TAXONOMY OF FISH LANDINGS AT NEENDAKARA LANDING CENTRE, KOLLAM

Dissertation submitted to the University of Kerala in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF SCIENCE

IN

ZOOLOGY

SUBMITTED BY:

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DEPARTMENT OF ZOOLOGY

TKM COLLEGE OF ARTS AND SCIENCE

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CERTIFICATE

This is to certify that the dissertation entitled **"Taxonomy of Fish Landings at Neendakara Landing Centre, Kollam"** is an authentic record of the work done by **Alana Nazeer** under my supervision as partial fulfillment of the requirements for the Degree of *Bachelor of Science* in Zoology and this report has not been submitted earlier for the award of any degree or diploma or any other similar titles anywhere.

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1.

2. 8/5/19

DECLARATION

I **Alana Nazeer**, do hereby declare that this dissertation "Taxonomy of Fish Landings at Neendakara Landing Centre, Kollam"" is a bona fide report of the project work carried out by me, under the supervision and guidance of Rohini Krishna M V, Asst. Professor, Department of Zoology, TKM College of Arts and Science, Kollam as partial fulfillment of the requirements for the award of the Degree of Bachelor of Science in Zoology.

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30.04.2019

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Alana Nazeer

CONTENTS

TAXONOMY OF FISH LANDINGS AT NEENDAKARA LANDING CENTRE

Introduction

Fishes, like many other forms of life, are of immense value to humans. They have long been a staple item in the diet of many peoples, unfortunately leading to the downfall of many species. Today fishes form an important element in the economy of many nations while giving incalculable recreational and psycho logical value to the naturalist, sports enthusiast, and home aquarist. They are also the subject of international and domestic agreements and disagreements. Many government institutions are devoted to the study of fish biology and propagation Particular aspects of various species lend themselves to studies in behavior, ecology, evolution, genetics, and physiology. They are used as general indicators of pollution, partly to the direct benefit of humans and partly to protect what people consider a valuable and necessary part of their heritage and life.

Fishes occur in lakes, streams, estuaries, and oceans throughout the world. In most species of fishes, all individuals live entirely either in fresh or in marine waters. Over 225 species are diadromous, regularly living part of their lives in lakes and rivers and part in the oceans. Among these, most are anadromous, spawning in fresh water but spending much of their time in the sea. A few are catadromous, spawning in the oceans but returning to fresh water. Classification of some species as marine, diadromous, estuarine, or freshwater is impossible, except as a generalization. Just as in an otherwise marine family there may be one species confined to fresh water, so in some species there are populations that occur in an environment opposite that of most others. Individuals of some otherwise marine species

ascend rivers for short distances in part of their range, and those of some species that are usually freshwater are anadromous in some areas. Many freshwater and marine species are also common in brackish-water estuaries. About one-third of the 555 families have at least one species with individuals that spend at least part of their life in fresh water. Berra (2001) gives much information and distribution maps for the freshwater fish families.

Many environmental factors influence just where a certain species will predominate. Competition and other biological interactions may exert a strong influence along with physicochemical factors. In freshwater environments, species may show a preference for lakes or streams. Variations in preferences may exist over the range of a species. Among lakes they may show a preference for deep, cold, oligotrophic lakes or for shallower, warmer, and more productive mesotrophic and eutrophic lakes. In lake waters they may show a preference (horizontal and vertical) for the open-water limnetic zone, the benthic area, or shallow littoral areas. Fishes may even be restricted to certain types of bottom or do best under certain physicochemical conditions. Stream fishes may prefer riffle or quiet areas, and a zonation of species is usually found from the headwaters to the mouth. In the oceans, the vast majority of fishes are coastal or littoral. Most of those living beyond the 200-m-deep continental shelf (oceanic species) are deep-sea (mesopelagic, bathypelagic, abyssopelagic, or benthic at various depths); only a small minority regularly live close to the surface in the well-lighted upper 200-m zone (epipelagic),a region much larger in volume than the coastal waters. The epipelagic and mesopelagic fishes, which consist of both large predators and small plankton. feeders, are varied, whereas most of the bathypelagic and abyssal fishes are relatively small.

