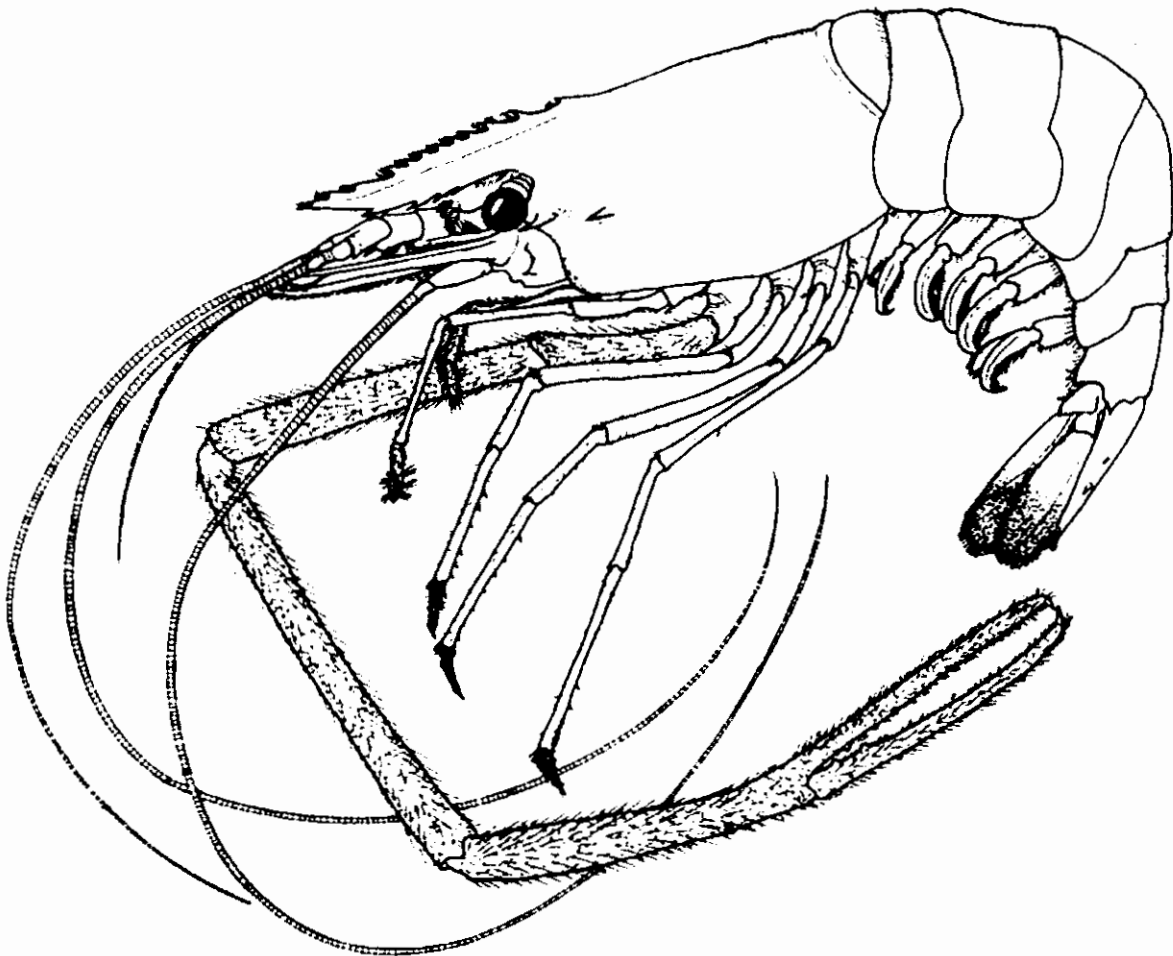


Large male
caught in
Sundarbans
East Wildlife
Sanctuary by
poacher's
charpata jal
(carapace and
abdominal
segments are
encrusted with
barnacles)

PRAWNS

Family Palaemonidae

Macrobrachium rude (Heller, 1862)



***Macrobrachium rude* KUCHA CHINGRI**

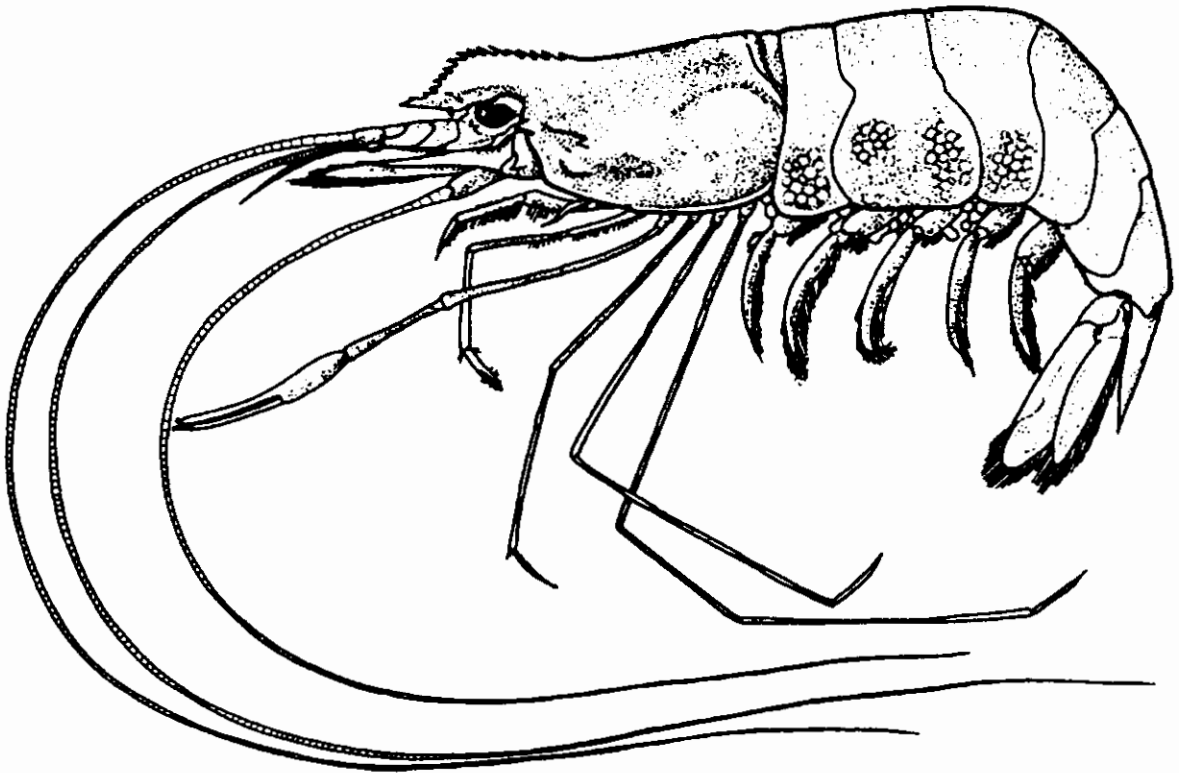
Local Names: Kucha chingri. **English Names:** Hairy river prawn.

This medium size species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

PRAWNS

Family Palaemonidae

Macrobrachium mirabile (Kemp, 1917)



Macrobrachium mirabile LUITTA ICHA

Local Names: Luitta icha.

English Names: Shortleg river prawn.

This small species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

PRAWNS

Family Palaemonidae

Macrobrachium birmanicus (Schenkel)

***Macrobrachium birmanicus* NAZARI ICHA**

Local Names: Nazari icha, shul icha.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Palaemonidae

Macrobrachium lamarrei (H Milne-Edwards)

***Macrobrachium lamarrei* THENGA ICHA**

Local Names: Thenga icha.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Palaemonidae

Macrobrachium villosimanus (Tiwari)

***Macrobrachium villosimanus* DIMUA ICHA**

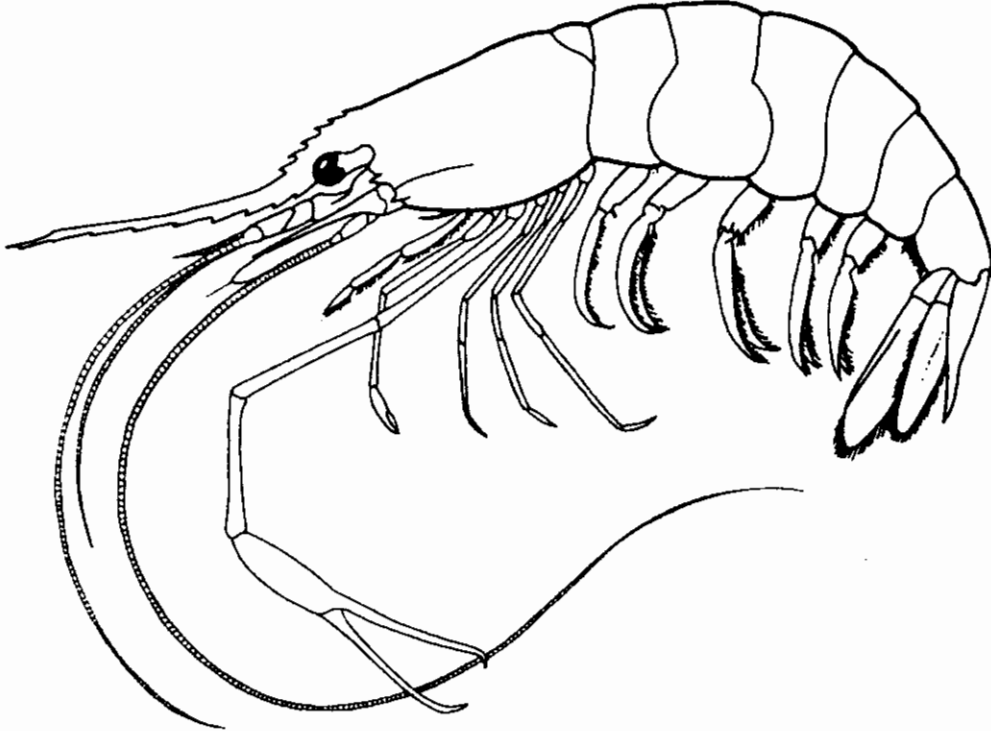
Local Names: Dimua icha.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

PRAWNS

Family Palaemonidae

Exopalaemon styliferus (H Milne-Edwards, 1840)



Exopalaemon styliferus GURA ICHA

Local Names: Gura icha. English Names: Roshna prawn. Synonyms: *Palaemon styliferus*.

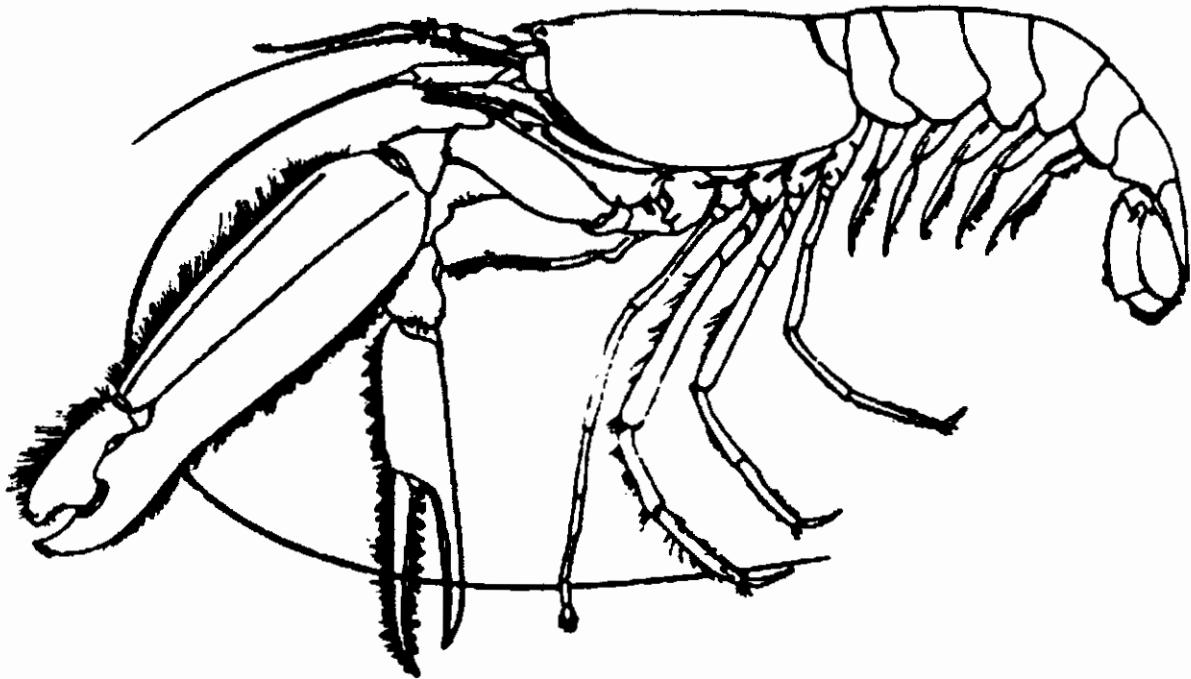
This species was recorded by Chantarasri (1994) and Khan (1999) from the Sundarbans as the synonym *Palaemon styliferus*. It was also observed by the contracted Khulna University field study in 2001. One specimen was seen by the author in the Sundarbans forest in November 2001.



PRAWNS

Family Alpheidae

Alpheus euprosyne (De Man)



Drawing above illustrates general morphology of alpheiid prawns

***Alpheus euprosyne* GODA CHINGRI**

Local Names: Goda chingri.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

LOBSTERS

LOBSTERS

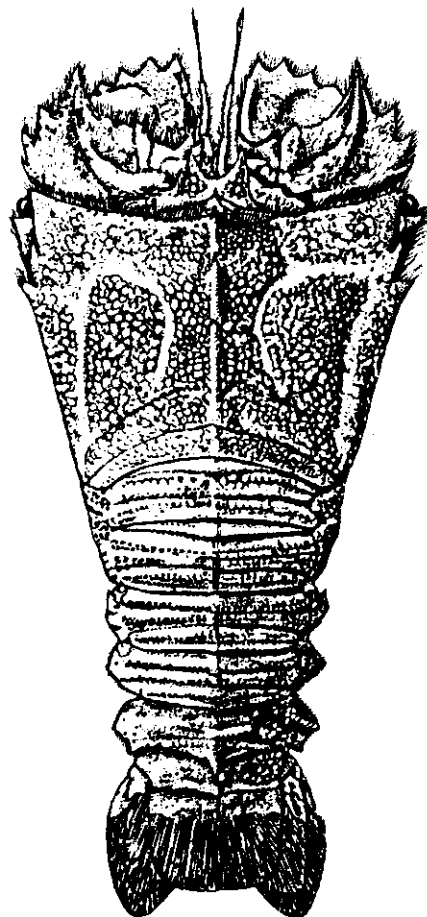
List of Species Recorded in Sundarbans:

Scyllaridae
Flathead lobsters

Thenus orientalis



Family Scyllaridae
Thenus orientalis (Lund, 1793)



Thenus orientalis BELSANASA

Local Names: Belsanasa. **International Names:** Cigale-de-mer, flathead lobster.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

CRABS

List of Species Recorded in Sundarbans:

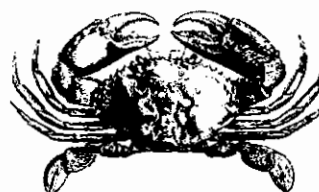
Limulidae
Horseshoe crabs

Carcinoscorpius rotundicauda



Portunidae
Swimming crabs

Scylla serrata
Portunus sanguinolentus



Calappidae
Moon crabs

Matuta victor



Grapsidae
Paddler crabs

Episesarma mederi
Varuna litterata
Metaplax crenulata
Metaplax elegans



Ocypodidae
Fiddler crabs

Gelasimus annulipes
Macrophthalmus brevis
Uca dussumieri
Uca forcipata



CRABS

Family Limulidae

Carcinoscorpius rotundicauda (Latrieille)



Carcinoscorpius rotundicauda SAGOR KAKRA

Local Names: Sagor kakra, shakul kakra.

English Names: Mangrove horseshoe crab.

This species has not previously been recorded from the Sundarbans. The author saw specimens from Dubla Char (in December 2000) and Mandarbaria (November 2001), as well as one specimen from Paikgacha several km north of the Sundarbans forest (May 2000). These specimens are provisionally identified as *Carcinoscorpius rotundicauda*.

CRABS



Opposite page and above left: Dubla Char specimen. Above right: Mandarbaria specimen
(Mandarbaria specimen with damaged carapace)

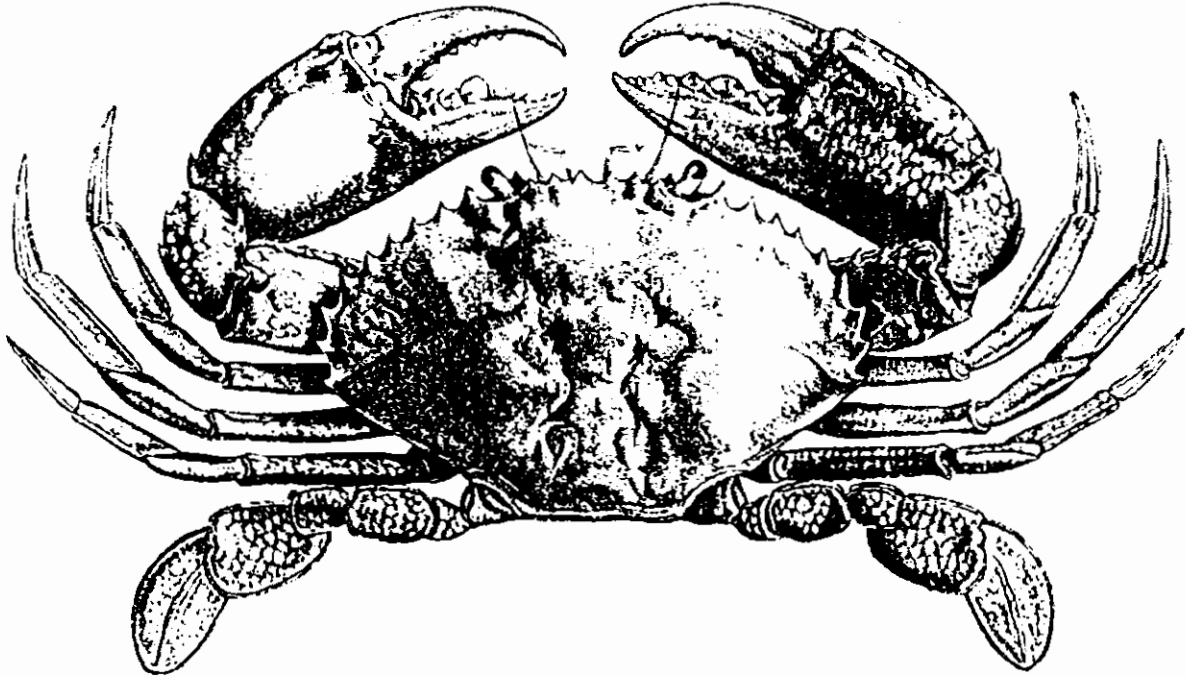
Below left: Dubla Char specimen. Below right: Mandarbaria specimen.



CRABS

Family Portunidae

Scylla serrata (Forsskal, 1775)



***Scylla serrata* KAKRA**

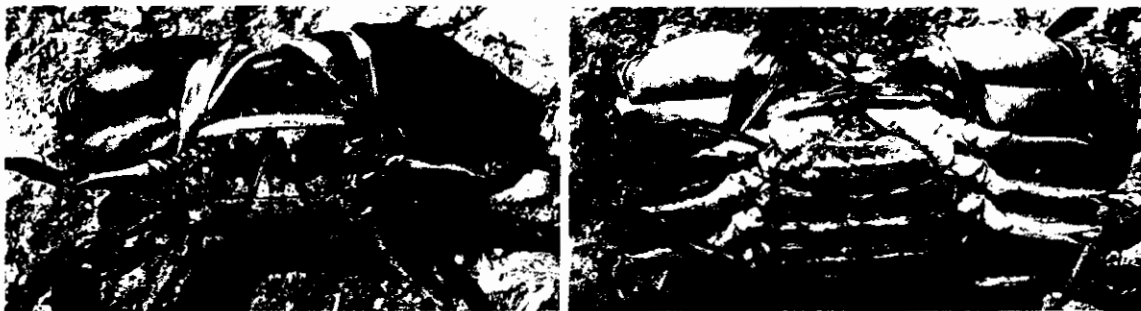
Local Names: Kakra.

English Names: Mud crab, mangrove crab.

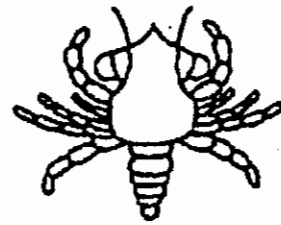
Synonyms: *Scylla oceanica*.

