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# ENVIS Newsletter

*on Wetland Ecosystems including Inland Wetlands*

Picture Courtesy: T. Siva

## Sarovar Saurabh

Vol. 14(2), 2018

**SÁLIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY**  
(A Centre of Excellence under the Ministry of Environment, Forest and Climate Change, Govt. of India)  
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We welcome original research and popular articles, reviews, reports, research highlights, notes, news, snippets, etc., related to the thematic area of the ENVIS Resource Partner for publication in 'Sarovar Saurabh the ENVIS Newsletter on Wetland Ecosystems including Inland Wetlands'.

The articles and other information should be neatly typed in double space not exceeding five pages. The figures, graphs/drawings should be of good quality and clarity. Photographs should be of minimum 300 dpi resolution. References should be limited and cited in the text by name and year. Council of Science editors style may be referred to for listing references at the end.

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**From The Editors' Desk**

Wetlands are the natural resources that are known to provide livelihood to mankind from time immemorial. Even before industrial revolution, the civilizations grew and flourished around water bodies. These were the cradles that were nurtured for their biodiversity and protected. With modernization, many wetlands were not considered significant enough and plundered to extinction and with it the species that it harbored. In this issue, we have attempted to compile the information on some of the fish fauna found in India and are facing varying degrees of concern. It is an attempt to highlight the importance of conserving habitat for the species that can provide nutrition and benefit the society.

June 5<sup>th</sup>, 2018 was an important day for India, being the global host for the World Environment Day (WED). SACON celebrated the day by observing several activities including the clean up drives along the wetland and river front in Coimbatore. The institution demonstrated the ways that could help in achieving the WED objective of "Beat Plastic Pollution". We are sure the country will keep up the momentum and succeed in tackling the plastic menace.

In the coming issue, we will bring you the events that were organized across the country to showcase our country's commitment. Here I request all readers to kindly contribute your events, activities, articles and keep us updated on the happenings of the wetlands around you. Your inputs will help us in disseminating the message of environmental well being to the larger audience.

Dr. Goldin Quadros





## Importance of fish biodiversity in the Wetland Ecosystem

Wetland habitats are among the most productive natural areas in the landscape and play a vital role in maintaining many natural cycles. Its productivity, results in habitat for a wide range of biota. Generally, the improvement in water quality helps to ensure the quality of surface water in lakes and rivers, required to maintain the aquatic species.

Fishes are a vital part of the aquatic ecosystem, transferring energy in the food chain. A vast array of fish species depend on wetlands as spawning grounds, as nursery areas for their young and shelter, whether it is in coastal or inland environments. Fishes have been recognized as bioindicators for environmental contamination, providing an integrated insight into the status of their environment over longer periods of time. Hence, the water quality of wetland ecosystems also plays a major role in the survival of fishes.

Hundreds of bird species, especially storks, egrets, pelicans, cormorants, darters etc., depend on wetlands for at-least part of their life cycles to feed on fishes. Inland / coastal fisheries provide food for billions and livelihood for millions of people worldwide.

Major threats to fishes include habitat modification, fragmentation and destruction; invasive species; overfishing; environmental pollution; and climate change. Intensive fishing results in the decimation of fish species and also affects entire biological communities. Marine and estuarine wetlands are affected by urban and industrial development, which affects them by land clearance; agricultural practices; dredging; reclamation and waterfront development. A sustainable approach to fisheries and aquaculture will help to protect the natural resources and assure that fish stocks are available for future generations.

This issue brings out the information on seven fish species listed under the IUCN Red List Category.

### TERMINOLOGIES

**Amphidromous:** The fishes are born in freshwater/estuaries, then drift into the ocean as larvae before migrating back into freshwater to grow into adults and spawn.

**Benthopelagic:** Species living at the bottom of the sea or lakes.

**Brackish:** The water that has higher salinity than fresh water, but not as much as seawater.

**Bycatch:** It is a fish or other marine species that is caught unintentionally while harvesting certain target species and target sizes of fish, crabs etc.

**Catadromous:** The fishes born in saltwater, migrate into freshwater as juveniles where they grow into adults before migrating back into the ocean to spawn.

**Conspecific:** The animals or plants belonging to the same species.

**Demersal species:** The species living and feeding near, deposited on, or sinking to the bottom of the sea or lakes.

**Dimorphism:** The existence of two different forms (as of color or size) of a species especially in the same population.

**Dioecism:** It means the male and female reproductive organs are in different individual.

**Freshwater:** It is any naturally occurring water except seawater and brackish water.

**Hemotrophic:** The nutritive materials supplied to the embryo through the placenta from the maternal bloodstream.

**Lagoon:** It is a shallow body of water protected from a larger body of water (usually the ocean) by sandbars, barrier islands, or coral reefs.

**Mangroves:** Plants that have morphological and physiological adaptations to withstand fluctuating salinity and tidal influence.

**Mariculture:** It is a specialized branch of aquaculture involving the cultivation of marine organisms for food and other products in the open ocean, an enclosed section of the ocean, or in tanks, ponds or raceways

which are filled with seawater.

**Nonguarders:** They do not protect their eggs and offspring after spawning.

**Ovoviparity (Aplacental viviparity):** It is a mode of reproduction in animals in which embryos that develop inside eggs remain in the mother's body until they are ready to hatch, so that the young are born alive but without placental attachment, as certain reptiles or fishes.