"morphospecies"), it should be noted that the species classification concept differs among scientists. While authorities such as Nelson (2006) and Mayr (1942) accept the "biological species" concept, others like Simpson (1951) promotes the "evolutionary species" concept. Then there is Cracraft (1983) who prefers to adopt the "phylogenetic" or "cladistic" species concept.

While most researchers are concerned with fishes as a food source and their work involves enriching the body of aquaculture knowledge, there are some who are interested in their diversity, distribution patterns, ecology and functional physiology. Recently, there has also been an overwhelming interest in the molecular constitution of fishes (Wong *et al.*, 2011; Pereira *et al.*, 2013; Rakshit *et al.*, 2015 Quraishia *et al.*, 2015) and their function as biological indicators to monitor waterbody pollution (Fonge *et al.*, 2011; Khodadoust *et al.*, 2013; Authman *et al.*, 2015). Correspondingly, the interest in fish has expanded exponentially, and the ichthyology discipline is often sought to contribute too many other fields of studies (Padilla and Williams, 2004; Lauder *et al.*, 2007; Feist and Longshaw, 2008; Rudkowska *et al.*,2010). Generally, species is the basic unit in these studies and sound taxonomy is a prerequisite to prevent confusion and misinterpretation.

Growth of fish taxonomy in India can be traced back to the late 18th century, when European scientists and British Officers of the East India Company, particularly medical doctors, began to collect and describe Indian fishes. Bloch (1795) is one of the pioneers in the field of taxonomy of Indian fishes. As on date, a total of about 2500 species of fish are known from India (Talwar and Jhingran 1991) of which about 1570 are truly marine. Marine taxonomic studies were carried out by Day (1878), Munro(1955) Smith and Heemstra (1986).

Taxonomic investigations on deep-sea fishes of India began with the publications of A. Alcock, based on the samples collected during the voyage of Indian marine survey steamer H.M.S. Investigator (Alcock 1899); and the descriptions also include a few deep-sea fishes off the erstwhile Travancore State. In the 20th century, several ichthyologists compiled information on marine fish fauna of the Indian Ocean, including those in the western ocean, notable in this series being *The Fishes of Indo-Australian Archipelago* (Weber & de Beaufort, 1916–1936; de Beaufort 1940; de Beaufort & Chapman 1951).Studies on the fish landing along the Kerala coast was also carried out by Day(1865),Naomi *et al*(2001).

The study is very significant as it will help to throw light on the taxonomy of fishes which are of immense significance in identification of species and thereby the identification of threatened species and to suggest measures to prevent its overexploitation and to promote sustainable fishery practices.

Materials and Methods

Neendakara is a village in Karunagappally Taluk, Kollam district 9 km north of Kollam city in Kerala, India. It is Kollam district's intermediate fishing port. Neendakara is 30 km north of Paravur and 14 km south of Karunagappally town (Fig 1). Major crafts are motorized fibre boats.

The different gear types used include bottom trawling and purse seining catches were also caught by gillnets, various line gear, and encircling nets. The specimens collected were preserved in 10% formalin for systematic studies.

The fish landings started at 9 am and usually took place during the whole day, with different boats landing at different time intervals. The fish landings took place during all the 7 days.

The body colouration was noted in fresh condition and photographed in digital camera. For identification of fishes the important taxonomic treatise of Day (1967) were consulted in addition to FAO sheet and Fishbase.

The statistical analysis was carried out by using Microsoft Office Excel Software

Map showing Study Area

Fig. No. 1

Fig. No. 2

Results

Species Description

Sixteen species of fishes belonging to 14 Families and 5 orders were recorded during the study period. Identity of the species, salient morphological and biological characters and economic importance of each species is described below.

1. **Scientific name : *Therapon theraps* (Cuvier, 1829)**

Order : Perciformes

Family : Terapontidae

Common name: Largescaled terapon

Fig. No. 3

Description: Color is dusky green above, white below; body, head and fins with an iridescent sheen. Four longitudinal brown stripes extend on the upper side from the head. A large prominent black blotch is on the distal end of the spinous portion of the dorsal fin. Similar brown stripes run across the caudal fin

Distribution : Indo-West Pacific: East Africa, Madagascar, Seychelles, Red Sea, Arabian Peninsula, Persian Gulf to India and Andaman Islands; and southeast Asia.