This large and highly commercially important species was recorded by Chantarasri (1994) from the Sundarbans. Many specimens were seen by the author in the Sundarbans forest from May 2000 to November 2001. This species is the object of an important export fishery targeting females with eggs ('berried' females) and large males.

Ventral views of male (left) and female (right) crabs illustrating sexual dimorphism of abdomen segments and telson



CRABS



megalopa (stage two)



Photo above: female with eggs attached to abdomen segments

CRABS

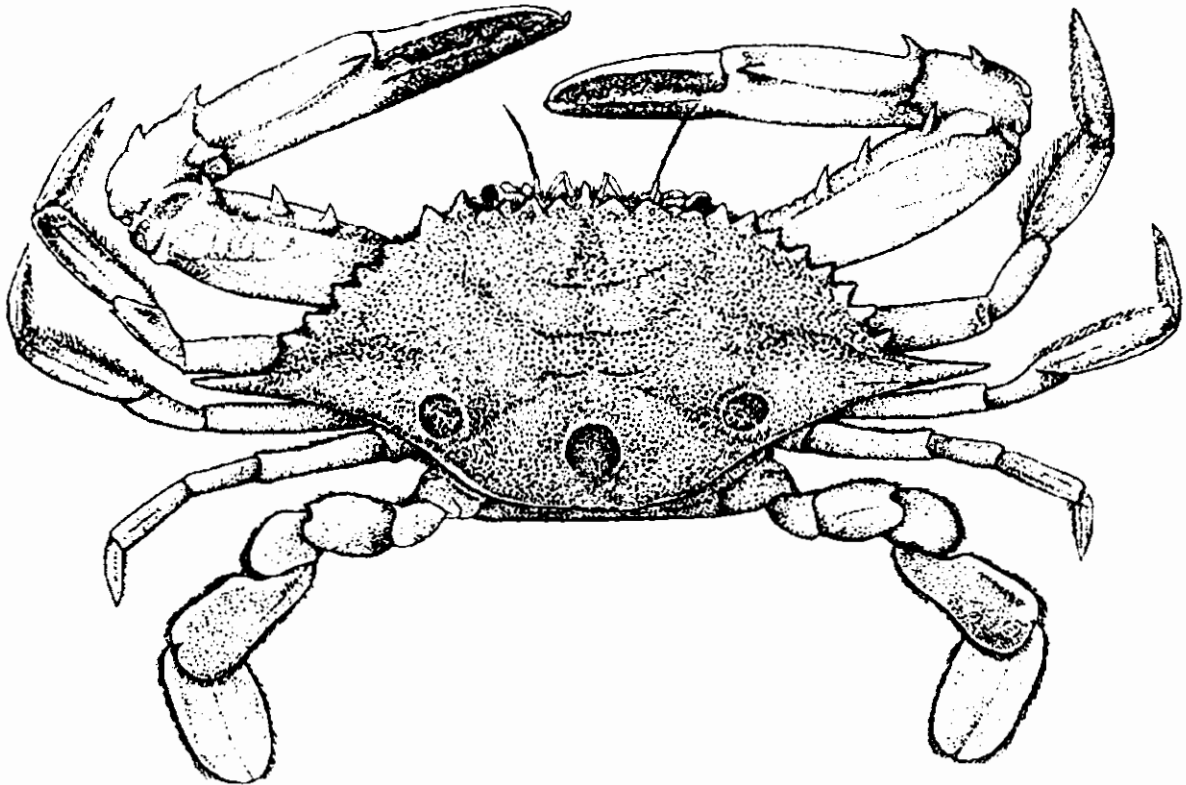


Photos this page of *Scylla serrata*

CRABS

Family Portunidae

Portunus sanguinolentus (Herbst, 1783)



***Portunus sanguinolentus* ZAJI KAKRA**

Local Names: Zaji kakra.

English Names: Three spot swimming crab, bloodspotted crab.

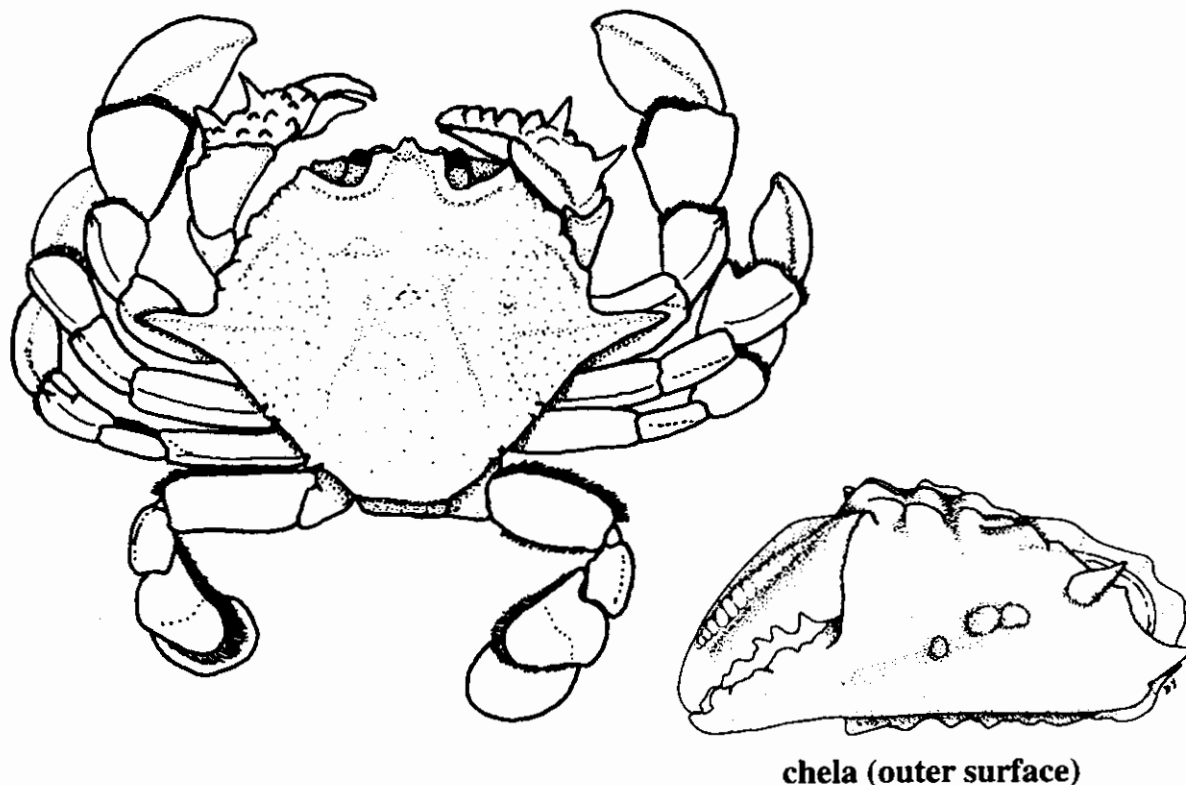
Synonyms: *Neptunus sanguinolentus*.

This distinctively marked species has not previously been recorded from the Sundarbans. The author saw several specimens at Dubla Char in December 2000 and January 2001.

CRABS

Family Calappidae

Matuta victor (Fabricius, 1781)



Matuta victor

English Names: Common moon crab.

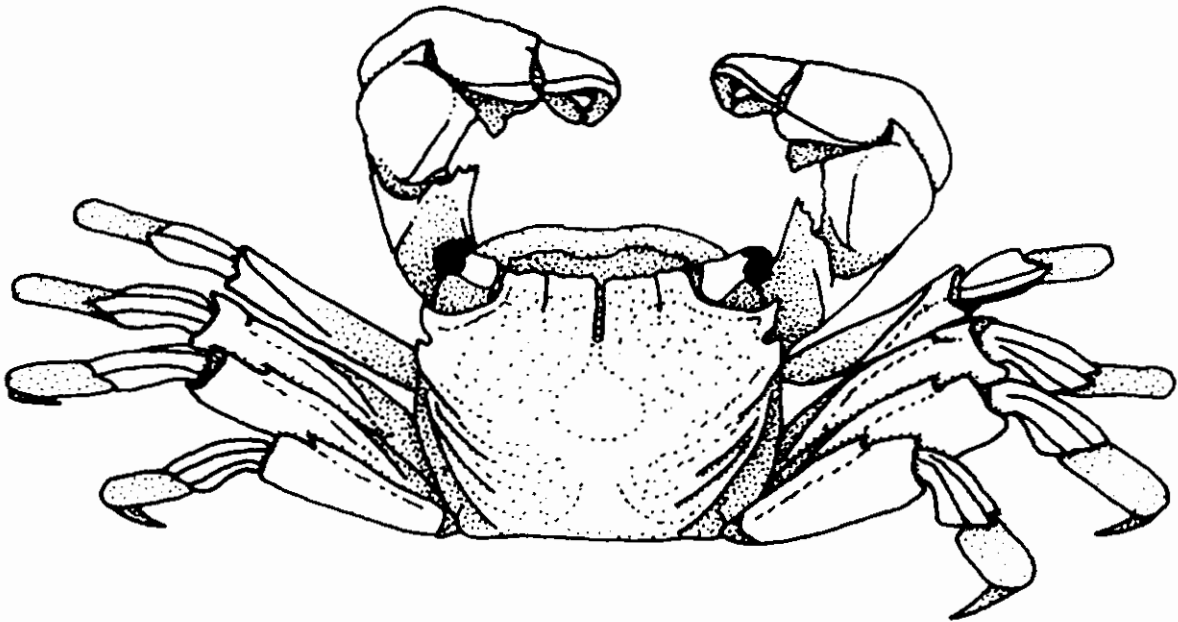
Synonyms: *Matuta lunaris*.

This small bright yellow, black and white species has not previously been recorded from the Sundarbans. The author saw several specimens at Dubla Char in December 2000, January 2001 and November 2001. It is relatively common in behundi net catches.

CRABS

Family Grapsidae

Episesarma mederi (A Milne-Edwards, 1854)



Episesarma mederi KOKROL

Local Names: Kokrol.

English Names: Thai vinegar crab.

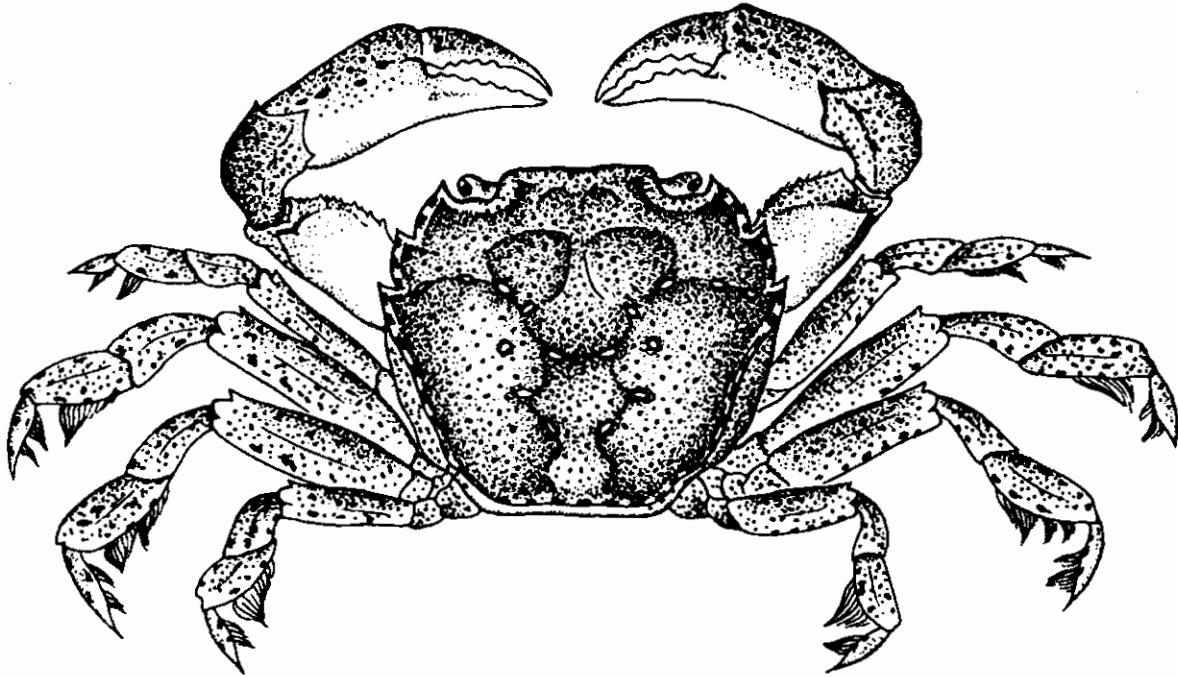
Synonyms: *Sesarma mederi*.

This small species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

CRABS

Family Grapsidae

Varuna litterata (Fabricius, 1798)



Varuna litterata GULLI KAKRA

Local Names: Gulli kakra. English Names: Oceanic paddler crab.

This small species has not previously been recorded from the Sundarbans. The author saw several specimens in the Sundarbans forest in November 2001.



CRABS



CRABS

Family Grapsidae

Metaplax crenulata

Metaplax crenulata

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Grapsidae

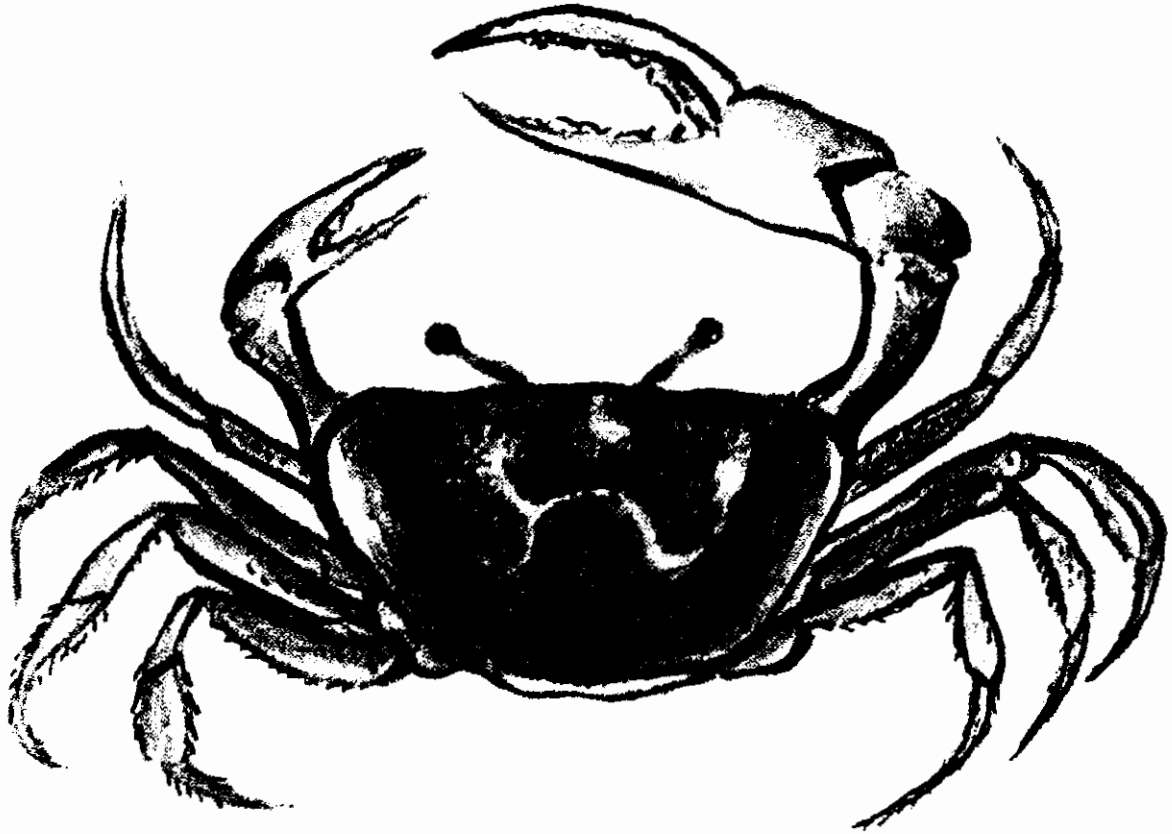
Metaplax elegans

Metaplax elegans

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

CRABS

Family Ocypodidae
Gelasimus annulipes



Gelasimus annulipes LAL KAKRA

Local Names: Lal kakra.

English Names: Red fiddler crab.

This common species was observed during field studies by Rajshahi University in the Sundarbans. The author was specimens in various locations in the Sundarbans forest from May 2000 to November 2001.

CRABS

Family Ocypodidae

Macrophthalmus brevis

***Macrophthalmus brevis* KOKROL**

Local Names: Kokrol.

English Names: Periscope crab.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Ocypodidae

