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An Overview of Major Finfish Species Landing in Chellanam Harbour of Ernakulam District, Kerala (India) and their Conservation Status

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A B S T R A C T

The present study primarily focused on systematic representation of IUCN (International Union for Conservation of Nature) Red Listed marine finfish landings of Chellanam harbour of Ernakulam district, Kerala. The study was conducted for a period of 6 months from November 2018 to April 2019. Sample collections were conducted twice in a month. A checklist of finfishes along with their scientific name, common name, family and present conservation status were prepared. A total of 41 species of fishes belonging to 24 families were identified during the entire study. As per IUCN (International Union for Conservation of Nature) Red List (2017-3), out of 41 fish species identified, 1 species comes under Near Threatened (NT), 1 species comes under Vulnerable (VU), 2 species comes under Data Deficient (DD), 31 species comes under Least Concern (LC) and 6 species comes under Not Evaluated (NE). Information on conservation status of fishes plays a significant role in fisheries science since it forms basis for management of marine fishery resources.

Introduction

As a tropical country, India boasts a rich diversity of flora and fauna and is listed among the world's mega biodiversity countries, however with a delicate ecosystem (Yadav, 1997). As fishery resources have multiple uses, fishing has become a major industry in developing countries such as India and has provided livelihoods for a number of people. Fishery resources are sustainable natural resources, yet are liable to extinction (as witnessed in several cases worldwide) if persistent and indiscriminate harvesting is adopted (Narayanakumar, 2017). Marine ecosystems are ecologically significant as they support high biodiversity and a wide range of fish species, but these coastal environments are remarkably sensitive to increasing anthropogenic activities and

related climate changes (Luypaert *et al*., 2019). There is growing concern about the increasing human effect that has occurred in recent years on marine biodiversity (Jackson, 2010). According to (Joshy, 2017) marine and coastal waters of Kerala are considered as the most significant ecosystems in terms of productivity and uniqueness. Highly flourished marine resources, abundant number of fish diversity and skilled fishing community are the driving forces which lead Kerala into a major producer and consumer in the field of fisheries. Favourable high rainfall, long coastline and a numerous numbers of rivers make the Kerala coast more productive for fishery. The Chellanam fishing harbour is a small fishing harbour, situated in the Kandekkadu gap of Chellanam Panchayath in Ernakulam District of Kerala. This region is rich in fishery resources and often mudbanks are formed here. The nearest established fishing port is at Thoppumpady, 20 km north of Chellanam, where there is no beach landing facility. The fishermen engaged in fishing and related activities here are from South Chellanam Matsyagramam. About 220 motorized boats called valloms and 25 inboard valloms are operating from this area. The assessment of the major marine fish reported from the study area with categories and criteria of IUCN (International Union for Conservation of Nature) Red List not only determines their conservation status but also helps to formulate sustainable fisheries management strategies. The present work is an effective attempt to identify major finfishes and determine the conservation status, reported in the Chellanam harbour of Ernakulam district.

Materials and Methods

The study area (Lat. 09°47′950″N, Long. 76°16′551″E) is located in the Chellanam Panchayath of Ernakulam District (Fig. 1), 250 metres west of Thoppumpady - Chellanam State Highway and 8.5 km from the N.H 47 at Eramalloor junction. Investigation regarding fish landing along with sample collection were conducted twice in a month and harbour visit were made on early morning (6 A.M) for a period of six months from November 2018 to April 2019. All images of fishes were captured with a Canon IXUS 190 digital camera. The collected fishes were identified using standard references and keys (Misra, 1952; Ebert and Mostarda, 2013; List of Fish Species; Fish Base). During the auction time, the fish samples were collected randomly from each heap. All collected samples were brought to the laboratory, washed thoroughly with tap water, and stored in 10% formalin for further examination. To supplement the sampling data, information regarding other than reported catch was collected from fishermen by questionnaire survey method. The fishes identified were classified in compliance with the status of the IUCN (International Union for Conservation of Nature) Red List and also the different schedules of the Indian Wildlife Act (Protection) and the appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (IUCN Red List 2017-3).