Biology: Eggs are guarded and fanned by the male parent . Marketed fresh

Uses: Edible fish, commercial use

2. **Scientific name : *Stolephorus commersonii* (Lacepede,1803)**

Order : Clupeiforms

Family : Engrauidae

Common name: Commerson's anchovy

Fig. No. 4

Description: Belly slightly rounded with 0-5 small needle-like pre-pelvic scutes. Maxilla tip pointed, reaching to or a little beyond hind border of pre-operculum, the latter convex, rounded. Small teeth on hyoid bones. Isthmus muscle tapering evenly forward. Body light transparent fleshy brown with a pair of dark patches behind occiput, followed by a pair of lines to dorsal fin origin. Bears a silver stripe on flanks.

Distribution : Indo-West Pacific: East Africa, from Gulf of Aden to Zanzibar, northern Madagascar and Mauritius (but not from Red Sea or Persian Gulf) eastward to Hong Kong and Papua New Guinea

Biology: A schooling fish found in coastal waters, apparently entering brackish water. Occurs in Godavari estuary, India, from February to June in salinities of 19.6-32.0 ppt, but almost totally absent in subsequent flood season. Feeds on surface plankton, primarily copepods and prawn larvae. Eggs are oval with a knob. Used for food and fish meal

Uses : Edible fish, commercial use

4. Scientific name *Megalapsis cordyla* (Linnaeus, 1758)

Order : Perciformes

Family : Carangidae

Common name: Torpedo scad

Fig. No. 6

Description: Body elongate, subcilindrical, a little compressed posteriorly, and with caudal peduncle strongly compressed with a marked medial keel. Snout and lower jaw pointed with a single row of small teeth, except a narrow band anteriorly; upper jaw extending posteriorly to centre of eye with small villiform teeth, outer teeth moderately enlarged. Eye moderate, with well developed adipose eyelid completely covering eye except for a vertical slit centred on pupil. Shoulder girdle (cleithrum) margin smooth, without papillae. Lateral line strongly arched anteriorly. Colour head and body bluish to green dorsally, sides and belly silvery; large black opercular spot. Dorsal and anal fins pale to yellow, distally dusky; pectoral and pelvic fins pale, with upper half dusky. Caudal fin dark, especially leading and trailing edges of fin.

Distribution : Indo-West Pacific: East Africa to Japan and Australia.

Biology: Adults are primarily oceanic, pelagic schooling species rarely seen on reefs . They feed mainly on fishes.

Uses: Generally marketed fresh and dried salted.

5. Scientific name: ***Nemiptreus japonicus***

Order: Perciforms

Family : Nemipteridae

Common name: Japanese threadfin bream

Fig. No. 7

Description: Eleven to twelve pale golden-yellow stripes along body from behind head to base of caudal fin. A prominent red-suffused yellow blotch below origin of lateral line. Pectoral fins very long, reaching to or just beyond level of origin of anal fin. Caudal fin moderately forked, upper lobe slightly longer than lower and produced into a short or moderately long filament. Three transverse scale rows on preopercle. Axillary scale present. Color: Upper body pinkish, silvery below.

Distribution : Indo-Pacific. A Red Sea immigrant into the Mediterranean reported from Haifa Bay (2005). A record of this species from northwestern Australia is unfounded.

Biology: Very abundant in coastal waters, found on mud or sand bottoms, usually in schools. Feeds mainly on small fishes, crustaceans, mollusks (mainly cephalopods), polychaetes and echinoderms. Females predominate at small sizes and males at larger sizes, due to faster growth rate in males

Uses: Marketed mainly fresh, but also frozen, steamed, dried-salted, dry-smoked, fermented or made into fish balls and fish meal.

