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Checklist, Distribution Of Prawns Of Vamsadhara And Nagavali Eastuaries Of Srikakulam District In Andhrapradesh, India.

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Introduction:

The Vamsadhara and Nagavali rivers are the two major river systems in the district of Srikakulam in Andhra Pradesh state of India. These two rivers originate in the Eastern Ghats of Odhisha state that is at Thuamul Rampur in the Kalahandi district enters into Andhra Pradesh and flows through the Srikakulam district till they connect to Bay of Bengal i.e Vamsadhara at Kalingapatnam and Nagavali at Kallepalli areas as (Fig-01) in Map showing it. Both the rivers form a dynamic and complex ecosystem. Crustaceans' mainly freshwater prawns and marine water shrimps that are available naturally in these waters are good fishery resources and plays a crucial role in the country's economy and also one of the top earners of foreign exchange.

The numbers of prawn species available in Indian subcontinent are total 437 species. Suborder Dendrobrachiata has 142 species and the suborder Pleocyemata has 295 species are present. Penaeidae is the main family that includes 73 species comes under 19 genera is the largest group among penaeoids and many of them are commercially very important in Indian aquaculture practices. Jayachandran (2002) listed the global diversity of these prawns and Jayachandran (2010) gave and account of taxonomic status of palaemonid prawns and its state wise distribution and species diversity.

Despite significant research on the prawn and shrimp fauna of Indian estuaries (Reddy, 1995; Deb, 1995, 1998), there is limited information available on these species from the Vamsadhara and Nagavali estuaries. To address this gap, the present study was conducted. My Present study provides diversity of these prawn species in the estuarine systems of these two river mouths.

Material and Methods:

Prawns were primarily collected using fishing nets with the assistance of local fishermen, while smaller shrimps were sometimes gathered by digging into the mud in the intertidal zones of the Nagavali and Vamsadhara estuaries (Fig-01). Based on extensive field surveys carried out from January 2021 to December 2023 on monthly basis and examined all about 188 specimens representing Penaeid and Non penaeid species. The collected prawn specimens were preserved in a 4% formaldehyde solution for further study. This paper presents a checklist of prawns of Nagavali and Vamsadhara estuaries and examines their diagnostic characteristics and global distribution. The species diagnoses are primarily based on the FAO Species Catalogue, as well as the works of Ravindranath (1977), Reddy (1995) and Deb (1998). In addition to this followed some research articles, monographs and some technical reports while preparing the provided checklist.

Results and Discussion:

Prawns constitute an important export commodity in India and the fact is that in India in the marine fish landings prawns are considered as economically most important constituents. Mainly in our country prawn industry was maintained the age old pattern till the beginning of the fifties of the twentieth century supporting an export trade of prawns worth a few million rupees at the most However in recent times a rapid and phenomenal transformation has taken place raising it to the status of an organized industry. About 20 percent of the marine prawn catches come from the east coast of India, the remaining 80 percent is form the West coast. India's shrimp exports reached 712,914 metric tons in 2023. Substantial quantities of prawns of marine origin, amounting to about a third of the above are caught form the various estuaries, tidal creeks, back waters and brackish water lakes along the coast. A typical freshwater prawn species form only sustenance fishery of lesser importance but in some isolated areas where some of the large palaemonid form fisheries of local

importance. The maintenance and management of biodiversity of any country needs accurate and continuous updating of data. In this connection a checklist (Table-01) of prawns available in the estuarine waters of rivers Vamsadhara and Nagavali is prepared which results in listing of 09 species under 03 genera and 02 families (Fig-02). Its IUCN status (Fig-03) also provided which indicates 06 species belongs to Not Evaluated category, 02 species Least Concern and 01 species belonging to Data Deficient category. After a thorough field surveys a total of nine prawn species were identified under three genera and two families namely Penaeidae and Palaemonidae.

