



CMFRI SPECIAL PUBLICATION
Number : 95

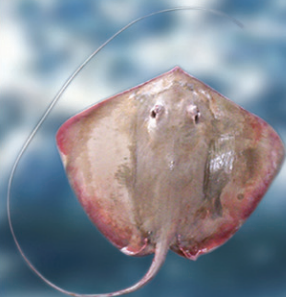
**AN ATLAS ON
THE ELASMOBRANCH
FISHERY RESOURCES OF INDIA**

by
**S.G. RAJE, S.SIVAKAMI, G.MOHANRAJ,
P.P.MANOJ KUMAR, A.RAJU AND K.K.JOSHI**



Central Marine Fisheries Research Institute
(Indian Council of Agricultural Research)
P.B.No. 1603, Cochin- 682 018

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An Atlas on the Elasmobranch Fishery Resources of India

Published by :

Prof. (Dr.) Mohan Joseph Modayil

Director

Central Marine Fisheries Research Institute,
Kochi-682 018

Telephone : 0091-0484-2394867

Fax : 0091-0484-2394909

E-mail : mdcmfri@md2.vsnl.net.in

Website : <http://www.cmfri.org.in>

ISSN 0972-2351

Cover Layout :

Dr. S. Sivakami

Citation style :

Raje, S.G., S.Sivakami, G.Mohanraj, P.P.Manoj Kumar, A.Raju and K.K.Joshi, 2007.

An Atlas on the Elasmobranch Fishery resources of India. CMFRI., Spl.Publ. No.95.253 pp.

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Printed at : Niseema Printers & Publishers, Cochin - 682 018. Kerala, India. Ph : 0484-2403760

FOREWORD

The ever increasing trade in products such as shark fins, meat, skate wings, cartilage and shark liver oil has a significant role in increased exploitation of the elasmobranch resources. Catches by industrial fleets have escalated phenomenally over the past 20 years and many of the world's sharks and rays species are now severely depleted. Because of their unique life history patterns such as slow growth rate, late maturation, long reproductive cycle, low fecundity and longer life span, the depleted stocks take long time to recover. With a view to maintaining the sustainability of the elasmobranch resources, international organisations such as CITES have made recommendations that agencies including FAO and national fishing agencies should initiate or improve the collection of species level taxonomy- specific data on sharks wherever it is possible.

India occupies the third position (2003) among Asian countries producing Chondrichthyan resources. Since over exploitation of elasmobranchs is a matter of international concern and countries like Australia, South Africa and the U.S.A. are adopting strict regulatory measures on the trade, the elasmobranchs fauna of India is coming more under stress of overexploitation. The elasmobranch production of India had been increasing over the years and this is driven by the increasing demand for shark fins in the Southeast Asian countries.

The Central Marine Fisheries Research Institute had initiated investigations on the resource characteristics and biology of elasmobranchs landed along its coast since 1947 and had gathered extensive data some of which have been already published. However, these deal with only a part of the work carried out by the Institute on the fishery, biology and population characteristics of elasmobranchs. It is in this context that the present attempt is made to bring out an atlas on the different species of sharks, skates and rays incorporating data on their distribution along Indian coast as well as globally. Efforts have been made to describe the biological characteristics and diagnostic features of each species and to provide suitable illustrations. The bathymetric distribution of each species has also been documented based on past literature.

I congratulate all my colleagues who have put in their best efforts to compile this work to bring out all available information on sharks, skates and rays distributed along the Indian coasts. I am confident that this atlas will be useful to researchers, academicians and students for their work.

Prof. (Dr.) MOHAN JOSEPH MODAYIL

Director

Central Marine Fisheries Research Institute

Introduction

The elasmobranchs represented by sharks, skates (sawfishes, guitar fishes) and rays are an important group of demersal fishes which are exploited for multifarious uses of their various body parts such as the meat, fins, liver, teeth and the hide. While shark fins are considered as a delicacy fetching increased export market, their liver oil is utilized in pharmaceutical industry. Shark teeth is used for ornamental purposes and their hide for a variety of leather products. This increased commercial demand coupled with their characteristic life history pattern including slow growth rate, delayed maturation, long reproductive cycle, low fecundity and long life span and their trans-boundary migration pattern make them susceptible to over fishing. Because of this background, of late there had been a growing international awareness over the conservation and management of the elasmobranch stocks. This in turn necessitates an understanding of resource characteristics and eco-biological features of different species of sharks, skates and rays.

The elasmobranchs production during 2003 & 2004 (Average) in India amounted to 57,713 t, contributing to 2.25 % of the all India marine fish landings (Anon,2005). Their average annual landings during 1961-2000 in India though indicated a general increasing trend, was found decreasing over the years at states such as Maharashtra, Kerala and Karnataka (Raje and Joshi, 2003). Additionally, there is dearth of information on the landing particulars of different species of elasmobranchs which makes it difficult to suggest species wise management measures.

Day (1878) had reported a total of 67 species consisting of 41 species of sharks, 19 species of rays and 7 species of skates. Misra (1951) had described 78 species of elasmobranchs which include 51 species of sharks, 20 species of rays and 7 species of skates. Talwar and Kacker (1984) reported 76 species of commercially important elasmobranchs. Compagno (1984) listed 55 species of sharks from Indian Ocean. The list given by Raje et al (2002) includes 66 species of sharks, 8 species of guitar fishes, 4 species of saw fishes and 32 species of rays thus totalling to 110 species from the Indian seas. However, information on the species wise catch trend is not available mainly because of the difficulty in identifying them in the field. Moreover, the information available on the taxonomy, diagnostic characters, bathymetric distribution, method of fishing for different species and biological information are lying scattered in different documents, which renders it all the more difficult to get a first hand information on a particular species. This atlas is therefore prepared with a view to describe all the above details for each of a total of 84 species of elasmobranchs represented in their fishery from the Indian seas.

The authors wish to express their gratitude to Prof.(Dr.) Mohan Joseph Modayil, Director, CMFRI, Kochi, (ICAR) for the motivation and encouragement for the preparation of this atlas. They also acknowledge the wholehearted support rendered by Dr.E.Vivekanandan, Head,

Demersal Fisheries Division, CMFRI., Kochi in the preparation of this atlas. The authors also acknowledge the valuable suggestions offered by Dr. P. Devadoss, former Principal Scientist, CMFRI, Kochi for finalisation of this atlas. Thanks are also due to Shri.Thakur Das,Shri. S.Mohan,Shri.K.Balachandran, Shri.N.Ramamurthy, Shri. P.P.Pavithran, Smt. S.Gomathi, and Smt.P.K.Seetha for their technical assistance. The help rendered by Shri. C.G. Shibin in computer graphics deserves special mention in this context.

The authors gratefully acknowledge the invaluable help rendered by the FAO. Fish Base .org in granting permission for using the photographs of the following species through written permission:

Chiloscyllium indicum, Centrophorus granulosus, Halaelurus hispidus, Himantura walga & Plesiobatis daviesi.

The permission accorded by CSIRO Marine & Atmospheric Research, GPO Box 1538, Hobart Tas 7001, Australia for using the photograph of the ray *Taeniura lymma* is also gratefully acknowledged.

Database:

Information on the species profile, field identification characters, global distribution, depth of occurrence, present utilization and endangered/ banned status were collected from past literature (Compagno, 1984; Day, 1878, Fischer & Bianchi, 1984 and Talwar & Kacker, 1984) and from FAO.Fishbase.org. Taxonomic position of each species is described following Misra (1951). Resource characteristics such as regionwise/gearwise landing is extracted from the data collected by the Fisheries Resources Assessment Division of CMFRI for the period 2003 & 2004 and the average reckoned for each gear. The average landings of each species at Mumbai centre was then raised for the north west coast, that of Calicut and Cochin for south west coast, and the landings at Tuticorin, Mandapam and Chennai for the east coast. In species where landing data is not available, major gears used in fishing is indicated. Biological characters are given based on past literature and from present observations. Maximum size given relates to Total Length (T.L.) for sharks and skates and disc width for rays. Regional / seasonal abundance and peak breeding season of major species of sharks, rays and skates landed are presented in Appendix I to III respectively.

In the maps, coastwise abundance is indicated only upto the continental shelf waters including for those species which occur beyond 200M depth.

A total of 84 species of elasmobranchs represented by 47 species of sharks, 29 species of rays and 8 species of skates including 4 species of saw fishes are reported in this atlas.

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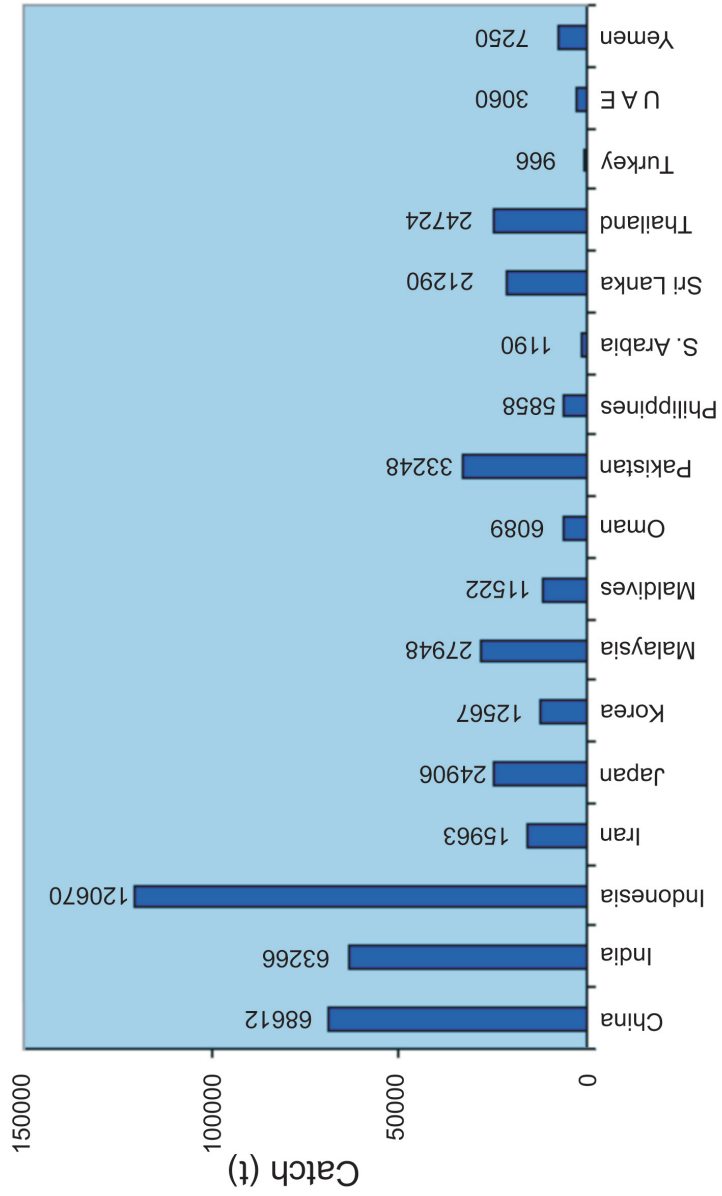
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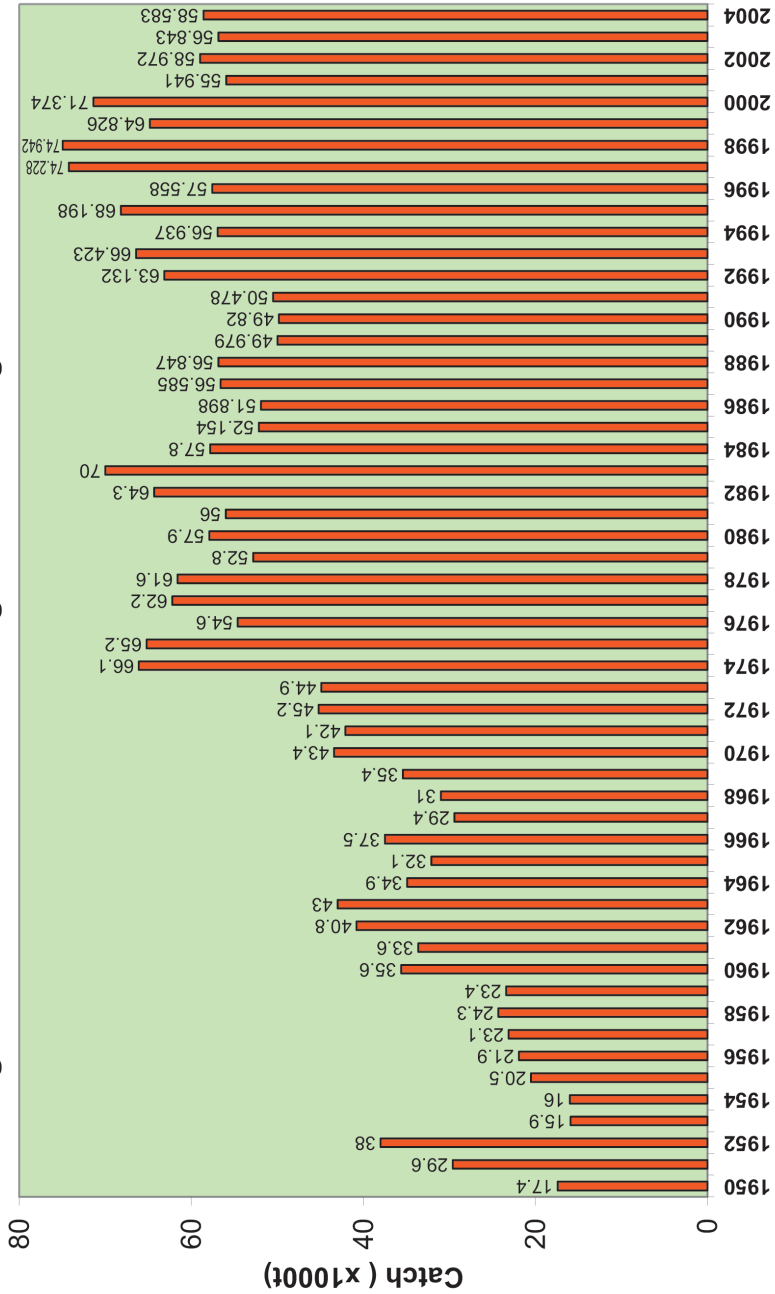
Fig. 1.1 Elasmobranchs production* (t) in major Asian countries during 2003



* Including Chimaeras

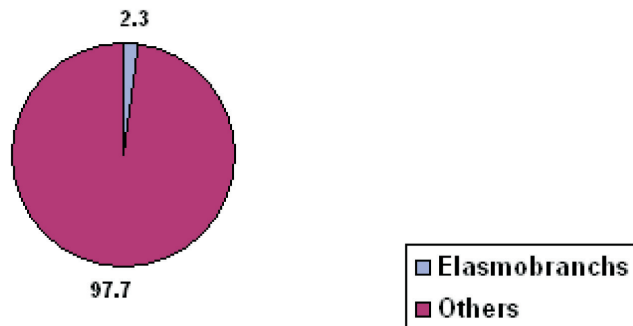
Source : FAO STAT Database 2006

Fig. 1.2 Elasmobranchs landing in India during 1950-2004



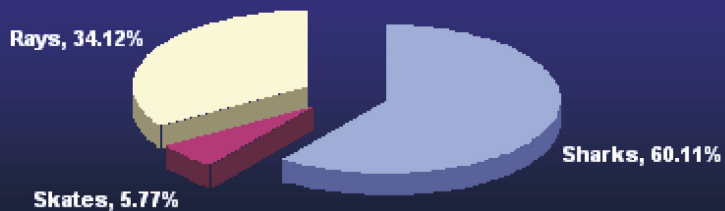
Source : 1. Jhingran, V.G., 1982; 2. Srinath et al., 2006

Fig.1.3. % Contribution of elasmobranchs in total marine fish landings in India during 2004



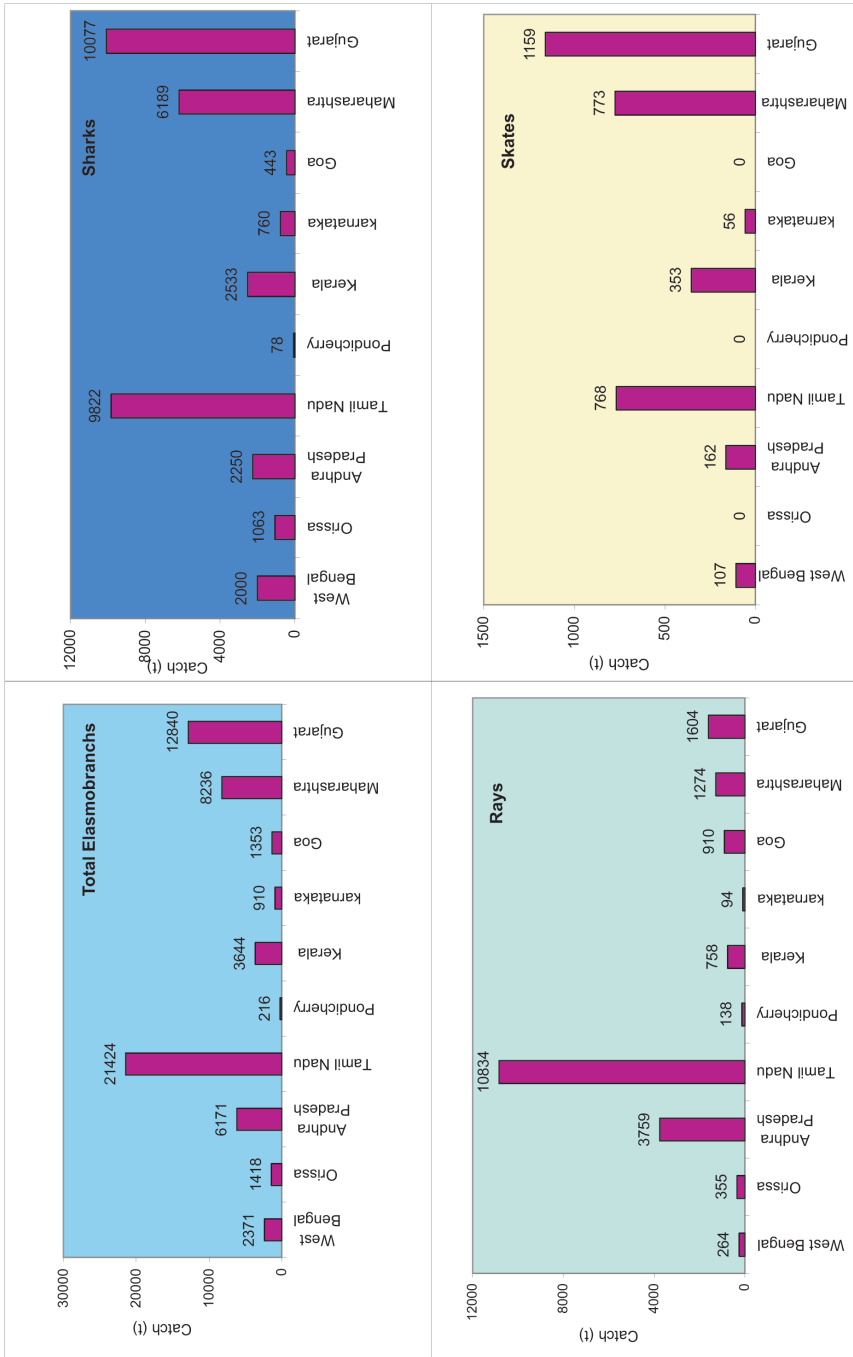
Source: *Mar.fish.Inform.Ser.T&E Ser., 185, 2005.*

Fig.1.4. % of Sharks, Skates & Rays in elasmobranchs landings in India during 2004.