6 . Scientific name *Lutjanus lutjanus* (Bloch, 1790)

Order : Perciforms

Family : Lutjanidae

Common name: Bigeye snapper

Fig. No. 8

Description: Dorsal profile of head gently sloped. Preorbital bone very narrow, much less than eye diameter. Preopercular notch and knob poorly developed. Scale rows on back rising obliquely above lateral line. Generally silvery white, with a broad yellow stripe running along the side from the eye to the caudal fin base. A series of faint narrow yellow horizontal lines is on the lower half of the body. The fins are pale yellow to whitish

Distribution : Indo-West Pacific: East Africa to the Solomon Islands, north to southern Japan, south to Australia. Recently recorded from Tonga

Biology: Adults inhabit offshore coral reefs and trawling grounds. Trawled to depth of almost 100 m . Frequently encountered in large schools with other *Lutjanus* species . Feed on fishes and crustaceans .

Uses: Commercial

7. **Scientific name:** ***Dascyatis zugei*** (Müller & Henle, 1841)

Order : Myliobatiformes

Family : Dasyatidae

Common name: Pale-edged stingray

Fig. No. 9

Description: It has a diamond-shaped pectoral fin disc slightly longer than wide, with concave anterior margins merging into an elongated, triangular snout; the head comprises more than half of the disc length. The eyes are small, with a pair of much larger spiracles immediately behind. There is a nearly rectangular curtain of skin between the nares, with a fringed rear margin. The mouth is gently curved, without papillae on the floor. The teeth of adult males have pointed cusps while those of juveniles and females are blunt. The pelvic fins are triangular. The tail is whip-like, much longer than the disc, and bears a stinging spine. A low dorsal fin fold originates just posterior of the spine tip while a deeper ventral fin fold originates below the spine base.

Distribution : Indo-West Pacific: India to southern Japan, Myanmar, Malaya, Indonesia, China and Indo-China.

Biology: Feed on bottom-dwelling organisms - primarily small crustaceans, but also small fishes. Exhibit ovoviparity (aplacental viviparity), with embryos feeding initially on yolk, then receiving additional nourishment from the mother by indirect absorption of uterine fluid enriched with mucus, fat or protein through specialized structures . Distinct pairing with embrace. Gives birth to litters of 1-4 pups. No reproductive synchronicity .

Uses: Landed in very large quantities as by-catch in the bottom trawl and trammel fisheries. Utilized for its meat, but of limited value due to its very small size

8. **Scientific name:** ***Sardinella longiceps*** (Valenciennes, 1847)

Order : Clupeiformes

Family: Clupeidae

Common name: Indian oil sardine

Fig. No. 10

Description: The body of *Sardinella* is particularly elongated even to the point of being subcylindrical. They have a slightly rounded belly and have eight rays on their pelvic fins. They have a very large number of gill rakers and a faint golden spot behind the gill opening. They also have a faint golden midlateral line, as well as a black spot on the hind border of their gill covers. No prominent keel

Distribution : Indian Ocean: northern and western parts only, Gulf of Aden, Gulf of Oman, but apparently not Red Sea or the Persian Gulf, eastward to southern part of India, on eastern coast to Andhra; possibly to the Andaman Islands.

Biology: Coastal pelagic . Forms schools in coastal waters and strongly migratory. Feeds mainly on phytoplankton (especially diatoms) and small crustaceans . Breeds once a year off western coasts of India when temperatures and salinity are low during the southwest monsoon months. Spawning peaks in August-September. Spawning usually takes place at night

Uses: Marketed fresh, dried and dried-salted. Also sold smoked and canned . Also made into fish meal and fish balls.

9. **Scientific name:** ***Aluterous monocerous*** (Linnaeus, 1758)

Order: Tetraodontiformes

Family: Monacanthidae

Common name: Unicorn leatherjacket filefish

Fig. No. 11

Description: Rudimentary pelvic spine disappears in large specimen . Snout convex in adults .andy to grey with small brown spots above; soft dorsal and anal fins pale yellowish to brownish; caudal membrane blackish brown

Distribution : Circumtropical. Western Atlantic: Massachusetts, USA to Argentina . Eastern Atlantic: west coast of tropical Africa . Eastern Pacific: Guatemala to Chile ; probably in Mexico . Western Indian Ocean: Mozambique and South Africa

Biology: Occasionally in shallow water by steep drop-offs. Solitary or in pairs, occasionally in groups of five or six, at less than 10 m depth. Juveniles are pelagic, seen under floating objects . Benthopelagic . Adults and juveniles are rarely seen near reefs. Juveniles often with large jellies and these may bring them close to reefs and adults may nest on sandflats adjacent to reefs in deep water. At other times, the adults may form large schools under weed-rafts that usually form during the wet season . Feed on benthic organisms .