**Potamodromous:** The fishes are born in upstream freshwater habitats, then migrate downstream (still in freshwater) as juveniles to grow into adults before migrating back upstream to spawn.

**Protogyny:** The condition in which an organism

begins life as a female and then changes into a male.

**Sexual dimorphism:** The condition in which the males and females in a species are morphologically different.

**Spawn:** It is the eggs and sperm released or deposited into water by aquatic animals. As a verb, to spawn refers to the process of releasing the eggs and sperm, and the act of both sexes is called spawning.

**Traumatogenic:** Capable of causing an injury.

**Viviparous:** Producing living young instead of eggs from within the body in the manner of nearly all mammals, many reptiles, and a few fishes is known as viviparous.

## 1. INDIAN MOTTLED EEL



Picture Courtesy: Nilesh Kamalkishor Heda

**Scientific Name:** *Anguilla bengalensis* (Gray, 1831).

**Family:** Anguillidae.      **Length:** 80-200 cm.

### Geographic Range:

The Indian Ocean subpopulation is found in Pakistan, India (Kerala, Andhra Pradesh, Arunachal Pradesh, Manipur, Meghalaya, Orissa, Tamil Nadu, Assam, and Nagaland (Tsurang River)), Bangladesh, Nepal (Gandaki, Koshi, Karnali, Mahakali), Sri Lanka, Myanmar, and also in southeast Africa. There are also occasional records of vagrant individuals in the Arabian Peninsula where it may be referred to as *A. bengalensis labiata*.

### Habitat:

Marine, freshwater, brackish, benthopelagic, catadromous.

### Life Cycle:

Breeds in sea. After the larva stage the adult fishes migrates to the fresh water bodies and spend their life in paddyfields, lakes and lagoons.

### Use and Trade:

*Anguilla bengalensis* is traditionally the most common eel in Indian inland waters and is of considerable commercial value in India and the Andaman Islands. Import data from Hong Kong and mainland China suggest that there are no live eel fry exports from India, Bangladesh, Sri Lanka or Pakistan. It is not known if glass eels of this species are traded nationally or internationally, moreover, due to the similarity of *A. bengalensis* with *A. marmorata*, young *A. bengalensis* may be sold under the incorrect name. In local markets of both India and Bangladesh, this species is only sold during the yellow or silver eel stage.

In Maharashtra, India, this species was much prized as a food fish, and is supposed to have special nutritional value and medicinal uses (arthritis). In addition, it is considered as a 'pristine rare ornamental species of the Himalayan drainage' often is being preserved in temple ponds for religious purposes.

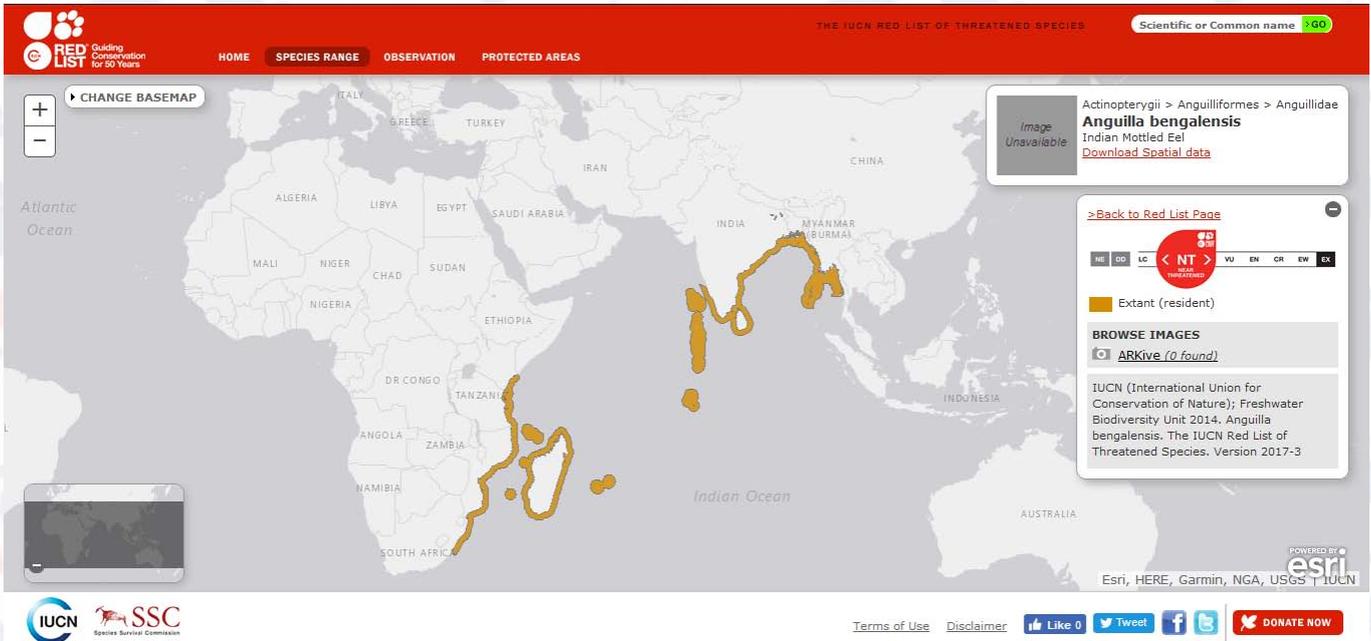
**Threat to humans:** Harmless.