Source: *Mar.fish.Inform.Ser.T&E Ser., 185, 2005.*

Fig. 1.5 Statewise landings of elasmobranchs in India during 2004



Source: Mar.Fish.Inform.Ser.7&E Ser., 185, 2005

SHARKS

Alopias pelagicus (Nakamura, 1936)

1. Species profile :

Name of species	: <i>Alopias pelagicus</i>
Common name	: Pelagic thresher shark
English name	: Pelagic thresher

2a. Taxonomical position:

Super order	: Salachoidei
Order	: Lamniformes
Family	: Alopiidae
Genus	: <i>Alopias</i>
Species	: <i>pelagicus</i>

2b. Other scientific names in use : None

3. Field identification characters : A large shark, teeth markedly oblique with one or more basal denticles on the outer side. First dorsal fin base closer to pectoral fin base. Labial furrows absent. Pectoral fins nearly straight and broad tipped. Second dorsal fin minute and positioned well ahead of the small anal fin. Upper caudal lobe about as long as the rest of shark. Colour : Bluish or grey above, white below, with a silvery sheen in gill region.

4. Maximum size : 330 cm (Fischer & Bianchi, 1984)

5a. Distribution (Global) : Indian ocean : South Africa, Red Sea, Arabian Sea (Off Somalia, Oman, India and Pakistan). Western North Pacific : China, Japan. Western South Pacific : Australia, New Caledonia, Tahiti. Eastern Pacific : Gulf of California to Galapagos Islands.

5B. Depth of occurrence : Neritic to oceanic: 0-152m (Fischer & Bianchi,1984)

6a Resource characters : Average annual landing (Gearwise %) in India during 2003 & 2004	Coast/ Gear	Gill net	Total catch (t)
	North West	0	0
	South West	100	79.51
	East coast	0	0

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

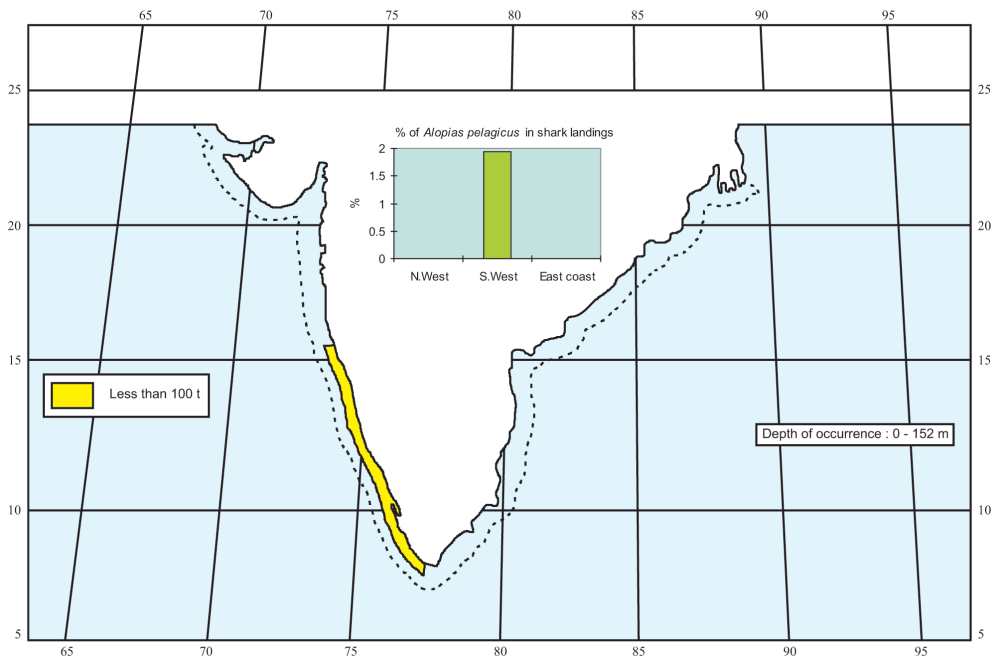
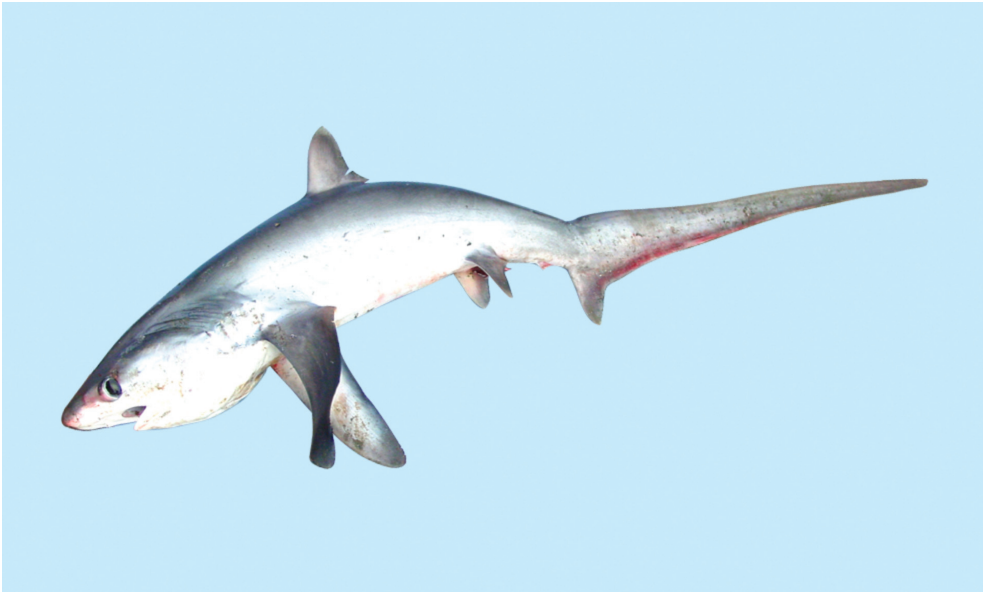
- Food preferences : Feeds on pelagic fishes and squids.
- Role in food chain : Predator on pelagic fishes
- Type of breeding & reproductive capacity : Ovoviviparous and oophagus, 2 embryos / litter.
- Size at birth : Greater than 96 cm.

8a. Present utilization : Meat for human consumption, liver for liver oil, hide for leather and fins for soup.

8b. Drug and medicinal value : Vitamin A is extracted from the liver.

9. Conservation and management :
Whether end angered /banned : No

10. General remarks : This species is purely oceanic and rarely caught along the Indian coast.

Alopias pelagicusCoastwise abundance (t.) of *Alopias pelagicus* along Indian coast

Alopias superciliosus (Lowe, 1841)

1. Species profile :

Name of species	: <i>Alopias superciliosus</i>
Common name	: Bigeye thresher shark
English name	: Bigeye thresher shark

2a. Taxonomical position:

Super order	: Selachoidi
Order	: Lamniformes
Family	: Alopiidae
Genus	: <i>Alopias</i>
Species	: <i>superciliosus</i>

2b. Other scientific names in use : *Alopias profundus* (Nakamura, 1935)

3. Field identification characters : A large shark, snout moderately long and conical; profile of forehead distinctly indented over eyes; interorbital space nearly flat, eyes very large and extending on to dorsal surface of head. First dorsal fin large and located in front of the pelvic fin origin, second dorsal fin minute and positioned well ahead of the small anal fin; pectoral fins very narrow, long and falcate, broad tipped; upper lobe of caudal fin very long and strap like, almost quite equal to the length of the rest of the shark; lower lobe short. Colour: Purplish grey above, creamy below.

4. Maximum size : 460-470 cm(Fischer & Bianchi, 1984)

5a. Distribution (Global) : South and East Africa, Madagascar, and the Arabian Sea. Else where in tropical Atlantic, and the West , Central & Eastern Pacific.

5b. Depth of occurrence : An oceanic species , but may come closer to the coast and occurs near the bottom upto 500m (Fischer & Bianchi, 1984)

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : Data not available
- 7. Biological characters :**
- Food preferences : Pelagic fishes (Alepisaurids, clupeoids, Scombroids, bottom fishes) & squids.
- Role in food chain : Predator
- Type of breeding& reproductive capacity : Ovoviviparous and oophagus., 2 to 4 young ones/litter.
- Size at birth : 100-130cm.
- 8. Present utilization** : Used frozen & canned.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : Nil

Alopias superciliosus



Alopias vulpinus (Bonnaterre,1788)

1. Species profile :

Name of species : *Alopias vulpinus*
Comm on name : Thresher shark
English name : Thin tail thresher

Vernacular name :

Tamil : Vaal sorrah
Lakshadweep islands : Nigudigumiyaru

2a. Taxonomical position:

Super order : Selachoidei
Order : Lamniformes
Family : Alopiidae
Genus : *Alopias*
Species : *vulpinus*

2b. Other scientific names in use : None

3. Field identification characters : A large shark, snout short and conical. Labial furrows present. First dorsal fin moderately large with its base well ahead of the pelvic fin base. Second dorsal fin minute and positioned just in front of the small anal fin. Pectoral fins very long and falcate. Caudal fin very long and strap like, about as long as rest of shark. Colour: White colour of the abdomen extending over to pectoral fin base; pelvic and dorsal fins blackish.

4. Maximum size : 500-609 cm(Fischer & Bianchi, 1984)

5a. Distribution (Global) : Oceanic and coastal, virtually circumglobal in warm seas. Western Atlantic : New Foundland to Cuba, Gulf of Maxico, Brazil, Argentina. Eastern Atlantic : Norway, British Isles to Mediterranean, Morocco, South Africa. Indo-West Pacific : South

Africa, Tanzania, Somalia, Maldives, Gulf of Aden, Pakistan, India, Sri Lanka, Sumatra, Japan, Korea, China, Australia. Central Pacific: Hawaiian Islands, Society Islands, Fanning Islands. Eastern Pacific : British Columbia to Central Baja California, Panama & Chile.

5b. Depth of occurrence : Oceanic & coastal, caught from 180-265m (Fischer & Bianchi, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Hooks & line	Gill net	BSGN*	Total catch(t)
North West	0	0	0	0
South West	0	100	0	17.807
East Coast	0.50	33	66.5	176

* Bottom Set Gill Net

6b. Regional/seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Feeds on small schooling fishes, cephalopods and

Role in food chain : Tertiary (Apex predator).

Type of breeding & reproductive capacity : Ovoviviparous and apparently a uterine cannibal. 2-4 embryos/litter (usually 2).

Size at birth : 120-152cm.

8a. Present utilization : The meat is of high quality, highly priced, used for human consumption. Fins are valuable for shark fin soup; the hide used as leather.

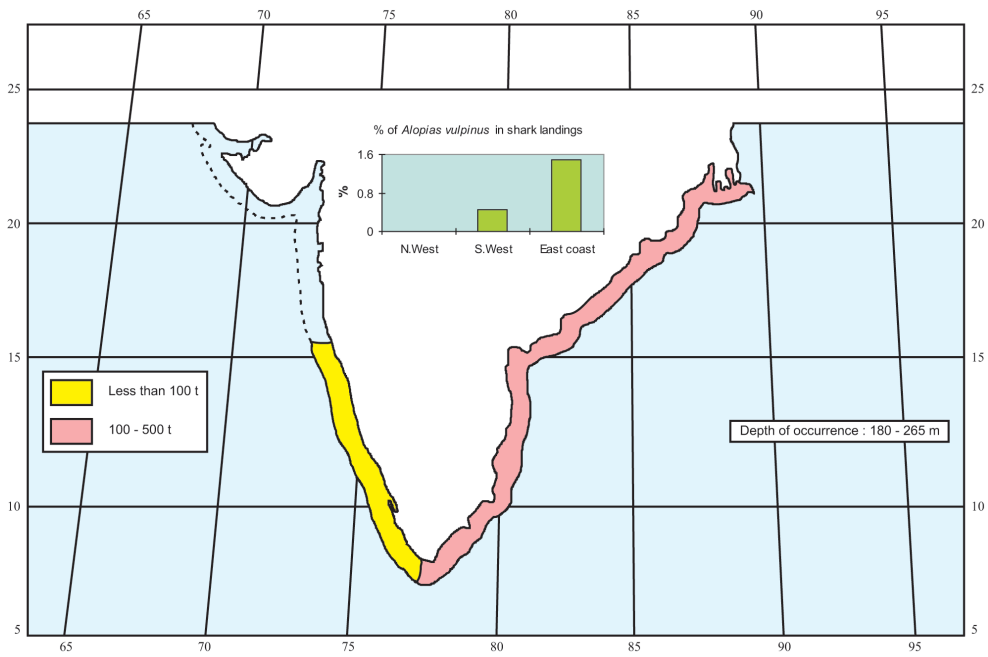
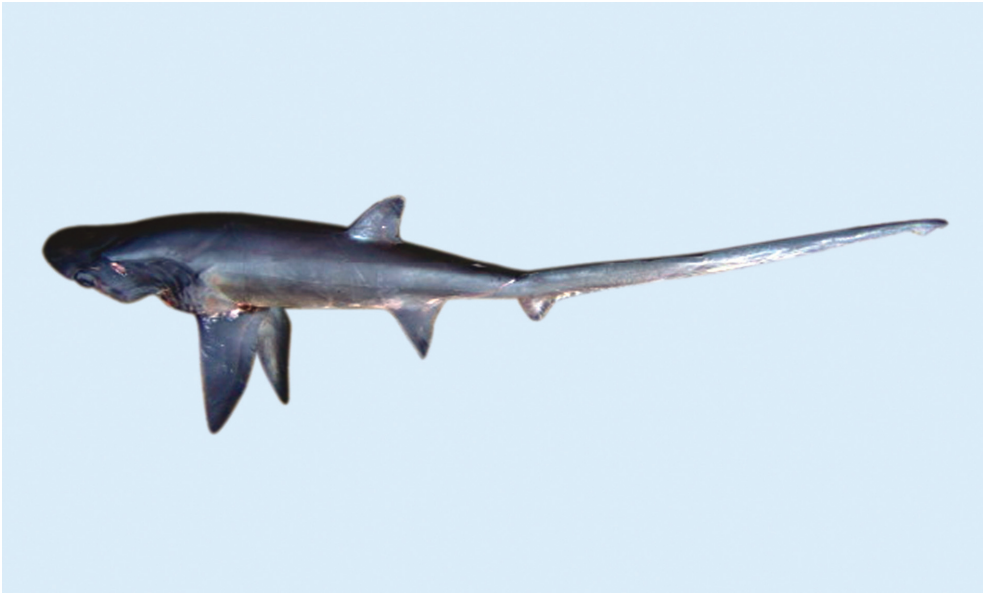
8b. Drug and medicinal value : The liver oil can be processed for vitamins.

9. Conservation and management:

Whether endangered /banned : No

10. General remarks : Vulnerable to over fishing.

Alopias vulpinus



Carcharhinus altimus (Springer,1950)

1. Species profile :

Name of species	: <i>Carcharhinus altimus</i>
Common name	: Bignose shark
English name	: Bignose shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>altimus</i>

2b. Other scientific names in use : *Carcharhinus radamae* (Springer, 1950)

3. Field identification characters : A large benthic shark with slender body and long rounded or bluntly pointed snout. Prominent anterior nasal flaps, high triangular serrated teeth, moderately high first dorsal fin and straight pectoral fin. High interdorsal ridge. No conspicuous markings on fins.

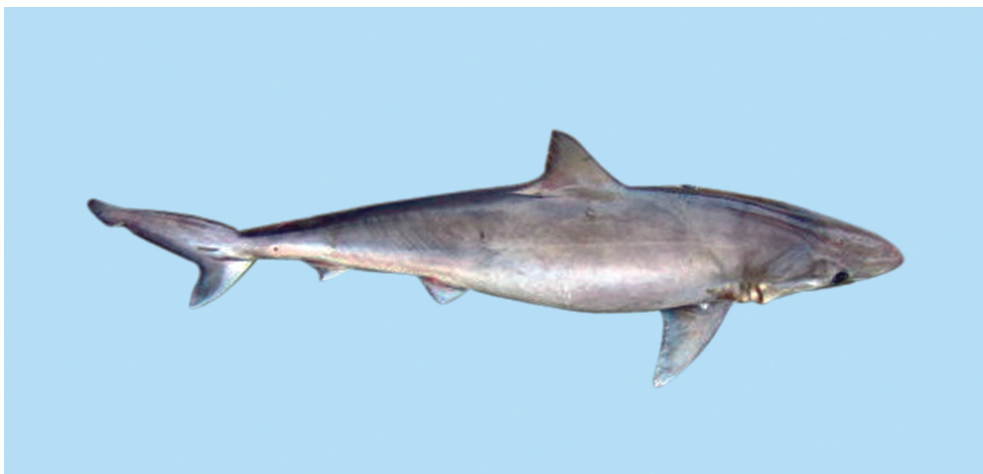
4. Maximum size : 300cm.common size: 240cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Western Atlantic: Florida. Bahamas, Cuba, Nicaragua, Costa rica,Venezuela. Eastern North Atlantic: Senegal, Gambia, Ivory coast, Ghana & Mediterranean Sea. Western Indian Ocean: South Africa, Madagascar, India, Red Sea.