Uca dussumieri

Uca dussumieri

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Ocypodidae

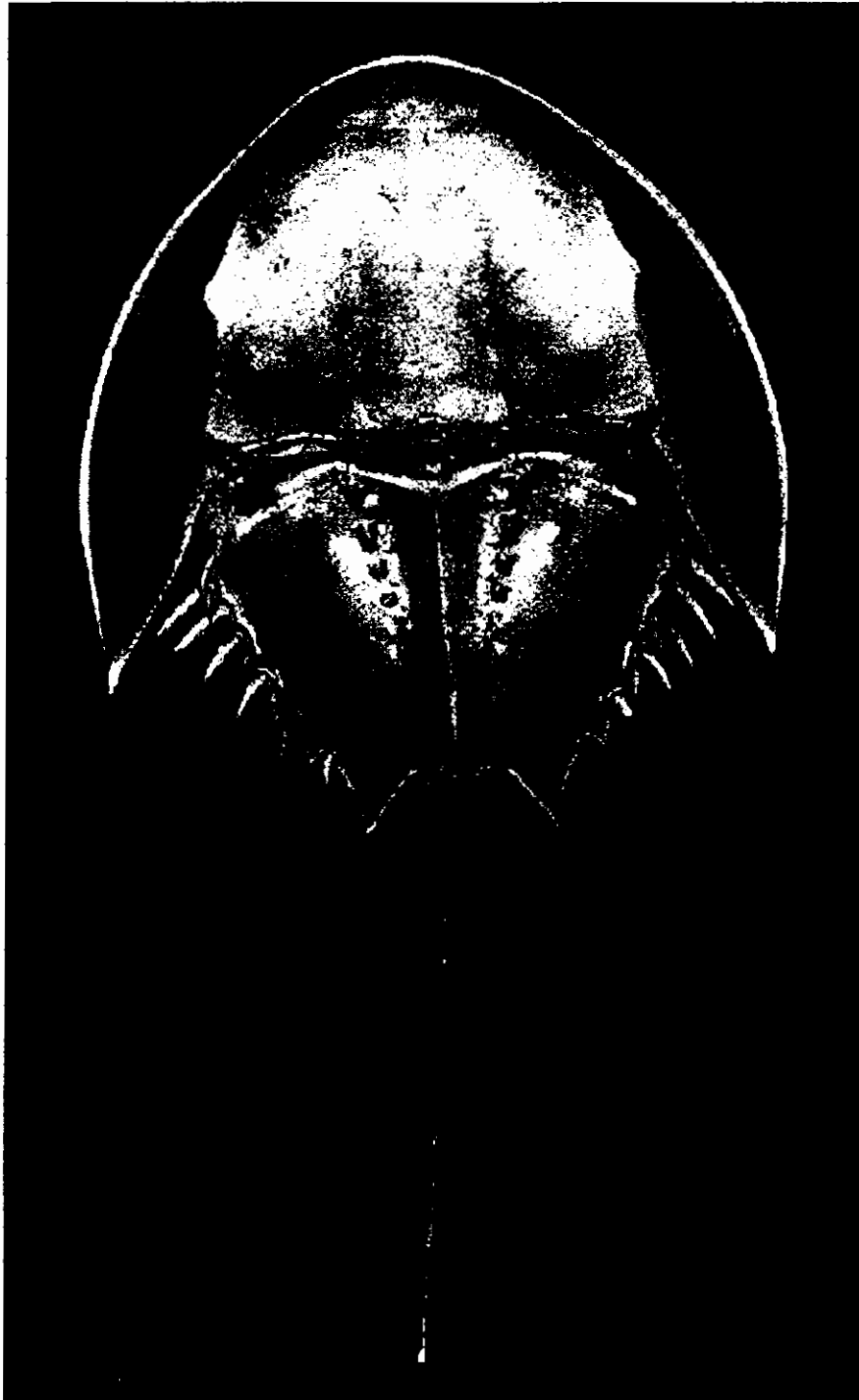
Uca forcipata

Uca forcipata

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

CRABS

Species of Uncertain Occurrence in Sundarbans

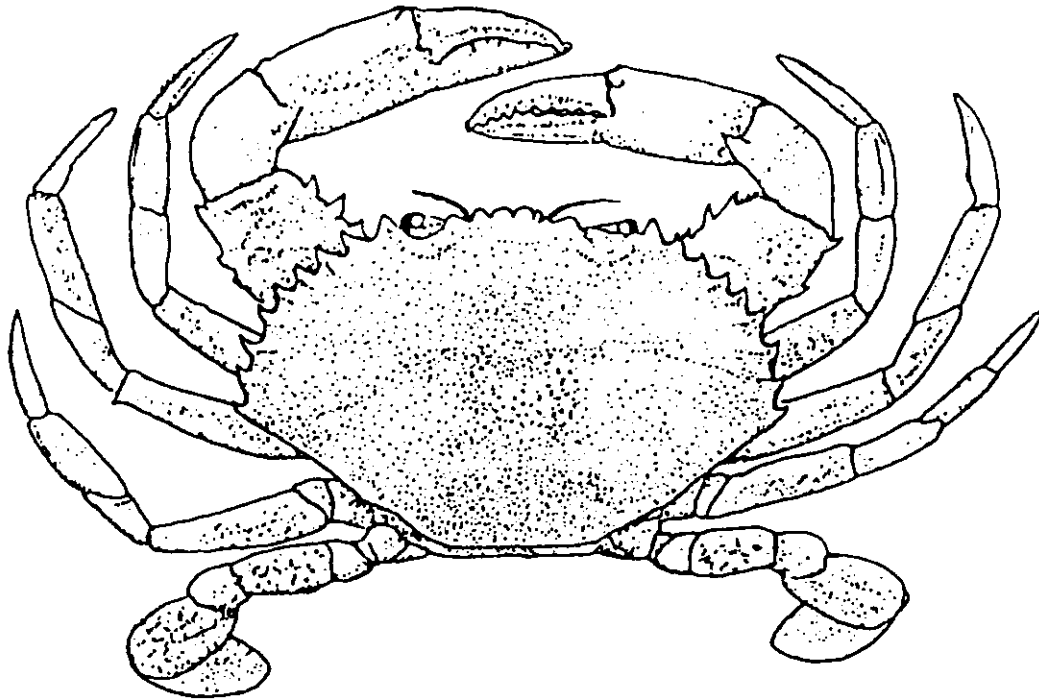


Example of genus *Tachypleus*

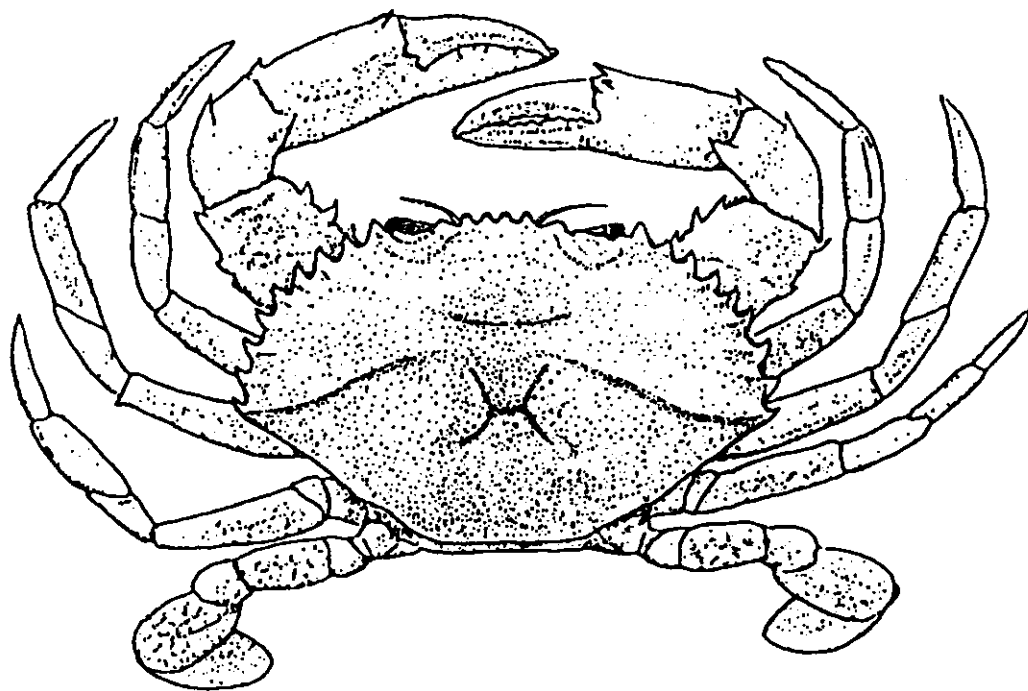
The horseshoe crab *Tachypleus gigas* (Muller) is recorded from the Indian Sundarbans, and may eventually be found to also occur in the Bangladesh Sundarbans.

CRABS

Two other crabs of the genus *Scylla* occur in the Bay of Bengal region, and may eventually be found to also occur in the Sundarbans:



Scylla olivacea (Herbst, 1796)



Scylla tranquebarica (Fabricius, 1798)

CRABS

Below: two unidentified species of grapsid crabs from the Sundarbans forest



CRABS



SNAILS

(and Related Shellfishes)

List of Species Recorded in Sundarbans:

Potamididae
Telescope &
horn snails

Telescopium telescopium
Cerithidea alata
Cerithidea cingulata
Cerithidea obtusa



Muricidae
Rock shells

Cymia tissoti
Cymia lacera
Thais blanfordi



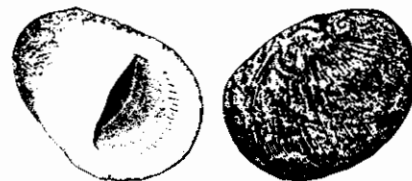
Melongenidae
Spiral snails

Pugilina cochlidium



Neritidae
Cherry snails

Nerita articulata
Nerita fulgurans
Nerita polita
Nerita lineata
Neritina cornucopia
Neritina smithii
Neritina violacea



Melampidae
Ear snails

Cassidula aurisfelis
Cassidula nucleus
Cassidula multiplicata
Auricula translucens
Ellobium gangetica
Pythia plicata



SNAILS

Littorinidae
Periwinkles

Littoraria melanostoma
Littoraria scabra



Thiaridae

Thiara tuberculata



Viviparidae

Bellamyia bengalensis



Naticidae
Moon snails

Polinices didyma



Buccinidae
Whelks

Babylonia spirata



Cassidae
Bonnet snails

Phalium granulatum



Bursidae
Frog snails

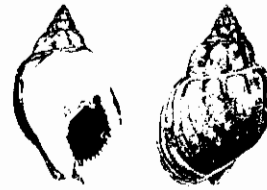
Bufonaria rana



SNAILS

Nassariidae
Mud snails

Nassarius floviolatus
Nassarius nodiferus



Fascioliariidae
Spindle snails

Latirus sp



Planorbidae

Indoplanorbis exustus



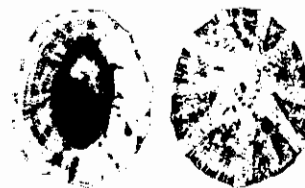
Costellariidae
Mitre snails

Zierliana sp



Onchidiidae

Onchidium tigrinum
Onchidium tenerum



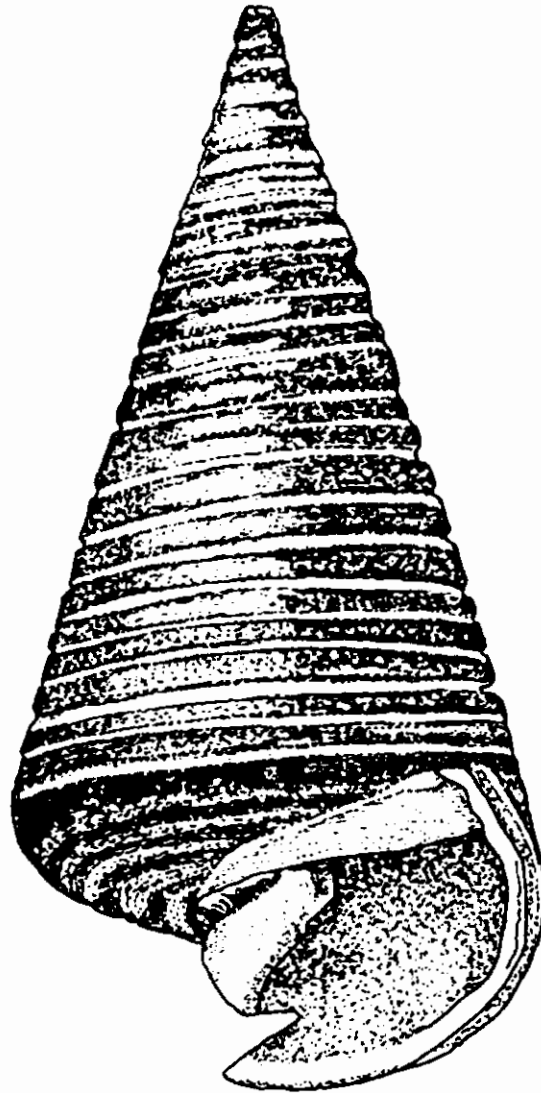
Patellidae
Limpets

Cellana radiata

SNAILS

Family Potamididae

Telescopium telescopium (Linnaeus, 1758)



Telescopium telescopium JONGRA

Local Names: Jongra.

English Names: Telescope snail.

This medium size commercially important species was recorded from the Sundarbans by Ahmed (1990), Jahan et al (1990) and Pendred (1995). Many specimens were seen by the author throughout the Sundarbans forest from May 2000 to November 2001. It is collected mainly as living shells from the Sundarbans forest floor, and burnt to produce lime.

SNAILS



Photo below: boat load of *Telescopium telescopium* (and the clam *Polymesoda bengalensis*)



SNAILS

Family Potamididae

Cerithidea alata



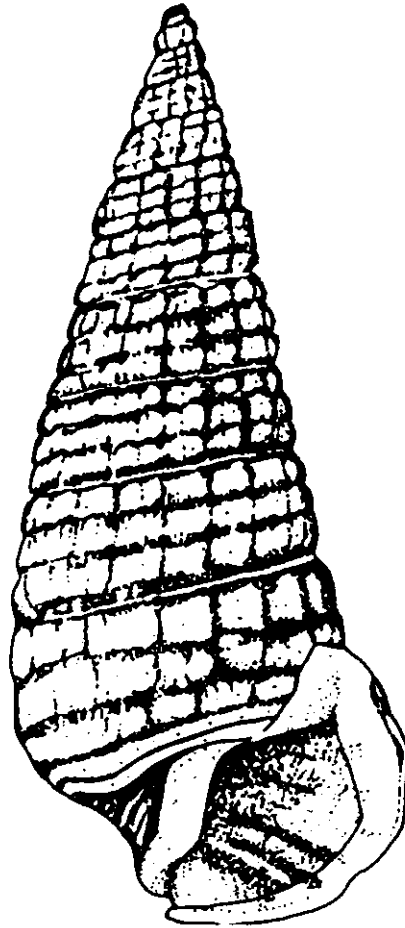
Cerithidea alata

This small species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author.

SNAILS

Family Potamididae

Cerithidea cingulata (Gmelin, 1791)



গ্রন্থাগার বন ভবন, ঢাকা
প্রাক্ষেপন নং: 36.....
তারিখ: 13.8.03.....

Cerithidea cingulata

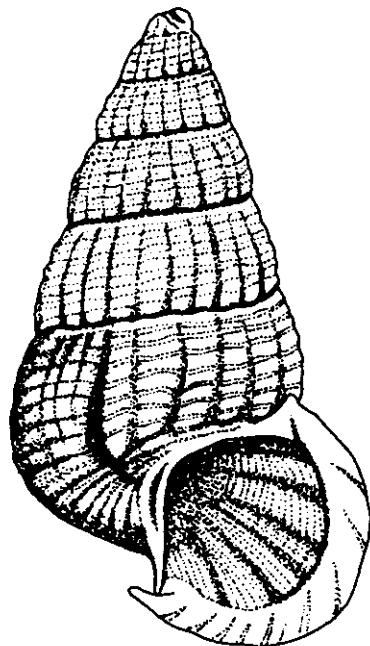
English Names: Girdled horn snail.

This small species was observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Potamididae

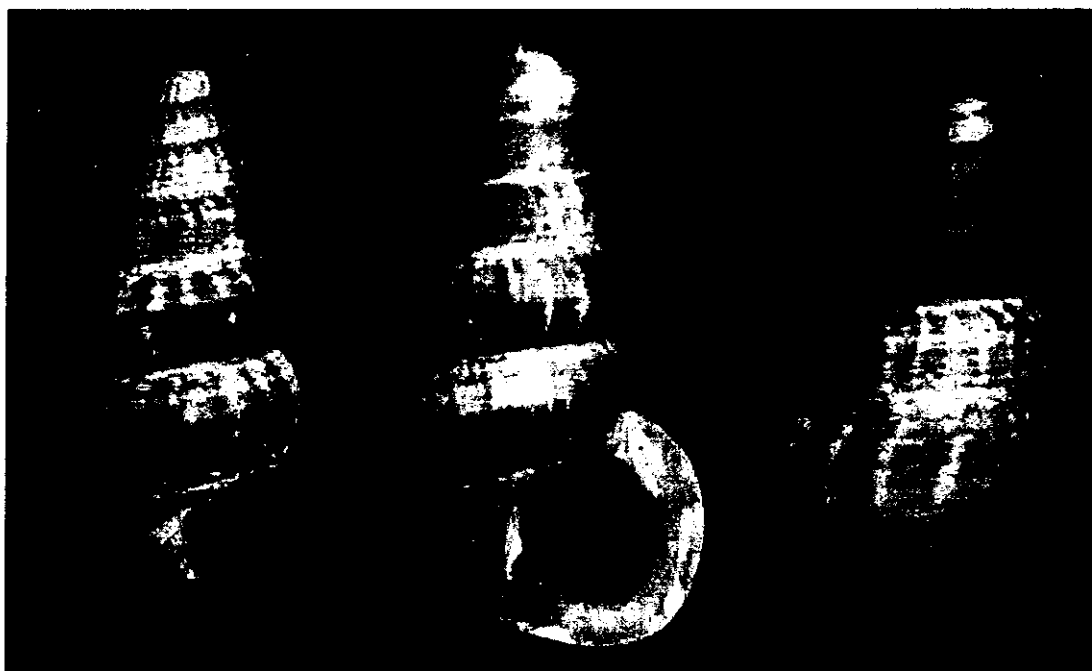
Cerithidea obtusa (Lamarck, 1822)



Cerithidea obtusa

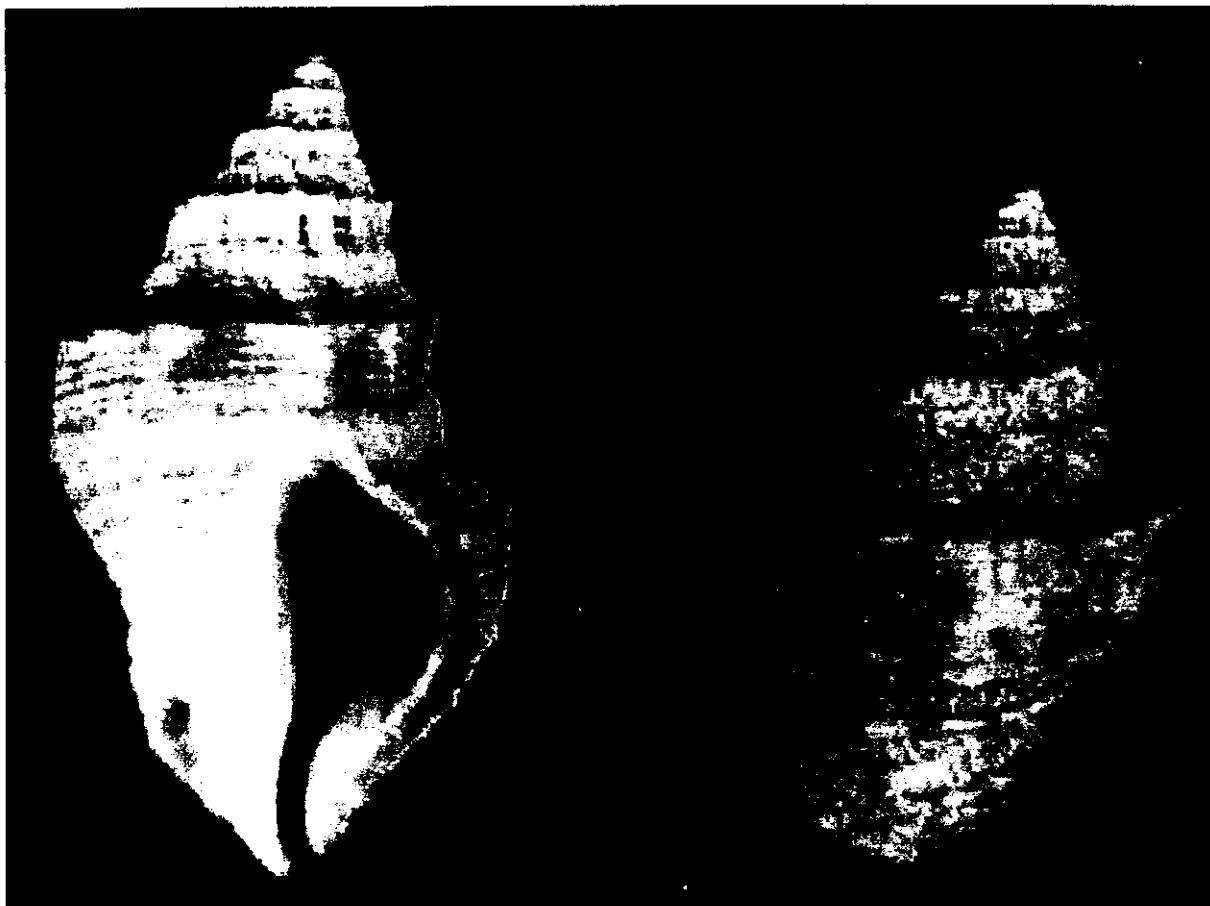
English Names: Obtuse horn snail.

This small species was recorded from the Sundarbans by Ahmed (1990), Jahan et al (1990), Chantarasri (1994) and Pendred (1995). Specimens were observed during the contracted Khulna University field study in 2001.



SNAILS

Family Muricidae
Cymia tissoti



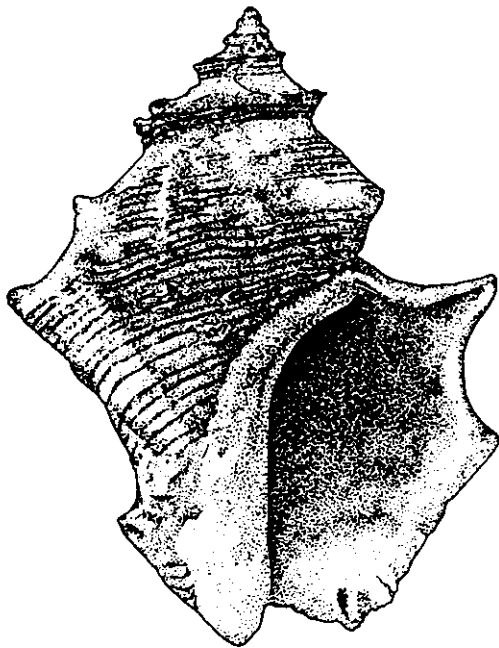
Cymia tissoti

This medium size species was recorded from the Sundarbans by Pendred (1995). Specimens were observed during the contracted Khulna University field study in 2001.