### Threats to the species:

Change in ocean currents, barriers to migration, mortality at hydropower turbines, pollution, exploitation and habitat reduction. The adult individuals, migrating back to sea for spawning, is the most threatened phase of its life-history as they are vulnerable to fishing pressure.

### Conservation Actions:

More research is needed into the population trends, threats and harvest levels of this species. Management of fishing levels and methods is needed in select areas. Fish passages should be designed into dam and weir constructions.



## The geographic distribution of *Anguilla bengalensis* (Gray, 1831)

Source: <http://maps.iucnredlist.org/map.html?id=61668607>

### Red List Category & Criteria / IUCN Status:

Near Threatened.

10.1038/srep41649

### Internet Source:

### Recent publications of the species:

1. Inn Ju Chai and Takaomi Arai (2018) Ages at maturation of tropical freshwater eels, *Anguilla bicolor bicolor* and *A. bengalensis bengalensis*. *Journal of Applied Animal Research* 46(1): 1108-1113
2. Arai T. and Abdul Kadir S.R. (2017) Opportunistic spawning of tropical anguillid eels *Anguilla bicolor bicolor* and *A. bengalensis bengalensis*. *Scientific Reports* 7: 41649 DOI:

1. <http://www.iucnredlist.org/details/61668607/0>
2. <http://www.fishbase.us/summary/SpeciesSummary.php?ID=1272>
3. <https://indiabiodiversity.org/species/show/226582>
4. <http://eol.org/pages/208519/overview>
5. <http://en.bdfish.org/2011/08/indian-mottled-eel-anguilla-bengalensis-bengalensis/>

**Scientific Name:** *Epinephelus bleekeri* (Vaillant, 1878).

**Family:** Epinephelidae. **Length:** 76 cm.

### Geographic Range:

*Epinephelus bleekeri* is an Indo-West Pacific species ranging from the Persian Gulf to Taiwan, Indonesia and the northern coast of Australia.

### Habitat:

Marine, it is a demersal species that occurs on shallow banks (depth: 30-104 m), but is not known from well-developed coral reefs.

### Life Cycle:

It is protogynous. Fertilisation is external. These fishes are non-guarders and scatter their eggs in open water.

### Use and Trade:

Fisheries, aquaculture, an excellent tasting fish, but it is apparently not abundant. Cultured in floating net cages, pens, ponds in South east Asian countries. Used in Life

## 2. DUSKYTAIL GROUPER



Picture Courtesy: Raju Saravanan@CMFRI

Reef Food Fish Trade in Hong Kong. It is traded commercially where the price category is very high.

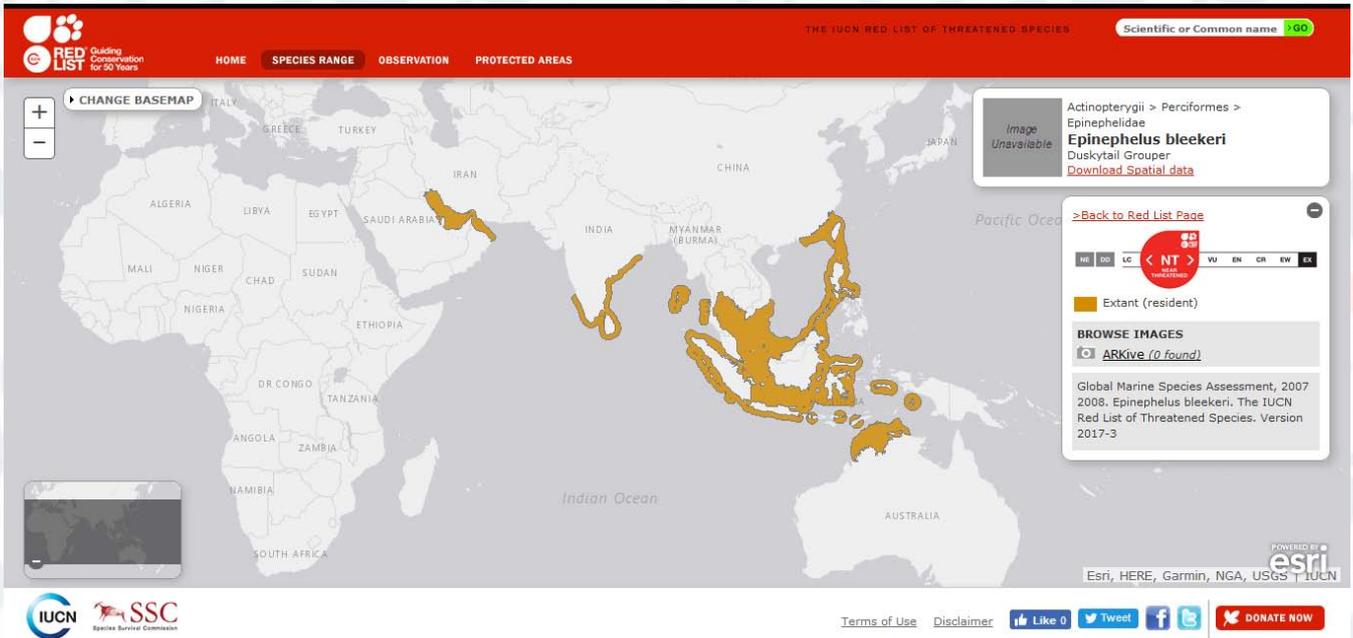
**Threat to humans:** Harmless.