5b. Depth of occurrence : Bottom dwelling species in depth from 90m upto 250-430m. The young may occur in shallow waters upto 25m depth (Compagno, 1984).

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional/seasonal abundance** : Data not available
- 6c. Method of fishing** : Bottom set gill net, Long line
7. Biological characters :
- Food preferences : Bony fishes, small shark, rays and cuttle fish.
- Role in food chain : Apex predator.
- Type of breeding & Reproductive capacity : Viviparous with 7-8 youngones / litter.
- 8a. Present utilization** : Fishmeal, oil and shagreen.
- 8b. Drug and medicinal value** : Liver oil for Vitamin.
- 9. Conservation and management:**
- Whether endangered /banned : No
- 10. General remarks** : Nil

Carcharhinus altimus



Carcharhinus amblyrhynchoides (Whitely,1934)

1. Species profile :

Name of species	: <i>Carcharhinus amblyrhynchoides</i>
Comm on name	: Graceful shark
English name	: Graceful shark

2a. Taxonomical position:

Super order	: Selachioidei
Order	: Carcharhiniiformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>amblyrhynchoides</i>

2b. Other scientific names in use : *Carcharhinus pleurotaenia* (Bleeker, 1852);
Carcharhinus limbatus (Val., 1839).

3. Field identification characters : A moderately large, tubby grey shark with short pointed snout, large eyes and large gill slits, large teeth, large pectoral fin. Interdorsal ridge absent. Origin of second dorsal fin about over anal origin. Snout much shorter than mouth width. Colour: Fins usually black tipped. Conspicuous white band on flank.

4. Maximum size : 167 cm , Common size - 150 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Indo-West Pacific, India, Sri Lanka, Gulf of Thailand, Philippines, Viet Nam, Java, Borneo, Australia.

5b. Depth of occurrence : Coastal pelagic.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	100	73
South West	100	36.441
East coast	100	11

6b. Regional /seasonal abundance : Data not available.

7. Biological characters :

Food preferences : Feeds on fishes.

Role in food chain : Predator.

Type of breeding & reproductive capacity : Viviparous; 1-6 youngones/litter.

Size at maturity : Male-108 cm, female-105cm (Raje *et al.*, 2002)

Size at birth : 50-60cm.

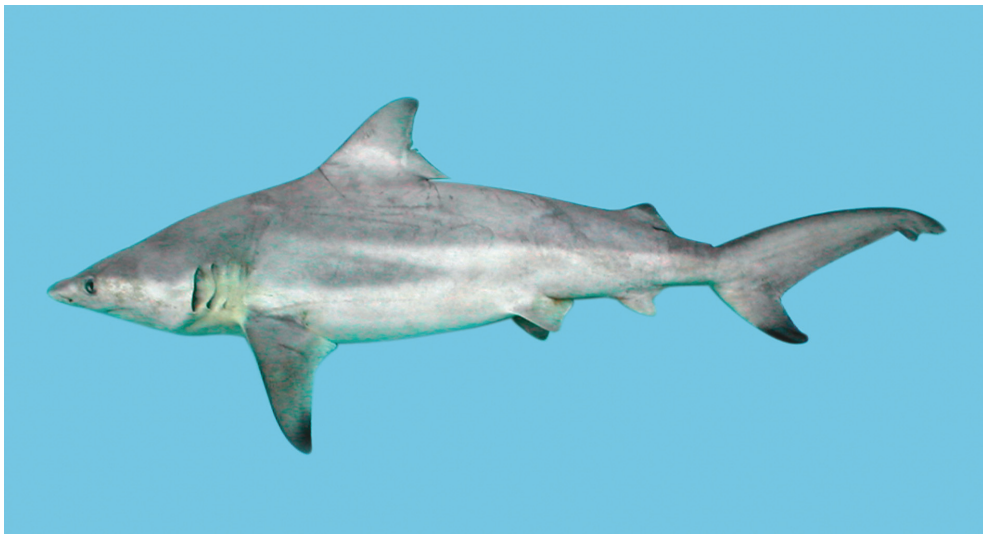
8. Present utilization : Meat eaten fresh and dried salted. Fin for soup, Liver for oil.

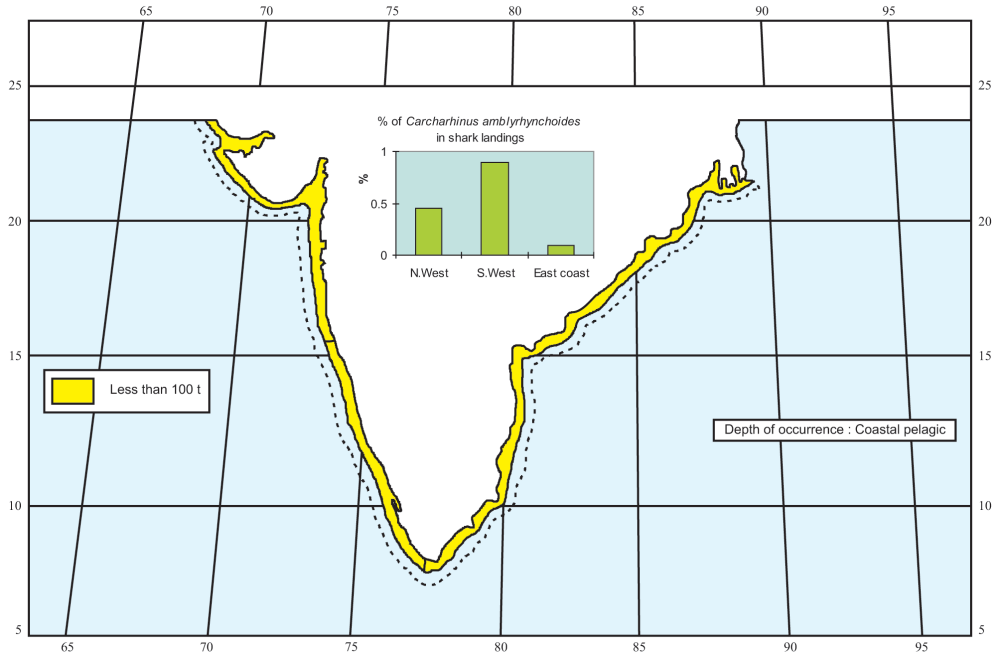
9. Conservation and management :

Whether endangered / banned : No

10. General remarks: : Nil

Carcharhinus amblyrhynchoides





Coastwise abundance (t.) of *Carcharhinus amblyrhynchoides* along Indian coast

Carcharhinus amblyrhynchos (Bleeker,1856)

1. Species profile :

Name of species	: <i>Carcharhinus amblyrhynchos</i>
Common name	: Requiem shark
English name	: Grey reef shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>amblyrhynchos</i>

2b. Other scientific names in use : *Carcharhinus menisorrhah* (Val., 1839) ;
Carcharhinus falciformis (Bibron, 1839).

3. Field identification characters : A medium-size to large shark with a moderately long, broadly rounded snout. Usually round eyes. No interdorsal ridge. Narrow cusped antero posterior teeth 14/13 on each side. Labial furrows very short and inconspicuous. First dorsal origin in front of pectoral free rear tips. Origin of second dorsal about over anal origin. Pectoral fins moderately large, narrow and falcate. Colour: Dorsal side light gray and pale white on ventral side. First dorsal fin plain. Entire posterior margin of caudal fin with a clear black marking. Pectoral, second dorsal, anal and pelvic fins with blackish or dusky tips.

4. Maximum size : 255cm; common length: 140 cm (Raje *et al.*, 2002).

5a. Distribution (Global) : Indian ocean : Madagascar, Mauritius, India. Western Central Pacific : Singapore to Australia - Wake Island and Tahiti.

5b. Depth of occurrence : Coastal pelagic, surface to 100m (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/Gear	Trawl	Total catch(t)
		North West	0
	South West	100	46.5
	East coast	0	0

6b. Regional/seasonal abundance : Data not available.

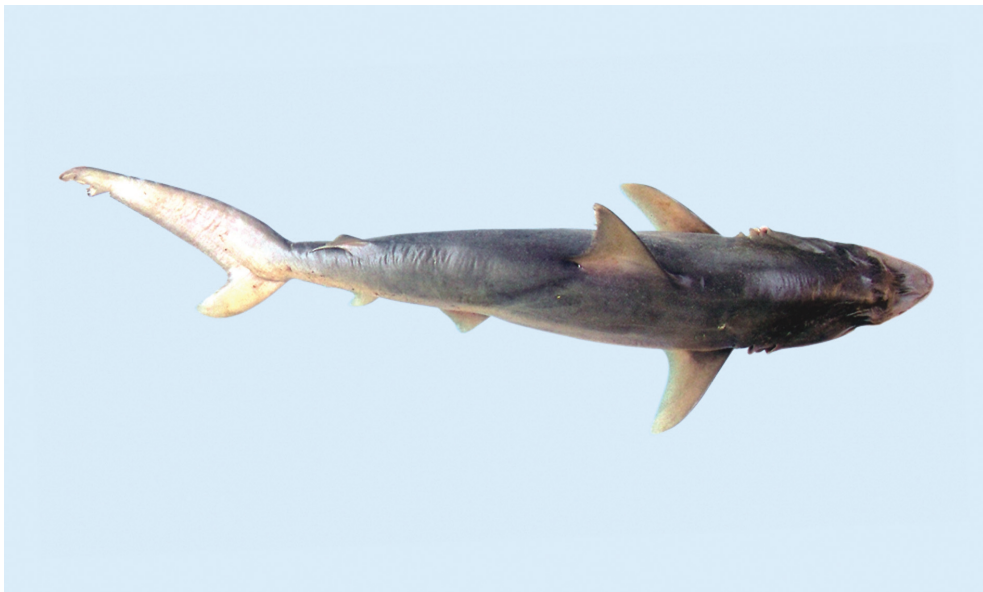
7. Biological characters :

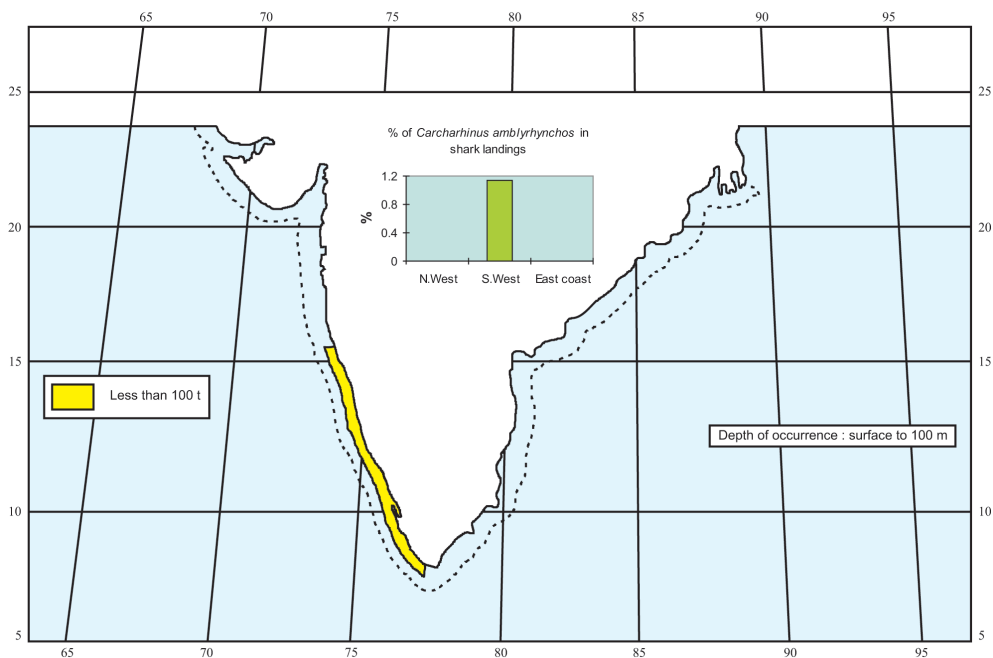
Food preferences : Fishes, squids, octopus, crabs, lobsters and shrimp.

Role in food chain : Tertiary

- Type of breeding & reproductive capacity : Viviparous with yolk sac placenta; 1-6 pups / litter.
- Gestation period : 12 months (Raje et al., 2002).
- Peak breeding season : See Appendix-I
- 8. Present utilization** : Fins used for soup, offal for fish meal. Meat consumed in fresh or salt - dried form. Dried fins are exported.
- 9. Conservation and management:** No.
Whether endangered / banned
- 10. General remarks** : Restricted habitat choice, small litter size and onshore distribution warrants protection for this species.

Carcharhinus amblyrhynchos





Coastwise abundance (t.) of *Carcharhinus amblyrhynchos* along Indian coast

Carcharhinus amboinensis (Muller & Henle, 1839)

1. Species profile :

Name of species	: <i>Carcharhinus amboinensis</i>
Comm on name	: Pigeye Shark
English name	: Pigeye Shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>amboinensis</i>

2b. Other scientific names in use : *Carcharias (Prionodon) henli* Bleeker 1855, *Carcharias (Prionodon) brachyrhynchus* Bleeker 1859, *Triaenodon obtusus* Day 1878.

- 3. Field identification characters** : A large stout bodied shark. Snout extremely short, broadly rounded. First dorsal fin very high, its origin a little in advance of insertion of pectoral fin, second dorsal fin low, its origin slightly in front of anal fin. Pectoral fin large, broad, with narrow pointed tips. No dermal ridge between dorsal fins. Small circular eyes. Colour: Grey above, light below, tips of fins darker in young, fading in adult.
- 4. Maximum size** : 280cm; common size: 200cm (Fischer & Bianchi, 1984).
- 5a. Distribution (Global)** : Eastern North Atlantic: Nigeria. Indo-West Pacific: South Africa, Madagascar, Gulf of Aden, Pakistan, Sri Lanka, Indonesia and Australia.
- 5b. Depth of occurrence** : An inshore species, common in 0-60m depth (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

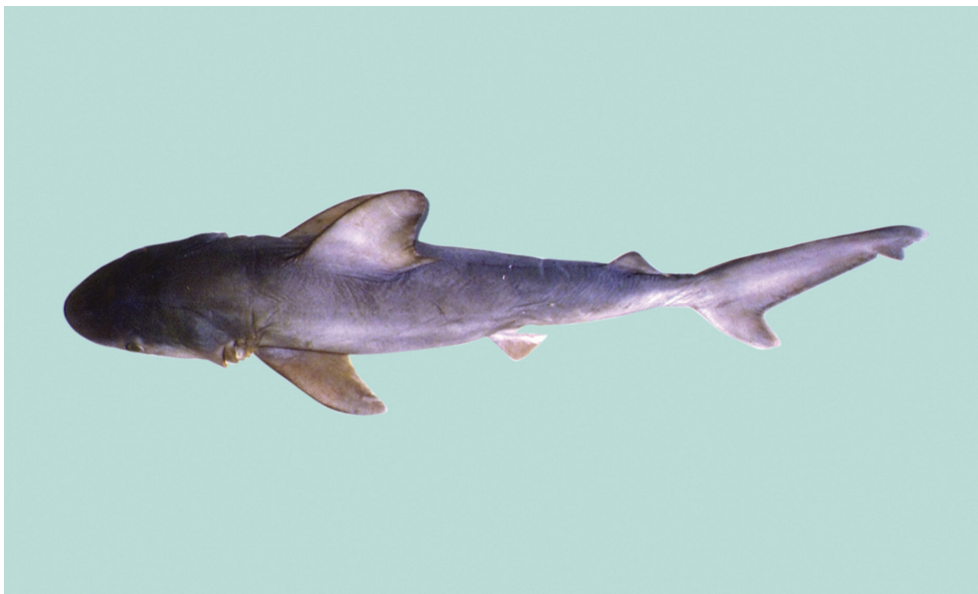
Coast/Gear	Gill net	BSGN*	Total catch(t)
North West	0	0	0
South West	100	0	63.5
East Coast	0	0	0

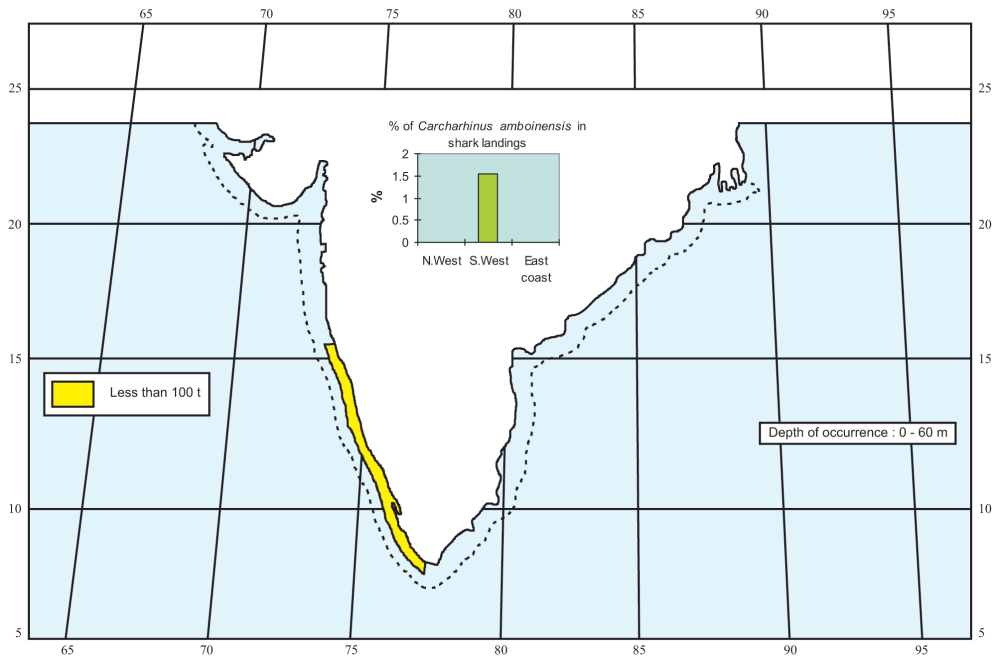
*= Bottom Set Gill Net

- 6b. Regional/seasonal abundance** : See Appendix-I
- 7. Biological characters :**
- Food preferences : Bottom feeding shark preying on pelagic and demersal bony fishes, sharks, rays, squids, cuttlefish, Octopus, lobster, gastropods.
- Role in food chain : Predator.
- Type of breeding & reproductive capacity : Viviparous with 3-13 young ones/litter.