Uses: Commercial.

10. **Scientific name:** ***Decapterus ruselli*** (Rüppell, 1830)

Order: Perciformes

Family: Carangidae

Common name: Indian scad

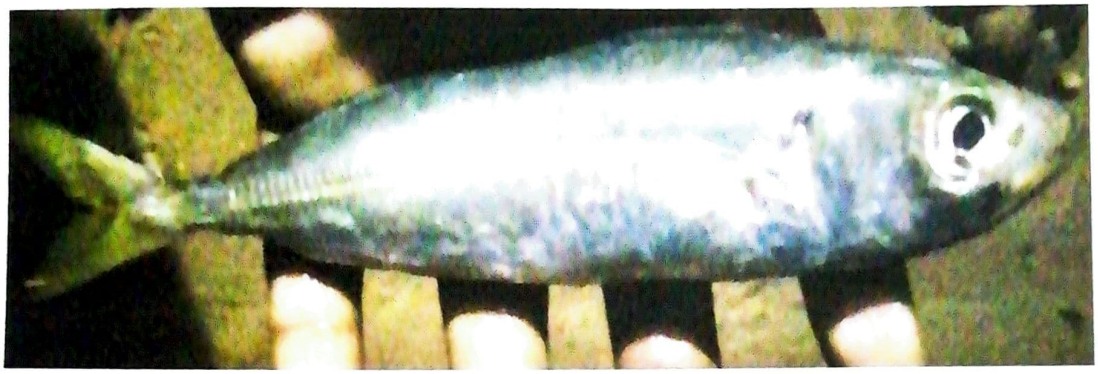

Fig. No. 12

Description: Color bluish green above, silvery below; caudal fin hyaline to yellowish; dorsal fins hyaline basally, light dusky distally. Opercle with small, black spot; opercular membrane with smooth margin. Snout longer than eye diameter; squarish lower posterior edge of maxilla; upper jaw with small teeth anteriorly; soft dorsal and anal fins relatively low, not falcate; pectoral fin sub falcate.

Distribution : Indo-West Pacific: East Africa to Japan, the Arafura Sea and Australia.

Biology: Adults dwell from middle to benthic , forming large schools in deep water, but occasionally inshore in sheltered bays in small to large groups . The most common *Decapterus* in coastal waters and on open banks of the Indian Ocean. They feed mainly on smaller planktonic invertebrates.

Uses: Generally marketed fresh, may be dried or salted. Also sold frozen and canned

11. Scientific name: *Secutor insidiator* (Bloch, 1787)

Order: Perciformes

Family: Leiognathidae

Common name: Pugnose ponyfish

Fig. No. 13

Description: Body silvery. Naked head; with nuchal spine. Mouth strongly oblique; nostrils situated above eyes . Protracted mouth pointing upward; Tip of maxilla reaching well below level of lower margin of eye. Body depth twice or slightly more than standard length. Lateral line ending before dorsal fin.

Distribution : Indo-West Pacific: Red Sea, Persian Gulf and East Africa to Australia, New Caledonia and Tahiti.

Biology: Schooling species found in shallow waters, usually near the bottom . Occasionally enters brackish waters . Swims in loose groups . Feeds on zooplankton including copepods, mysids, and larval fishes and crustaceans

Uses: Sold fresh and dried salted; also used for fishmeal.

12. Scientific name: *Zebrias synapturoides*. (Jenkins, 1910)

Order: Pleuronectiformes

Family: Soleidae

Common name: Indian zebra sole

Fig. No. 14

Description: *Zebrias* is a genus of soles native to coastal waters in the Indo-Pacific and southern Australia. All species in the genus have clear dark and pale stripes giving it a name derived from the word 'Zebra' due to the shared characteristic. At least some members of this genus are toxic. Marine; demersal; depth range 43 - 125 m . Tropical

Distribution : Indo-West Pacific: Persian Gulf to Papua New Guinea.