Table-01: Checklist of prawns and shrimps of estuarine waters of rivers Vamsadhara and Nagavali along with IUCN Status:

S.No	Name of the Species	IUCN Status
CALSS: Crustacea ORDER: Decapoda FAMILY: Penaeidae		
1.	***Penaeus monodon* (Fabricius, 1798)**	**Not Evaluated**
2.	***Penaeus semisulcatus* (De Hann, 1844)**	**Not Evaluated**
3.	***Penaeus indicus* (H.Milne Edwards, 1837)**	**Not Evaluated**
4.	***Metapenaeus monoceros* (Fabricus, 1798)**	**Not Evaluated**
5.	***Metapenaeus dobsoni* (Miers, 1878)**	**Not Evaluated**
FAMILY: Palaemonidae		
6.	***Macrobrachium equidens* (Dana, 1852)**	**Data Deficient**
7.	***Macrobrachium banjarae* (Tiwari, 1958)**	**Least Concern**
8.	***Macrobrachium scabriculam* (Heller, 1862)**	**Least Concern**
9.	***Macrobrachium Macolmsonii* (H.M. Edwards, 1844)**	**Not Evaluated**

Diagnosis, Distribution of Prawn Species listed in the above checklist:

1. *Penaeus monodon* (Fabricius, 1798):

Diagnosis: The carapace is smooth, and the rostrum is robust and has 7 to 8 dorsal teeth, 3to 4 ventral teeth. Straight hepatic carina is present, the adrostal carina and groove extended beyond the epigastric tooth. A prominent antennal crest is present. The Petasma features a disto median projection which reaches the distal margin of the costae. The thelycum is characterized by big lateral plates and forms like lip with a smaller concave anterior plate. A sub triangular posterior plate positioned between the lateral plates.

Distribution - with in India: East and West coasts, Andaman and Nicobar Island and Lakshadweep.

Distribution - outside India: Pakistan, Sri Lanka, China, Japan, Gulf of Aden, Red Sea, West coast of Madagascar, Mauritius, New Guinea and Australia.

2. *Penaeus semisclactus* (De Haan, 1844):

Diagnosis: The carapace is smooth, with a long, strong, and straight rostrum, bearing 5 to 8 dorsal teeth and 2 to 4 ventral teeth. The Adrostral crest and groove extend beyond the Epigastric tooth, and the Gastro frontal crest is absent. The antennal crest is prominent, and the fifth pereopod is a small but exopod is distinct. Straight hepatic carina is present. The distomedian projections of Petasma have extending up to the costae. The thelycum is characterized by big flap like lateral plates forms lip like structure and meet at the midpoint. Semi circular and concave anterior process, convex posterior processes are present.

Distribution with in India: East and West Coasts of India.

Distribution outside India: Sri Lanka, China, Japan, Gulf of Aden, Red Sea, West coast of Madagascar, Mauritius, New Guinea, Northern Australia, East Mediterranean and Korea .

3 *Penaeus indicus* (H.Milne Edwards, 1837):

Diagnosis: Smooth carapace with large and slender rostrum with 7 to 9 dorsal teeth and 4 to 6 ventral teeth. The adrostral crest and groove expanded up to epigastric tooth. Gastro frontal and hepatic crests are absent. In between hepatic spine and orbital angle the entire space is occupied by gastro orbital carina. The disto median projections of Petasma extended beyond the posterior margin of costae. Ventral costae are unarmed. Thelycum is characterized by big lateral plates which form a lip like structure with round anterior and vestigial posterior processes.

Distribution – with in India: East and West coasts, Andaman and Nicobar Island and Lakshadweep.

Outside India: China, Sri Lanka, East African Coast, Madagascar, Red Sea, Philippines and Northern Australia.

4. ***Metapenaus monoceros*** **(Fabricius, 1798):**

Diagnosis: the body is pubescent with larger specimens often displaying a small patch or stripe. Rostrum has 9 to 12 evenly spaced teeth on its dorsal. Adrostral crest is up to second rostral tooth and the adrostral groove is also up to Epigastric tooth. The telson is devoid of spinules. There is a distinct ischial spine on the first walking leg. Petasma has convoluted, bulb shaped distomedian projections that conceal the distolateral projection. The thelycum features as long, deeply grooved anterior plate with round terminal structures, small oval shaped lateral plates with big swollen margins.

Distribution with in India: East and west Coast of India, this species available in plenty in the present study areas.

Distribution outside India: Sri Lanka, Malay Peninsula, Red Sea, Madagascar, South Africa and Mauritius.