### Threats to the species:

The greatest threat to this species is overfishing.

### Conservation Actions:

There are no known species conservation measures in place for *Epinephelus bleekeri*.



### The geographic distribution of *Epinephelus bleekeri* (Vaillant, 1878)

Source: <http://maps.iucnredlist.org/map.html?id=132826>

#### Red List Category & Criteria / IUCN Status:

Near Threatened.

#### Recent publications of the species:

1. Basheer V.S., Vineesh N., Bineesh K.K., Kumar R.G., Mohitha C., Venu S., Kathirvelpandian A., Gopalakrishnan A. and Jena J.K. (2017) Mitochondrial signatures for identification of grouper species from Indian waters. *Mitochondrial DNA Part A* 28(4): 451-457
2. Xiaorui Wu, Zhenzhen Xie, Lidong Yang, Huaqiang Yang, Lei Yue, Liping Hou, Yong Zhang and Hu Shu (2015) The complete

mitochondrial genome of the duskytail grouper *Epinephelus bleekeri* (Serranidae: Epinephelinae). *Mitochondrial DNA* 26(5): 722-723

#### Internet Source:

1. <http://www.iucnredlist.org/details/132826/0>
2. <http://www.fishbase.org/summary/Epinephelus-bleekeri.html>
3. <https://indiabiodiversity.org/species/show/232222>
4. <https://www.arkive.org/duskytail-grouper/epinephelus-bleekeri/>

## 3. GIANT GROUPER



Picture Courtesy: P. Devarapalli

**Scientific Name:** *Epinephelus lanceolatus* (Bloch, 1790).

**Family:** Epinephelidae. **Length:** 129 cm.

#### Geographic Range:

Indo-Pacific: Red Sea to Algoa Bay, South Africa and eastward to the Hawaiian and Pitcairn islands, north to

southern Japan, south to Australia.

**Habitat:** Marine, brackish, reef-associated; depth range 1-200 m.

#### Life Cycle:

It is protogyny. Fertilisation is external. These fishes are non-guarders and scatter their eggs in open water.

#### Use and Trade:

Food, fisheries, commercial aquaculture, recreational gamefish. Cultured in Taiwan PC. In live reef fish markets. Juveniles sold in ornamental trade as “bumblebee grouper”.

**Threat to humans:** Traumatogenic.

#### Threats to the species:

Commercial and recreational fishing activities, including the live reef fish trade and the marine aquarium fish trade, have the potential to adversely affect populations of this species.

### The geographic distribution of *Epinephelus lanceolatus* (Bloch, 1790)

Source: <http://maps.iucnredlist.org/map.html?id=7858>

#### Conservation Actions:

There is a total ban on the capture and sale of *E. lanceolatus* in the Union Territory of Andaman Islands, India, where *E. lanceolatus* is relatively abundant.

#### Red List Category & Criteria / IUCN Status:

Vulnerable.

#### Recent publications of the species:

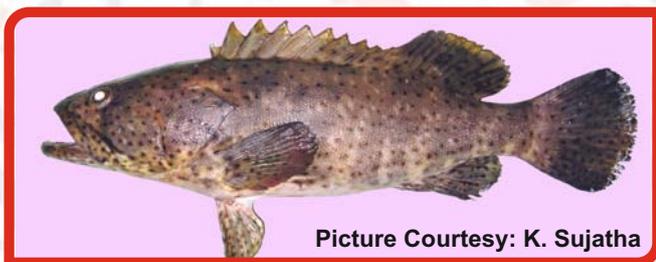
1. Su B.C., Lin W.C. and Chen J.Y. (2018) Recombinant *Epinephelus lanceolatus* serum amyloid A as a feed additive: Effects on immune gene expression and resistance to

*Vibrio alginolyticus* infection in *Epinephelus lanceolatus*. *Fish and Shellfish Immunology* 76: 233-239

#### Internet Source:

1. [https://en.wikipedia.org/wiki/Giant\\_grouper](https://en.wikipedia.org/wiki/Giant_grouper)
2. <http://www.iucnredlist.org/details/7858/0>
3. <http://www.fishbase.org/summary/6468>
4. <http://www.fao.org/docrep/pdf/011/i0254e/i0254e12.pdf>
5. <https://www.cabi.org/isc/datasheet/83923>
6. <http://www.marinespecies.org/aphia.php?p=taxdetails&id=218224>

## 4. MALABAR GROUPEr



Picture Courtesy: K. Sujatha

**Scientific Name:** *Epinephelus malabaricus* (Bloch & Schneider, 1801).

**Family:** Epinephelidae. **Length:** 234 cm.

#### Geographic Range:

It is found in the Indo-Pacific: Red Sea and East Africa to Tonga, north to Japan, south to Australia.

#### Habitat:

Marine, brackish, lagoons, mangroves, coral and rocky reefs, sandy and muddy bottom areas, between 2 and 150 m deep. The juveniles prefer lagoon or brackish areas.

#### Life Cycle:

It is protogyny. Sexual maturity in males does not occur until they are 114 cm in length. Fertilisation occurs externally. These fishes are non-guarders and scatter their eggs in open water.