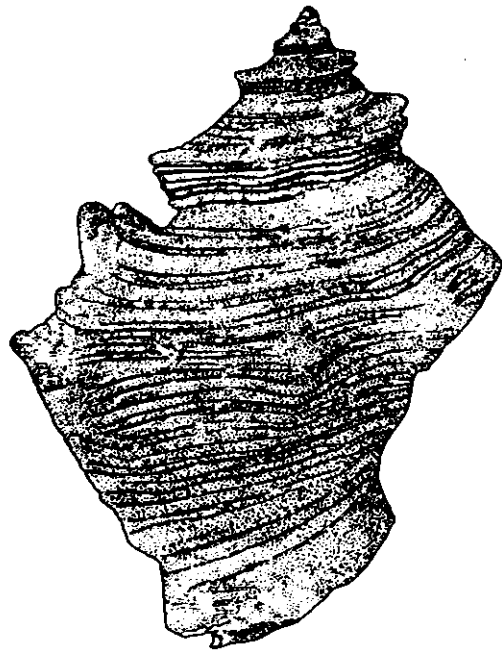
SNAILS

Family Muricidae

Cymia lacera (Born, 1778)



ventral view



dorsal view

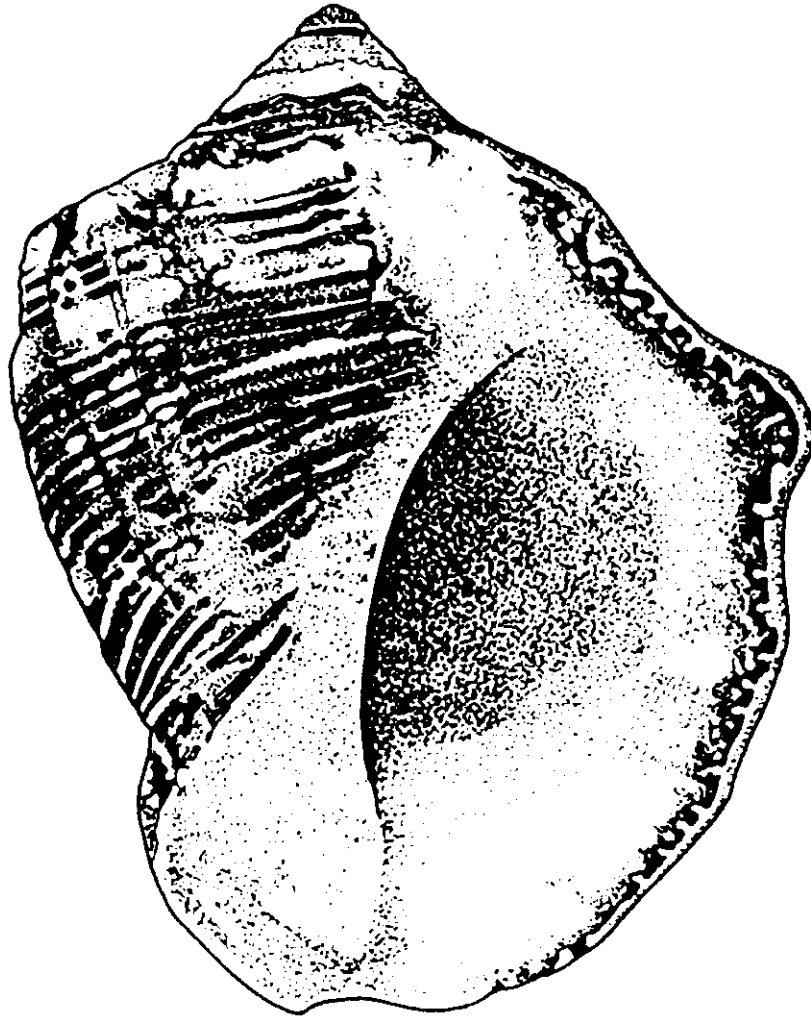
Cymia lacera

English Name: Carinate rock shell.

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

SNAILS

Family Muricidae
Thais blanfordi



Drawing of *Thais bufo* (Lamarck, 1822) to illustrate general shell morphology of genus *Thais*

Thais blanfordi

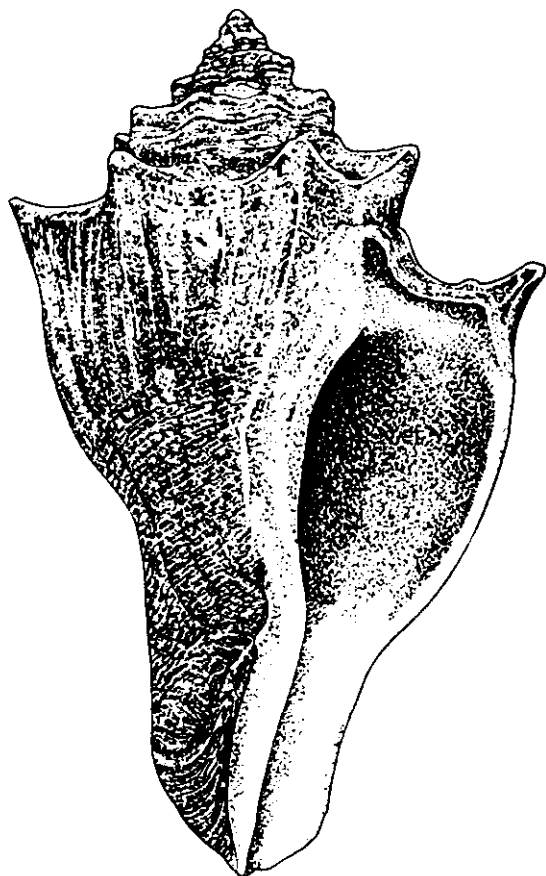
English Names: Rock shell.

This species were observed during the contracted Khulna University field study in 2001.

SNAILS

Family Melongenidae

Pugilina cochlidium (Linnaeus, 1758)



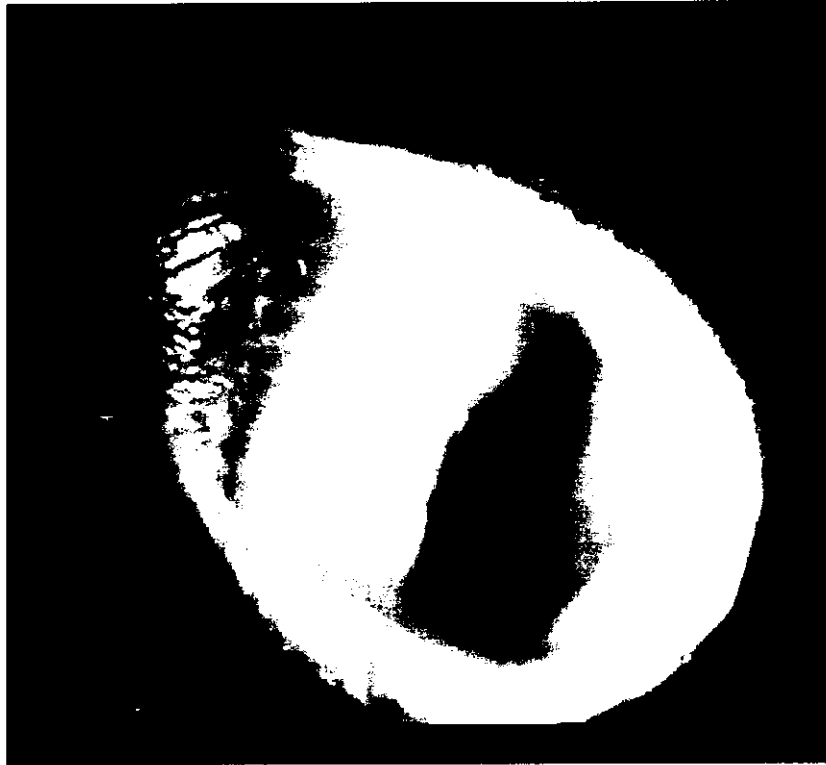
Pugilina cochlidium

English Names: Spiral snail.

This species was recorded from the Sundarbans by Jahan et al (1990) and Pendred (1995). Specimens were observed during the contracted Khulna University field study in 2001.

SNAILS

Family Neritidae
Nerita articulata



Nerita articulata

English Names: Cherry snail.

This species was recorded from the Sundarbans by Jahan et al (1990) and Pendred (1995). No specimens were seen by the author.

Family Neritidae
Nerita fulgurans

Nerita fulgurans

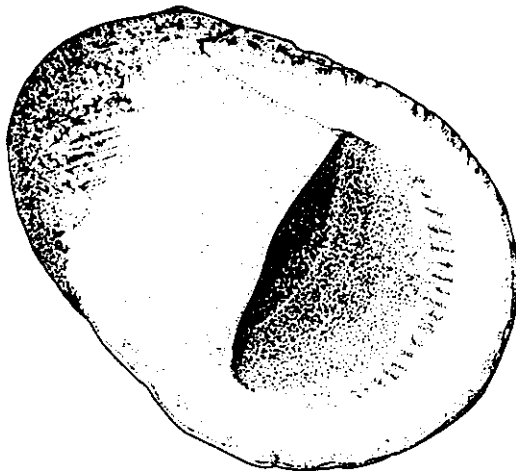
English Names: Cherry snail.

Specimens were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Neritidae

Nerita polita Linnaeus, 1758



ventral view



dorsal view

Nerita polita

English Names: Polished Cherry snail.

Specimens were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

Family Neritidae

Nerita lineata

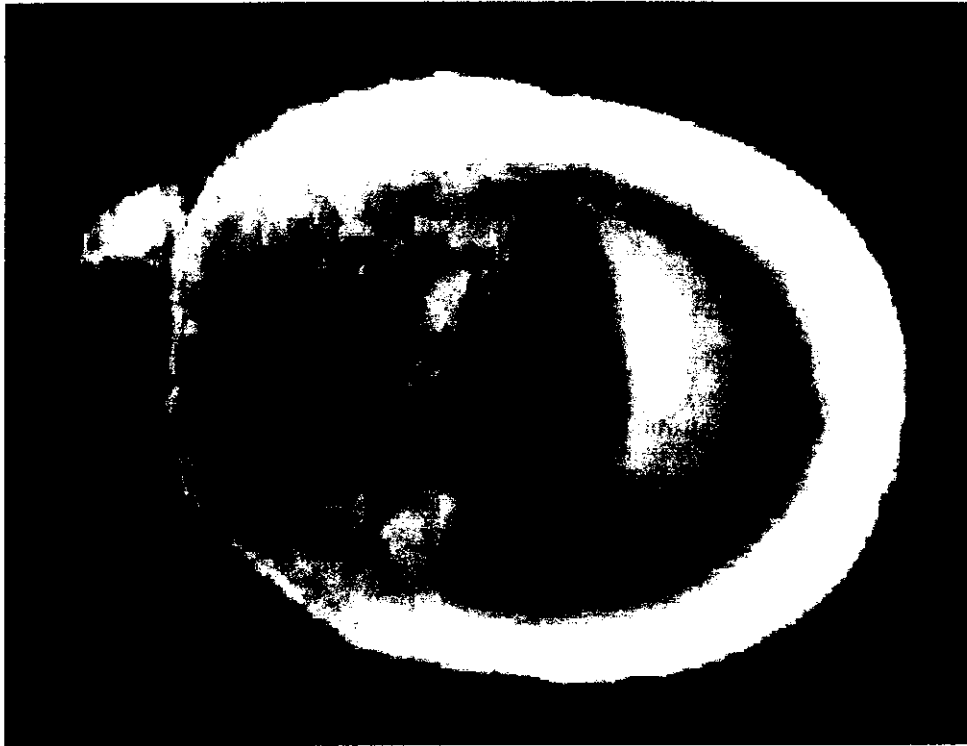
Nerita lineata

English Names: Cherry snail.

Specimens were observed during the contracted Khulna University field study in 2001.

SNAILS

Family Neritidae
Neritina cornucopia



Neritina cornucopia

English Names: Cherry snail.

This species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author.

SNAILS

Family Neritidae

Neritina smithii



Neritina smithii

English Names: Cherry snail.

This species was recorded from the Sundarbans by Pendred (1995). Specimens were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Neritidae
Neritina violacea



Neritina violacea

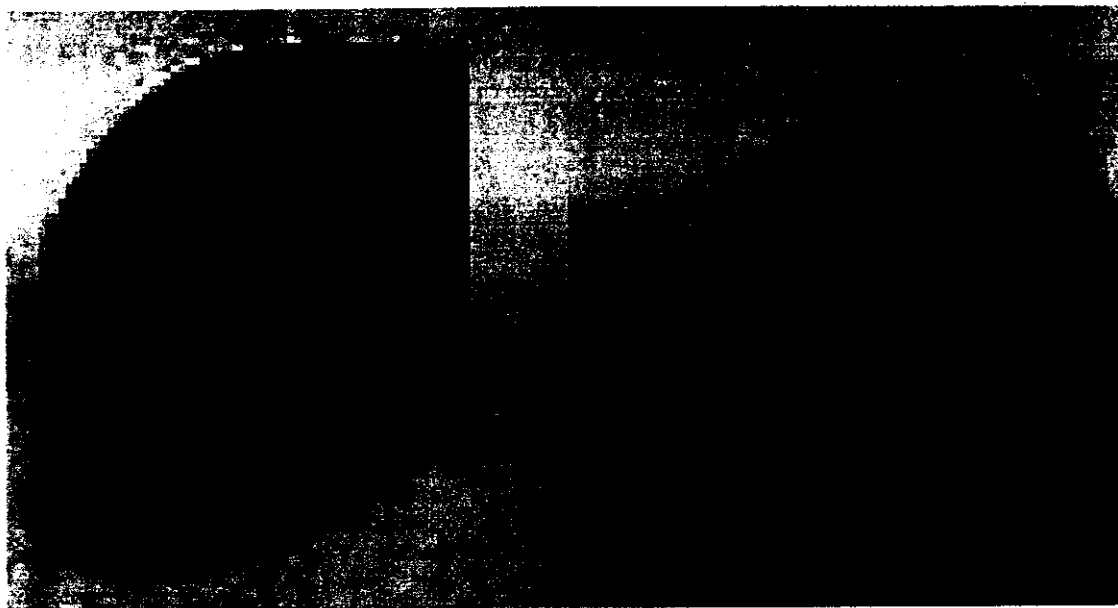
English Names: Cherry snail.

This species was recorded from the Sundarbans by Ahmed (1990), Jahan et al (1990) and Pendred (1995). Specimens were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Melampidae

Cassidula aurisfelis (Brugiere, 1789)



Cassidula aurisfelis JONGRA

Local Names: Jongra.

English Name: Ear snail.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

Family Melampidae

Cassidula nucleus (Gmelin)

Cassidula nucleus

English Name: Ear snail.

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

SNAILS

Family Melampidae
Cassidula multiplicata



Cassidula multiplicata JONGRA

Local Names: Jongra.
English Name: Ear snail.

This species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author.

Family Melampidae
Auricula translucens (Annandale and Prashad)

Auricula translucens

English Name: Ear snail.

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

SNAILS

Family Melampidae

Ellobium gangetica



Ellobium gangetica

English Names: Ear snail.

This species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author.

SNAILS

Family Melampidae
Pythia plicata (Gray, 1835)



Pythia plicata

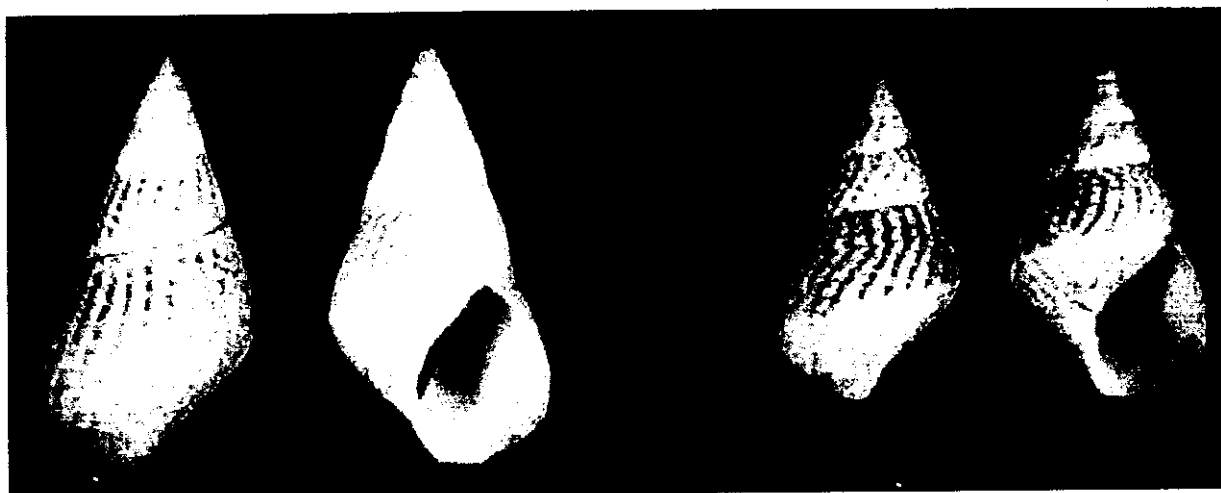
English Names: Ear snail.

This species was recorded from the Sundarbans by Jahan et al (1990) and Pendred (1995). No specimens were seen by the author.

SNAILS

Family Littorinidae

Littoraria melanostoma



Littoraria melanostoma

English Names: Periwinkle.

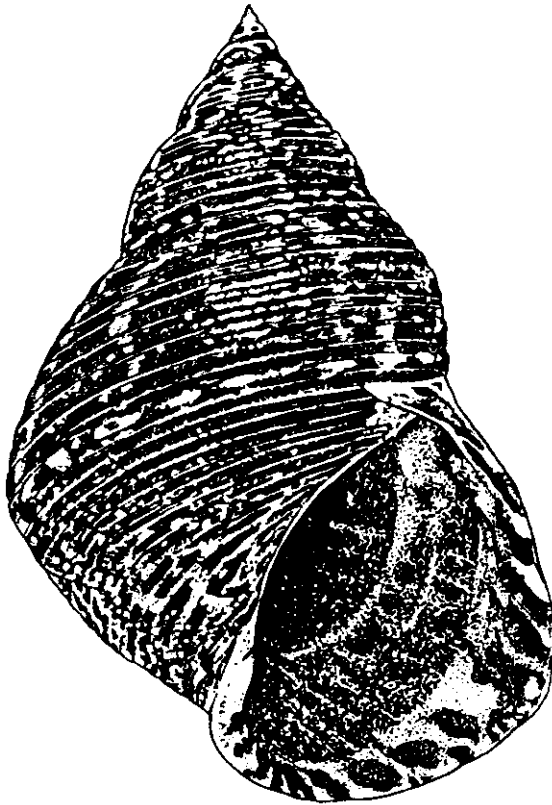
Synonyms: *Littorina melanostoma*.

This species was recorded from the Sundarbans by Jahan et al (1990) and Pendred (1995). Specimens were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

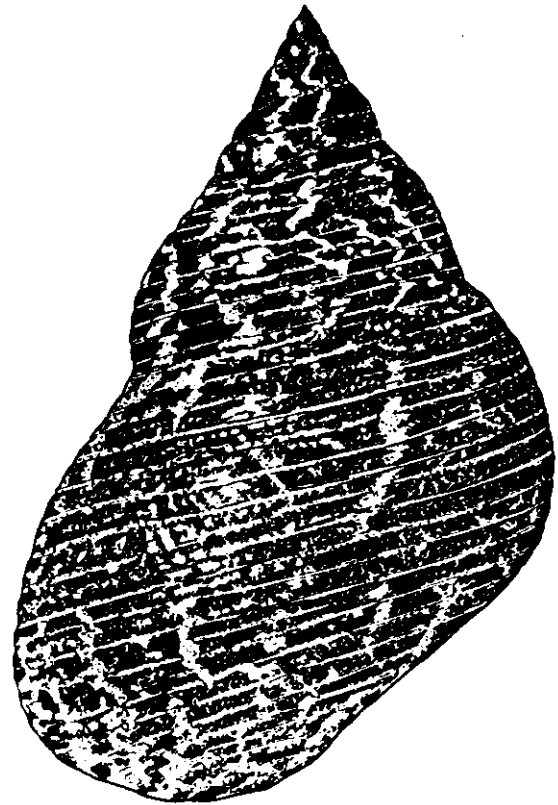
SNAILS

Family Littorinidae

Littoraria scabra (Linnaeus, 1758)



ventral view



dorsal view

Littoraria scabra

English Names: Rough periwinkle.

Synonyms: *Littorina scabra*.

This species was recorded from the Sundarbans by Jahan et al (1990) as the synonym *Littorina scabra*. No specimens were seen by the author.

SNAILS

Family Thiariidae

Thiara tuberculata



Thiara tuberculata

This species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author.

SNAILS

Family Viviparidae
Bellamyia bengalensis



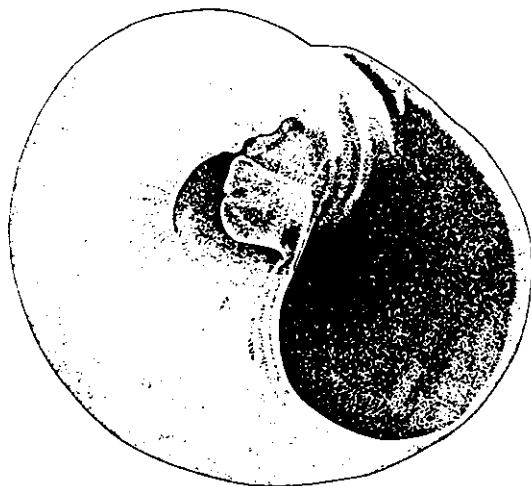
Bellamyia bengalensis

This species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author.

