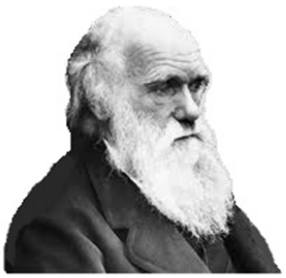
Available online at www.worldnewsnaturalsciences.com



World News of Natural Sciences

An International Scientific Journal

WNOFNS 52 (2024) 118-125 EISSN 2543-5426

Biodiversity Potential of Southeast Fishes in the Velankanni Coast, Nagapattinam District, Tamil Nadu in India

G. Shanmugavel[1], Pinku Satnami[2], M. Baranitharan[2,*], K. Salesh Rani[3]

[1] Department of HSS, Puducherry Technological University, Puducherry - 605014, India

[2] Department of Zoology, Silapathar Science College (Affiliated to Assam Science & Technology University), Silapathar -7 87 059, Assam, India

[3] Department of Zoology, Thiru. Vi. Ka. Govt. Arts College, Thiruvarur - 610003, Tamil Nadu, India

*E-mail address: bharanitharan2011@gmail.com

ABSTRACT

Though marine science has been established much attention along the southeast coast of India in recent years, and fish (marine and estuaries) studies are still watch over by many researchers. The present research was carried out on marine and estuaries fish accessibility along the Velankanni coastal, Nagapattinam District to identify. A large collection of marine and estuaries fish was made along the coastal line of Velankanni, and totally 30 fish species belonging to 17 families and 11 orders of fishes were identified over a 3 months (March 2023 to May 2023) study period. Most of the species were commonly available in all the season along Velankanni coastal area. The present study revealed the occurrence of marine and estuaries fish species along the Velankanni coastal in Nagapattinam, Tamil Nadu in India.

***Keywords*:** Fishes, species, Coastal area, family

1. INTRODUCTION

Geological change is continuously happening, although much of this change occurs over a period straddling millions of years. Some species depend on periodic disturbances such as fire in order to survive (Ramu *et al.,* 2015; Tamizhazhagan *et al.,* 2020). Continuously, coastal

(Received 10 November 2023; Accepted 02 December 2023; Date of Publication 04 December 2023)

region is a place of hectic human activity owing to urbanization and industrialization resulting in human interference of rapid development (Ramesh *et al.*, 2008; Prabhahar *et al.*, 2011). In recent years, a marine science has been established much attention along the southeast coast of India in recent years and marine fish studies are still watch over by many researchers (Ramu *et al.*, 2016), also southeast coast region are present the commercially important fishes and received extensive consideration in recent years due to greater demand for meat (Elaiyaraja *et al.*, 2012). Fishes are an important vertebrate group of the animal world and contribute overwhelmingly to global biodiversity, and used as a food source and contain many vital vitamins, omega fatty acids, low saturated fat known to support good health (Ikem and Egiebor, 2005; Karthik *et al.*, 2019). Hence, the present studies take some on marine fish biodiversity studies on the Velankanni coastal area, Nagapattinam district in Tamil Nadu, India.

2. MATERIAL AND METHODS

2. 1. Study area

Figure 1. Study area of Velankanni landing centre

The fishes were collected from Velankanni coastal landing centre (10°68'N to 10°59'N latitude, and 79°85'E to 79°76'E longitude), Nagapattinam District, Tamil Nadu in India (Figure 1) (Baby *et al.*, 2010). Fish collections were done in one season (Pre monsoon from March to May 2023) with help of local fisherman using a variety of gears including cast nets, drag net, scoop net and traps. The followed method and identified fishes were properly labelled and arranged in the racks of Department of Zoology, maintained was Thiru. Vi. Ka. Govornment Arts College museum (Jayaram, 2013). FAO species identification sheets (Fischer and Bianchi, 1984) besides standard book (Talwar and Kacker, 1984) also used to identify the fishes. Data were collected fortnightly summer seasonally, and a marine fish from one collection site was combined together for different species.