Results and Discussion

A total of 41 species of fishes belonging to 24 families were identified during the entire study. Scientific names of the 41 species of fishes, with family, common name and IUCN status are shown in Table 1 and the details of number of species representing each family are shown in figure 3. Out of 24 families, Engraulidae dominated first with five species of fishes including *Encrasicholina punctifer, Stolephorus commersonnii, Stolephorus indicus, Thryssa mystax* and *Thryssa setirostris.* Carangidae and Clupeidae secondly dominated representing 4 species from each family. Families of Tetradontidae,

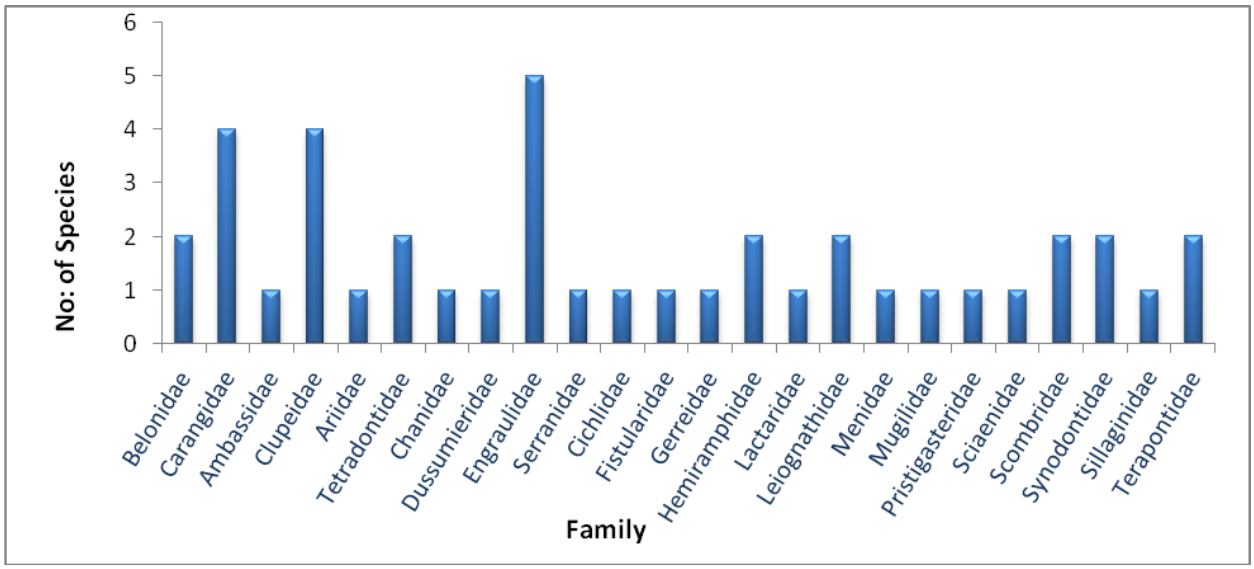
Hemiramphidae, Leiognathidae, Scombridae, Syonodontidae, Belonidae and Terapontidae represented 2 species from each family. Families of Ambassidae, Ariidae, Chanidae, Dussumieriidae, Serranidae, Cichlidae, Fistularidae, Gerreidae, Lactaridae, Menidae, Mugilidae, Pristigasteridae, Sciaenidae, and Sillaginidae represented 1 species from each family.

Table.1 Different fish species with conservation status recorded during the study