- Size at maturity : Male-195cm;female-198-223cm (Raje *et al.*, 2002)
- Gestation period : 12 months.
- Size at birth : 71-72cm (Compagno,1984).
- 8. Present utilization** : Meat for human consumption; fins for soup.
- 9. Conservation and management**
Whether endangered /banned : Not banned.
- 10. General remarks** : Nil.

Carcharhinus amboinensis





Coastwise abundance (t.) of *Carcharhinus amboinensis* along Indian coast

Carcharhinus brevipinna (Muller & Henle, 1839)

1. Species profile :

Name of species : *Carcharhinus brevipinna*
 Comm on name : Spinner Shark
 English name : Spinner Shark

Vernacular name :

Marathi : Mushi / Chotti mushi
 Kannada : Shivra / Thate

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Carcharhinus*
 Species : *brevipinna*

2b. Other scientific names in use : *Carcharhinus maculipinnis* (Poey, 1865).

3. Field identification characters : A large but slender shark with long sharply pointed snout, small eyes, long gill slits, small pectoral fin, no inter dorsal ridge. Upper labial furrow is elongated and prominent, Colour : Tips of fins dark in adults. A white band on flanks.

4. Maximum size : 280 cm; common size:250cm (Fischer & Bianchi, 1984)

5a. Distribution (Global) : Western Atlantic : Bahamas, Cuba, Brazil, Mexico. Eastern Atlantic. Indo-West Pacific : South Africa, Madagascar, Mauritius, Oman, Singapore, Japan, Philippines.

5b. Depth of occurrence : Common in shallow waters in depth less than 30m to 70m (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	100	34.62
East coast	0	0

6b. Regional/seasonal abundance : Data not available

7. Biological characters :

Food preferences : Sardines, Elops sp., anchovies, catfish, lizardfish, mullets, tunas, croakers, jacks, tongue soles, sting ray, cuttle fish, squid & Octopus. Unusual method of feeding on schools of small fishes gives the name spinner shark.

Role in food chain : Predator

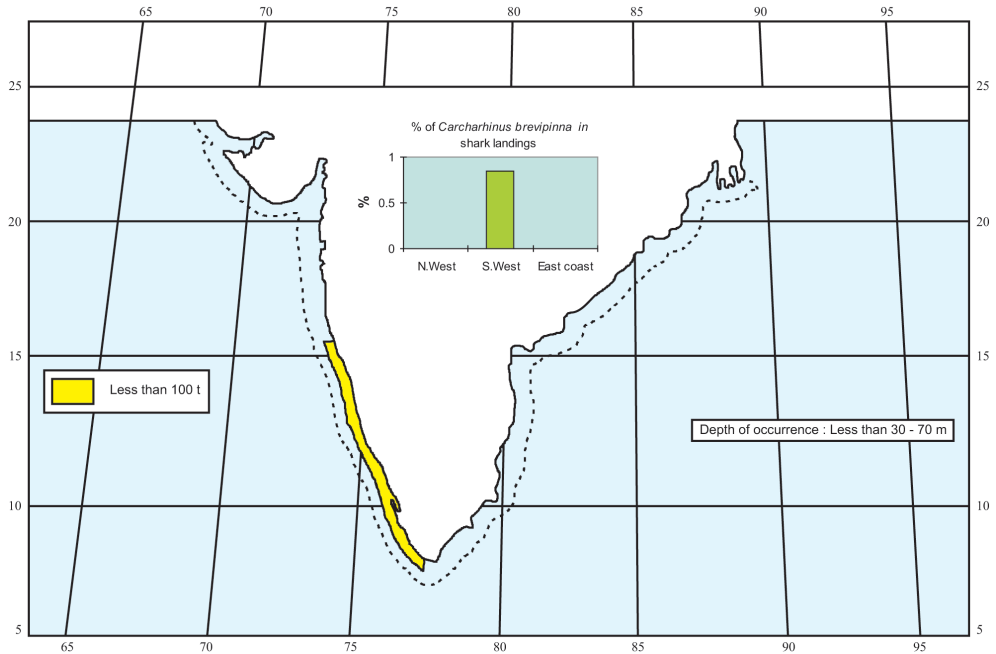
Type of breeding & reproductive capacity : Viviparous with yolk sac placenta, number of young 3 to 15/litter.

Size at maturity : Male-130cm,female-150-155cm.

- Gestation period : 12 to 15 months (Raje *et al.*, 2002).
- Size at birth : 60-75cm.
- 8. Present utilization** : Meat-dried and salted. Valuable for hides, fins and liver oil.
- 9. Conservation and management**
Whether endangered /banned : Lower risk, near threatened (LR/nt)
- 10. General remarks** : Nil.

Carcharhinus brevipinna





Coastwise abundance (t.) of *Carcharhinus brevipinna* along Indian coast

Carcharhinus dussumieri (Valenciennes, 1839)

1. Species profile :

Name of species : *Carcharhinus dussumieri*
 Comm on name : Whitecheek shark
 English name : Whitecheek shark

Vernacular name :

Gujarati	: Moosi
Marathi	: Ghari-Mushi, Balda
Kannada	: Thervat
Malayalam	: Sravu
Tamil	: Kondaian - sorrah
Telugu	: Karimuthu - sorrah, Suga - sorrah
Oriya	: Dhalla magar
Bengali	: Kamarah

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>dussumieri</i>

2b. Other scientific names in use : *Carcharhinus menisorrah* (Val.1839),
Carcharhinus falciformis (Bibron, 1839).

3. Field identification characters : A small grey shark with moderately long rounded snout. Fairly large oval eyes. Labial folds very short. Inter dorsal ridge present. Short gill slits. First dorsal fin triangular with a short tip, its origin behind pectoral base. Colour: Back dark grey, belly greyish or white. Second dorsal fin with a conspicuous black tip. Other fins without markings.

4. Maximum size : 100 cm at Cochin, Common size : 65cm (Raje *et al.*, 2002).

5a. Distribution (Global) : Indo - West Pacific : The “Gulf” and Arabian Sea between Gulf of Oman and Pakistan, India, Singapore, Malaysia, Java, Thailand, Borneo, Viet Nam, China, Japan.

5b. Depth of occurrence : Inshore shark of continental shelves (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/Gear	Gill net	Total catch(t)
	North West	0	0
	South West	100	57.58
	East coast	0	0

6b. Regional /seasonal abundance : See Appendix-I

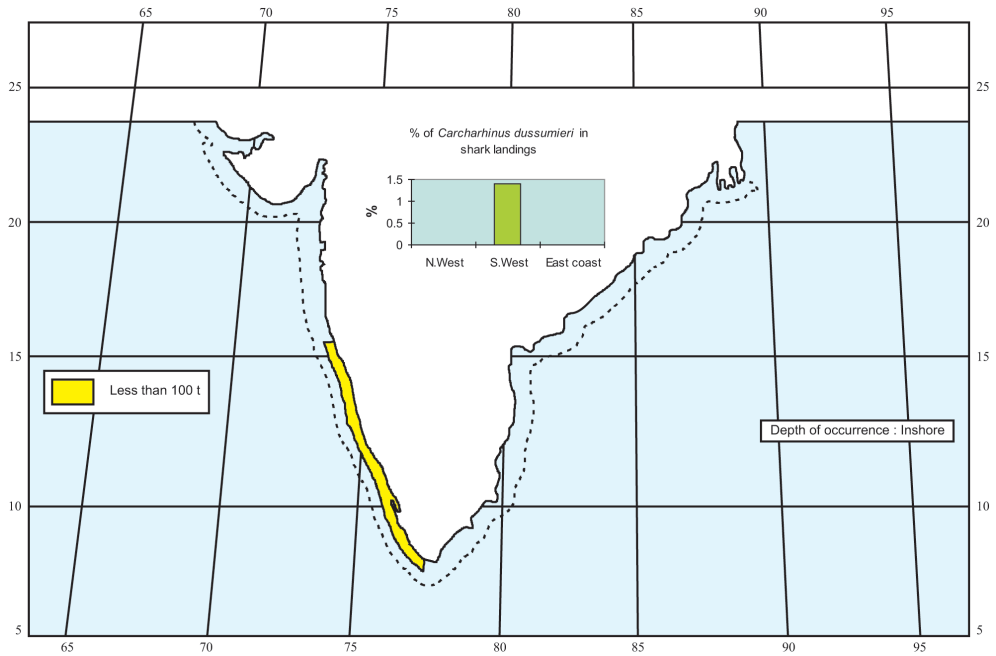
7. Biological characters :

Food preferences : Small fishes, squids and crustaceans (Appukuttan & Nair, 1988).

- Role in food chain : Secondary predator
- Type of breeding & Reproductive capacity : Viviparous with a yolk sac placenta. Litter size normally 2-4. Off Gulf of Mannar, east coast of India, peak parturition during March-April.
- Size at maturity : Male-65 cm; female-76cm.
- Size at birth : 37-38cm.
- Peak breeding season : See Appendix-I
- 8a. Present utilization** : Used as fish meat, liver oil, fin trade for soup.
- 8b. Drug and medicinal value : Liver oil and cartilage is used for preparation of medicine.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : Nil.

Carcharhinus dussumieri





Coastwise abundance (t.) of *Carcharhinus dussumieri* along Indian coast

Carcharhinus falciformis (Bibron, 1839)

1. Species profile :

Name of species : *Carcharhinus falciformis*
 Comm on name : Silky shark
 English name : Silky shark

Vernacular name :

Malayalam : Sravu

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Carcharhinus*
 Species : *falciformis*

2b. Other scientific names in use : *Carcharias falcipinnis* Lower, 1839; *Carcharias* (Prionodon) *menisorrah* Val. (Muller & Henle, 1839).

3. Field identification characters : Large, dark grey oceanic shark, long rounded snout, large eyes, interdorsal ridge present. First dorsal origin well behind pectoral free rear tips. Origin of second dorsal over or slightly behind anal origin and inter margin very long usually over twice fin height. Colour : Fins plain or with slightly dusky tips.

4. Maximum size : Maximum : 350cm; common: 250 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Western Atlantic, Gulf of Mexico, Caribbean Sea, Central and Eastern Atlantic. Indian ocean, Central and Western Pacific, Caroline, Hawaiian Islands , California, Peru.

5b. Depth of occurrence : An offshore, oceanic epipelagic and littoral, tropical shark. Occurs in shallow waters upto 18m, in open ocean upto 500m. depth (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	100	24.345
East coast	0	0

6b. Regional/seasonal abundance : Data not available.

7. Biological characters :

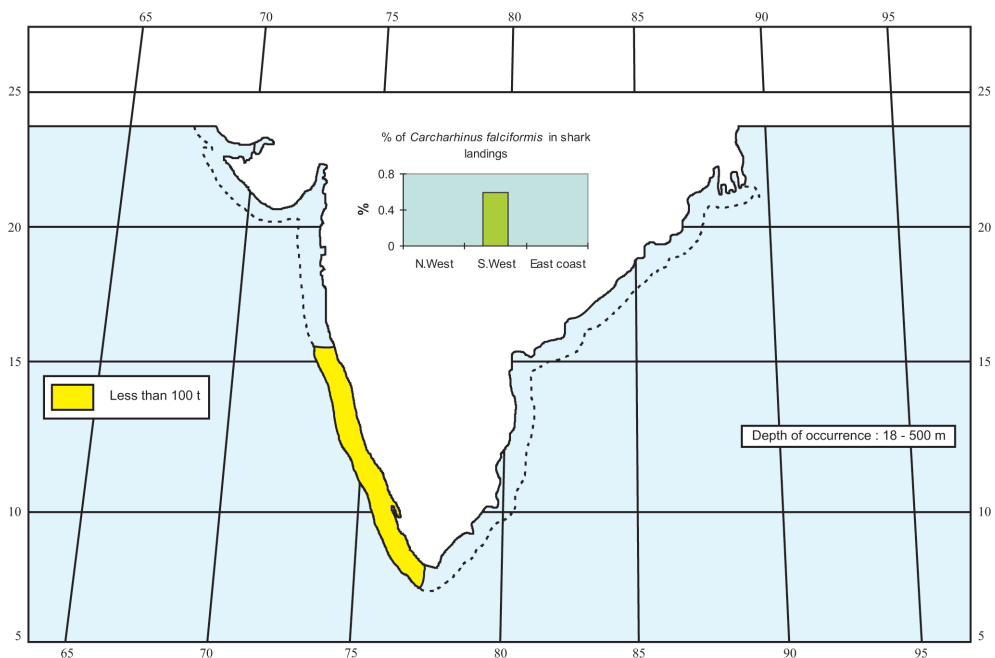
Food preferences : Finfishes, catfishes, mullets, mackerel, yellowfin tuna, albacore, squid, paper nautilus, pelagic crabs.

Role in food chain : Predator

Type of breeding & reproductive capacity	: Viviparous with yolk sac placenta, number of young 2-14 / litter
Size at maturity	: Male-225cm., female-235-245cm (Raje <i>et al.</i> , 2002).
Size at birth	: 75-80 cm.
8a. Present utilization	: Hide for leather, fins for soup and liver for oil. Meat utilized fresh and dried/ salted form for human consumption.
8b. Drug and medicinal value	: Liver is exported for oil which has high Vitamin 'A' content.
9. Conservation and management:	
Whether endangered / banned	: No
10. General remarks	: Nil

Carcharhinus falciformis





Coastwise abundance (t.) of *Carcharhinus falciformis* along Indian coast

Carcharhinus hemiodon (Valenciennes, 1839)

1. Species profile :

Name of species : *Carcharhinus hemiodon*
 Common name : Pondicherry shark
 English name : Long nosed shark

Vernacular name :

Tamil : Palsorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Carcharhinus*
 Species : *hemiodon*

- 2b. Other scientific names in use** : *Hypoprion hemiodon* (Val., 1839).
- 3. Field identification characters** : A small grey shark with snout moderately long and fairly pointed; first dorsal fin with a narrowly rounded apex, its origin just posterior to pectoral fin base insertions and over pectoral inner margins, its inner margin and free rear tip rather long; second dorsal fin moderately large with a short rear tip. Pectoral fins moderately large and falcate. Colour : Grey above, white below, tips of pectorals, second dorsal and tip of both the lobes of caudal fin black , a conspicuous white band on flank.
- 4. Maximum size** : 299 cm at Mumbai, 60 cm at Chennai, 150 cm at East coast (Raje *et al.*, 2002).
- 5a. Distribution (Global)** : Indo-West Pacific : Nominal from Oman to Viet Nam, Indonesia, New Guinea, North Australia, India, Pakistan and China.
- 5b. Depth of occurrence** : Continental shelf species (Fischer & Bianchi, 1984).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional/seasonal abundance** : See Appendix-I
- 6c. Method of fishing** : Hooks & Line, trawl and gill net
- 7. Biological characters** :
- Food preferences : Fishes, cephalopods, crustaceans.
- Role in food chain : Tertiary predators
- Type of breeding & reproductive capacity : Viviparous with yolk sac placenta, producing an average of 6 embryos per litter, usually 2 - 4 in each uterus lobe. Off Gulf of

- Mannar, along the east coast of India, gravid females of this species collected in March had a length range of 82.5 to 88.7 cm and the embryo within a length range of 30 to 33.5 cm was in the advanced stage.
- Peak breeding season : See Appendix-I
- Other remarks : The right ovary alone is functional .
- 8a. Present utilization** : Fins are used for soup preparation, offal for fish meal, consumed fresh, salted or in the dried form.
- 8b. Drug and medicinal value** : Liver is used for oil extraction.
- 9. Conservation and management :**
- Whether endangered / banned : Yes, the species is listed as critically endangered (Rarely recorded and poorly known inshore Indo-Pacific shark, Protected by MoEF under section 61 of Wild Life (Protection) Act, 1972.
- 10. General remarks** : This is a little-known shark of the Indo-West Pacific. There is no information about its fishery and biology, except for the report on the sporadic landing from India coast.

Carcharhinus hemiodon



Carcharhinus leucas (Valenciennes, 1839)

1. Species profile :

Name of species	: <i>Carcharhinus leucas</i>
Comm on name	: Bull shark
English name	: Bull shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>leucas</i>

2b. Other scientific names in use : None

3. Field identification characters : A massive shark with a short and stocky body, broad and blunt snout, small eyes; upper teeth with broad strongly serrated cusps. No inter dorsal ridge. Ist dorsal fin broad and triangular and less than 3.2 times height of the 2nd dorsal. First dorsal fin origin anterior or over pectoral fin axil. Pectoral fins moderately long and broad. Colour: Greyish above, white below, fins with dark tips especially in young individuals.

4. Maximum size : 350cm; common size: 260 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Western Atlantic : Massachusetts, USA to southern Brazil. Eastern Atlantic: Morocco, Senegal to Angola. Indo-West Pacific: Kenya and South Africa to India, Viet Nam to Australia. Eastern Pacific : Southern Baja California, Mexico to Ecuador and possibly occurring in Peru.

5b. Depth of occurrence : Upto 152 m (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Gill net	BSGN*	Total catch(t)
North West	0	0	0
South West	0	0	0
East coast	21	79	200

*Bottom Set Gill Net

6b. Regional /seasonal abundance : Data not available.

7. Biological characters :

Food preferences : Bony fishes, sharks, rays, mantis shrimp, crabs, squid, sea snails, sea urchins, sea turtles.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Viviparous, upto 13 pups/litter.
Size at maturity : Male-210-220cm, female-225cm.