#### Use and Trade:

Food, fisheries, highly commercial, aquaculture, gamefish, price category is very high. *E. malabaricus* is a common species along the west coast of India where about 5% of grouper fishery comprises of this species along Calicut, Malabar coast, West coast of India and in the Gulf of Mannar, East coast of India. Specimens of 45 cm size are more commonly traded in the commercial catches along Indian coast. It is caught with trawls, longlines, traps, spear and hook-and-line. Used in marine aquariums. Widely used in mariculture mainly in the Far East. It is also one of the dominant species in the Andaman Islands, and is exploited there in large quantities for the live fish trade.

**Threat to humans:** Harmless.

### The geographic distribution of *Epinephelus malabaricus* (Bloch & Schneider, 1801)

Source: <http://maps.iucnredlist.org/map.html?id=61338>

#### Threats to the species:

Over fishing, pollution, exploitation and habitat loss.

#### Conservation Actions:

There are not known fisheries regulations in place for the Malabar grouper. The Malabar grouper can also be maricultured, which may lessen the pressure on wild populations. Hatchery produced juveniles may be used for mariculture practices, instead of harvesting live juveniles from wild.

#### Red List Category & Criteria / IUCN Status:

Near Threatened.

#### Recent publications of the species:

1. Thirunavukkarasu P., Joe J.T.X. and Lu M.W. (2017) Cloning and expression of Malabar

grouper (*Epinephelus malabaricus*) ADAR1 gene in response to immune stimulants and nervous necrosis virus. *Fish and Shellfish Immunology* 71: 116-126

#### Internet Source:

1. [https://en.wikipedia.org/wiki/Malabar\\_grouper](https://en.wikipedia.org/wiki/Malabar_grouper)
2. <http://www.iucnredlist.org/details/61338/0>
3. <http://www.fishbase.org/summary/6439>
4. <https://indiabiodiversity.org/species/show/232203>
5. <http://eol.org/pages/2793766/overview>
6. [http://species-identification.org/species.php?species\\_group=fnam&id=1875](http://species-identification.org/species.php?species_group=fnam&id=1875)
7. <https://www.arkive.org/malabar-grouper/epinephelus-malabaricus/>

## 5. LONGTAIL BUTTERFLY RAY



Picture Courtesy: Sachinandan Dutta

#### Geographic Range:

Indo-Pacific: Persian Gulf, Red Sea to French Polynesia, westward across India and Sri Lanka, to China and southern Japan, the Philippines, and the western islands of Indonesia (including Borneo, Sumatra, and Java).

#### Habitat:

Marine, shallow, inshore waters throughout its range (to ~30 m depth), typically on sand or mud substrate.

#### Life Cycle:

Exhibit ovoviparity (aplacental viviparity), with embryos feeding initially on yolk, then receive additional nourishment from the mother by indirect absorption of uterine fluid enriched with mucus, fat or protein through specialised structures. Distinct pairing with embrace. Gives birth to litters of up to 7 pups.

**Scientific Name:** *Gymnura poecilura* (Shaw, 1804).

**Family:** Gymnuridae. **Length:** 92 cm.

THE IUCN RED LIST OF THREATENED SPECIES Scientific or Common name **GO**

HOME SPECIES RANGE OBSERVATION PROTECTED AREAS

CHANGE BASEMAP

Image Unavailable

Chondrichthyes > Rajiformes > Gymnuridae  
**Gymnura poecilura**  
Longtail Butterfly Ray  
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Extant (resident)

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International Union for Conservation of Nature (IUCN) 2006. *Gymnura poecilura*. The IUCN Red List of Threatened Species. Version 2017-3

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IUCN SSC Species Survival Commission

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## The geographic distribution of *Gymnura poecilura* (Shaw, 1804)

Source: <http://maps.iucnredlist.org/map.html?id=60117>

### Use and Trade:

Fisheries, it is widely caught for meat and as bycatch in artisanal and commercial fisheries, including in India, Thailand, and Indonesia.

**Threat to humans:** Harmless.

### Threats to the species:

Intensive inshore fisheries; habitat loss; pollution and degradation.

### Conservation Actions:

There are no conservation measures in place for this species throughout its range. Though specific population and catch data are lacking, the longtail butterfly ray is thought to be susceptible to overfishing due to its low reproductive rate and the fact that pregnant females often abort their young when captured. Hence, direct and indirect catches in artisanal and commercial fisheries throughout its distribution need to be documented.

### Red List Category & Criteria / IUCN Status:

Near Threatened.

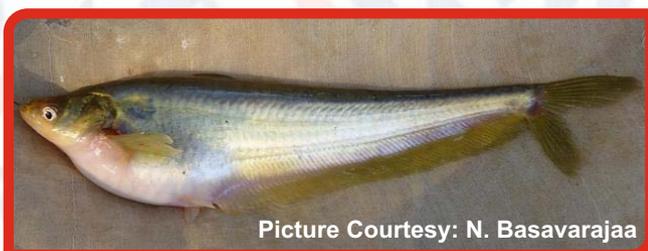
### Recent publications of the species:

1. Muktha M., Akhilesh K.V., Sandhya S., Jasmin F., Jishnudev M. A. and Shoba Joe K. (2018) Re-description of the longtail butterfly ray, *Gymnura poecilura* (Shaw, 1804) (Gymnuridae: Myliobatiformes) from Bay of Bengal with a neotype designation. *Marine Biodiversity* 48(2): 1085-1096
2. Chen X., Ai W., Xiang D. and Shi X. (2016) Mitochondrial genome of the longtail butterfly ray *Gymnura poecilura* (Myliobatiformes: Gymnuridae). *Mitochondrial DNA Part A* 27(1): 696-697