Biology: Caught in shallow sand and mud bottoms of the continental shelf and creeks.

Uses: Commercial.

13. Scientific name: *Thryssa mystax* (Bloch & Schneider, 1801)

Order: Clupeiformes

Family: Engraulidae

Common name: Moustached thryssa

Fig. No. 15

Description: It is a small schooling fish found in depth of 0-50m. Maximum length do not exceed 15.5 cm. The fish has 11 to 12 dorsal soft rays and only present 29 to 37 anal soft rays. There are 24 to 32 keeled scutes from isthmus to anus on belly region. Lower gill rakers are serrated. Body is silver, darker dorsally. There is a distinctive dark blotch behind upper part of gill opening,

Distribution : Indo-West Pacific: western coast of India to Myanmar and south to Java, Indonesia.

Biology: Found in coastal pelagic waters and often observed as entering mangroves and adjacent brackish waters . Juveniles and adults may penetrate the upper reaches where mixohaline-mesohaline conditions prevail. Eggs and larvae are found in the lower reaches of the mangroves . A schooling species found mostly inshore. Feed on planktonic organisms in coastal waters . Juveniles in mangroves feed on larvae of shrimps and fish .

Uses: Commercial

14. Scientific name: *Pristipomoides filamentosus* (Valenciennes, 1830)

Order: Perciformes

Family: Lutjanidae

Common name: Crimson jobfish

Fig. No. 16

Description: Interorbital space flat. Lower jaw slightly protruding. Pectoral fins long, reaching level of anus. Bases of dorsal and anal fins without scales, their last soft rays extended in short filaments. Scale rows on back parallel to lateral line. Color of back and sides varies from brownish to lavender or reddish purple; the snout and interorbital space with narrow yellow lines and blue spots; the dorsal and caudal fins light blue or lavender with reddish orange margins.

Distribution : Indo-Pacific: East Africa to Hawaii and Tahiti, north to southern Japan, south to eastern Australia and Lord Howe Island.

Biology: Adults occur over rocky bottoms ; off Guam, caught most abundantly between 180 and 270 m . At night, they migrate vertically to the upper part of its habitat to feed . They feed on small fishes, shrimps, crabs, amphipods, ascidians and salps.

Uses: Marketed fresh

15. Scientific name: *Priacanthus hamrur* (Forsskål, 1775)

Order: Perciformes

Family: Priacanthidae

Common name: Moontail bullseye

Fig. No. 17

Description: The male *Priacanthus hamrur* can reach a maximum length of 45 cm. The body is orange to red or silver, or silver with broad red bands. Often it has a row of about fifteen small dark spots along the lateral line. The fins are red to light pink. The pelvic fins are very large. The dorsal fin has 13 to 15 soft rays. The caudal fin has a concave margin which may be lunate (hence the common name). The eyes are large. The mouth is oblique with a protruding lower jaw.

Distribution : Indo-Pacific: Red Sea and southern Africa to French Polynesia, north to southern Japan, south to Australia. Reported from Easter Island

Biology: Uncommon species found in outer reef slopes and deep lagoon pinnacles from 8 to at least 80 m. In small aggregations, sometimes schools in oceanic locations . Also found under ledges or hovering next to coral heads during day . Feeds on small fish, crustaceans, and other small invertebrates

Uses: Generally marketed fresh, may be salted or dried.

16. Scientific name: *Rastrelliger kanagurta* (Cuvier, 1816)

Order: Perciformes

Family: Scombridae

Common name: Indian mackerel

Fig. No. 18

Description: The body of the Indian mackerel is moderately deep, and the head is longer than the body depth. The maxilla are partly concealed, covered by the lacrimal bone, but extend till around the hind margin of the eye. These fish have thin dark longitudinal bands on the upper part of the body, which may be golden on fresh specimens. There is also a black spot on the body near the lower margin of the pectoral fin. Dorsal fins are yellowish with black tips, while the caudal and pectoral fins are yellowish. The remaining fins are dusky.

