

MANGROVE ECOSYSTEMS

A MANUAL FOR THE ASSESSMENT OF BIODIVERSITY

A follow up of the
National Agricultural Technology Project (NATP.), ICAR.

*Mangrove Ecosystem Biodiversity :
Its Influence on the Natural Recruitment of
Selected Commercially Important Finfish and Shellfish
Species in Fisheries*

Edited by :
Dr. George J. Parayannilam



भारत
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Central Marine Fisheries Research Institute
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P.B. No. 1603, Ernakulam North P.O; Cochin – 682 018, Kerala, India







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Sea-Anemones

Gurudas Chakravarty, S. K. Chakraborty, G. P. Kumaraswamy Achary and S. Dam Roy

Actinarians are popularly called 'sea-anemones' because of their flower-like appearance of the expanded oral disc. They are very common animals of the sea-shore and muddy intertidal belt of estuary. They belong to the Phylum Cnidaria having solitary, cylindrical body. The body is divided into oral disc, column and base. Different workers like- Annandale (1907&1915), Carlgren (1925), Panikkar (1936), Parulekar (1968), Seshaiya and Cuttress (1971), Misra (1975&1976), Misra and Soota (1981), Bairagi (1998) etc. had worked on sea-anemones in Indian waters. Altogether 20 species under 17 genera belong to 10 families have been recorded from India. Among these only 7 species are reported from West Bengal but Bairagi (1998) had confirmed the occurrence of 9 species under 7 genera and 5 families from Hoogly-Matla estuarine area of West Bengal.

Morphological characters : general scientific terms

Acontia: These are thin threads attached at one end to mesenteries, as a rule below the filaments, while the other end free and laden with extra-ordinary numerous nematocysts of variable categories.

Basilar muscles: In forms with a pedal disc, the parietal muscles, found on both faces of the septa, running out onto the disc more or less parallel to it.

Physa: The aboral ampullaceous end of certain Athenaria is known as physa.

Scapus: This is the principal and longest zone of the column - often provided with tentacles or tubercles.

Scapulus: A thick walled zone above the scapus differing from it in histological construction and general appearance.

Capitulum: Upper short delicate, thin wall region of the column.

Nematocysts: Stinging capsules, the thread of which shows several types of structure: a) *atrichs* - thread without a differentiated basal shaft and with barbs, smooth. b) *holotrichs* - thread without a differentiated basal shaft but with barbs along its whole length. c) *basitrichs* - thread without shaft but with barbs at its base only.

Actinopharynx: The tube which leads from the mouth into the coelenteron.

Sphincter: The endodermal circular muscles of the column are often accumulated at or near the margin and form a sphincter which is endodermal or embedded in the mesogloea, when it is called a mesogloea sphincter.

Taxonomy of different species of Actinaria (Sea-anemones) in mangroves

Species
Phylum - Cnidaria
Class - Anthozoa
Order - Actinaria
Family - Edwardsiidae
i) <i>Edwardsia jonesii</i> Seshaiya & Cuttress
Family- Haliactiidae
i) <i>Pelocoetes exul</i> Annandale
ii) <i>Phytocoeteopsis ramunii</i> Panikkar
Family-Diadumenidae
i) <i>Diadumene schilleriana</i> (Stoliczka)
Family- Actiniidae
i) <i>Paracondylactis indica</i> Dave

Phylum – Cnidaria :

1. The Cnidarians exist in two forms - *Polyp* (representing asexual phase) and *Medusa* (representing sexual phase). Polyp is tubular and

usually remains fixed at aboral end. Medusa is free-swimming, umbrella-like.

- Highly specialised intracellular structures called *nematocysts* are present.
- Presence of a single internal *coelenteron*.
- Presence of only one permanent aperture - the mouth which also functions as anus.

Class – Anthozoa :

- They exist only in *polyp* form.
- Stomodaeum is strongly developed and possesses siphonoglyphs, extending between the stomodaeum and the body-wall there are mesenteries.
- Mesoglea is well-developed with fibrous connective tissue.

Order – Actiniaria :

- Numerous tentacles and mesenteries are usually present in multiples of six.
- Skeleton is absent.

Key to the families of Actiniaria:

- Basilar muscles present.....2
Basilar muscles absent.....3
- Acontia present ----- **Diadumenidae**.
Acontia absent ----- **Actiniidae**.
- Acontia present ----- **Haliactiidae**.
Acontia absent ----- **Edwardsiidae**.

Family - Edwardsiidae.