### Internet Source:

1. [https://en.wikipedia.org/wiki/Longtail\\_butterfly\\_ray](https://en.wikipedia.org/wiki/Longtail_butterfly_ray)
2. <http://www.iucnredlist.org/details/60117/0>
3. <https://www.fishbase.de/summary/8260>
4. <http://eol.org/pages/207143/overview>
5. <http://www.marinespecies.org/aphia.php?p=taxdetails&id=215611>

## 6. BUTTER CATFISH



Picture Courtesy: N. Basavarajaa

**Scientific Name:** *Ompok bimaculatus* (Bloch, 1794).

**Family:** Siluridae. **Length:** 45 cm.

### Geographic Range:

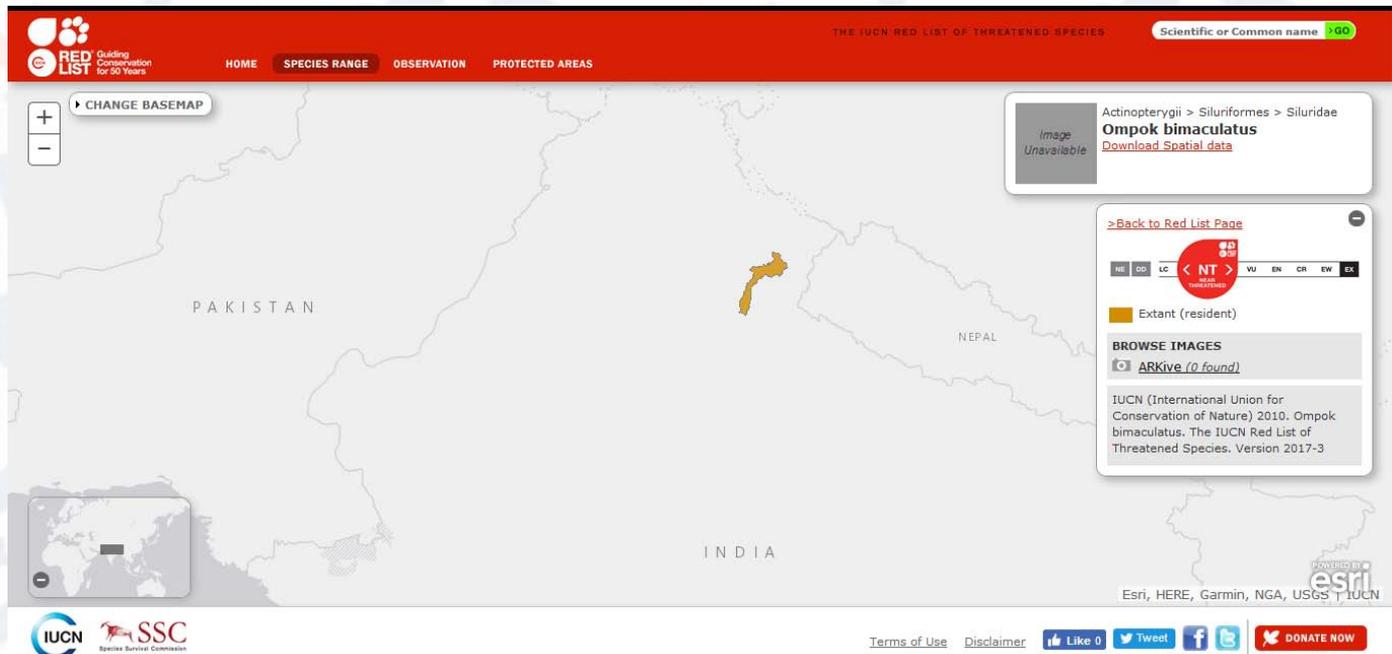
It is widely distributed in Pakistan, India, Sri Lanka, Bangladesh and Myanmar.

### Habitat:

Freshwater, brackish, demersal, potamodromous; depth range 0-2 m.

### Life Cycle:

The males tend to be more slender than the females and



### The geographic distribution of *Ompok bimaculatus* (Bloch, 1794) Source: <http://maps.iucnredlist.org/map.html?id=166616>

are described as having serrations on the posterior edge of the pectoral fin spines, whilst the female's pectoral fins lack these serrations. There are no known documented spawnings of this catfish in aquaria, which is most likely due to the fact that this catfish is rarely imported and also due to the size of aquarium required.

Whilst there is no documented aquarium spawning, it is reported that these catfish are bred in India using hormone injections.

#### Use and Trade:

Food fish in the Indian subcontinent and is the subject of targeted fisheries. It is occasionally caught and exported as an ornamental fish, commercial, aquaculture.

**Threat to humans:** Harmless.

#### Threats to the species:

Overexploitation of this species for food is a major threat and has resulted in marked population declines. The effects of other potential anthropogenic threats such as habitat destruction and competition from alien species need to be further ascertained.

#### Conservation Actions:

Empirical data on exploitation levels for this species throughout the rest of its range (other than South-western Bengal) is needed. The identity of the population from Myanmar requires further study, as there is some evidence to indicate that it is not conspecific with the populations from the Indian subcontinent. The effects of other anthropogenic threats such as pollution and habitat destruction on population declines need to be further ascertained.