Distribution : Indo-West Pacific: Red Sea and East Africa to Indonesia, north to the Ryukyu Islands and China, south to Australia, Melanesia and Samoa. Entered the eastern Mediterranean Sea through the Suez Canal.

Biology: Adults occur in coastal bays, harbors and deep lagoons, usually in some turbid plankton-rich waters. Form schools. Feed on phytoplankton (diatoms) and small zooplankton (cladocerans, ostracods, larval polychaetes, etc.) . Small groups were seen eating eggs of *Cheilio inermis* straight after spawning . Adult individuals feed on macroplankton such as larval shrimps and fish. Eggs and larvae are pelagic

Uses: Generally marketed fresh, frozen, canned, dried-salted, and smoked; also made into fish sauce.

Table 1: List of marine fishes landed in Neendakara landing Centre, Kollam.

SL No	Species	Order	Family
1	*Therapon theraps*	Perciformes	Terapontidae
2	*Stolephorus commersonii*	Clupeiforms	Engrauidae
3	*Mene maculata*	Perciforms	Menidae
4	*Megalapsis cordyla*	Perciformes	Carangidae
5	*Nemiptreus japonicus*	Perciforms	Nemipteridae
6	*Lutjanus lutjanus*	Perciforms	Lutjanidae
7	*Dascyatis zugei*	Myliobatiformes	Dasyatidae
8	*Sardinella longiceps*	Clupeiformes	Clupeidae
9	*Aluterous monocerous*	Tetraodontiformes	Monacanthidae
10	*Decapterus ruselli*	Perciformes	Carangidae
11	*Secutor insidiator*	Perciformes	Leiognathidae
12	*Zebrias synapturoides*	Pleuronectiformes	Soleidae
13	*Thryssa mystax*	Clupeiformes	Engraulidae
14	*Pristipomoides filamentosus*	Perciformes	Lutjanidae
15	*Priacanthus hamrur*	Perciformes	Priacanthidae
16	*Rastrelliger kanagurta*	Perciformes	Scombridae

Table 2: Species abundance of various orders landed at Neendakara landing centre.

SL No	Order	Abundance
1	Perciformes	10
2	Clupeiforms	3
3	Myliobatiformes	1
4	Tetraodontiformes	1
5	Pleuronectiformes	1

Table 3: Species abundance of various fish families landed at Neendakara Landing centre

SL NO	Family	Abundance
1	Terapontidae	1
2	Engrauidae	1
3	Menidae	1
4	Carangidae	2
5	Nemipteridae	1
6	Lutjanidae	2
7	Dasyatidae	1
8	Clupeidae	1
9	Monacanthidae	1
10	Leiognathidae	1
11	Soleidae	1
12	Engraulidae	1
13	Priacanthidae	1
14	Scombridae	1

Discussion

Taxonomic studies on marine fish landings at Neendakara landing centre,Kollam revealed the presence of 16 species classified under 5 orders, 14 families.(Figure No. 3-18, table 2 and 3).The order Perciformes represented the most diverse fish marine fish order with a species diversity of 10 species followed by Clupeiforms (3 species each) Myliobatiformes, Tetraodontiformes, Pleuronectiformes(1 species each). The species rich family was Carangidae, Lutjanidae(2 species each) followed by Terapontidae, Engrauidae, Menidae, Nemipteridae, Dasyatidae, Clupeidae, Monacanthidae, Leiognathidae, Soleidae, Engraulidae, Priacanthidae, Scombridae. The species coming under Order Perciformes are *Therapon theraps, Mene maculata, Megalapsis cordyla, Nemiptreus japonicas, Lutjanus lutjanus, Decapterus ruselli, Secutor insidiator, Pristipomoides filamentosus, Rastrelliger kanagurta.*The species coming under Order Clupeiforms are *Stolephorus commersonii, Sardinella longiceps, Thryssa mystax.*The species coming under Order Myliobatiformes are *Dascyatis zugei.* The species coming under Order Pleuronectiformes are *Zebrias synapturoides.* The species coming under Order Tetraodontiformes are *Aluterous monocerous.* Family Carangidae includes species such as *Megalapsis cordyla and Decapterus ruselli.*Family Lutjanidae includes species such as *Lutjanus lutjanus, Pristipomoides filamentosus.* Family Terapontidae is represented by *Therapon theraps.* Engrauidae by *Stolephorus commersonii.* Menidae by *Mene maculata.* Nemipteridae by *Nemiptreus japonicas.* Dasyatidae by *Dascyatis zugei.* Clupeidae by *Sardinella longiceps.* Monacanthidae by *Aluterous monocerous.* Leiognathidae by *Secutor insidiator.* Soleidae by *Zebrias synapturoides.* Engraulidae by *Thryssa mystax.* Priacanthidae by *Priacanthus hamrur.* Scombridae by *Rastrelliger kanagurta.*