SNAILS

Family Naticidae

Polinices didyma (Roding, 1798)



basal view



apical view

Polinices didyma

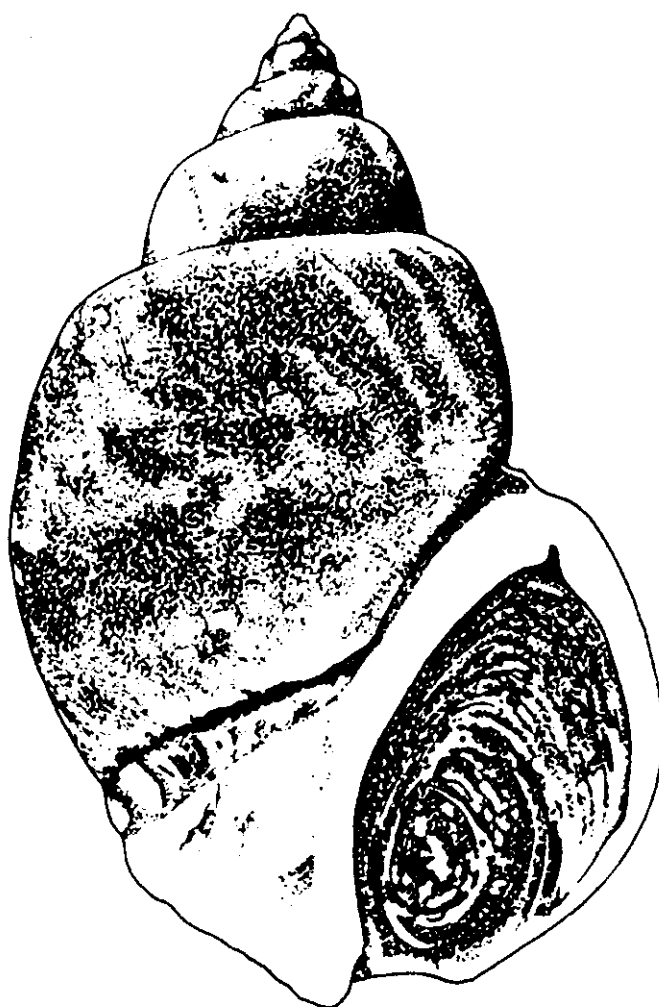
English Names: Bladder moon snail.

Specimens were observed during field studies by Rajshahi University. No specimens were seen by the author.

SNAILS

Family Buccinidae

Babylonia spirata



Drawing of *Babylonia lutosa* (Lamarck, 1822) to illustrate general shell morphology of genus *Babylonia*

Babylonia spirata

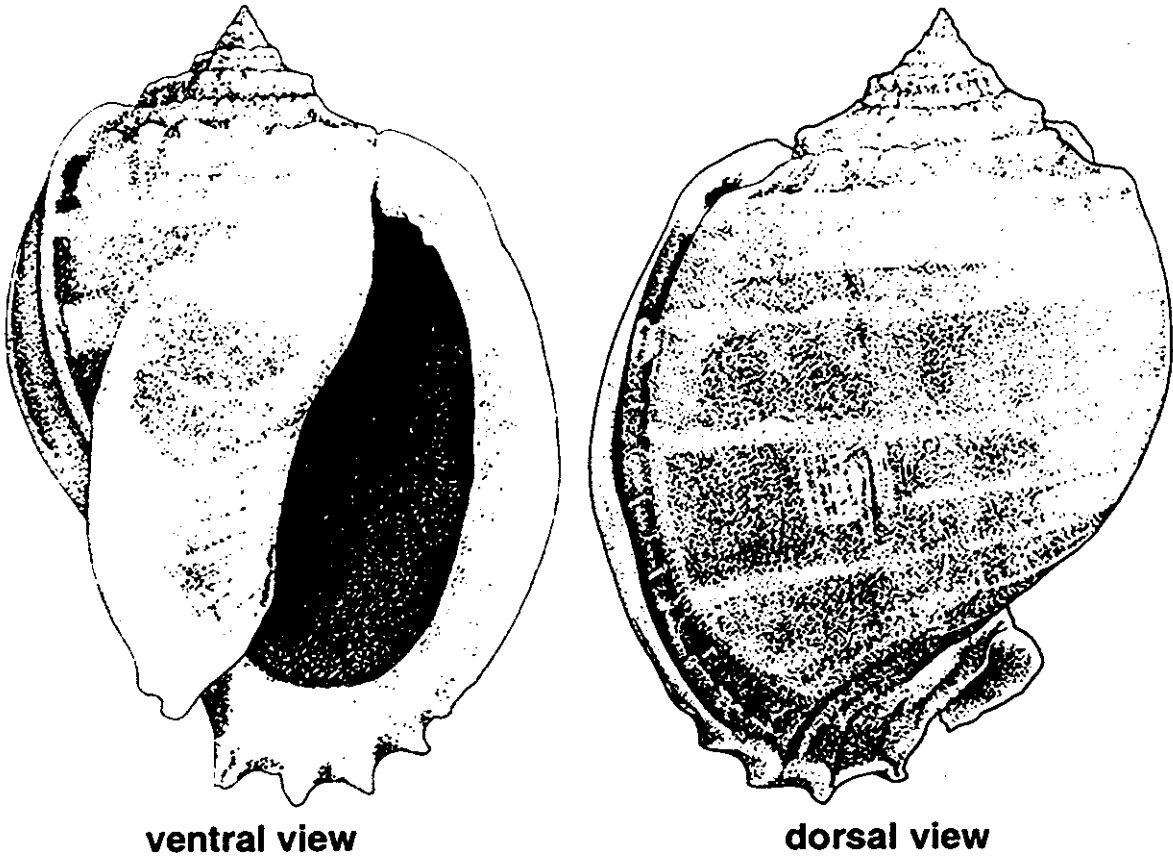
English Names: Whelk.

Specimens were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Cassidae

Phalium granulatum



Drawing of *Phalium glaucum* (Linnaeus, 1758) to illustrate general shell morphology of genus *Phalium*

Phalium granulatum

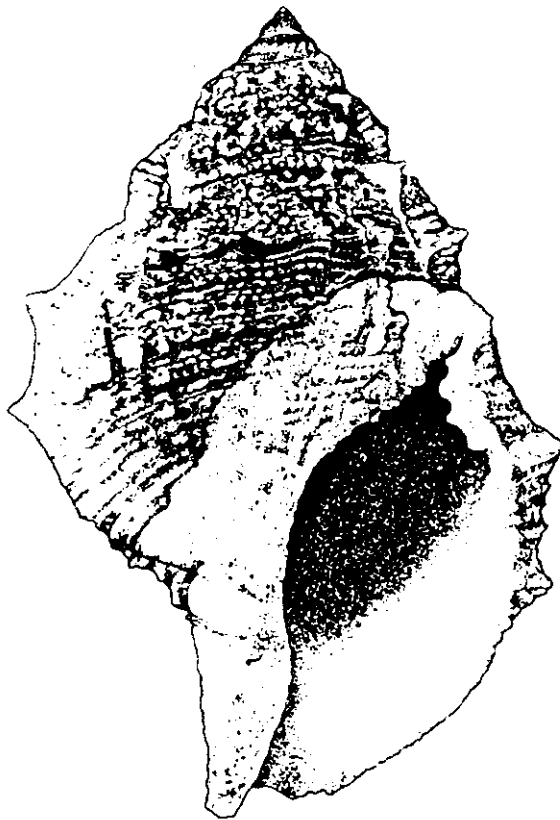
English Names: Bonnet snail.

Specimens were observed during field studies by Rajshahi University. No specimens were seen by the author.

SNAILS

Family Bursidae

Bufonaria rana (Linnaeus, 1758)



ventral view



dorsal view

Bufonaria rana

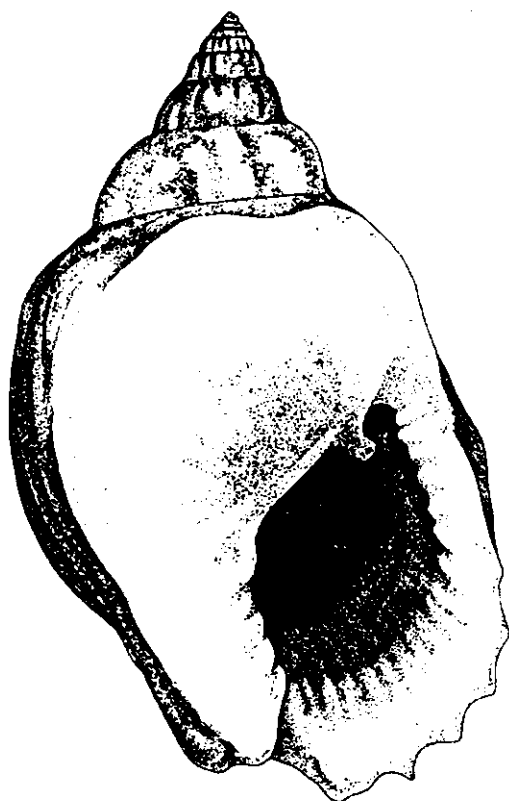
English Names: Common frog snail.

Synonyms: *Bursa rana*.

Specimens were observed during field studies by Rajshahi University. No specimens were seen by the author.

SNAILS

Family Nassariidae
Nassarius floviolatus



ventral view



dorsal view

Drawing of *Nassarius coronatus* (Bruguiere, 1789) to illustrate general shell morphology of genus *Nassarius*

Nassarius floviolatus

English Names: Mud snail.

Specimens were observed during field studies by Rajshahi University. No specimens were seen by the author.

Family Nassariidae
Nassarius nodiferus

Nassarius nodiferus

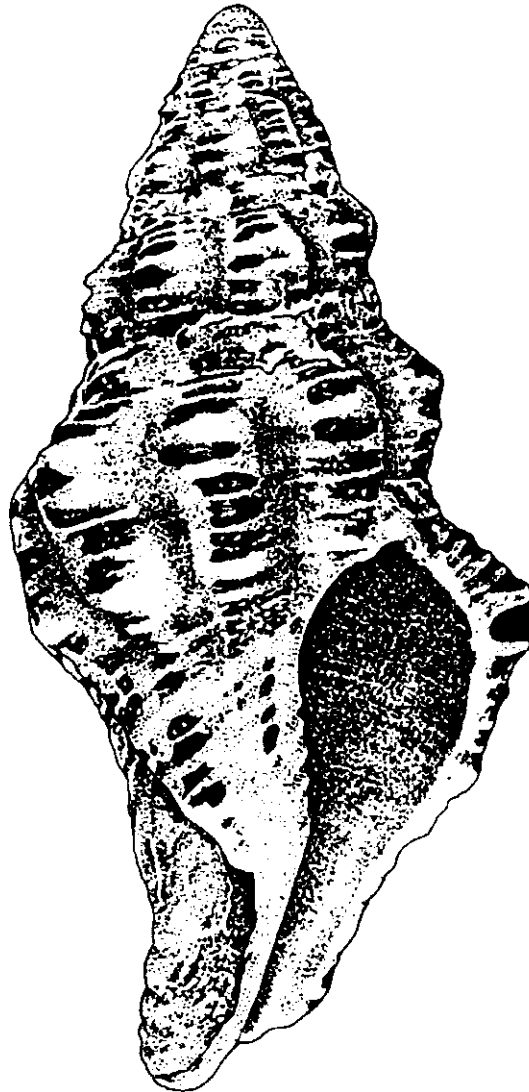
English Names: Mud snail.

Specimens were observed during field studies by Rajshahi University. No specimens were seen by the author.

SNAILS

Family Fasciolaridae

Latirus sp



Drawing of *Latirus polygonus* (Gmelin, 1791) to illustrate general shell morphology of genus *Latirus*

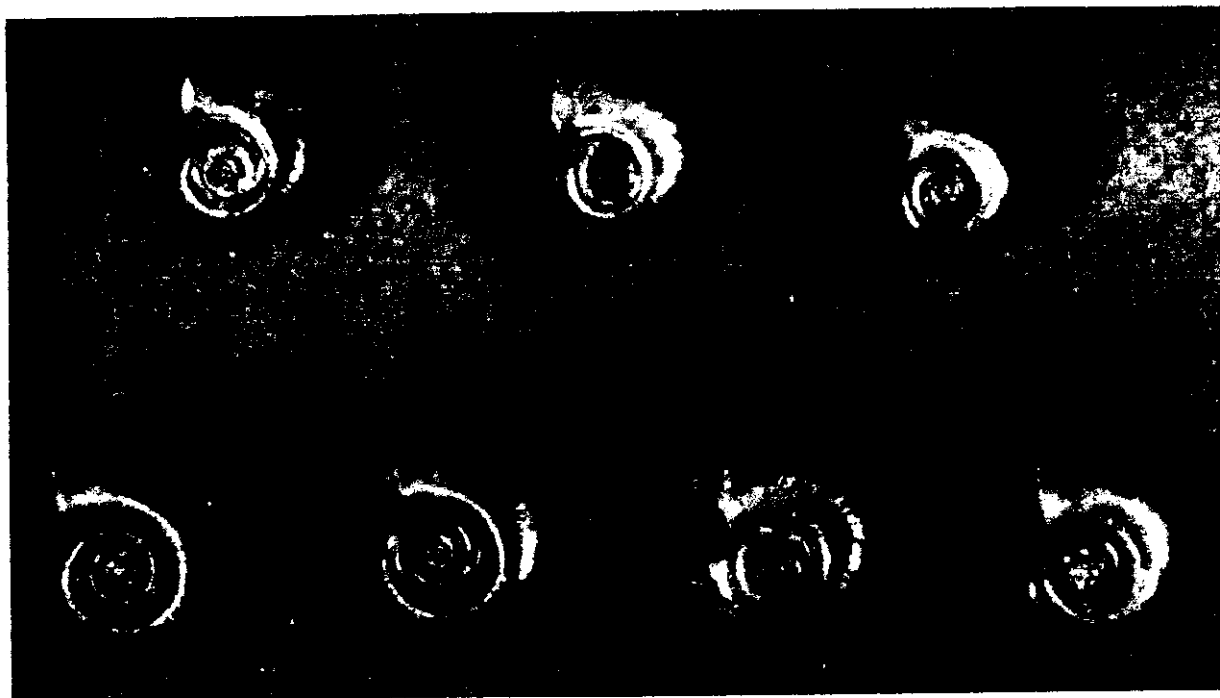
***Latirus* sp**

English Names: Spindle snail.

Unidentified specimens of the genus *Latirus* were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Planorbidae
Indoplanorbis exustus



Indoplanorbis exustus

English Names: Snail.

This species was recorded from the Sundarbans by Pendred (1995). No specimens were seen by the author. It is a typically freshwater species.

SNAILS

Family Costellariidae
Zierliana sp



Drawing of *Zierliana ziervogeli* to illustrate general shell morphology of genus *Zierliana*

Zierliana sp

English Name: Mitre snail.

Unidentified specimens of the genus *Zierliana* were observed during field studies by Rajshahi University, and during the contracted Khulna University field study in 2001.

SNAILS

Family Onchidiidae

Onchidium tigrinum (Stoliczka)

Onchidium tigrinum

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

Family Onchidiidae

Onchidium tenerum (Stoliczka)

Onchidium tenerum

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

SNAILS

Family Patellidae
Cellana radiata (Born)



ventral view



dorsal view

Drawing of *Cellana rota* (Gmelin, 1791) to illustrate general shell morphology of genus *Cellana*

Cellana radiata

English Name: Limpet.

This species was recorded from the Sundarbans by Jahan et al (1990).

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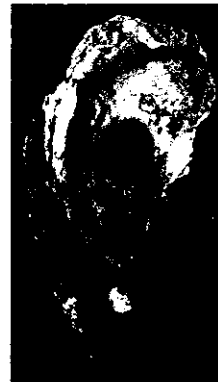
OYSTERS, MUSSELS & CLAMS

(and Related Shellfishes)

List of Species Recorded in Sundarbans:

Ostreidae
Oysters

Crassostrea belcheri
Crassostrea gryphoides
Dendostrea folium



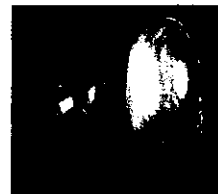
Anomiidae

Enigmonia aenigmatica



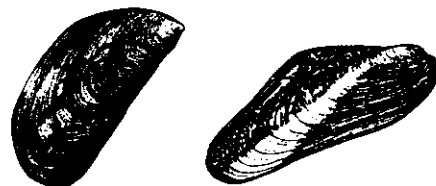
Unionidae
Freshwater
mussels

Lamellidens marginalis



Mytilidae
Sea mussels

Perna viridis
Modiolus striatulus
Brachiodontes emerginatus



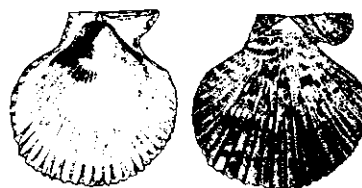
Myidae

Sphenia sp

OYSTERS, MUSSELS & CLAMS

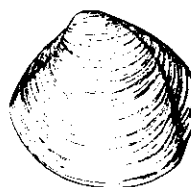
Pectinidae
Scallops

Pecten sp



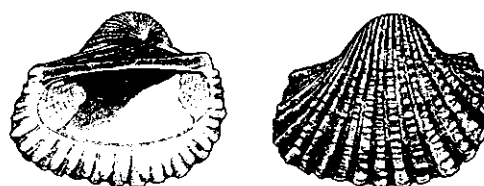
Corbiculidae
Marsh clams

Polymesoda bengalensis



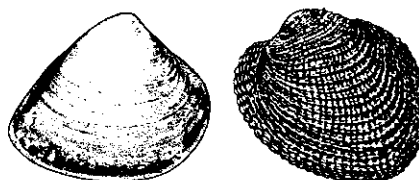
Arcidae
Ark clams

Anadara sp



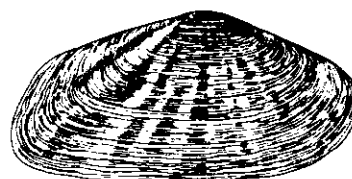
Veneridae
Venus clams

Meretrix meretrix
Marcia opima
Bassina calophylla
Periglypta sp



Psammobiidae
Sunset clams

Gari sp

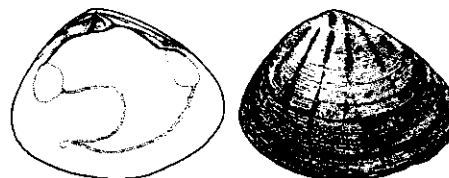


Mactridae
Trough shells

Spisula solidissimo

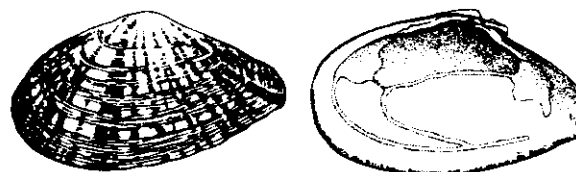
Donacidae
Bean clams

Donax sp



Tellinidae

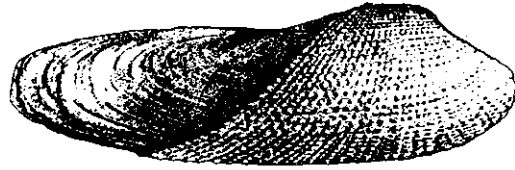
Macoma birmanica



OYSTERS, MUSSELS & CLAMS

Pholadidae
Angel wing
clams

Pholas sp



Teredinidae
Shipworms

Teredo sp
Bankia norchi



OYSTERS, MUSSELS & CLAMS

Family Ostreidae

Crassostrea belcheri



Internal (left) and external views of shell

Crassostrea belcheri KOSTURI

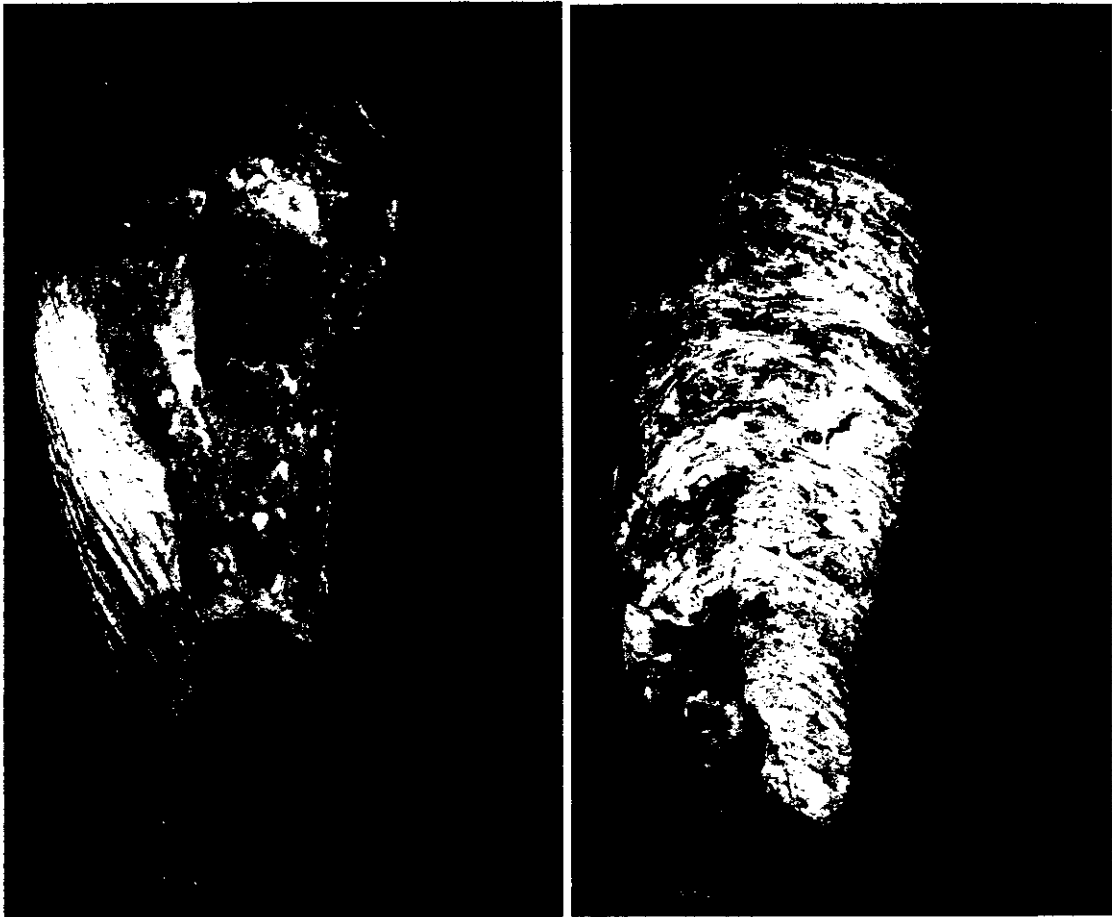
Local Names: Kosturi

English Names: Giant oyster.