5. ***Metapenaeus dobsoni*** **(Miers, 1878):**

Diagnosis: .M.dobsoni body is pubescent with patches on it and long rostrum extending up to atennualr peduncle which is armed with 7 to 9 dorsal teeth, half of the distal region is toothless.

The adrostral crest extends to the Epigastric tooth and the Telson is Equipped with spinules. The Petasma features distomedian projections that form short, tubular filaments with forwarded distolateral projections. The thelycum has a tongue shaped long anterior plate with central goove and there are horse shoe shaped lateral plates.

Distribution with in India: south- West Coast of India. This species is abundantly present in Vamsadhara and Nagavali estuarine waters.

Distribution outside India: Sri Lanka, Gulf of Thailand, Philippines and Indonesia.

6. *Macrobrachium banjarae* (Tiwari, 1958):

Diagnosis: The carapace is smooth, featuring both antennal and hepatic spines. The Rostrum is long, extending to the tip of the antennal scale, and bears 11 to 15 evenly spaced dorsal teeth, with 2 posterior orbital teeth, 4 to 6 ventral teeth. It is with smooth abdomen and elongated

Telson extending beyond the uropodal spine along with accessory sub apical spine

Distribution within India: Andhra Pradesh, Madhya Pradesh, Maharashtra and Karnataka.

Distribution outside India: Sri Lanka, China, East coast of Africa and Madagascar.

7. *Macrobrachium equidens* (Dana, 1852):

Diagnosis: The body is robust, with a strong, long rostrum that extends to the tip of the antennal scale. The Dorsal margin of the rostrum has 10-11 regularly spaced teeth and is armed ventrally with 4 to 7 teeth. The antennal spine's ridge extends towards hepatic spine. Telson has two posterolateral spines; the lower spine extends beyond the telson tip.

Distribution within India: Kerala and South-West Coast in India.

Distribution outside India: Sri Lanka, China, Pakistan, East coast of Africa, Madagascar and Philippines.

8. *Macrobrachium scabriculum* (Heller, 1862):

Diagnosis: Short rostrum extending up to antennular peduncle tip. Its upper margin has 12 to 15 teeth, 4 to 5 are post orbital and the 1 to 3 teeth are on ventral margin. The carapace is smooth and telson is very strong. The crest of the rostrum extends up to middle of the carapace. The arm and wrist surface is rough with spines and shorter than palm. Hatched larvae undergo migration to low salinity waters to complete their life cycle.

Distribution within India: Indian Ocean

Distribution outside India: Sri Lanka, Cuba, Pakistan, South Italian, Somalia and Zanzibar, Mozambique and Indonesia.

9.*Macrobrachium malcolmsonii* (H. M. Edwards, 1844)

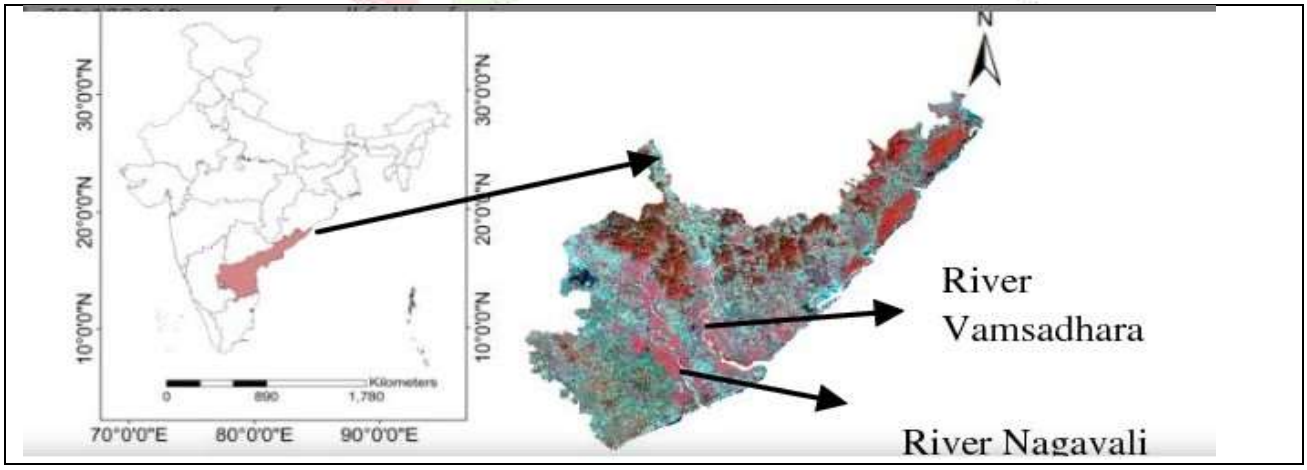
Diagnosis: the body is symmetrical with a hard, elongated rostrum prolonged up to antennal scale and forming a small crest like structure. The dorsal side of the rostrum is with 7 to 11 teeth, 3 teeth are on orbital margin backside and 1 to 3 teeth at sub distal region. The remaining teeth are evenly spaced. Antennal spine is present above the hepatic spine. The pointed tip of the Telson extends beyond the posterolateral spines.