3. RESULTS

A different family fishes were identified along the collection site such as Channidae (1 Sp.), Anguuillidae (1 Sp.), Congridae (1 Sp.), Exocoetidae (2 Sp.), Clupeidae (3 Sp.), Chirocentridae (1 Sp.), Dussumeiriidae (1 Sp.), Engraulidae (7 Sp.), Cyprinidae (10 Sp.), Dasyatidae (1 Sp.), Drepaneidae (1 Sp.), Epinephelidae (1 Sp.), Leiognathidae (1 Sp.), Haemulidae (1 Sp.), Cynoglossidae (2 Sp.), Platycephalidae (1 Sp.), Siluridae (1 Sp.), Pangasiidae (1 Sp.), Ailiidae (1 Sp.), Ariidae (1 Sp.), Fistulariidae (1 Sp.), Syngnathidae (1 Sp.), Diodontidae (1 Sp.), Terapontidae (1 Sp.) and Triacanthidae (1 Sp.) (Table 1 & Figure 2). A total of 45 fish species were recorded belonging to the 12 order and 25 families in the Velankanni coastal area (marine and estuaries), Nagapattinam district, Tamil Nadu in India during study period (March 2023 to May 2023).

Table 1. List of predominant families with total number of order, family and species

Order	Family	Species	Abundance
Anabantiformes	Channidae	*Channa striata*	+
Anguilliformes	Anguillidae	*Anguilla bengalensis*	+
	Congridae	*Conger cinereus*	+
Beloniformes	Exocoetidae	*Cheilopogon spilopterus*	+++
		Exocoetus volitans	++
Clupeiformes	Clupeidae	*Tenualosa ilisha*	++
		Sardinella longiceps	+++
		Sardinella fimbriata	+++

	Chirocentridae	*Chirocentrus blochii*	++
	Dussumeiriidae	*Dussumieria acuta*	+
	Engraulidae	*Encrasicholina punctifer*	++
		Stolephorus commersonnii	++
		Stolephorus indicus	++
		Stolephorus insularis	+
		Thryssa mystax	++
		Thryssa purava	+++
		Thryssa malabarica	++
Cypriniformes	Cyprinidae	*Labeo catla*	++
		Labeo rohita	+
		Cirrhinus cirrhosus	+
		Cirrhinus reba	++
		Labeo bata	+
		Labeo fimbriatus	++
		Labeo calbasu	+
		Labeo kontius	++
		Cyprinus carpio	+
		Hypophthalmichthys molitrix	++
Myliobatiformes	Dasyatidae	*Himantura imbricata*	++
Perciformes	Drepaneidae	*Drepane punctata*	+
	Epinephelidae	*Epinephelus tauvina*	+
		Epinephelus diacanthus	+
	Leiognathidae	*Leiognathus bindus*	++

	Haemulidae	*Pomadasys maculates*	++
Pleuronectiformes	Cynoglossidae	*Cynoglossus arel*	+++
		Cynoglossus macrostomus	+++
Scorpaeniformes	Platycephalidae	*Platycephalus indicus*	+
Siluriformes	Siluridae	*Wallago attu*	+
	Pangasiidae	*Pangasius buchanani*	+
	Ailiidae	*Ailia coila*	+++
	Ariidae	*Arius arius*	+
Syngnathiformes	Fistulariidae	*Fistularia commersonii*	+
	Syngnathidae	*Hippocampus kuda*	++
Tetraodontiformes	Diodontidae	*Diodon hystrix*	++
	Terapontidae	*Lagocephalus lunaris*	+++
	Triacanthidae	*Triacanthus biaculeatus*	+++

(+++) abundance of the fish species; (++) presence of the fish species; (+) trace of the fish species.