#### Red List Category & Criteria / IUCN Status:

Near Threatened.

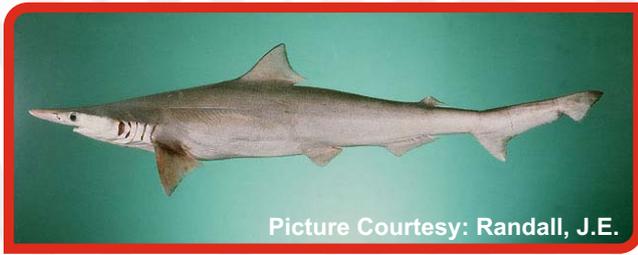
#### Recent publications of the species:

1. Barman A.S., Singh M. and Pandey P.K. (2017) Complete mitochondrial genome of near threatened butter Catfish *Ompok bimaculatus* (Siluriformes: Siluridae). *Mitochondrial DNA Part B* 2(1): 313-314
2. Praveen A., Kumar S.U., Sahebrao N.N., Mani M.R., Ravindra K., Abhishek A. and Kumar P.B. (2017) Dynamics of reproductive ecology of the fish *Ompok bimaculatus* (Siluriformes: Siluridae) in six tropical rivers of the Ganges basin, India. *Cuadernos de Investigación UNED* 9(1): 73-85

#### Internet Source:

1. [https://en.wikipedia.org/wiki/Ompok\\_bimaculatus](https://en.wikipedia.org/wiki/Ompok_bimaculatus)
2. <http://www.iucnredlist.org/details/166616/0>
3. <https://www.fishbase.de/summary/Ompok-bimaculatus>
4. <https://indiabiodiversity.org/species/show/232938>
5. <http://en.bdfish.org/2011/01/butter-catfish-ompok-bimaculatus/>
6. <https://www.seriouslyfish.com/species/ompok-bimaculatus/>
7. [https://www.scotcat.com/factsheets/ompok\\_bimaculatus.htm](https://www.scotcat.com/factsheets/ompok_bimaculatus.htm)

## 7. SPADENOSE SHARK



Picture Courtesy: Randall, J.E.

**Scientific Name:** *Scoliodon laticaudus* (Müller & Henle, 1838).

**Family:** Carcharhinidae. **Length:** 74 cm.

### Geographic Range:

Indo-West Pacific: Persian Gulf, Somalia, Tanzania, Mozambique, Pakistan to Java in Indonesia; then Japan, China, and Taiwan. Reported from Australia.

### Habitat:

Marine, brackish, demersal, amphidromous; depth range 10 - 13 m.

### Life Cycle:

Viviparous, with an unusual columnar placenta. Maternal and foetal placenta comprises the entire placenta. Transplacental nutrient transfer may be hemotrophic. Litter size varies from 1 to 14. Size at birth about 13 to 15 cm TL. Distinct pairing with embrace.

### Use and Trade:

Fisheries, it is valued by artisanal and commercial fishers for its meat and fins, bait: usually.

**Threat to humans:** Harmless.

**Threats to the species:** Overfishing, habitat loss, pollution.

### Conservation Actions:

There are no known conservation or management measures that apply specifically to this species.

### Red List Category & Criteria / IUCN Status:

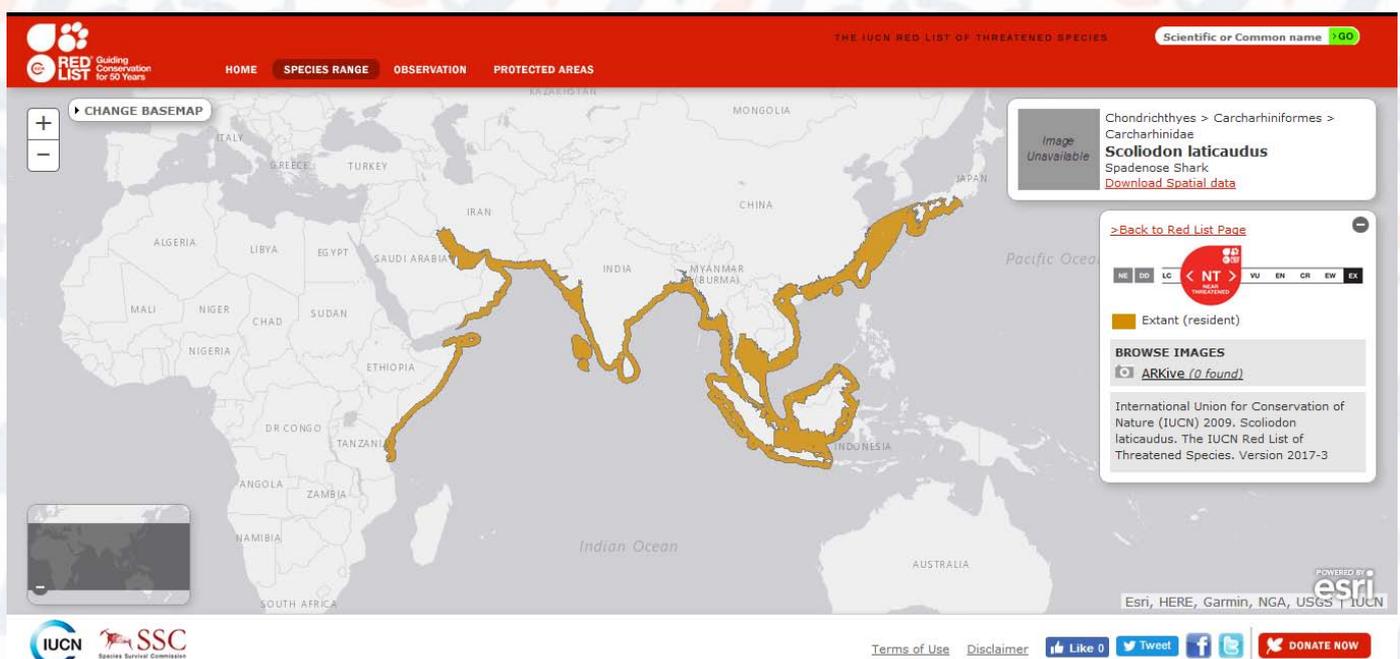
Near Threatened.