Distribution within India: Kerala and South-West Coast in India.

Distribution outside India: Pakistan, Sri Lanka, China East coast of Africa, Madagascar and Philippines and New Caledonia.

Summary:

Nine species of prawn under three genera and two families have been recorded from Vamsadhara and Nagavali Estuarine waters of district Srikakulam in Andhra Pradesh state of India. This checklist serves as a basic key for future researchers and can be a ready reckoner for further studies.



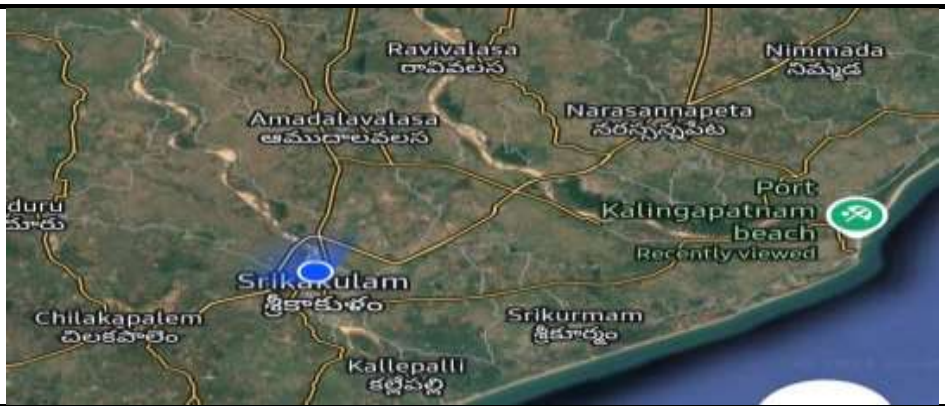


Fig-01: Map showing Location of rivers Nagavali and Vamsadhara

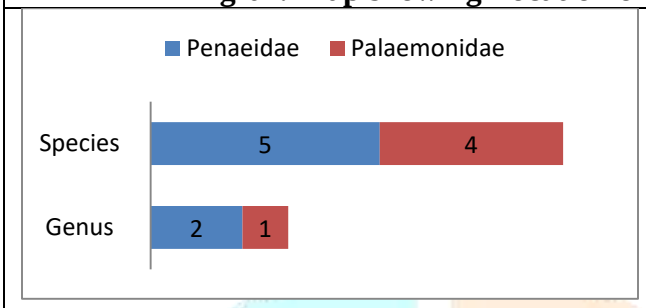


Fig- 02: Genus and species compostion of Prawns

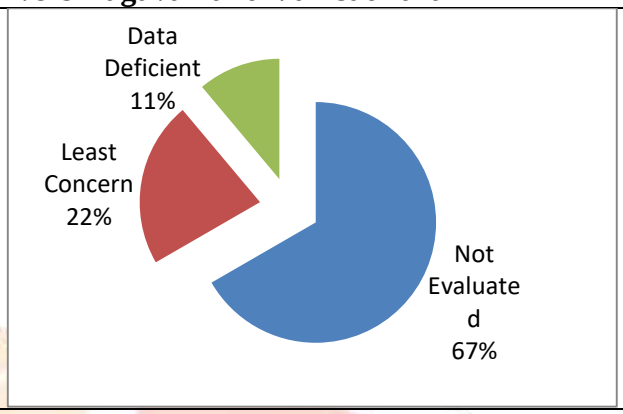


Fig-03:IUCN Status of Prawns of Study Area

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