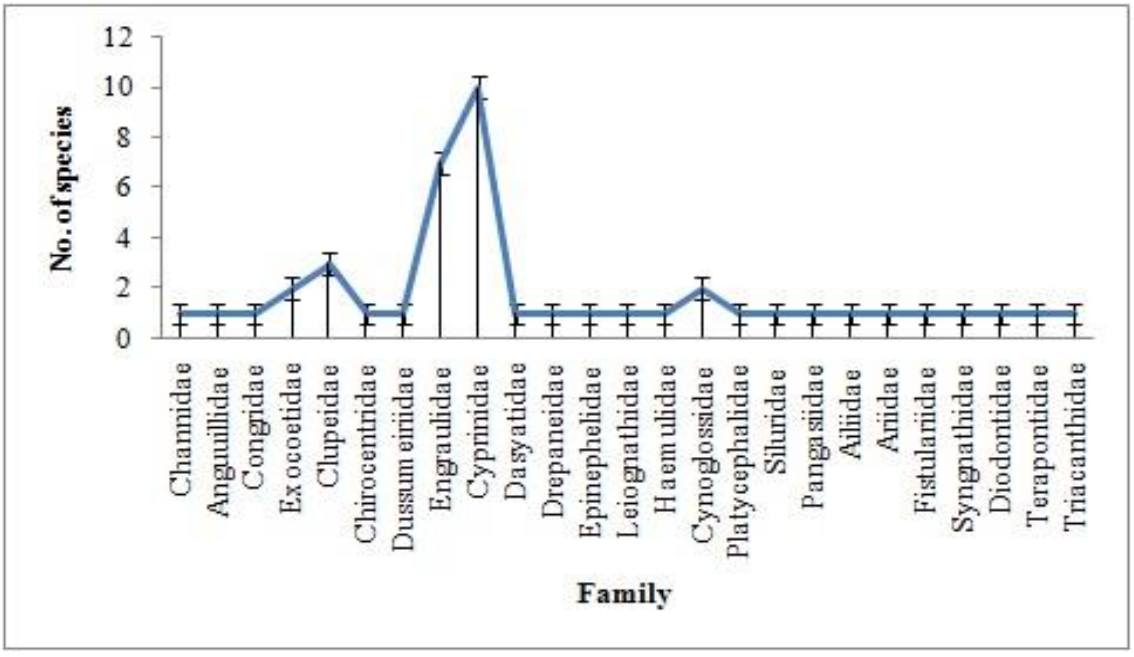


Figure 2. Number of species and family along the collection sites

4. DISCUSSION & CONCLUSIONS

The coastal area is dependent upon fishing, related activities and their economies have been badly damaged by the overfishing of fishery resources at an ever increasing rate over the past decade (Ramu *et al.,* 2016). Tamil Nadu has a very rich marine and estuarine fish fauna, it's fish diversity of about 51.25% to the total fish diversity of India, and 4.76% to the total fish diversity of world (Gopi and Mishra, 2015; Eschmeyer *et al.,* 2018). It's ichthyo-fauna is characterized by unique elements of Indian Ocean Origin (Barman *et al.,* 2011). The present study, a total of 30 species of fishes were recorded belonging to the 11 order and 17 families in the Velankanni coastal area, Nagapattinam district, Tamil Nadu in India during study period (March 2023 to May 2023).

The above findings are in concord with collected 46 fishes species in Parangipet (Murugesan *et al.,* 2012), followed by, 66 fish species were identified in Cuddalore coastal area (Varadharajan *et al.,* 2012), and 95 fish species were identified among the Nagapattinam coastal area (Ramu *et al.,* 2015). Furthermore, species diversity and abundance have reported from the shallow waters in west coast of India (Vivekanandan *et al.,* 2003). Continuously, the abundance and distribution of fishes in dependent on several distinct factors such as habitat structure, environmental factors, food availability and recruitment (Williams *et al.,* 2004), also most of the coral reef fishes tend to increase in both abundance and number of species with increasing depth on fringing reefs (Roberts and Gaines, 1986).

In the present survey designate that represents various circumstances in using sea ranching and marine hatchery enhancement to generate income, re-establish fisheries and conserve aquatic biodiversity. Thus, it may be concluded that the marine fishes distributed at Velankanni coastal area in Nagapattinam District as flashing distribution are either homogenous or heterogeneous in origin.

Acknowledgments

This study was supported by the Department of Zoology, Thiru. Vi. Ka. Govt. Arts College, Thiruvarur for providing the necessary facilities, and Silapathar Science College, Demaji District, Assam, India.