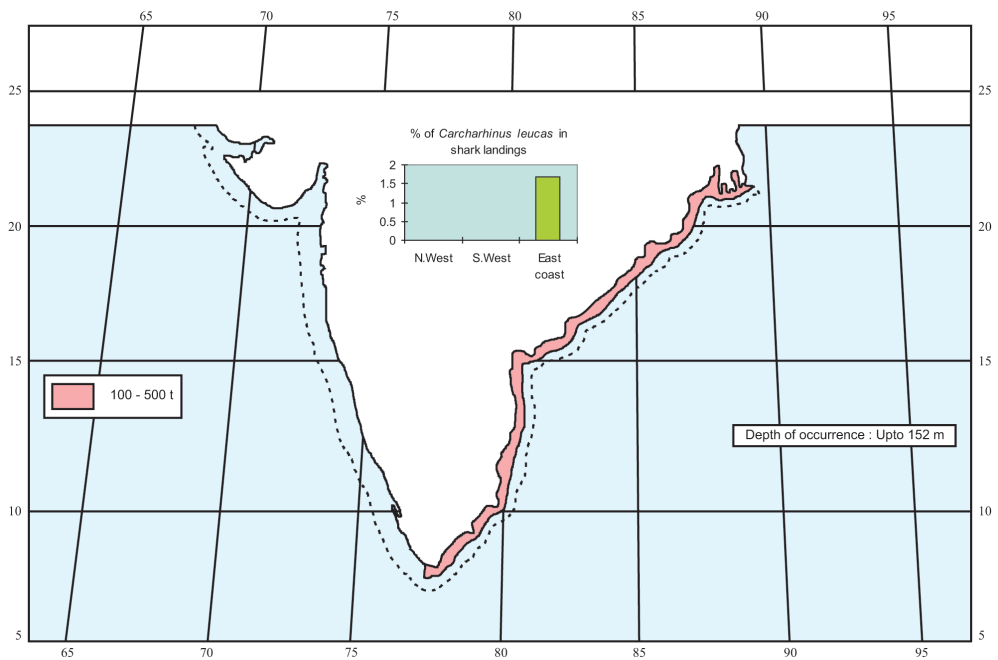
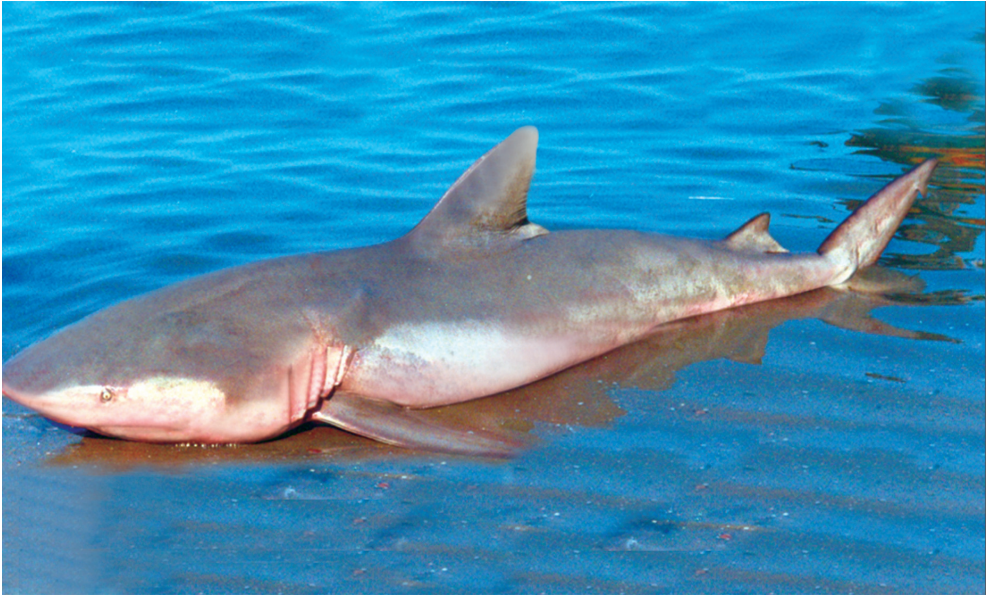
Size at birth : 60-75cm.

8. Present utilization : Utilized fresh-frozen or smoked for human consumption; fins for soup, hide for leather, liver for oil and carcass for fish meal.

9. Conservation and management:

Whether endangered / banned : Yes, Lower Risk :near threatened(LR/nt) 30-June 2000.

10. General remarks : Nil

Carcharhinus leucasCoastwise abundance (t.) of *Carcharhinus leucas* along Indian coast

Carcharhinus limbatus (Muller & Henle, 1839)

1. Species profile :

Name of species	: <i>Carcharhinus limbatus</i>
Comm on name	: Ground Shark
English name	: Ground Shark

Vernacular name :

Gujarati	: Moosi, Magara
Marathi	: Walu, Mushi, Balda
Kannada	: Khaski
Malayalam	: Sorrah
Tamil	: Kundan - sorrah, Pettiyar - sravu, Paduvala - sorrah
Telugu	: Sorra
Oriya	: Kala magari
Bengali	: Kala magari
Lakshadweep Islands	: Miyaru

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: Carcharhinus
Species	: <i>limbatus</i>

2b. Other scientific names in use : *Carcharias* (Prionodon) *limbatus* Val. in Muller & Henle, 1839.

3. Field identification characters : Large fairly stout grey shark with long pointed snout; long gill slits; small eyes. First dorsal fin origin over pectoral fin inner margin; second dorsal fin origin just behind anal origin; no inter-dorsal ridge; moderately large pectoral fins. Snout length less than or equal to mouth width. Upper and lower teeth nearly symmetrical and similar with erect, narrow cusps and serrated edges. Colour: Usually black tips

on most fins in juveniles to adults. A conspicuous white band on flanks.

4. Maximum size : 247 cm, common: 150cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Widespread in all tropical & subtropical continental waters. Western Atlantic : Massachusetts to South Brazil, Gulf of Mexico and Caribbean. Eastern Atlantic : Madeira, Mediterranean, Canary Islands, Senegal to Zaire. Indo - West Pacific : South Africa, Madagascar, Red Sea, India, Sri Lanka, Pakistan, Thailand, China, Taiwan Islands, Philippines, Java, Borneo, Australia. Central Pacific : Tahiti, Marquesas, Hawaiian Islands. Easter Pacific : Baja California, Peru, Revillagigedo and Galapagos Islands.

5b. Depth of occurrence : Commonly occurs close to shore off river mouths, estuaries, and in shallow muddy bays; rarely found in waters deeper than 30 m (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	Hooks & line	Long line	Total catch(t)
North West	98.65	1.35	0	0	402
South West	3.35	50.06	16.3	30.3	1523.594
East coast	83.63	16.37	0	0	398

6b. Regional / Seasonal abundance : See Appendix-I

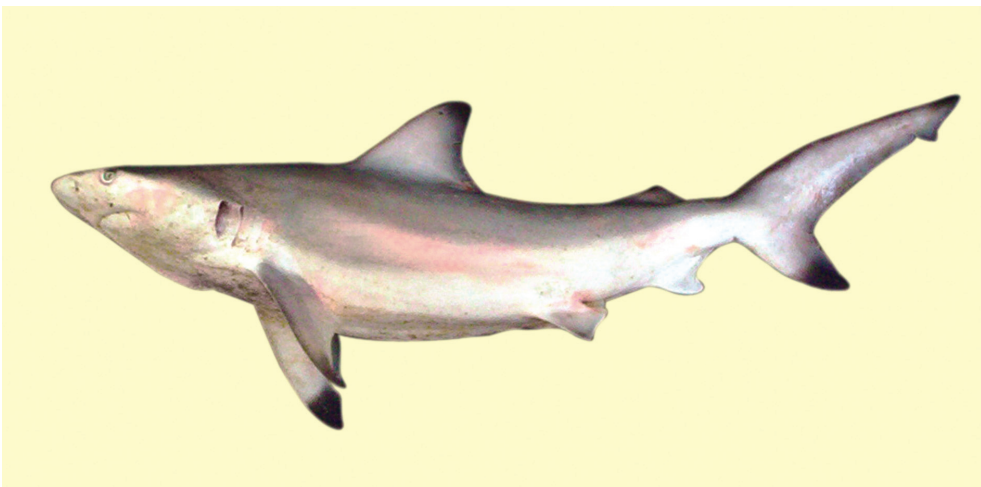
7. Biological characters :

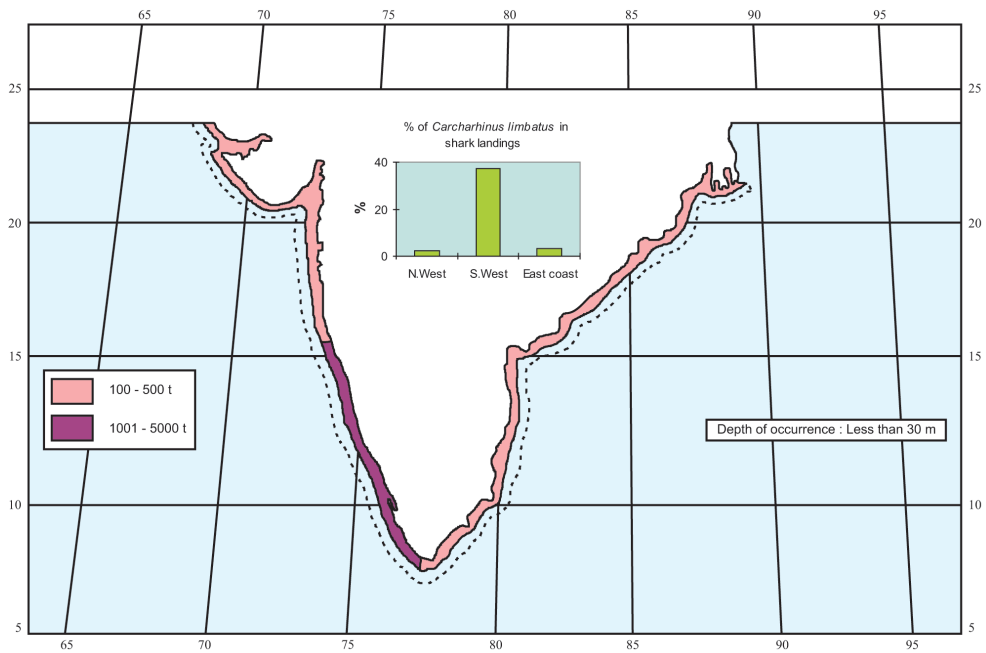
Food preferences : Variety of fishes ie. sardines, mackerel, sciaenids, soles, crustaceans and cephalopods.

Role in food chain : Predator

- Type of breeding & reproductive capacity : Viviparous with yolk sac placenta, producing an average of 6 embryos per litter, usually 2 - 4 in each uterus lobe.
- Gestation period : 10-12 months.
- Size at maturity : Males: 140-160 cm, Females: 150-160 cm
- Size at birth : 55-60 cm (Raje et al., 2002).
- Peak breeding season : See Appendix-I
- 8a. Present utilization** : Utilised fresh, frozen and dried salted for human consumption; carcass for fish meal and skin for leather, fins for soup. Fins and cartilage exported.
- 8b. Drug and medicinal value** : Liver yields oil of a moderate vitamin 'A' value.
- 9. Conservation and management:**
- Whether endangered / banned : Yes, listed in the IUCN Red List
- 10. General remarks** : Vulnerable

Carcharhinus limbatus





Coastwise abundance (t.) of *Carcharhinus limbatus* along Indian coast

Carcharhinus longimanus (Poey 1861)

1. Species profile :

Name of species	: <i>Carcharhinus longimanus</i>
Comm on name	: Oceanic white tip shark
English name	: Oceanic white tip shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>longimanus</i>

2b. Other scientific names in use : *Carcharhinus maou* (Lesson, 1830);
Pterolamiops longimanus (Poey, 1861)

3. Field identification characters : A large moderately stout shark. Snout short and broadly rounded. First dorsal fin high, expanded, not falcate, with a broadly rounded apex, its origin just anterior to pectoral free tip. Pectoral fins long, broad, paddle-shaped. Usually a low interdorsal ridge present. Colour : Back usually dark grey with a bronze tinge, sometimes brown or bluish. Tips of first dorsal, pectoral and lower lobe of caudal fin often white or with white spots.

4. Maximum size : 350 cm, common size: 270 cm (Fischer & Bianchi, 1984)

5a. Distribution (Global) : Western Atlantic : Maine to Argentina, Caribbean and Gulf of Mexico. Eastern Atlantic : Madeira, Portugal, Gulf of Guinea. Western Indian Ocean : South Africa, Madagascar, Mozambique, Mauritius, Seychelles, Red Sea and India. Western Pacific : China, Philippines, Australia, New Caledonia. Central Pacific : Hawaii, Tahiti and Taumotu Archipelago. Eastern Pacific : California, Peru, Clipperton Island.

5b. Depth of occurrence : From surface to 152 m depth (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	100	345.46
East coast	0	0

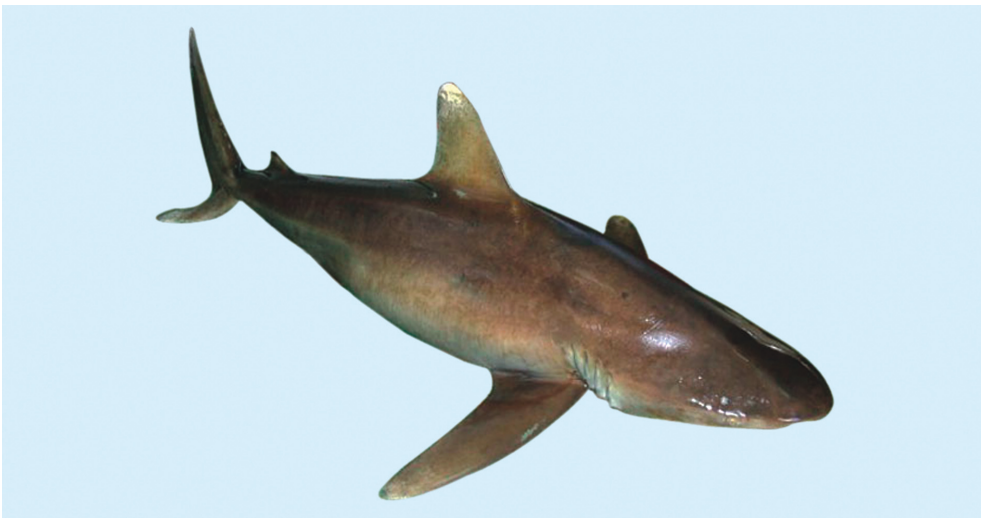
6b. Regional /seasonal abundance : See Appendix-I

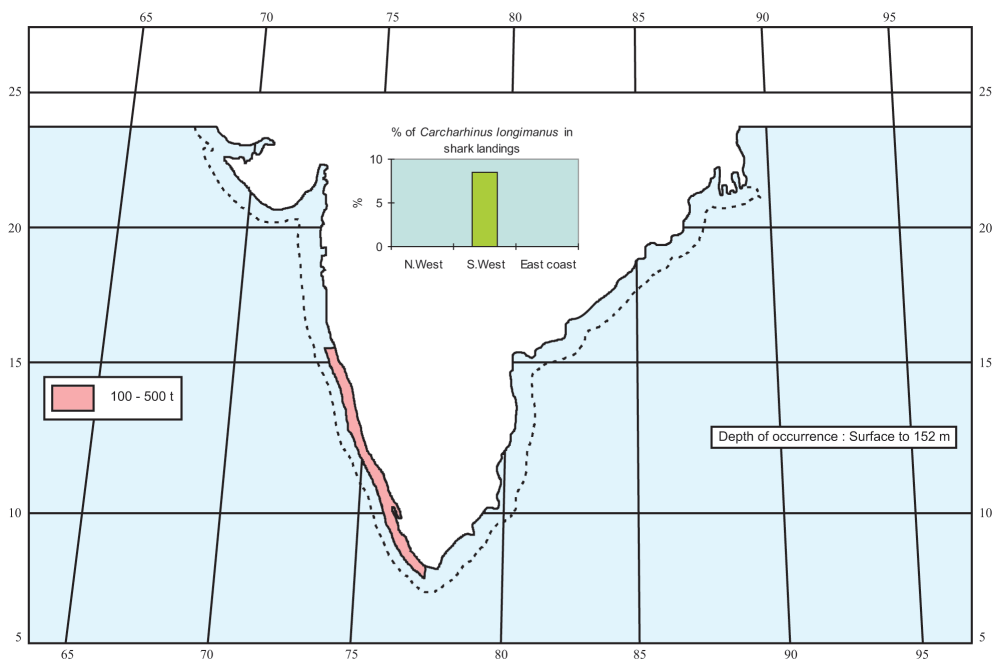
7. Biological characters :

Food preferences : Fishes (Scombroids and carangids), squid, crab, crustaceans & turtles.

Role in food chain	: Tertiary
Type of breeding & reproductive capacity	: Viviparous, 1-6 young ones/litter.
Gestation period	: 10-12 months
Size at maturity	: Male & Female: 190 cm(Raje et al., 2002).
Size at birth	: 65-75 cm.
Peak breeding season	: See Appendix-I
8a. Present utilization	: Consumed fresh, smoked and dried salted. Fins for soup, hide for leather. Fins and cartilage exported.
8b. Drug and medicinal value	: Liver oil extracted for vitamin 'A'.
9. Conservation and management:	
Whether endangered / banned	: No
10. General remarks	: This species is oceanic. Catch data available only in long line from Calicut, off South west coast of India.

Carcharhinus longimanus





Coastwise abundance (t.) of *Carcharhinus longimanus* along Indian coast

Carcharhinus macloti (Muller & Henle, 1839)

1. Species profile :

Name of species	: <i>Carcharhinus macloti</i>
Common name	: Requiem Shark
English name	: Hard nose Shark
Vernacular name :	
Marathi	: Toki mushi
Malayalam	: Sravu
Tamil	: Muthra sorrah
Telugu	: Pala - sorrah, Sorrah - kowah

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes

Family	: Cacharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>macloti</i>

2b. Other scientific names in use : *Hypoprion macloti* (Muller & Henle, 1839).