This species was reported by Chantarasri (1994), but misidentified as *Crassostrea gigas* (Thunberg, 1793). The author has compared specimens from the Sundarbans with material of *Crassostrea gigas* and *Crassostrea belcheri* housed at the Australian Museum in Sydney¹, and the Sundarbans giant oyster is in better agreement with the *Crassostrea belcheri* specimens. The author saw many specimens along the beaches of the southern Sundarbans forest. The giant oyster is a commercially important species. The dead shells are collected from the southern coastal part of the Sundarbans forest, and burnt to produce lime. The oysters live in holes in the forest floor, and are difficult to extract in living condition. They are also dangerous as they will snap tightly closed on fingers. The shells display concentric rings which are interpreted as growth rings. Most of the dead shells collected on beaches appear to be of animals that are possibly 10-12 years old. Average shell length is 27 cm, maximum about 38 cm.

¹ The specimens in the Australian Museum had been identified in the 1980s by Dr Kenji Torigoe of the University of Hiroshima, a leading world expert on oyster taxonomy.

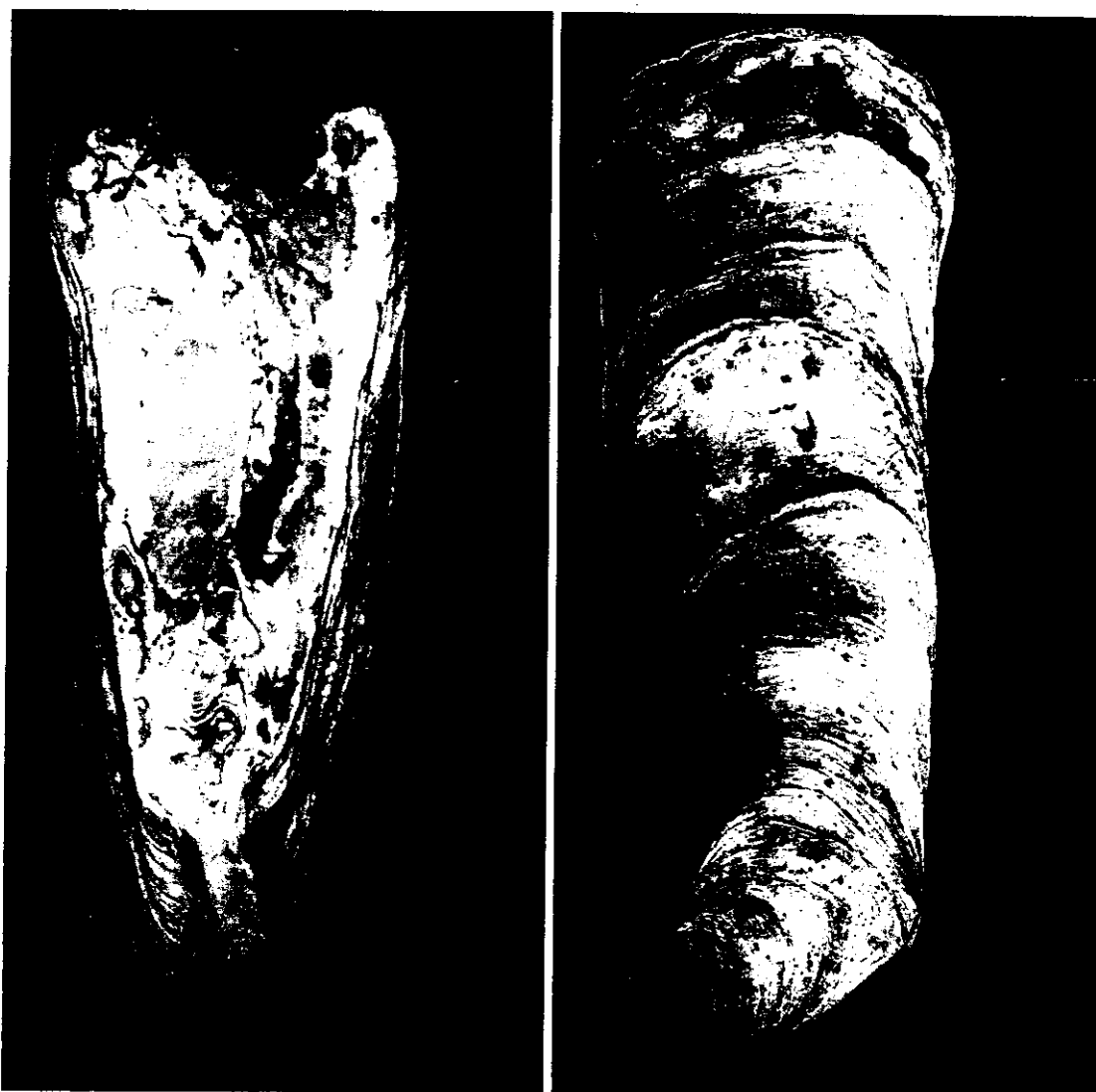
OYSTERS, MUSSELS & CLAMS



Above and below: internal (left) and external views of shells
The lower shell is somewhat atypical in shape and dark coloration



OYSTERS, MUSSELS & CLAMS



Above: shell of *Crassostrea belcheri*, internal view (left) and external view

Family Ostreidae
Crassostrea gryphoides

***Crassostrea gryphoides* KOSTURI**

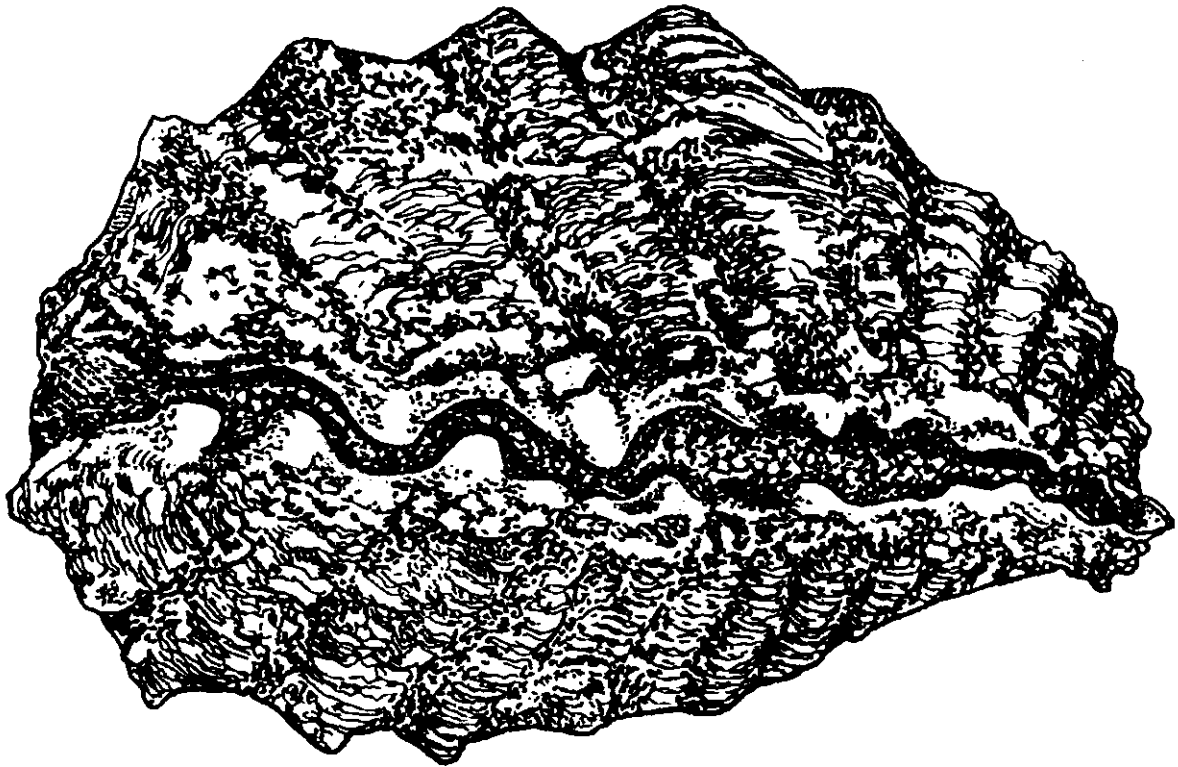
Local Names: Kosturi, chiloen.
English Names: Rock oyster.

This species was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

Family Ostreidae

Dendostrea folium (Linnaeus, 1758)



Dendostrea folium KOSTURI

Local Names: Kosturi.

English Names: Leaf oyster.

This species has not previously been recorded from the Sundarbans. The author collected specimens encrusting the exposed derrick of a large sunken ship (Duba Zahas) in the Sundarbans marine zone². The identification of these specimens was made by comparison with oyster shells in the collection of the Australian Museum in Sydney (identified by Dr Kenji Torigoe). The Sundarbans specimens agree best with specimens of *Dendostrea folium*, but the level of agreement is not high, so the identification should be considered tentative.

² GPS coordinates of the sunken vessel are 21°42'36" N and 89°35'38" E. The location is about 12 km due south of Dubla Island. The vessel apparently sank during World War Two.

OYSTERS, MUSSELS & CLAMS

Family Anomiidae

Enigmonia aenigmatica (Holten, 1803)



Enigmonia aenigmatica

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

Family Unionidae
Lamellidens marginalis



Lamellidens marginalis

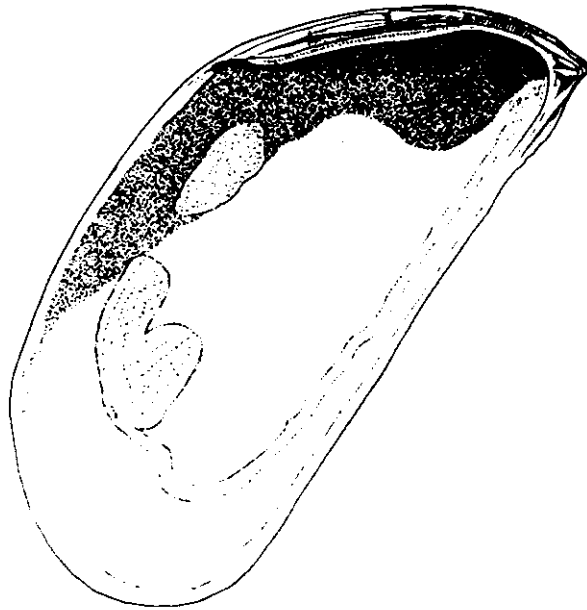
English Names: Mussel.

This species was recorded from the Sundarbans by Pendred (1995). Several specimens were seen by the author.

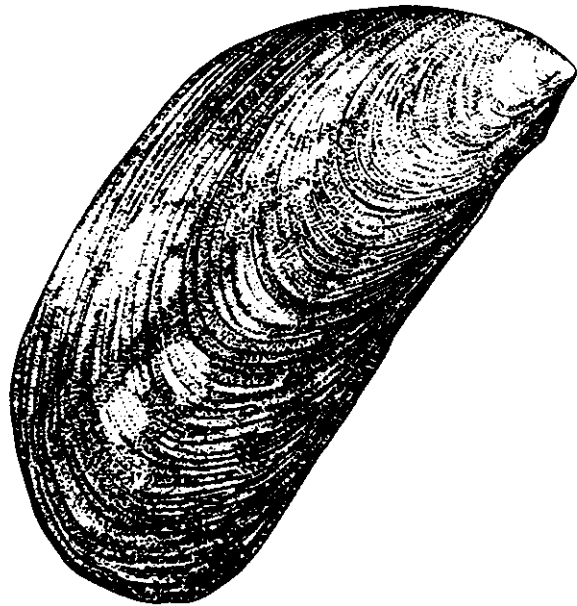
OYSTERS, MUSSELS & CLAMS

Family Mytilidae

Perna viridis (Linnaeus, 1758)



interior of left valve



exterior of right valve

Perna viridis

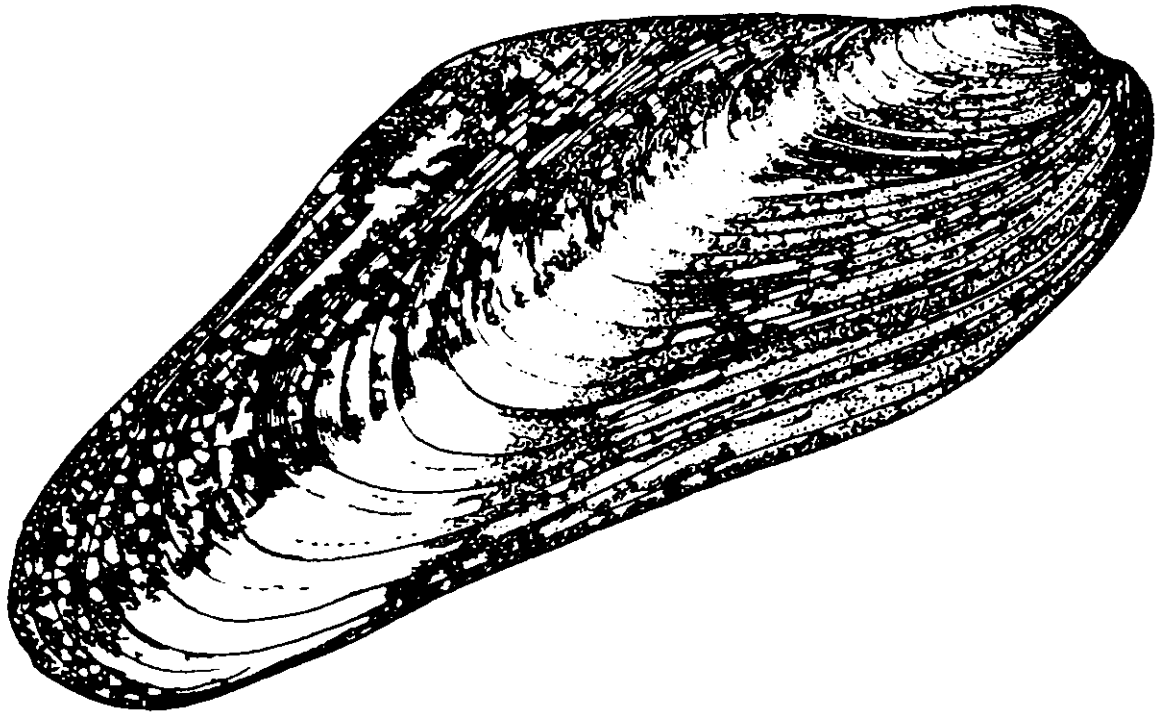
English Names: Asian brown mussel, brown mussel, green mussel.

Synonyms: *Mytilus viridis*.

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

Family Mytilidae
Modiolus striatulus



exterior of right valve

Drawing of *Modiolus metcalfei* (Hanley, 1843) to illustrate general shell morphology of genus *Modiolus*

Modiolus striatulus

English Names: Horse mussel.

This species was recorded from the Sundarbans by Jahan et al (1990) and Ahmed (1990). No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

Family Mytilidae

Brachiodontes emerginatus

Brachiodontes emerginatus

English Names: Horse mussel.

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

Family Myidae

Sphenia sp

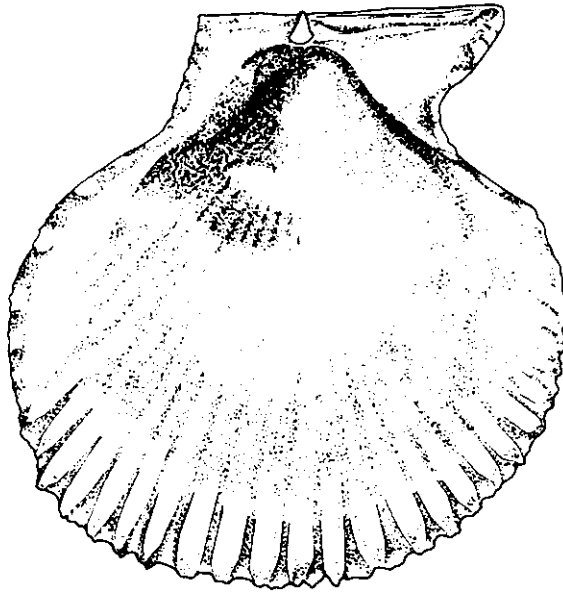
Sphenia sp

An unidentified species of the genus *Sphenia* was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

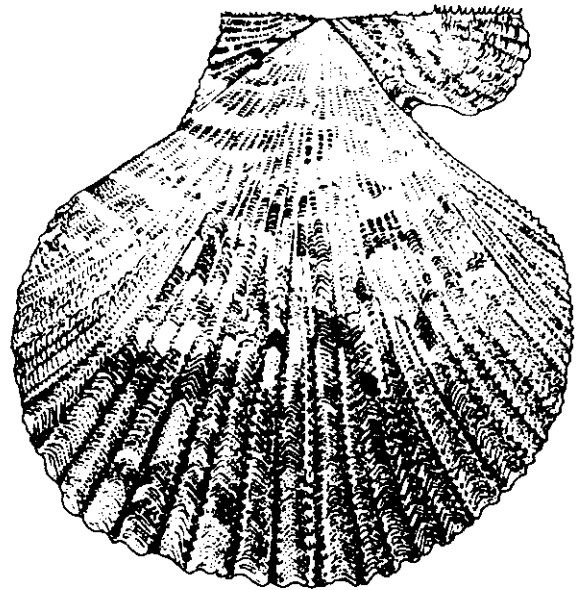
OYSTERS, MUSSELS & CLAMS

Family Pectinidae

Pecten sp



interior of left valve



exterior of right valve

Drawing of *Chlamys senatoria* (Gmelin, 1791) to illustrate general shell morphology of family Pectinidae

Pecten sp

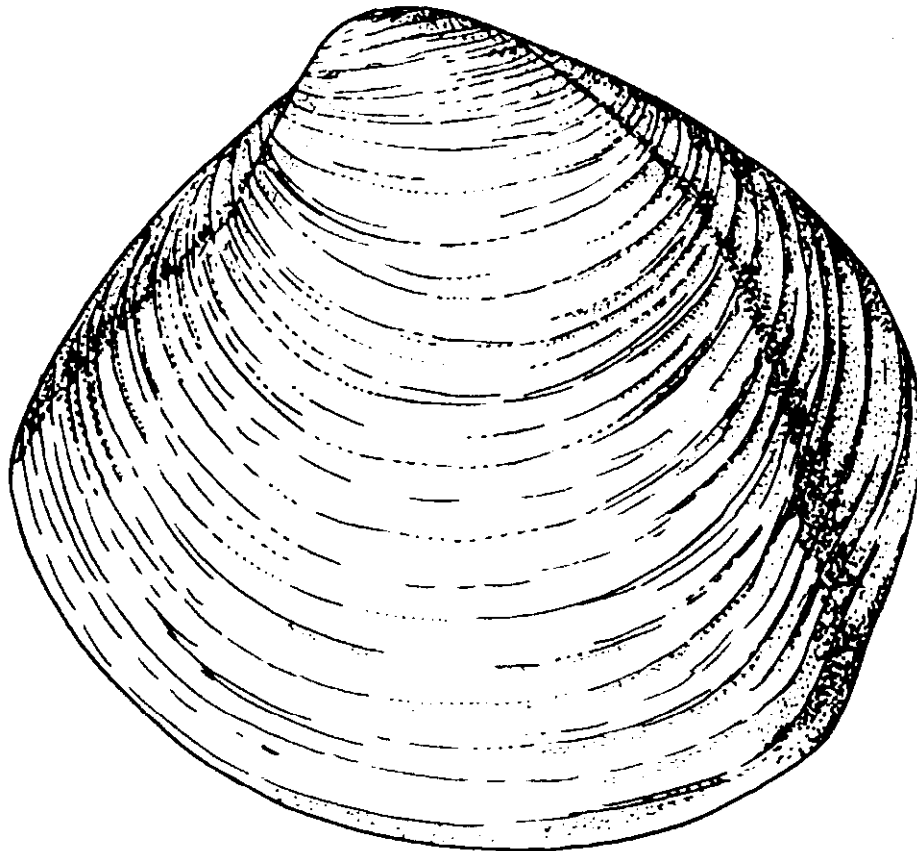
English Name: Scallop.