The results of current study gives us information on the taxonomy and relative adundance of different species of marine fish landings of Neendakara landing centre. Similar studies have been conducted in different landing centres along Kerala coast. In the study conducted by

Naomi(2011) *Decapterus russelli, Nemipterus japonicus, Sardinella longiceps, Stolephorus commersonnii, Priacanthus hamrur, Rastrelliger kanagurta, Megalaspis cordyla* and *Thryssa mystax* were obtained from Neendakara.

Dasyatis zugei,Stolephorous. Sardinella longiceps Priacanthus hamrur, Decapterus russelli, Mene maculata, Leiognathus bindus, Nemipterus japonicus Terapon theraps, Rastrelliger kanagurta, Zebrias synapturoides, Thryssa mystax was recorded in the present study and those conducted by Bijukumar and Deepthi(2006) to survey the fishes along the Kerala coast. It is interesting to note that these species made up the main catch in the present study and bycatch in the previous one.

Dasyatis zugei,Sardinella longiceps, Stolephorus commersonnii, Thryssa mystax,Therapon theraps, Priacanthus hamrur, Decapterus russelli, Megalaspis cordyla, Mene maculata Nemipterus japonicus was recorded during this study and the study conducted by Bijukumar and Rajeev(2010).

It has been observed that certain species such as *Decapterus russelli* are found dominant along with the emergence of a few rare species and new records indicating the presence of the unexploited and unexplored marine finfish resources along the southern Kerala coast. Perhaps the mechanization of the fishing crafts, with the use of modern equipments, high enduring capacity as well as catching efficiency achieved by the gears would have brought in the rare and new resources.

Conclusion

Taxonomic survey was conducted to study the taxonomy and diversity of marine fish landing at Neendakara landing centre,Kollam during January to March 2019. A total of 16 species classified under 6 orders and 14 families were recorded from the landing centre.Most fishes belonged to the Order Perciformes followed by Clupeiforms, Myliobatiformes, Tetraodontiformes, Pleuronectiformes. Fish families such as was Carangidae, Lutjanidae were the most diverse in the study.Fishes of the Order Perciformes outnumbered other orders in abundance.Major fishing crafts were motorized fiber boats operating on a single day basis. The different gear types used include bottom trawling and purse seining catches were also caught by gillnets, various line gear, and encircling nets. Due to paucity of time the species diversity could only be recorded for a short duration of two months. So a detailed study should be conducted in the area in order to get more information on the fish diversity and taxonomy and to take actions for conservation and sustainable utilization. Presence of species with higher trophic level in the bycatch could have far reaching consequences, considering high level of carnivores and top level predators sustaining the fisheries in this region. As predatory fishes are selectively removed from the oceans, the trawl must increasingly rely on species in the lower trophic level. This is found true in the case of species in the trawl bycatch of Kerala coast, as the bycatch is dominated by mid level carnivores, particularly the demersal species. However, studies extending over longer time-scale are required to unequivocally establish the decline of predatory fishes in trawl landings. The multispecies nature of trawl fishing and multiday fishing could also have contributed to the greater biodiversity of the catch. The current features of trophic levels of trawl bycatch warrants policy interventions to reduce fishing pressure and to implement bycatch reduction devices along the southwest coast of India.

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