3. Field identification characters : A small slender grey shark. Snout slightly pointed, long narrow with hypercalcified, hardened mass, easily detected by pinching. Labial fold present, fairly large eyes, no interdorsal ridge. First dorsal fin moderately large with an extremely long rear tip, a small low second dorsal fin with large rear tip. Anal fin origin well before second dorsal fin origin. Colour : Greyish or grey brown dorsally and white below. No conspicuous markings on fins.

4. Maximum size : 90 cm. common size : 76 cm (Raje et al., 2002).

5a. Distribution (Global) : Indo-West Pacific : South Africa, Madagascar, Mozambique, Tanzania, Kenya, Seychelles, Mauritius, Pakistan, Sri Lanka, Andaman Sea, Viet Nam, China, Sumatra, Java and New Guinea.

5b. Depth of occurrence : Continental waters both inshore and offshore (Fischer & Bianchi, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004:

Coast/ Gear	Gill net	BSGN*	Total catch(t)
North West	87.64	12.35	479
South West	0	0	0
East coast	0	0	0

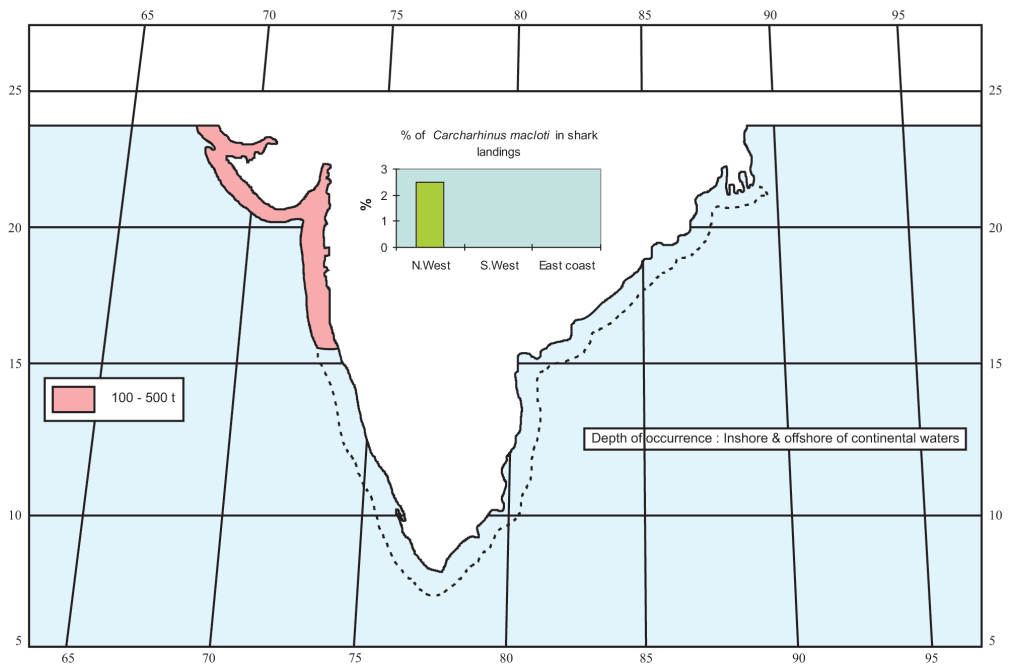
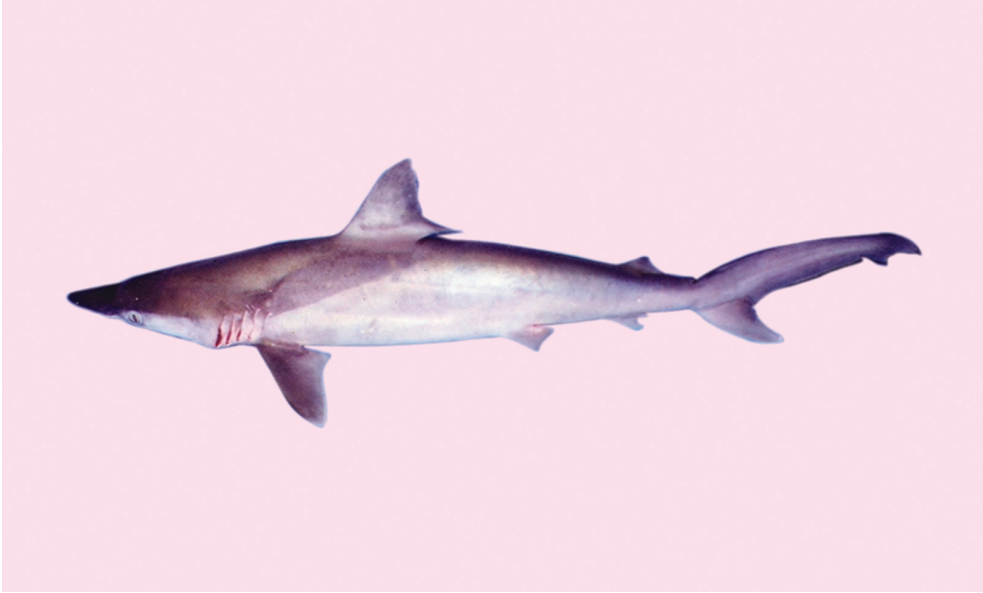
*Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Small fishes, cephalopods and crustaceans.

Role in food chain	: Tertiary.
Type of breeding & reproductive capacity	: Viviparous with a yolk sac placenta. 1 or 2 young / litter. A strong sexual segregation (M:F:95:5) within its population was noticed in Bombay waters.
Gestation period	: 12 months (Raje et al., 2002):
Size at maturity	: Males: 69 cm, females: 70 cm (Raje & Joshi, 2003).
Size at birth	: 44-50 cm (Fischer & Bianchi, 1984)
Peak breeding season	: See Appendix-I
8a. Present utilization and commercial value	: Utilised fresh-frozen or smoked for human consumption; fins for soup, hide for leather, liver for oil and carcass for fish meal. Fins & cartilage exported.
8b. Drug and medicinal value	: Liver used for extraction of liver oil.
9. Conservation and management:	No
Whether endangered / banned	
10. General remarks	: Nil

Carcharhinus macrotiCoastwise abundance (t.) of *Carcharhinus macroti* along Indian coast

Carcharhinus melanopterus (Quoy & Gaimard, 1824)

1. Species profile :

Name of species	: <i>Carcharhinus melanopterus</i>
Comm on name	: Ground shark
English name	: Blacktip shark

Vernacular name :

Gujarati	: Niagra patar
Marathi	: Balda, Khoda mushi, Mori
Kannada	: Neikaplethantee
Malayalam	: Mookan sravu
Tamil	: Perunthalai shark, Koppuli sura
Telugu	: Coval sorrah, Mukkan sorrah, Bokka sorrah, Ran-sorrah
Oriya	: Magar
Bengali	: Bhundi magar/ Kamar/ Hangur
Lakshadweep Islands	: Kattafuli miyaru
Andaman Islands	: Badmash machi

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>melanopterus</i>

2b. Other scientific names in use : *Mapolamia spallanzanii* (in Le Sueur, 1822, equals to *C. sorrah*); *Hypoprion playfairi* (Gunther, 1870).

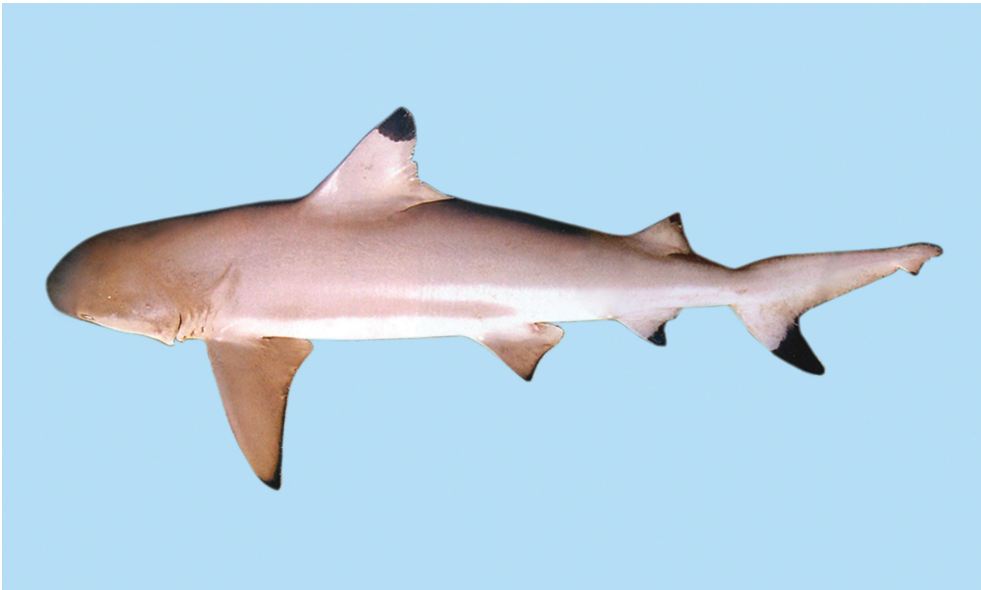
3. Field identification characters : A moderate sized brownish 'grey shark' with a short and bluntly round snout and horizontally oval eyes. No inter dorsal ridge. Upper labial furrow short and inconspicuous. First dorsal fin moderately large, with a rounded apex. A moderately large second dorsal fin with a short rear tip. Pectoral fins moderately large and falcate.

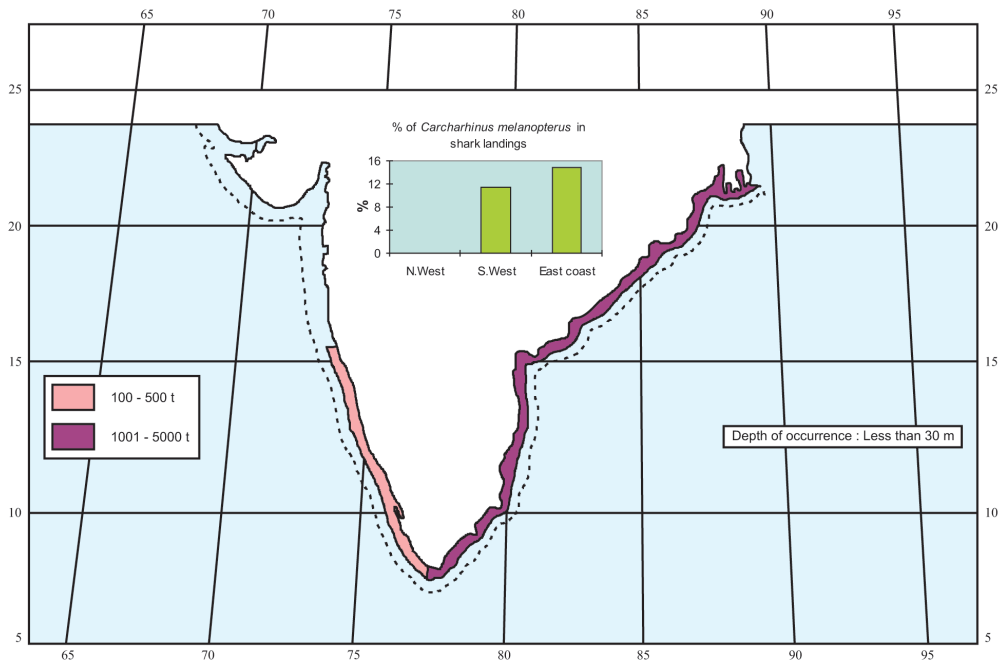
Colour : Brilliant black blotches on the first dorsal apex and lower caudal lobe. Black tips on other fins. Entire posterior margin of caudal fin with a narrow but obvious black boarder. A conspicuous white band on flank.

- 4. Maximum size** : 200 cm (Raje & Joshi, 2003)
- 5a. Distribution (Global)** : Eastern Mediterranean Sea; Indian Ocean : South Africa, Mauritius, Seychelles and Madagascar to Red Sea, Sri Lanka, Andaman, Pakistan, India, Maldives Islands. Western Pacific: Thailand to China, Japan, The Philippines, Australia and New Caledonia.
- 5b. Depth of occurrence** : Less than 30 m depth (Compagno, 1984).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004**
- | Coast/
Gear | Trawl | Gill net | Hooks & line | Long line | Total catch(t) |
|----------------|-------|----------|--------------|-----------|----------------|
| North West | 0 | 0 | 0 | 0 | 0 |
| South West | 13.5 | 45.45 | 31 | 10 | 467.2 |
| East coast | 36.27 | 58.79 | 4.94 | 0 | 1760 |
- 6b. Regional/seasonal abundance** : See Appendix-I
- 7. Biological characters :**
- Food preferences : Mulletts, silverbellies, anchovies, Hilsa, skates, Therapon sp., jacks, slip jaws, Surgeon fish, squids, Octopus, prawns (James, 1973)
- Role in food chain : Secondary carnivores
- Type of breeding & reproductive capacity : Viviparous with a yolksac placenta. 2 to 5 youngones /litter (Raje et al., 2002); 12 (Setna & Sarangdhar, 1949); Maximum : 40 (James, 1973).

Gestation period	: 16 months.
Size at maturity	: Males-91-100cm;females-96-112cm(Raje <i>et al</i> , 2002)
Size at birth	: 33-52cm .
Peak breeding season	: See Appendix-I
8a. Present utilization	: Fins are used for soup, meat marketed fresh, dried, salted or in smoked form. Fins & cartilage exported.
8b. Drug and medicinal value	: Liver is a source of oil for vitamin extraction; females possess larger liver.
9. Conservation and management:	
Whether endangered / banned	: No
10. General remarks	: Nil

Carcharhinus melanopterus





Carcharhinus obscurus (Le Sueur,1818)

1. Species profile :

Name of species	: <i>Carcharhinus obscurus</i>
Comm on name	: Dusky Shark
English name	: Dusky Shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>obscurus</i>

2b. Other scientific names in use : *Galeolamna macrurus* (Ramsay & Ogilby, 1887), *Carcharhinu iranzae* Fourmanoir, 1961.

3. Field identification characters : Body slender to moderately stout, snout bluntly round, length of snout less than or equal to mouth width, interdorsal ridge present. First dorsal fin origin usually over or slightly anterior to the pectoral free rear tips; low and moderately round at apex. Pectoral fin long and tapered with curve or falcate. Triangular saw edged upper teeth. Colour : Tips of most fins dusky or plain.

4. Maximum size : 364 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : South Africa, Madagascar, East-Africa. Wide - ranging in the Atlantic, Eastern Indian ocean and Pacific.

5b. Depth of occurrence : Coastal pelagic, and offshore upto 400 m depth (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Long line	Total catch(t)
North West	0	0
South West	100	13.06
East coast	0	0

6b. Regional/seasonal abundance : See Appendix-I

6c. Method of fishing : Trawl net, gill net, hooks & line, long line.

7. Biological characters :

Food preferences : Bony fishes, sharks, skates, rays, cephalopods, crustaceans and gastropods.

Role in food chain : Secondary

Type of breeding & reproductive capacity : Viviparous with a yolk sac placenta, 3-14 youngones/litter

Size at birth : 69-102 cm (Fischer & Bianchi, 1984)

8a. Present utilization : Meat, liver, cartilage, fins, hide. Liver is used for extraction of vitamin 'A', cartilage

used for preparation of drugs. Fresh meat utilised for human consumption and fins for soup preparation. Hide, fins and liver oil exported.

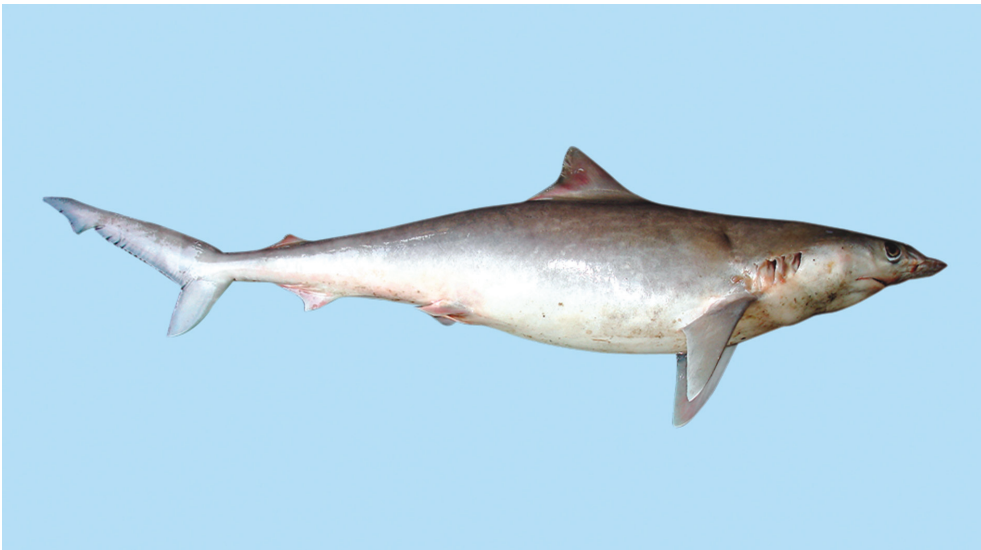
8b. Drug and medicinal value : Liver oil for extraction of vitamin A.
Cartilage used for preparation of drugs.