An unidentified species of the genus *Pecten* was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

Family Corbiculidae

Polymesoda bengalensis (Lamarck, 1818)



exterior of left valve

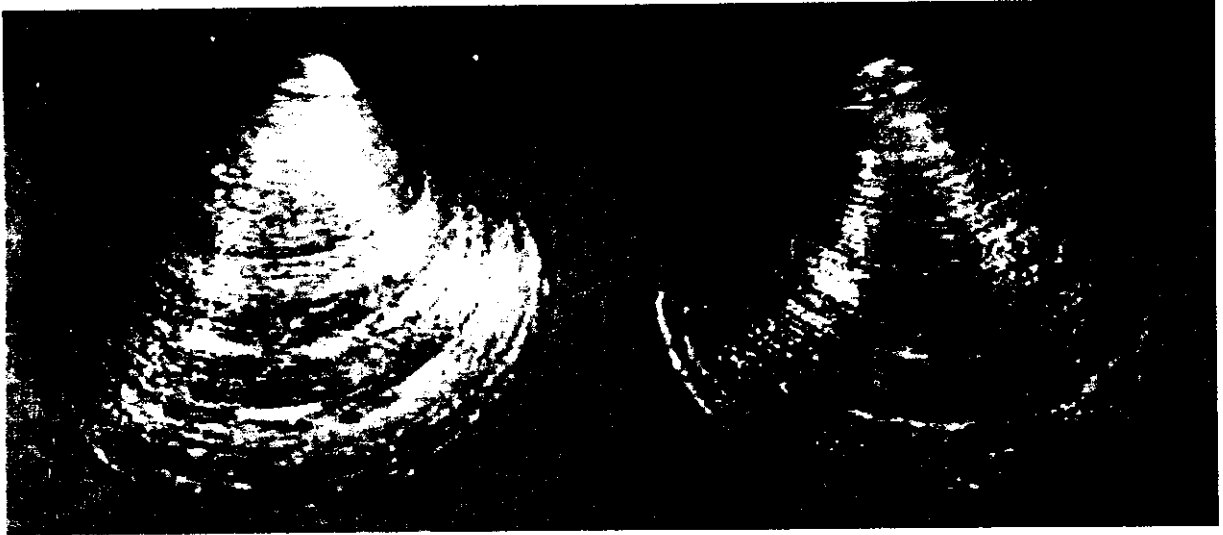
***Polymesoda bengalensis* CHINUK**

Local Names: Chinuk.

English Names: Bengali clam.

This commercially important species was recorded by Pendred (1995) from the Sundarbans. The author saw many live and dead shells in the Sundarbans forest and along the sea coast in 2000 and 2001. Both live and dead shells are collected from the forest floor and beaches, and burnt to produce lime.

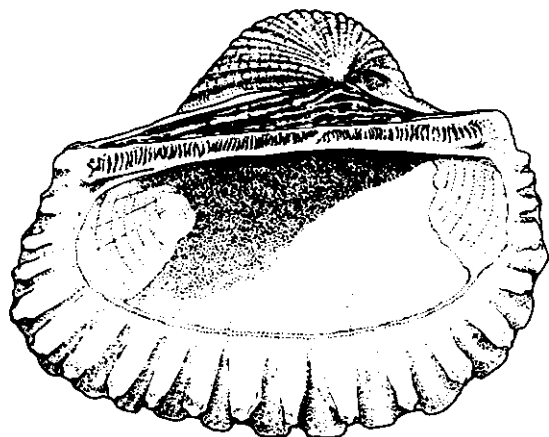
OYSTERS, MUSSELS & CLAMS



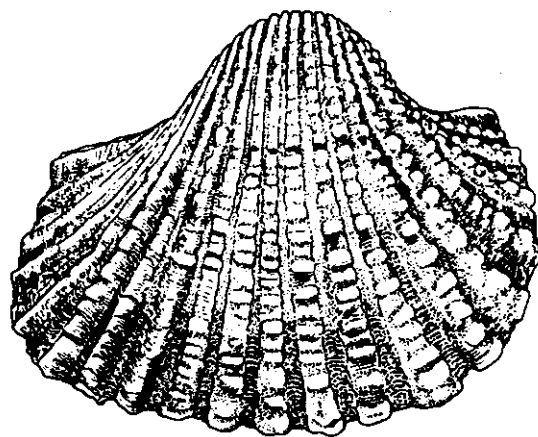
OYSTERS, MUSSELS & CLAMS

Family Arcidae

Anadara sp



Interior of left valve



exterior of right valve

Drawing of *Anadara granosa* (Linnaeus, 1758) to illustrate general shell morphology of genus *Anadara*

Anadara sp

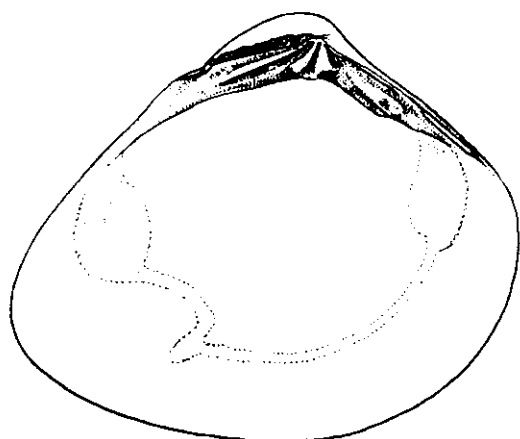
English Names: Ark clam.

An unidentified species of the genus *Anadara* was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

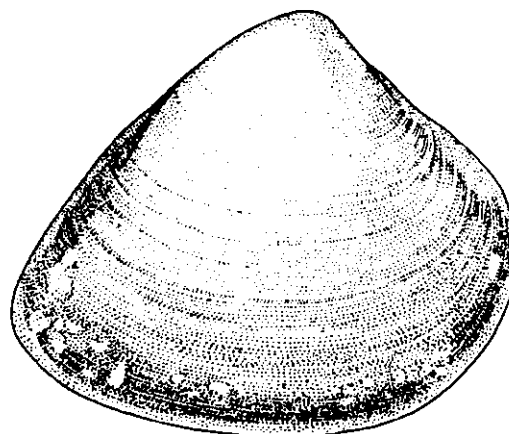
OYSTERS, MUSSELS & CLAMS

Family Veneridae

Meretrix meretrix (Linnaeus, 1758)



Interior of left valve



exterior of right valve

Meretrix meretrix

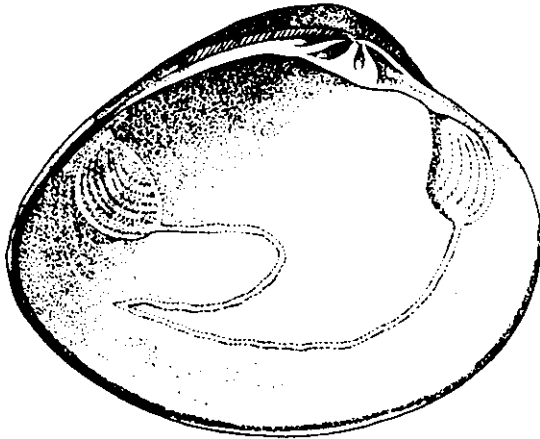
English Names: Asiatic hard clam, thick-shelled clam.

This species was recorded from the Sundarbans by Jahan et al (1990) and Chantarasri (1994). No specimens were seen by the author.

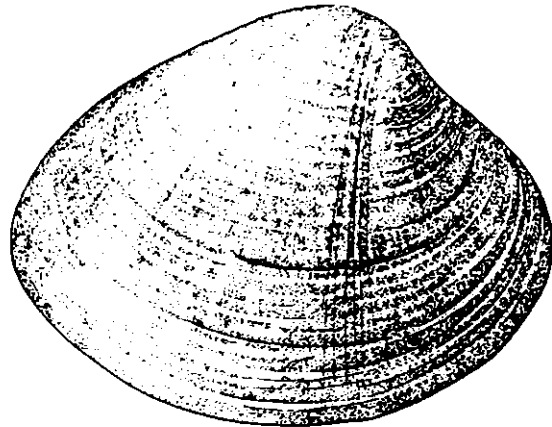
OYSTERS, MUSSELS & CLAMS

Family Veneridae

Marcia opima (Gmelin, 1791)



interior of left valve



exterior of right valve

Marcia opima

English Names: Fertile venus clam.

Synonyms: *Marcia pinguis*.

This species has not previously been recorded from the Sundarbans. It was observed by the contracted Khulna University field study in 2001 and identified as the synonym *Marcia pinguis*.

Family Veneridae

Bassina calophylla

Bassina calophylla

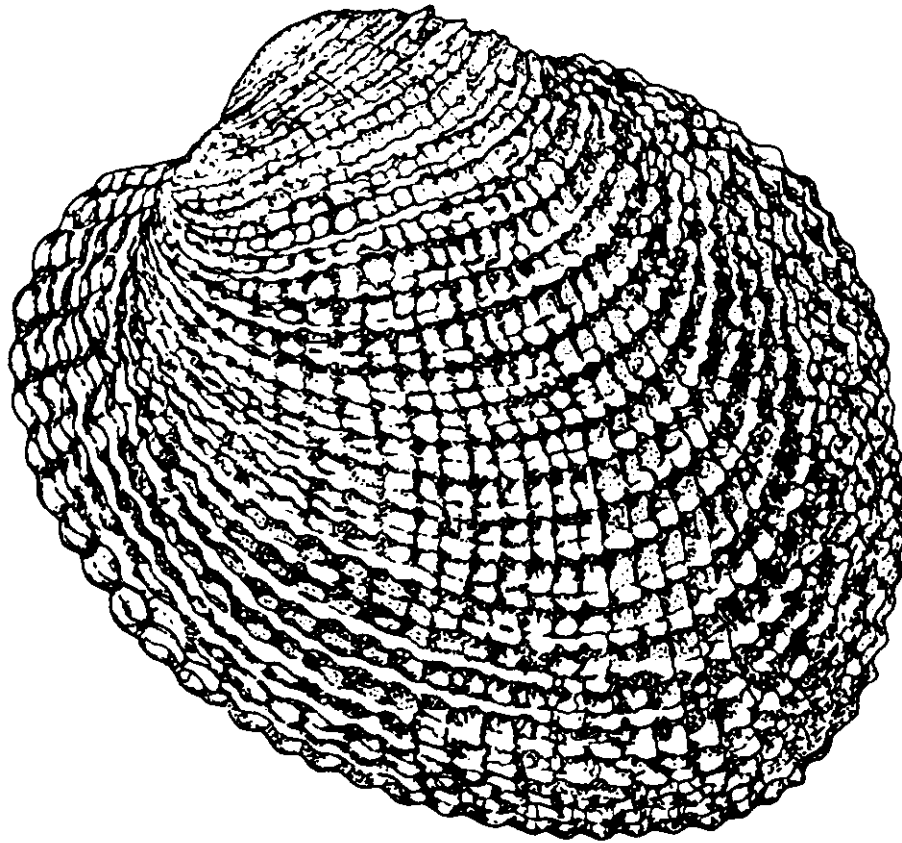
English Names: Venus clam.

This species has not previously been recorded from the Sundarbans. It was observed during the contracted Khulna University field study in 2001.

OYSTERS, MUSSELS & CLAMS

Family Veneridae

Periglypta sp



exterior of left valve

Drawing of *Periglypta reticulata* (Linnaeus, 1758) to illustrate general shell morphology of genus *Periglypta*

***Periglypta* sp**

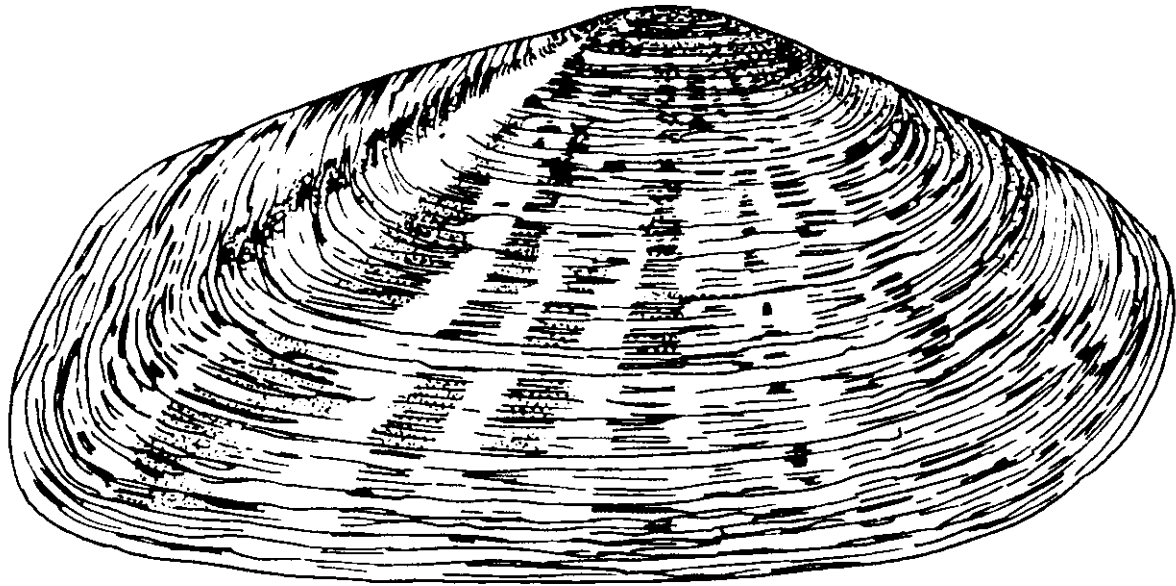
English Names: Venus clam.

An unidentified species of the genus *Periglypta* was observed during the contracted Khulna University field study in 2001.

OYSTERS, MUSSELS & CLAMS

Family Psammobiidae

Gari sp



exterior of right valve

Drawing of *Gari elengata* (Lamarck, 1818) to illustrate general shell morphology of genus *Gari*

Gari sp

English Names: Sunset clam.

Synonyms: *Hiatula* sp.

An unidentified species of the genus *Gari* was recorded by Chantarasri (1994) as the synonym genus *Hiatula* from the Sundarbans. No specimens were seen by the author.

Family Mactridae

Spisula solidissimo

Spisula solidissimo

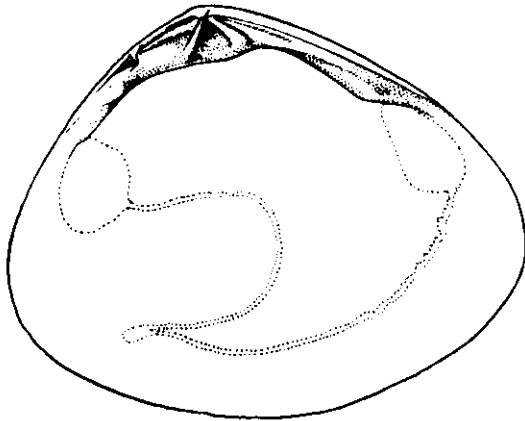
English Names: Trough shell clams.

This species was recorded by Ahmed (1990) from the Sundarbans. Specimens were also observed during the contracted Khulna University field study in 2001.

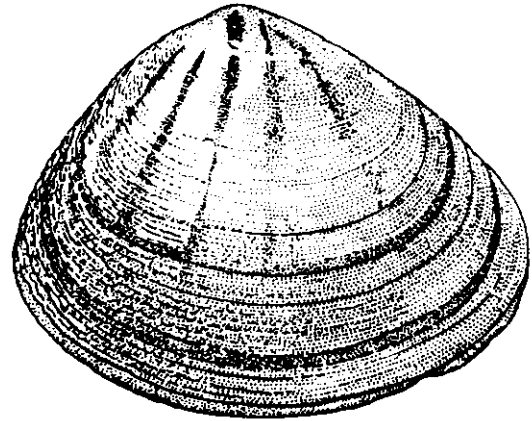
OYSTERS, MUSSELS & CLAMS

Family Donacidae

Donax sp



interior of left valve



exterior of right valve

Drawing of *Donax faba* Gmelin, 1791 to illustrate general shell morphology of genus *Donax*

Donax sp

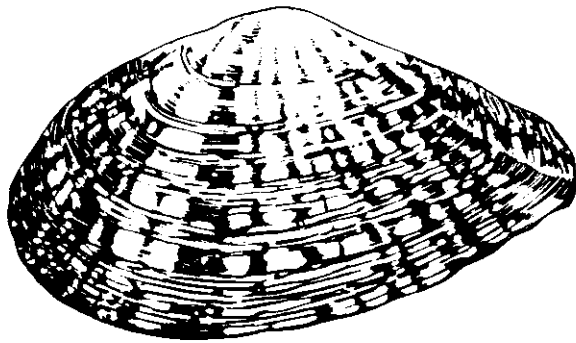
English Names: Pacific bean clam.

An unidentified species of the genus *Donax* was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

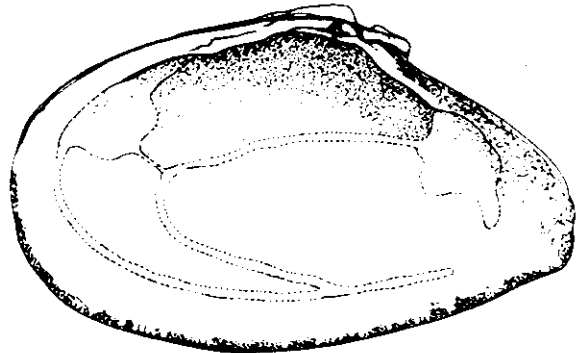
গ্রন্থাগারের বই নম্বর, ঢাকা
ক্রমিক নম্বর নং:
তারিখ:

OYSTERS, MUSSELS & CLAMS

Family Tellinidae
Macoma birmanica



exterior of left valve



interior of right valve

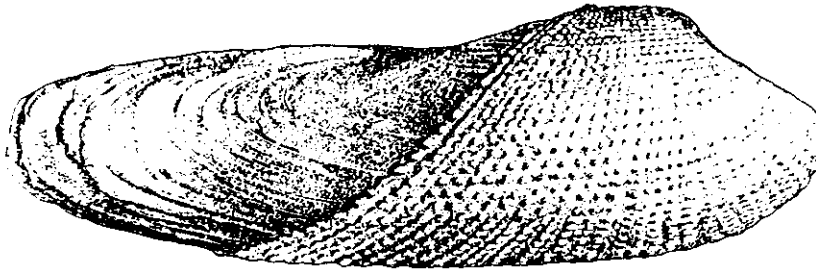
Drawing of *Tellina staurella* Lamarck, 1818 to illustrate general shell morphology of family Tellinidae

Macoma birmanica

This species was recorded from the Sundarbans by Jahan et al (1990). No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

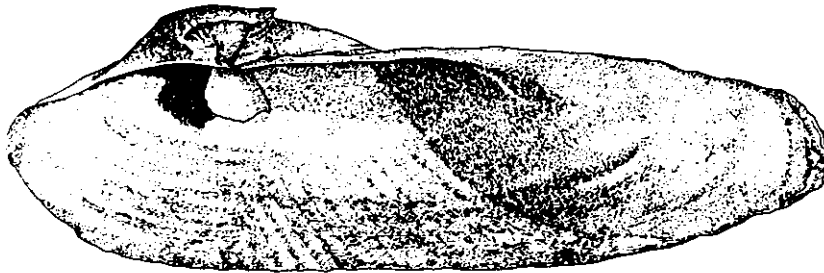
Family Pholadidae
Pholas sp



exterior of right valve



dorsal view of anterior
accessory plate



interior of right valve

Drawing of *Pholas orientalis* Gmelin, 1791 to illustrate general shell morphology of genus *Pholas*

Pholas sp

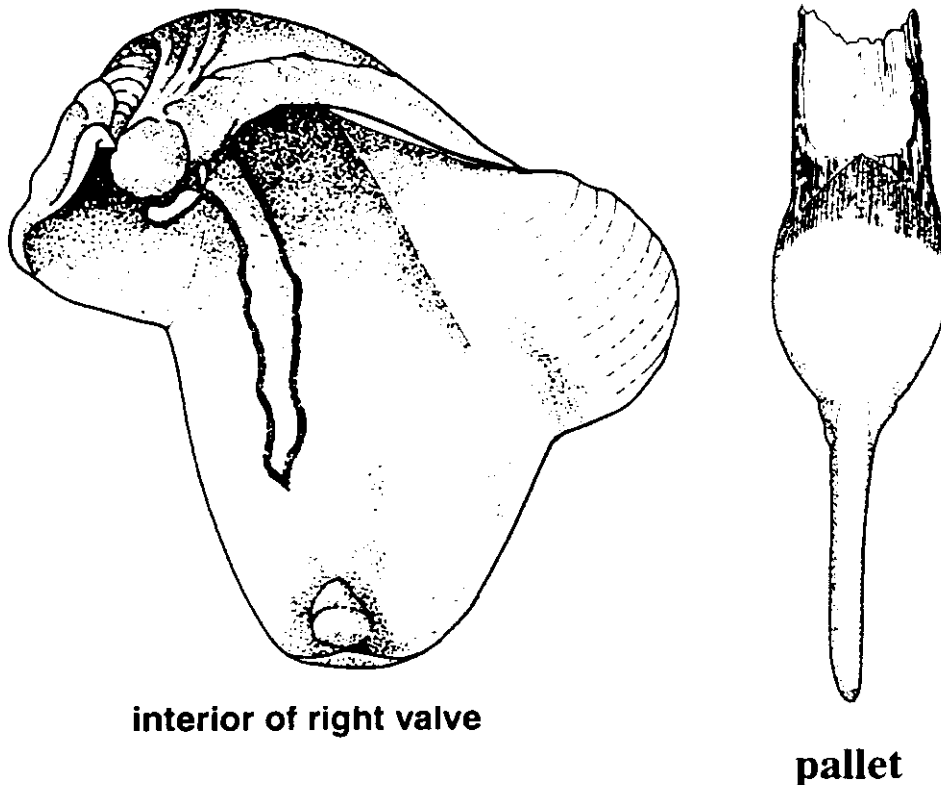
English Names: Angel wing clam.