Sl. No	Species Name	Common Name	Family	IUCN Status
1.	*Ablennes hians (Valenciennes,1846)*	Flat needle fish	Belonidae	LC
2.	*Alepes djedaba (Forsskal,1775)*	Shrimp scad	Carangidae	LC
3.	*Ambassis dussumieri (Cuvier,1828)*	Malabar glassy perchlet	Ambassidae	LC
4.	*Amblygaster sirm (Walbaum,1792)*	Spotted sardinella	Clupeidae	LC
5.	*Arius arius (Thunberg,1792)*	Threadfin sea catfish	Ariidae	LC
6.	*Arothron leopardus (Day,1878)*	Banded leopardblowfish	Tetradontidae	DD
7.	*Atule mate (Cuvier,1833)*	Yellowtail scad	Carangidae	LC
8.	*Chanos chanos (Forsskal 1775)*	Milkfish	Chanidae	LC
9.	*Dussumieria acuta (Valenciennes,1847)*	Rainbow sardine	Dussumieriidae	LC
10.	*Encrasicholina punctifer (Fowler,1938)*	Buccaneer anchovy	Engraulidae	LC
11.	*Epinephelus diacanthus (Valenciennes,1828)*	Spinycheek Grouper	Serranidae	LC
12.	*Escualosa thoracata (Valenciennes,1847)*	White sardine	Clupeidae	LC
13.	*Etroplus suratensis (Bloch,1790)*	Pearlspot	Cichlidae	LC
14.	*Fistularia petimba (Lacepede,1803)*	Red cornetfish	Fistularidae	LC
15.	*Gerres filamentosus (Cuvier,1829)*	Whipfin silver-biddy	Gerreidae	LC
16.	*Hemiramphus far (Forsskal,1775)*	Black-barred halfbeak	Hemiramphidae	NE
17.	*Hemiramphus marginatus (Forsskal,1775)*	Yellowtip halfbeak	Hemiramphidae	NE
18.	*Lactarius lactarius (Bloch and Schneider,1801)*	False trevally	Lactariidae	NE
19.	*Lagocephalus inermis (Temminck and Schlegel,1850)*	Smooth blaasop	Tetradontidae	LC
20.	*Leiognathus equlus (Forskkal,1775)*	Common ponyfish	Leiognathidae	LC
21.	*Megalaspis cordyla (Linnaeus,1758)*	Torpedo scad	Carangidae	LC
22.	*Mene maculate (Bloch and Schneider,1801)*	Moonfish	Menidae	NE
23.	*Mugil cephalus (Linnaeus,1758)*	Flathead grey mullet	Mugilidae	LC
24.	*Opisthopterus tardoore (Cuvier,1829)*	Tardoore	Pristigasteridae	LC
25.	*Otolithes ruber (Bloch and Schneider,1801)*	Tigertooth croaker	Sciaenidae	NE
26.	*Photopectoralis bindus (Valenciennes,1835)*	Orangefin ponyfish	Leiognathidae	NE
27.	*Rastrelliger kanagurta (Cuvier, 1816)*	Indian mackerel	Scombridae	DD
28.	*Sardinella longiceps (Valenciennes, 1847)*	Indian oil sardine	Clupeidae	LC
29.	*Saurida tumbil (Bloch,1795)*	Greater lizardfish	Synodontidae	LC
30.	*Saurida undosquamis (Richardson,1848)*	Brushtooth lizardfish	Synodontidae	LC
31.	*Scomberoides tol (Cuvier,1832)*	Needlescaled queenfish	Carangidae	LC
32.	*Scomberomorus commerson (Lacepede,1800)*	Narrow-barred Spanish Mackerel	Scombridae	NT
33.	*Sillago sihama (Forsskal,1775)*	Silver sillago	Sillaginidae	LC
34.	*Stolephorus commersonnii (Lacepede,1803)*	Commerson's anchovy	Engraulidae	LC
35.	*Stolephorus indicus (van Hasselt,1823)*	Indian anchovy	Engraulidae	LC
36.	*Tenualosa toli (Valenciennes,1847)*	Toli shad	Clupeidae	VU
37.	*Terapon jarbua (Forsskal,1775)*	Jarbua terapon	Terapontidae	LC
38.	*Terapon theraps (Cuvier,1829)*	Largescaled terapon	Terapontidae	LC
39.	*Thryssa mystax (Bloch and Schneider,1801)*	Moustached thryssa	Engraulidae	LC
40.	*Thryssa setirostris (Broussonet,1782)*	Longjaw thryssa	Engraulidae	LC
41.	*Tylosurus crocodiles (Peron and Lesuer,1821)*	Hound needle fish	Belonidae	LC

Fig.1 Map showing study area (•)

Fig.2 Graph showing No: of fish species reported with respect to various families



Based on the rate of decline, population size, geographic distribution area, degree of population and distribution fragmentation, IUCN (International Union for Conservation for Nature) Red List (2017-3) categorized the species into nine groups including Extinct (EX), Extinct in the wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD) and Not Evaluated (NE). As per the knowledge from IUCN Red List, out of 41 fish species identified, 1 species comes under Near Threatened (NT), 1 species comes under Vulnerable (VU), 2 species comes under Data Deficient (DD), 31 species comes under Least

Concern (LC) and 6 species comes under Not Evaluated (NE) so far.

The Chellanam fishing harbour is a small fishing harbour with a very clean and tidy environment. The people engaged in fishing in this area are from the Chellanam area itself. The harbour is required to have more infrastructural facilities as a large number of people are dependent on this place for their livelihood activities. Study results reveals that the Chellanam harbour is blessed with landing of wide variety of fish species. The conservation and management of endangered fish species is important for the sustainability of the coastal ecosystems. According to Shukla and Singh (2013) the best strategy towards the conservation of a species is to disseminate information, knowledge and awareness about the danger and extinction of species as preservation is not only desirable but also is cheaper than thinking of ways for recalling the extinct species. Fish fauna of the coastal waters of Kerala (Vincent *et al*., 2018) are being threatened due to several anthropogenic activities, habitat destruction and pollution. All of these activities would slowly diminish the biodiversity in the region. Thus awareness programmes amongst the fishers, strict ban on illegal monsoon fishing, usage of proper mesh sized nets and protection of breeding ground should be encouraged.

Studies of (Grafton *et al*., 2006) stated that "In an open access regime such as fisheries, there are many negative externalities which mean that unregulated fisheries are bound to end up in what is called the commons tragedy". This work will provide ideal data on major finfish landings in Ernakulam district's Chellanam harbour, India's southwest coast, and it may be inevitable in further fisheries based management and conservation strategies.

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