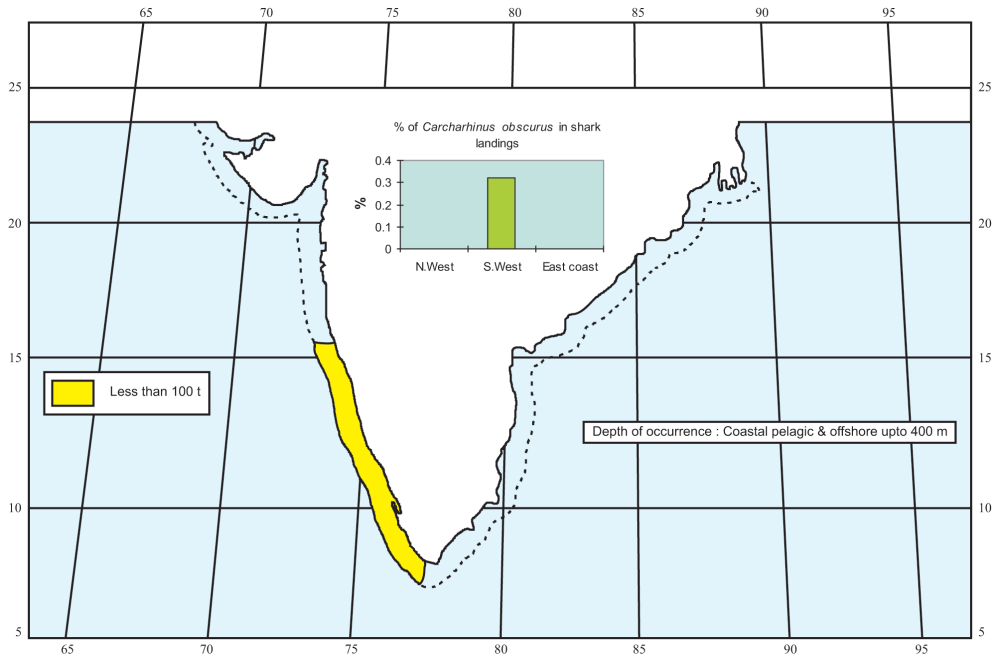
9. Conservation and management:

Whether endangered / banned : No

10. General remarks : The availability of this species is incidental.
Hence there is no record of its landing.

Carcharhinus obscurus





Coastwise abundance (t.) of *Carcharhinus obscurus* along Indian coast

Carcharhinus sealei (Pietschmann, 1916)

1. Species profile :

Name of species : *Carcharhinus sealei*
 English name : Black spot shark

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Carcharhinus*
 Species : *sealei*

2b. Other scientific names in use : *Carcharhinus borneensis* (Seale, 1910),
Carcharhinus dussumieri (Val., 1839),
Carcharhinus menisorrah, (Val., 1839).

- 3. Field identification characters** : Body stout to slender, moderately long rounded snout. Upper labial furrows short and inconspicuous. Fairly large horizontal oval eyes. Interdorsal ridge present or absent. First dorsal fin strongly falcate, second dorsal fin with a conspicuous black tip, but other fins plain. Pectoral fins short and strongly falcate.
- 4. Maximum size** : 95 cm; common size: 68 cm (Raje *et al.*, 2002).
- 5a. Distribution (Global)** : Indo-West Pacific: South Africa, Madagascar, Mozambique, Tanzania, Kenya, Seychelles, Mauritius, Pakistan, Sri Lanka, India, Andaman, Thailand, Veit Nam, China, Sumatra, Java, Australia and New Guinea.
- 5b. Depth of occurrence** : A shallow water species; intertidal to 40 m depth(Compagno, 1984).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : Data not available
- 6c. Method of fishing** : Gillnet and long line.
- 7. Biological characters :**
- Food preferences : Small fishes including sea horses as well as squids and prawns.
- Type of breeding& reproductive capacity : Viviparous with yolk sac placenta; 1 or 2 young / litter. (Raje *et al.*, 2002)
- Gestation period : 9 months (Raje *et al.*, 2002)
- Size at maturity : 65-75 cm (Raje *et al.*, 2002)

8. **Present utilization** : Flesh utilized for human consumption and fins for soup preparation.

9. **Conservation and management:**

Whether endangered / banned : Not banned.

10. **General remarks** : Nil.

Carcharhinus sealei



Carcharhinus sorrah (Valenciennes,1839)

1. **Species profile :**

Name of species : *Carcharhinus sorrah*

Comm on name : Requiem shark

English name : Spot tail shark

Vernacular name :

Marathi : Balda, Pisor

Kannada : Shirat

Malayalam : Sravu

Tamil	: Katta sorrah
Telugu	: Pala - sorrah
Oriya	: Bhundi magar

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Carcharhinus</i>
Species	: <i>sorrah</i>

2b. Other scientific names in use : *Squalus spallanzani* Peron & Le Sueur, 1839; *Carcharias* (Prionodon) bleekeri (Dumeril, 1865).

3. Field identification characters : Body small to fairly large, spindle shaped; moderately long round snout. Second dorsal origin behind anal origin. Second dorsal fin low with very elongated inner margin over twice fin height. Interdorsal ridge present. Upper labial furrow short and inconspicuous. Colour : Second dorsal, pectoral and lower caudal lobe easily identifiable by the combination of strikingly black tips. Pelvic, anal and upper caudal lobe plain. First dorsal with thin black trailing edge near apex. Body medium grey above, white below.

4. Maximum size : 169 cm (Cuddalore) (Devadoss, 1988a)

5a. Distribution (Global) : Indo-West Pacific : Mozambique, South Africa, Madagascar, Mauritius, Seychelles, Red Sea, Aden, Yemen, Pakistan, India, Sri Lanka, Singapore, Malaysia, Thailand, Viet Nam, China, Philippines, Australia, Solomon Islands.

5b. Depth of occurrence : Coastal shallow water shark found around coral reefs at depth from intertidal down to 140m (Fischer & Bianchi, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast	Trawl	Gill net	Hooks& line	Total catch (t)
	Gear				
	North West	99.04	0.96	0	909
	South West	30.5	56	13.56	445.987
	East coast	46.98	41.77	11.25	1429

6b. Regional/seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Bony fishes like mackerel, flying fish, sardines, squids, squilla and prawns.

Role in food chain : Predator

Type of breeding & reproductive capacity : Viviparous, 2-6 young ones/litter; common 6.

Size at maturity : Males -115 cm, females -120 cm.

Size at birth : 40 cm.

Peak breeding season : See Appendix - I.

8a. Present utilization : The meat is of high quality, highly priced, used for human consumption. Fins are valuable for shark fin soup; the hide used as leather. Frozen shark meat, dried fins, cartilage and jaws exported to Southeast Asian countries.

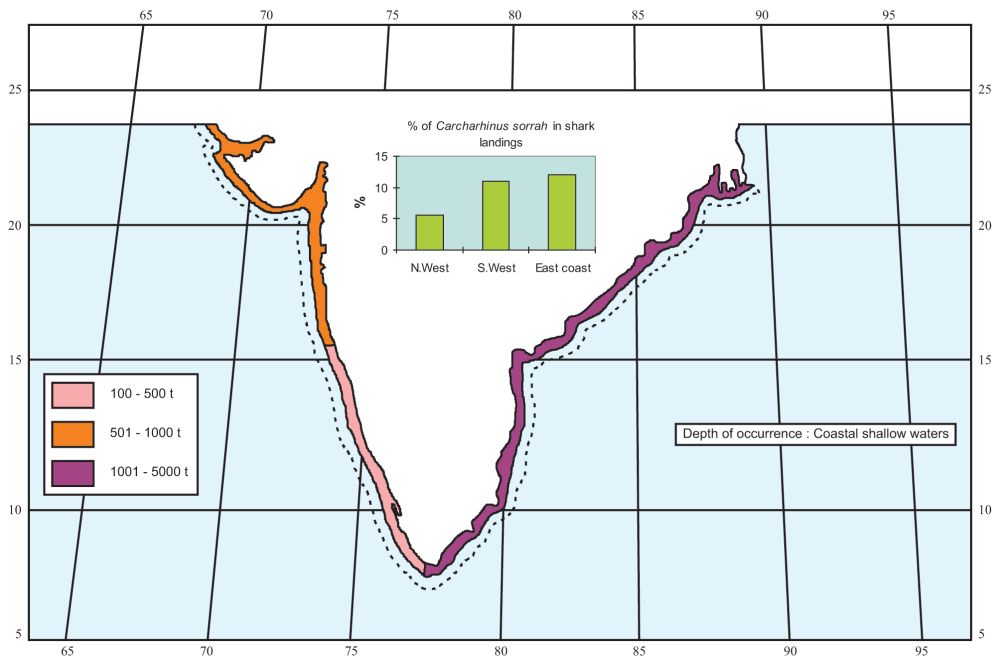
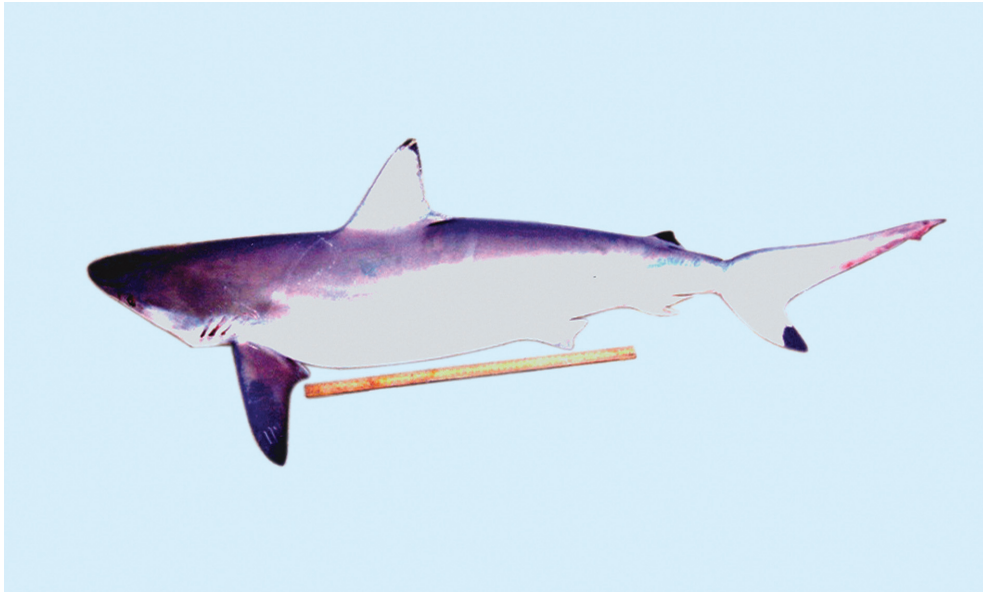
8b. Drug and medicinal value : Liver oil used for extraction of vitamins.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Carcharhinus sorrah



Coastwise abundance (t.) of *Carcharhinus sorrah* along Indian coast

Centrophorus granulosus (Bloch & Schneider, 1801)

1. Species profile :

Name of species	: <i>Centrophorus granulosus</i>
Common name	: Gulper shark
English name	: Gulper shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Squaliformes
Family	: Squalidae
Genus	: <i>Centrophorus</i>
Species	: <i>granulosus</i>

2b. Other scientific names in use : None

3. Field identification characters : Shark with cylindrical and slightly compressed body, no anal fins, dorsal fins with spines. Snout larger than mouth width. Height of second dorsal more than 1/2 that of first dorsal. Rear tip of pectoral fins angular, extended to behind first dorsal spine. Teeth differing in upper (smaller, broad, bladelike, high with erected cusps) and lower jaws (large, compressed bladelike with single oblique cusps). Caudal fin with a strong subterminal notch. Caudal peduncle without dermal keel or precaudal pits. Colour: Grey above; lighter below.

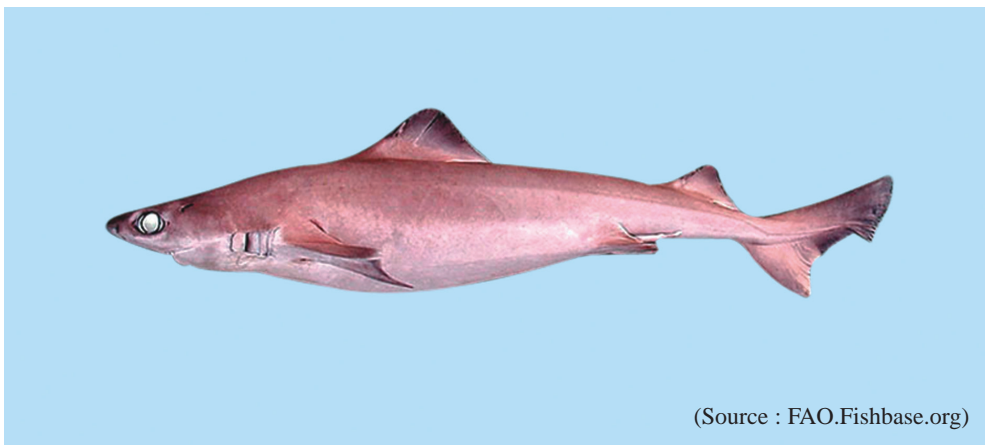
4. Maximum size : 95cm (Grace Mathew *et al.*, 1991)

5a. Distribution (Global) : Western North Atlantic: Northern Gulf of Mexico; Eastern Atlantic: France, Portugal, Mediterranean to Zaire. Western Indian Ocean: Aldabra Island.; Western Pacific: Japan.

5b. Depth of occurrence : Deep water species; 100-120m; commonest below 200m (Fischer & Bianchi, 1984).

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Catch data not available
- 6b. Regional /seasonal abundance** : See Appendix-I
- 7. Biological characters :**
- Food preferences : Feeds on bony fishes such as lantern fishes
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous, one embryo/litter (Grace Mathew, *et al.*, (1991).
- 8a. Present utilization** : Smoked, dried and salted for human consumption.
- 8b. Drug & medicinal value** : Liver- a source of liver oil.
- 9. Conservation and management:**
- Whether endangered / banned : Vulnerable (Listed in IUCN Red List).
- 10. General remarks** : Nil

Centrophorus granulosus



(Source : FAO.Fishbase.org)

Centrophorus moluccensis (Bleeker ,1860)

1. Species profile :

Name of species : *Centrophorus moluccensis*
 Comm on name : Bramble sleeper or dogfish shark
 English name : Smallfin gulper shark, spiny shark

Vernacular name :

Tamil : Sorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Squaliformes
 Family : Squalidae
 Genus : *Centrophorus*
 Species : *moluccensis*

2b. Other scientific names in use : *Centrophorus scalpratus* Mc Culloch, 1915; *Atractophorus armatus* Gilchrist , 1922.

3. Field identification characters : No anal fin, two dorsal fins with large spines. Bladelike unicuspidate teeth in the upper and lower jaws with the lower much larger than the upper. A moderately long snout. The spine origin of second dorsal behind the rear tip of pelvic fins; rear tip of pectoral fins narrowly angular and greatly elongated. Caudal fin with a strong sub terminal notch. Colour: Grey- brown above, lighter below, fins slightly darker.

4. Maximum size : 94.3 cm (Kerala) (Silas *et al.*, 1969).

5a. Distribution (Global) : Western Indian Ocean: South Africa, Southern Mosambique. Western Pacific: Japan, Indonesia (Amban) Australia (Victoria), New Hebrides, New Caledonia.

5b. Depth of occurrence : A deep water bottom dwelling species known from depth upto 800m (Fischer & Bianchi, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/Gear	Trawl	Total catch(t)
	North West	0	0
	South West	100	0.406
	East coast	0	0

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Feeds on bony fishes including lantern fish, carangids, worm eels, as well as other dog fish, sharks, squids, octopus, shrimp and even tunicates, *Auxis thazard* and *Dipterygonotus lanceogrammicus* (Hamsa et al., 1991)

Role in food chain : Tertiary

Type of breeding & Reproductive capacity : Ovoviviparous. 2 pups / litter

Size at birth : 33-37 cm.

8a. Present utilization : Meat, liver oil is of high value.

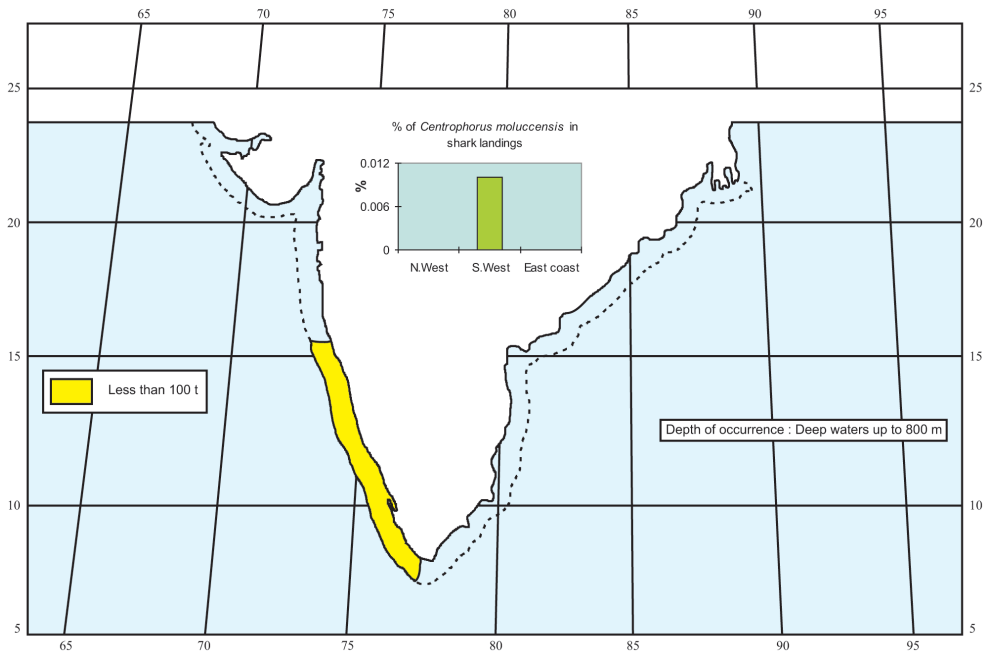
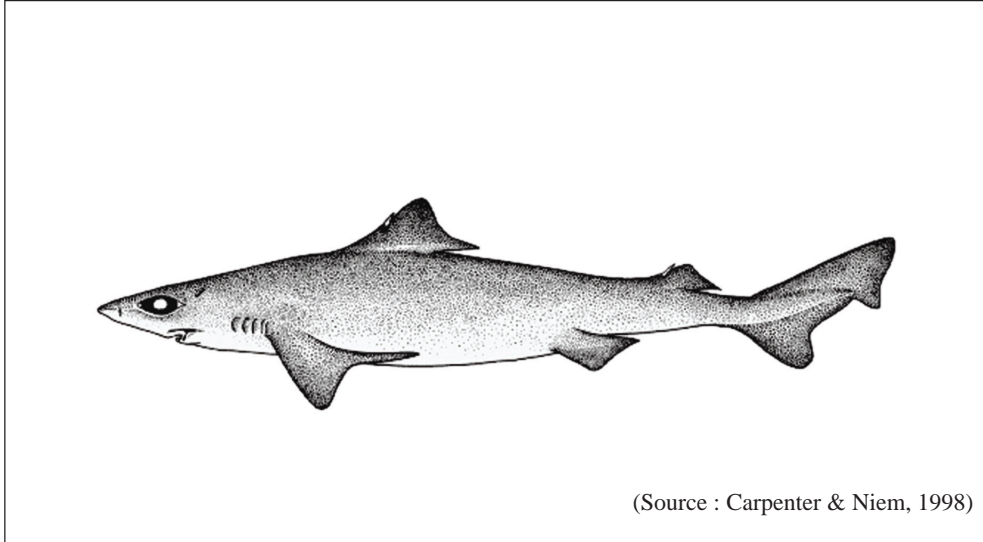
8b. Drug and medicinal value : Vitamin 'A' is extracted from the liver.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Sporadically occurs during July off Gulf of Mannar, South east coast of India.