Reference

[1] Ramu S, Anandaraj T, Elaiyaraja C, Panneerselvam A. Check list of marine fish from Nagapattinam coastal waters, southeast coast of India. *International Journal of Fisheries and Aquatic Studies* 2 (2015) 193-197

[2] Thamizhazhagan V, Baranitharan M, Sridhar N, Senthilmurugan S. Hematopathology and histolopathology alteration exposure periods of $C_4H_{10}NO_3PS$ in freshwater Channa pinctata. *Asian Journal of Advances in Research* 3 (2020) 22-33

[3] Ramesh R, Nammalwar P, Gowri VS. Database of coastal information of Tamil Nadu. Report submitted to environmental information system (ENVIS) Centre Department of Environment, Government of Tamil Nadu (2008) 1-133

[4] Prabhahar C, Saleshrani K, Dhanasekaran D, Tharmaraj K and Baskaran K. Studies on the fish resources in nagapattinam coastal area, Tamil nadu. *India International Journal Current Life Sciences* 1 (2011) 26-28

[5] Ramu S, Rajakumar R, Anandaraj T, Ravichelvan R, Elaiyaraja C. Marine fish resource in Nagapattinam coastal waters, Tamil Nadu coastline, India. *International Journal of Modern Research and Reviews* 4 (2016) 1188-1191

[6] Elaiyaraja C, Sekar V, Rajasekaran R, Fernando OJ. Diversity and Seasonal distribution of the turrids (Gastropoda: Turridae) among the four landing centers of Southeast coast of India. *Annals of Biological Research* 3 (2012) 5718-5723

[7] Ikem A, Egiebor NO. Assessment of trace elements in canned fishes (mackerel, tuna, salmon, sardines and herrings) marketed in Georgia and Alabama (United States of America). *Journal of Food Composition and Analysis* 18 (2005) 771-787

[8] Karthik M, Dinesh Kumar G, Rajakumar R. Biodiversity potential of marine fishes in Nagapattinam coasta, Tamil Nadu, India. *Jouranl of Emerging Technologies and Innovative Research* 6 (2019) 431-439.

[9] Baby F, Tharian J, Ali A, Raghavanl R. A checklist of freshwater fishes of the New Amarambalam Reserve Forest (NARF), Kerala, India. *Journal of Threatened Taxa* 2 (2010) 1330-1333

[10] Jayaram KC. The Freshwater Fishes of the Indian Region, 2 nd Edition (corrected). Narendra Publishing house, New Delhi (2013) 616

[11] Fischer W, Bianchi G. FAO identification sheets for fishery Purposes: Western Indian Ocean (Fishing Area 57). Food and Agriculture Organization of the United Nations, Rome, Italy (1984)

[12] Talwar PK, Kacker RK. Commercial sea fishes in India. Records of Zoological Survey of India, Calcutta (1984) 997.

[13] Gopi KC, Mishra SS. Diversity of Marine Fish of India. In: Marine Faunal Diversity in India. Taxonomy, Ecology and Conservation (Venkataraman K, Sivaperuman C, eds) (2015) 171-193

[14] Eschmeyer WN, Fricke R, Van der Laan R. Catalog of fishes: genera, species, references.(http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp) (2018)

[15] Barman RP, Mishra SS, Kar S, Mukherjee P, Saren SC. Marine and estuarine fish. Fauna of Tamil Nadu, State Fauna Series. *Zoological Survey of India* 17 (2011) 293-417

[16] Murugesan P, Purusothaman S, Muthuvelu S. Trophic level of fishes associated in the trawl bycatch from Parangipettai and Cuddalore, Southeast coast of India. *Journal of Fisheries and Aquatic Sciences* 7 (2012) 29-38

[17] Varadharajan D, Pushparajan N, Soundarapandian P. Fish Resources in Mallipattinam Coast, South East Coast of India. *International Journal of Pharmaceutical & Biological Archives* 3 (2012) 871-876

[18] Vivekanandan E, Srinath M, Pillai VN, Immanuel S, Kurup KN. Marine fisheries along the southwest coast of india. In: Assessment Management and future directions for coastal fisheries in Asian countries'. (eds G. Silvestre, L. Garces, I. Stobutzki, M. Ahmed, R. A. V. Santos, C. Luna, L. L. Alino, P. Munro, V. Christensen and D. Pauly), World fish Center. Malaysia (2003) 757-792

[19] Williams LR, Warren ML, Adams SB, Arvai JL, Taylor CM. Basin visual estimation technique (BVET) and representative reach approaches to wadeable stream surveys: methodological limitations and future directions. *Fisheries* 229 (2004) 12–22

[20] Robertson D.R., Gaines S.D. Interference competition structures habitat use in a local assemblage of coral reef surgeonfishes. *Ecology* 67 (1986) 1372-1383