Genus - *Edwardsia* Quatrefages, 1842

Body divided into physa, scapus, scapulus and capitulum; scapus long with batteries of nematocysts sunk in the mesoglea; tentacles at least 12, shorter or longer; ventral siphonoglyph weak.

- Edwardsia jonesii* Seshaiya & Cuttress, 1971.
Tentacles 12, long, smooth and arranged in two cycles of 6 each; body distinctly divided into capitulum, scapulus, scapus and inflatable physa without cuticle; capitulum thin-walled, almost transparent, smooth and without cuticle; scapus thick-walled, covered with thick shaggy rusty-red cuticle; actinopharynx with 8 longitudinal ridges, siphonoglyph indistinct.

Family - Haliactiidae

Genus - *Pelocoetes* Annandale, 1915.

Elongated vermiform body; column divided into capitulum, scapus and physa. Scapus with longitudinal rows of warts; distinct sphincter absent; Actinopharynx long; upper part of capitulum and oral disc thrown out into 6 long outgrowths (pedicels) each bifurcating two or three times.

- Pelocoetes exul* Annandale, 1915

Basal disc reduced, bluntly tapering and without physa; column elongated; longitudinal rows of nematocyst batteries alternate with cinclides on column; tentacle's branches hexamerously arranged (6+6+12+24+48, the last cycle more or less complete); oral disc lobed.

Genus - *Phytocoeteopsis* Panikkar, 1936.

Body vermiform, divisible into 3 distinct regions, capitulum, scapus and physa-like base; column elongated, smooth and without suckers or cuticle; sphincter absent; oral disc with radial muscles; tentacles numerous, arranged in five to six cycles; acontia well developed.

- Phytocoeteopsis ramunnii* Panikkar, 1936.

Tentacles 96, arranged in five cycles; base usually reduced, physa-like and without ectodermal cinclides; column thin and smooth; capitulum narrow, scapus long, thick, very broad above and vermiform below.

Family - Diadumenidae

Genus - *Diadumene* Stephenson, 1920.

Body divided into scapus with cinclides and capitulum with collar; tentacles long and numerous, inner tentacles thicker than the other tentacles; basal disc well developed; distinct sphincter absent.

- Diadumene schilleriana* (Stoliczka, 1869).

Body very short, 12-19 mm in length and diameter greater than that of column and provided with longitudinal rows of warts; basal disc strong and adhesive; column divided into scapus and capitulum; tentacles long, numerous, more or less regularly arranged and inner tentacles thicker than the outer; distinct sphincter absent.

Family - Actiniidae

Genus - *Paracondylactis* Carlgren, 1934.

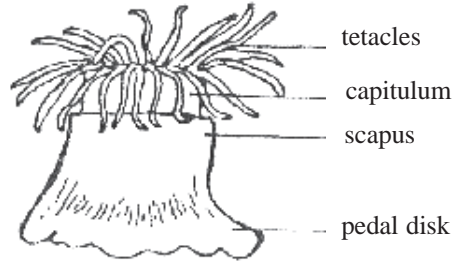
Body elongated and pedal disc narrow; column smooth, sometimes with nematocysts; sphincter diffuse; tentacles hexamerously arranged.

v) *Paracondylactis indica* Dave, 1957.

Column elongated and tapering; pseudospherules present on column; pedal disc flattened but distinct; tentacles 96, white in colour, arranged in five cycles.



Contracted with acontia

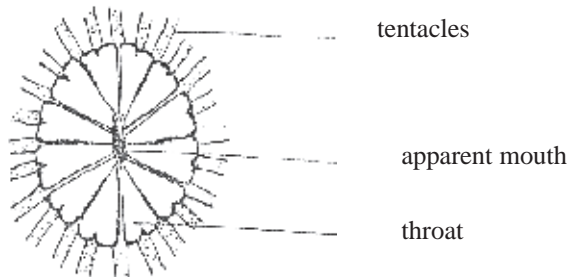


Expanded

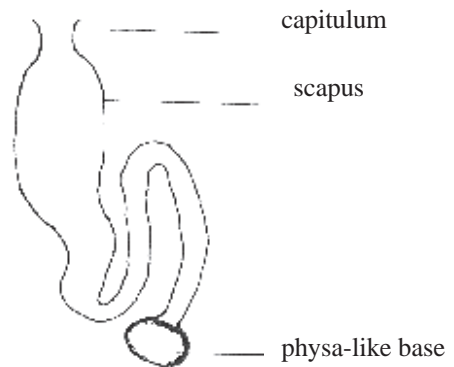
Diadumene schilleriana



Paracondylactis indica (bioturbation structure)



The first whorl of tentacles



General shape of the column

Phytocoeteopsis ramunii

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