An unidentified species of the genus *Pholas* was recorded by Chantarasri (1994) from the Sundarbans. No specimens were seen by the author.

OYSTERS, MUSSELS & CLAMS

Family Teredinidae

Teredo sp



Drawing of *Lyrodus pedicellatus* (Quatrefages, 1849) to illustrate general shell morphology of family Teredinidae

***Teredo* sp**

English Names: Shipworm.

An unidentified species of the genus *Teredo* was recorded by Ahmed (1990) from the Sundarbans. Specimens were also observed during the contracted Khulna University field study in 2001.

Family Teredinidae

Bankia norchi

Bankia norchi

English Names: Shipworm.

This species was recorded by Jahan et al (1990) from the Sundarbans. No specimens were seen by the author.

CUTTLEFISHES & SQUIDS

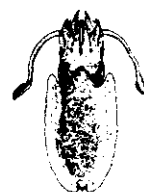
CUTTLEFISHES & SQUIDS

(and Related Shellfishes)

List of Species Recorded in Sundarbans:

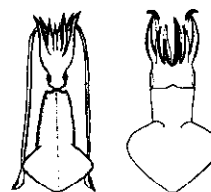
Sepiidae
Cuttlefishes

Sepia sp



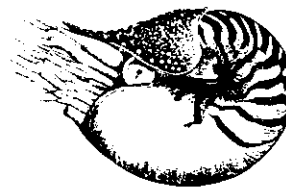
Loliginidae
Squids

Brachiooteuthis sp
Loliolus investigatories



Nautilidae
Nautiluses

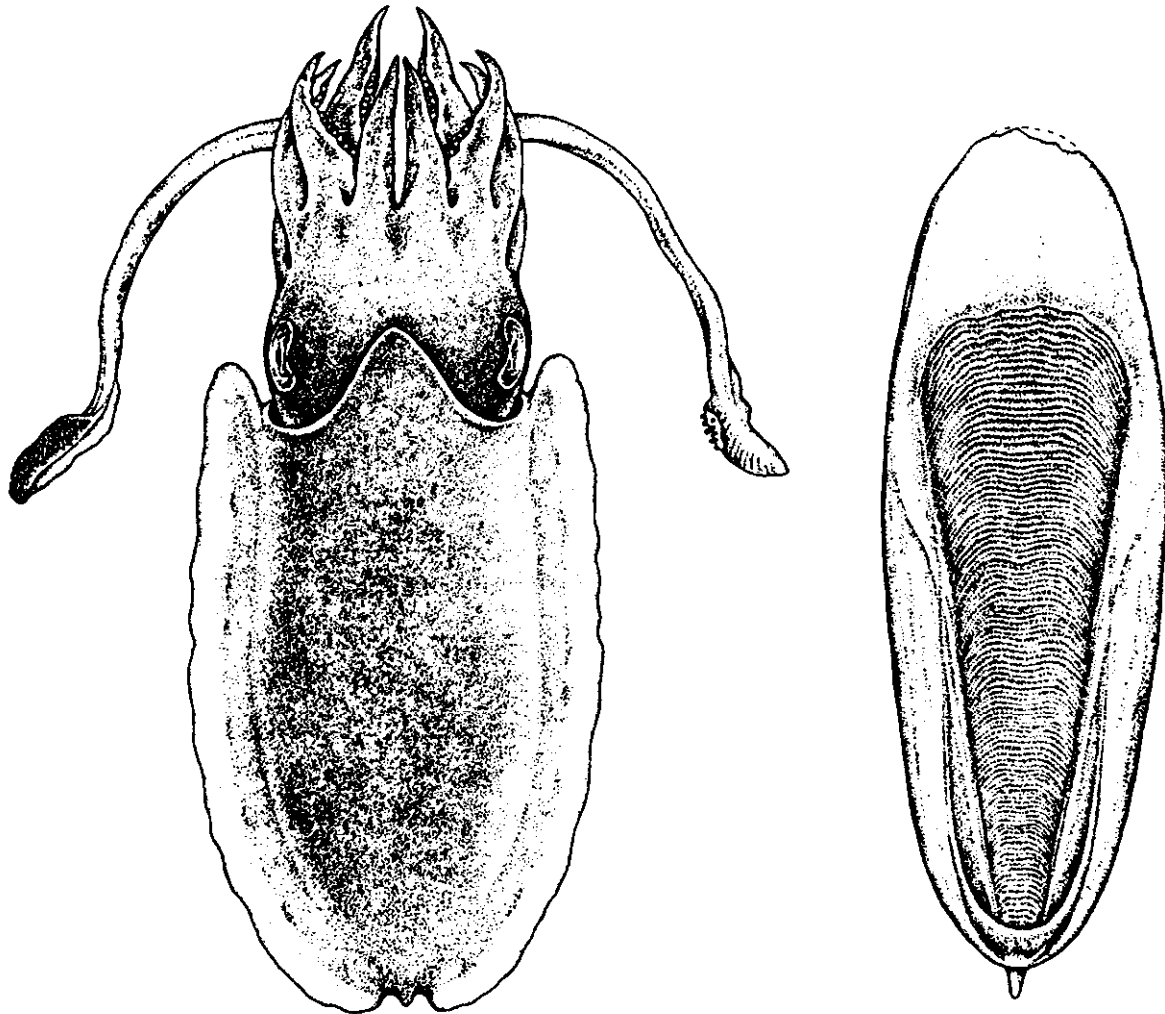
Nautilus pompilius



CUTTLEFISHES & SQUIDS

Family Sepiidae

Sepia sp



Drawing of *Sepia aculeata* Ferussac and d'Orbigny, 1848 to illustrate the general morphology of the genus *Sepia*

***Sepia* sp PERGI**

Local Names: Pergi.

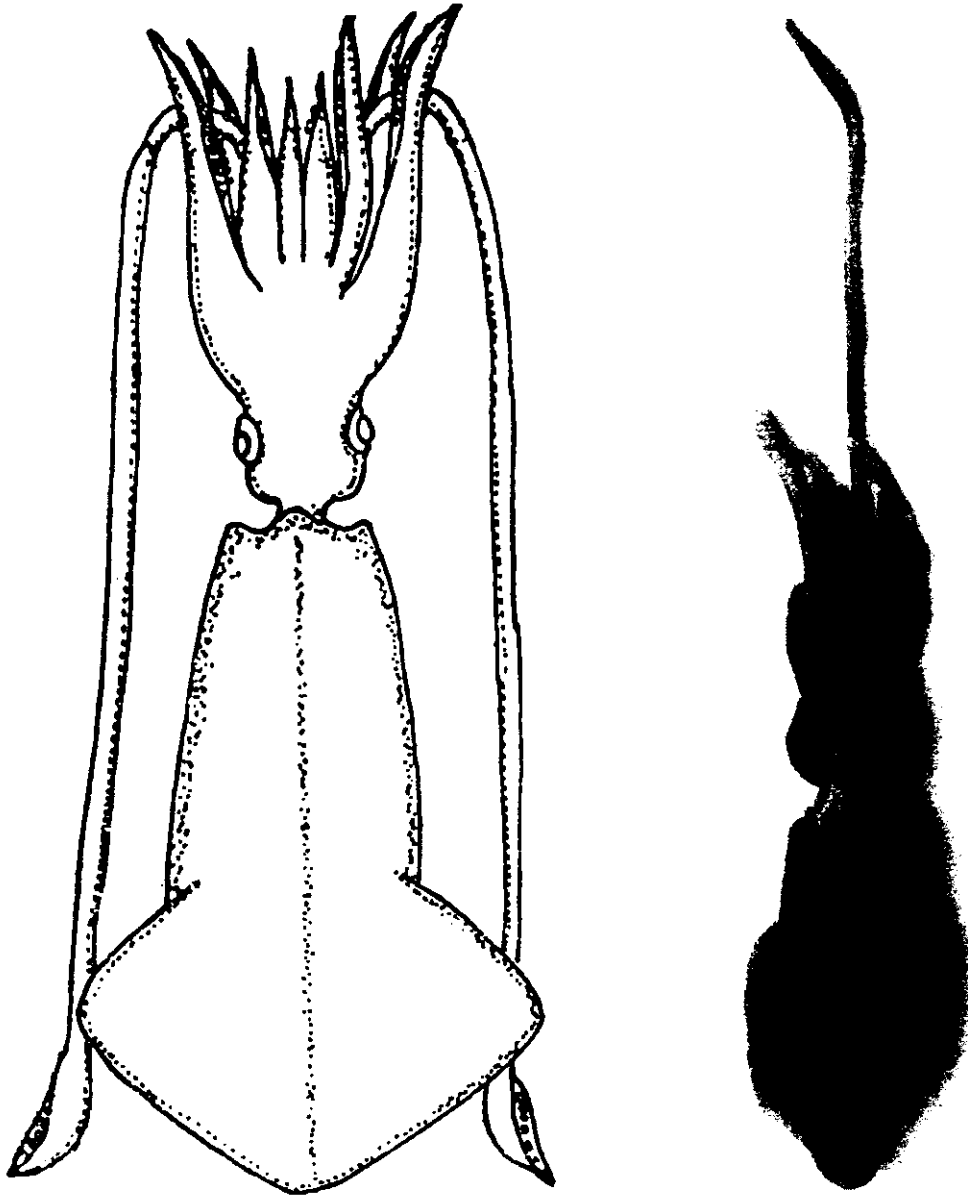
English Names: Cuttlefish.

Several cuttlefish specimens were seen by the author at Dubla Char in December 2000 and January 2001, and provisionally identified as the genus *Sepia*. Cuttlebone are common on the coastal beaches of the Sundarbans.

CUTTLEFISHES & SQUIDS

Family Loliginidae

Brachioteuthis sp



***Brachioteuthis* sp PERGI**

Local Names: Pergi.

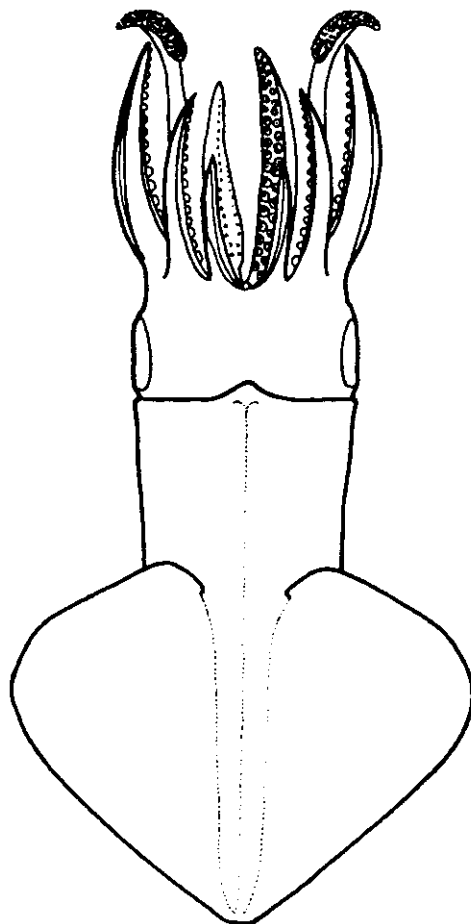
English Names: Squid.

This squid specimen collected at Dubla Char in November 2001 is provisionally identified as belonging to the genus *Brachioteuthis*.

CUTTLEFISHES & SQUIDS

Family Loliginidae

Loliolus investigatories (Goodrich)



Drawing of *Loliolus affinis* Steenstrup, 1856 to illustrate the general morphology of the genus *Loliolus*

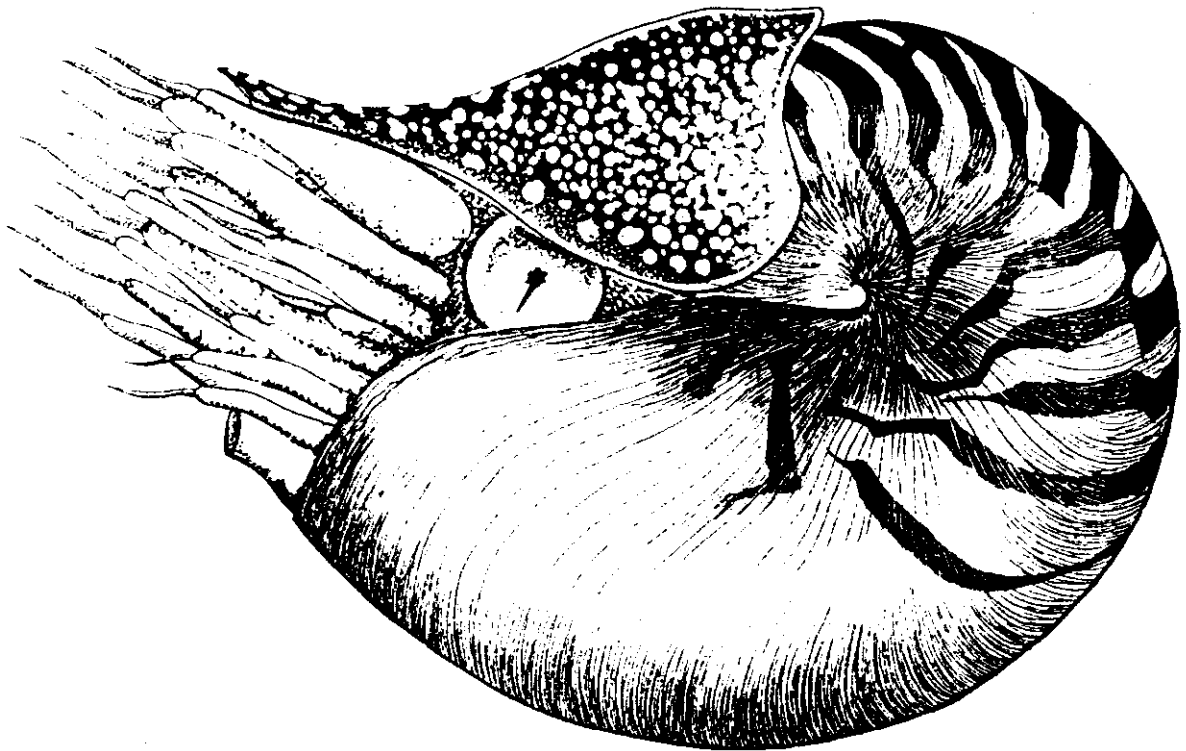
Loliolus investigatories PERGI

Local Names: Pergi.

English Names: Bay squid.

This species was recorded by Jahan et al (1990) from the Sundarbans.

CUTTLEFISHES & SQUIDS
Family Nautilidae
Nautilus pompilius Linnaeus, 1758

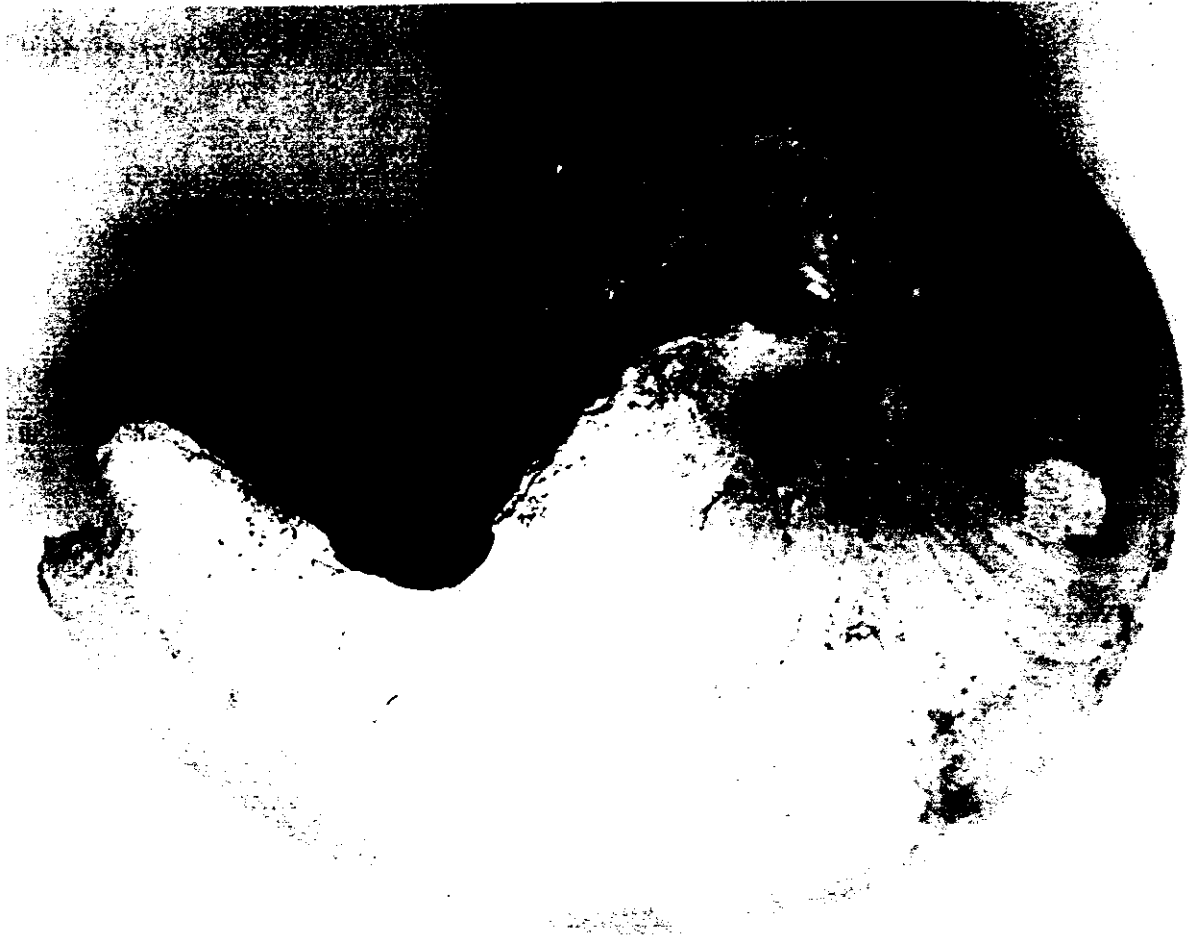


Nautilus pompilius

English Names: Emperor nautilus.

This species has not previously been recorded from the Sundarbans. The author saw two specimens (empty damaged shells) from the coastal area of the Sundarbans.

CUTTLEFISHES & SQUIDS



CUTTLEFISHES & SQUIDS