### Recent publications of the species:

1. Karim E., Qun L., Mahmood M.A., Baset A., Hoq, M.E., Shamsuzzaman M.M. and Das A. (2017) Assessment of some demographic trends of Spadenose shark (*Scoliodon laticaudus*) of the Bay of Bengal, Bangladesh. *Indian Journal of Geo Marine Sciences* 46(10): 1986-1995
2. Veena S., Sujitha T., Raje S.G. and Raveendra D. (2011) Case of leucism in the spadenose shark, *Scoliodon laticaudus* (Müller and Henle, 1838) from Mangalore, Karnataka. *Indian Journal of Fisheries* 58(1): 109-112

### Internet Source:

1. [https://en.wikipedia.org/wiki/Spadenose\\_shark](https://en.wikipedia.org/wiki/Spadenose_shark)
2. <http://www.iucnredlist.org/details/39383/0>
3. <https://www.fishbase.de/summary/Scoliodon-laticaudus>
4. [http://species-identification.org/species.php?species\\_group=sharks&id=479&menuentry=sorten](http://species-identification.org/species.php?species_group=sharks&id=479&menuentry=sorten)
5. <https://shark-references.com/species/view/Scoliodon-laticaudus>



The geographic distribution of *Scoliodon laticaudus* (Müller & Henle, 1838)

Source: <http://maps.iucnredlist.org/map.html?id=39383>

## World Environment Day 2018 activities by SACON-ENVIS Resource Partner

Sálim Ali Centre for Ornithology and Natural History (SACON) along with the ENVIS RP on “Wetland Ecosystems including Inland Wetlands” celebrated the World Environment Day 2018 by organizing awareness campaign and cleaning drive programmes. The initiative was supported by Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India. Four on-ground activities were undertaken involving the local administration and the public at large.

**The Mobile van campaign** during 24<sup>th</sup> to 26<sup>th</sup> May, 2018 had information on the plastic pollution and the perils of plastic misuse. The van travelled across the Coimbatore City spreading the message of environment conservation in a visual manner. It was also used as a medium to inform the public about the cleanup activities.



**Wetland Clean up activity** - On 26<sup>th</sup> May, 2018 at Kumaraswamy Lake, approximately 200 people including volunteers from Coimbatore City Municipal Corporation, Tamil Nadu Forest Department, Education institutions, NGOs and as well as the public from the nearby residences participated. The clean up drive was flagged off by Dr. K. Sankar, Director SACON and the participants successfully cleaned and disposed the plastic wastes from most part of the lake.

The clean-up drive was concluded at the SBOA Matriculation Higher Secondary School premises with addresses by Dr. T. Chandini, Advisor, MoEF&CC, Mrs. Vanitha Mohan, Environmentalist and Mrs. Geetha Gopinath, Principal, SBOA Matric. & Hr. Sec. School and the Director, SACON, followed by refreshments. A poster to raise awareness to beat plastic pollution prepared by SACON-ENVIS Resource Partner was also released. The participants were provided a certificate of appreciation for their involvement in the programme.



**River Cleanup** - On 27<sup>th</sup> May 2018 the clean-up drive took place at the Noyyal River front. The river is choked by the wastes including plastics disposed off by the public. During the cleanup drive, we had some more individuals apart from the volunteers who participated on 26<sup>th</sup> May 2018. In the event along Noyyal River front at Perur, we successfully cleaned and disposed the plastic wastes from the river front and the adjoining temple premises. All the volunteers in the lake

clean-up drive were provided with a T-shirt, hat, gloves, masks, garbage bags, rakes, brooms and baskets. The clean-up drive concluded at the Perur Temple premises with inspirational addresses by Dr. T. Chandini, Advisor, MoEFCC, and the Director, SACON, followed by refreshments. All the volunteers participated in the event were provided a certificate of appreciation.

### World Environment Day - Environment Festival

On 5<sup>th</sup> June 2018 World Environment Day was celebrated as a full day Environment Festival organized by the host institute SACON along with ENVIS RP for School Children from different schools across Coimbatore. The venue for the festival was Vidya Vanam a tribal school at Anaikatty that promotes and inculcates environment friendly practices. The festival provided an effective and a common platform for school kids, teachers, youth, artists and SACON staff to come together to actively participate in pledging to conserve the environment. This platform also acted as a catalyst to bring forward the best environment-friendly plastic free practices to encourage and empower the participants towards a sustainable living. Approximately, 600 students from 10 schools of Coimbatore participated in the festival.