Centrophorus moluccensis



Coastwise abundance (t.) of *Centrophorus moluccensis* along Indian coast

Centrophorus uyato (Rafinesque, 1809)

1. Species profile :

Name of species : *Centrophorus uyato*
 Common name : Bramble, sleeper or dogfish shark
 English name : Little gulper shark, spiny shark.

Vernacular name :

Tamil : Sorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Squaliformes
 Family : Squalidae
 Genus : *Centrophorus*
 Species : *uyato*

2b. Other scientific names in use : None

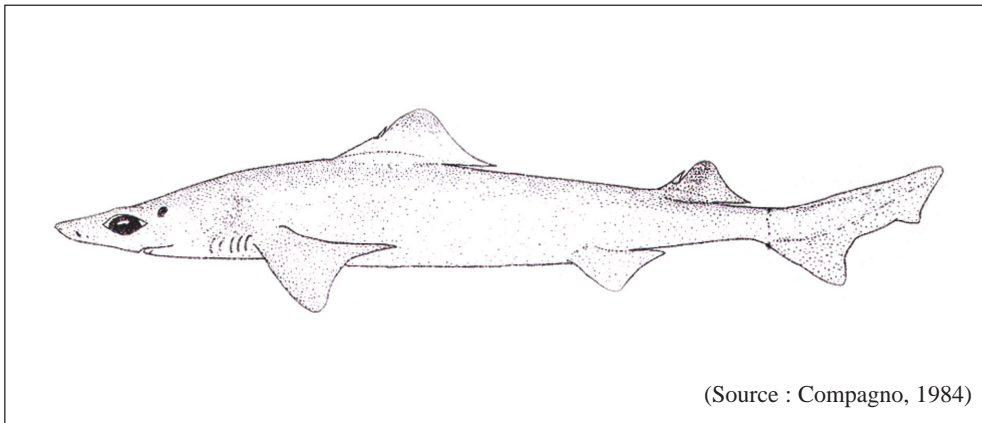
3. Field identification characters : Snout more pointed. No anal fin, two dorsal fin with large spines. First dorsal relatively high and short, second dorsal lower than first. Spine with lateral grooves on anterior edges of both dorsal fins. Rear tips of pectoral fins narrowly angular and strongly extended. Block like very broad sessile, crowned wide spaced cuspidate lateral denticles. Colour : Dark grey -brown above, lighter below. A dark spot above gill slits and eyes. Oral cavity blackish.

4. Maximum size : 93 cm (Appukuttan & Nair, 1988).

5a. Distribution (Global) : Western North Atlantic : Gulf of Mexico, Eastern Atlantic: Western Mediterranean to Northern Namibia. Indian Ocean : Southern Mozambique, India. Western North Pacific : Taiwan Islands.

- 5b. Depth of occurrence** : Deepwater species; 50-1400m (Fischer & Bianchi, 1984).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. Regional /seasonal abundance** : Data not available.
- 7. Biological characters :**
- Food preferences : Feeds on bony fishes and squids.
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous; One embryo / litter
- Size at birth : 40-50 cm
- 8. Present utilization** : Smoked, dried and salted for human consumption. Fish meal, Liver oil.
- 9. Conservation and management:**
Whether endangered / banned : No
- 10. General remarks** : Nil

Centrophorus uyato



Cephaloscyllium silasi (Talwar, 1974)

1. Species profile :

Name of species	: <i>Cephaloscyllium silasi</i>
Common name	: Ground shark
English name	: Catshark, Indian Swellshark

2a. Taxonomical position:

Super order	: <i>Selachoidei</i>
Order	: <i>Carcharhiniformes</i>
Family	: <i>Scyliorhinidae</i>
Genus	: <i>Cephaloscyllium</i>
Species	: <i>silasi</i>

2b. Other scientific names in use : *Scyliorhinus* (Halaelurus) *silasi* (Talwar, 1974)

3. Field identification characters : Mouth large, crescentic with short labial folds only at angle of lower jaw, nostrils nearer to eye than snout tip. Anterior nasal flaps elongate, lobate and overlapping mouth posteriorly. Five pairs of gillslits and spiracle small. Colour : Seven moderately broad dark brown saddles on a light brown background and an obscure darker blotch over the pectoral inner margins.

4. Maximum size : 318mm (Talwar, 1972).

5a. Distribution (Global) : South west coast of India and the East Indies; in deeper waters.

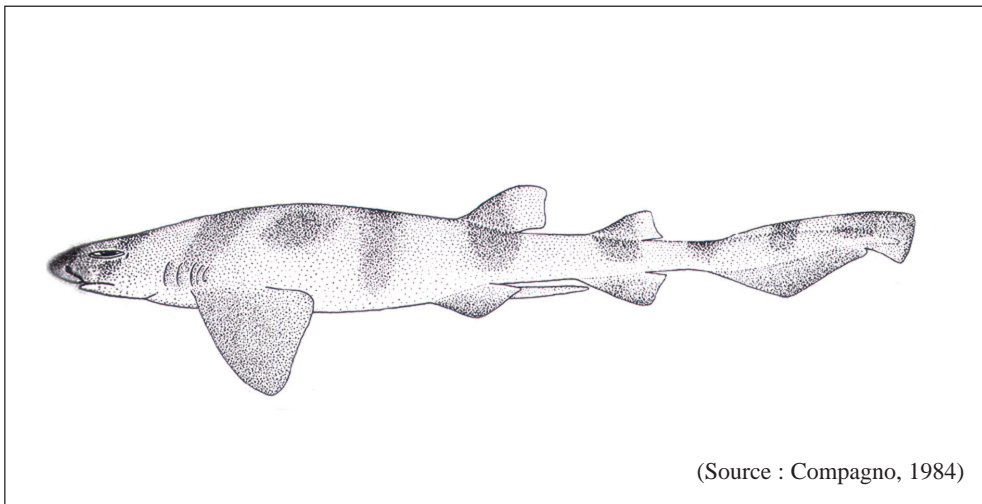
5b. Depth of occurrence : Bottom dwelling -found in waters upto 300m depth.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 : Data not available.

6b. Regional /seasonal abundance : Data not available.

7. **Biological characters** : Biology little studied.
8. **Present utilization** : In India, the species does not form a fishery.
9. **Conservation&management** :
- Whether endangered / banned : No
10. **General remarks** : Nil

Cephaloscyllium silasi



Chaenogaleus macrostoma (Bleeker, 1852)

1. Species profile :

Name of species : *Chaenogaleus macrostoma*
 Common name : Ground shark
 English name : Hook tooth shark

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Hemigaleidae
 Genus : *Chaenogaleus*
 Species : *macrostoma*

2b. Other scientific names in use : *Hemigaleus balfouri* Day, 1878
 (Compagno, 1984).

3. Field identification characters : A small, slender shark with an angular, moderately long snout, large lateral eyes with nictitating eyelids, small spiracles. Long gill slits about twice eye length or more, very long parabolic mouth with prominently protruding teeth. Two spineless dorsal fins, and an anal fin, transverse, crescentic precaudal pits. No prominent markings.

4. Maximum size : 100cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Indo-West pacific: The "Gulf" , Pakistan, India, Sri Lanka, Singapore, Thailand, Viet Nam, China (Including Taiwan Province), Java, Sulawesi.

5b. Depth of occurrence : Inshore species found in depth upto 59m
 (Compagno, 1984)

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 : Data not available.

6b. Regional /seasonal abundance : Catch rare

7. Biological characters :

Food preferences : Feeds on small fishes, cephalopods and crustaceans.

Type of breeding & reproductive capacity : Viviparous with a yolk sac placenta; 1 to 4 youngones / litter

Size at birth : 20cm (Fischer & Bianchi, 1984).

Peak breeding season : See Appendix-I

Other remarks : Shell membranes enclosing the embryo degenerate most probably to supply additional nutrient to the embryo.

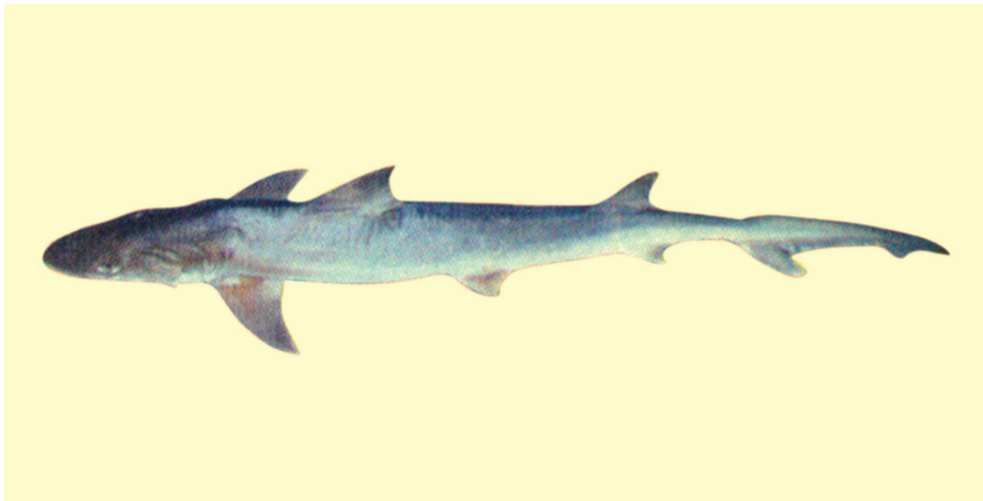
8. Present utilization : Meat utilised in the fresh condition.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Chaenogaleus macrostoma



Chiloscyllium griseum (Muller & Henle, 1838)

1. Species profile :

Name of species : *Chiloscyllium griseum*
 Comm on name : Grey bamboo shark
 English name : Black banded catshark

Vernacular name :

Malayalam : Ettee, Udumban - sravu
 Tamil : Kurangu - sorrah
 Telugu : Bakhi sorrah
 Oriya : Bakhi sorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Orectolobiformes
 Family : Hemiscyllidae
 Genus : *Chiloscyllium*
 Species : *griseum*

2b. Other scientific names in use : None

3. Field identification characters : A small shark, body moderately stout. Snout broadly rounded, nostrils with short barbels. Mouth small, transverse and well in front of eyes. No lateral ridges on trunk. Dorsal fin smaller than pelvics. Dorsals without projecting free rear tips. Caudal fin strongly asymmetrical with a pronounced caudal subterminal notch but without a ventral lobe. Colour : No colour pattern in adults but transverse band in young.

4. Maximum size : East coast- 80 cm , Mumbai - 74 cm (Raje & Joshi, 2003).

5a. Distribution (Global) : Indo-west Pacific : The Gulf between Iran and Arabian Peninsula, Pakistan, India, Malaysia, Thailand, Indonesia, China, Japan, Philippines, Papua New Guinea.

5b. Depth of occurrence : A common inshore shark found in 5 to 80 m depth range.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	BSGN*	Total catch(t)
North West	0	0
South West	0	0
East coast	100	6

* Bottom Set Gill Net

6b. Regional/seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : This species feeds on invertebrates, fishes, and crustaceans (Devadoss, 1987).

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Oviparous .Breeds during January-March off Mumbai along the North west coast of India (Raje & Joshi, 2003).

Size at maturity : Male : 520 mm; Female : 530 mm.

Peak breeding season : See Appendix -1

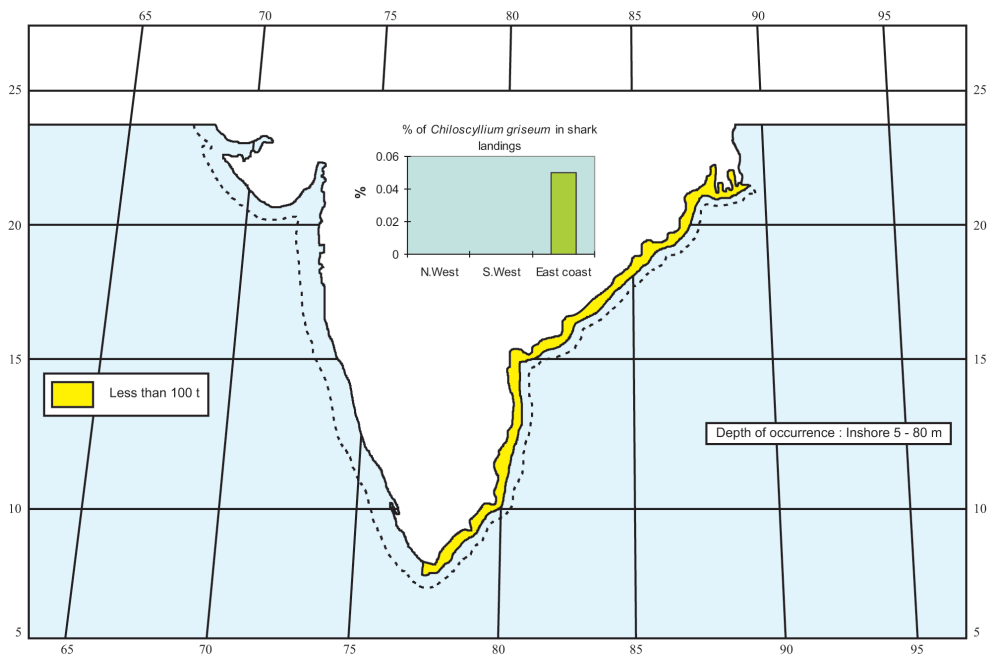
Other remarks : Deposits eggs in oval egg cases on the sea bottom; hatching takes place in seawater.

8. Present utilization : Meat utilized for human food.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Chiloscyllium griseumCoastwise abundance (t.) of *Chiloscyllium griseum* along Indian coast

Chiloscyllium indicum (Gmelin,1789)

1. Species profile :

Name of species	: <i>Chiloscyllium indicum</i>
Comm on name	: Slender bamboo shark
English name	: Indian catshark
Vernacular name :	
Marathi	: Baravta
Malayalam	: Etti, Udumban - sravu
Tamil	: Corungun - sorrah, Korangan - sorrah
Telugu	: Bokee - sorrah, Ra - sorrah
Oriya	: Bakhi - sorrah

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Orectolobiformes
Family	: Hemiscyllidae
Genus	: <i>Chiloscyllium</i>
Species	: <i>indicum</i>

2b. Other scientific names in use : *Chiloscyllium colax* (Meuschen, 1781)

3. Field identification characters : A small shark, body and tail very slender, with low lateral ridges. Snout narrowly rounded with short barbels. Mouth small, transverse and well in front of eyes. Two dorsal fins about as large as pelvic fins. Anal fin long, low and broadly rounded, with its origin far behind free rear tip of second dorsal fin. Caudal fin strongly asymmetrical. Colour : Body with numerous small dark spots and bars.

4. Maximum size : 65 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Indo-west Pacific : Arabian Sea to India, Sri Lanka, Singapore, Thailand, Indonesia, Viet Nam, Taiwan Island, Philippines, Solomon Islands.

Indo-West Pacific : South Africa, Madagascar, Gulf of Aden, Pakistan, Sri Lanka, Indonesia and Australia.

5b. Depth of occurrence : Inshore bottom shark found in sandy and muddy bottom of coastal waters.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	BSGN*	Total catch(t)
North West	0	0	0
South West	100	0	13.79
East coast	95.7	4.31	1332

* Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Feeds on small fishes and bottom dwelling invertebrates.

Role in food chain : Tertiary

Type of breeding : Oviparous

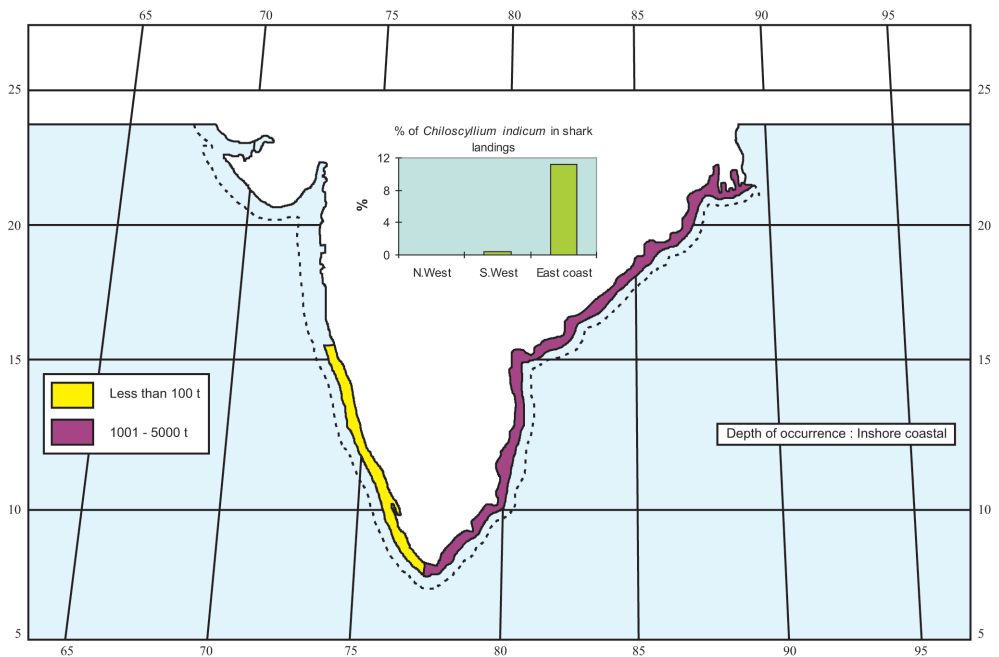
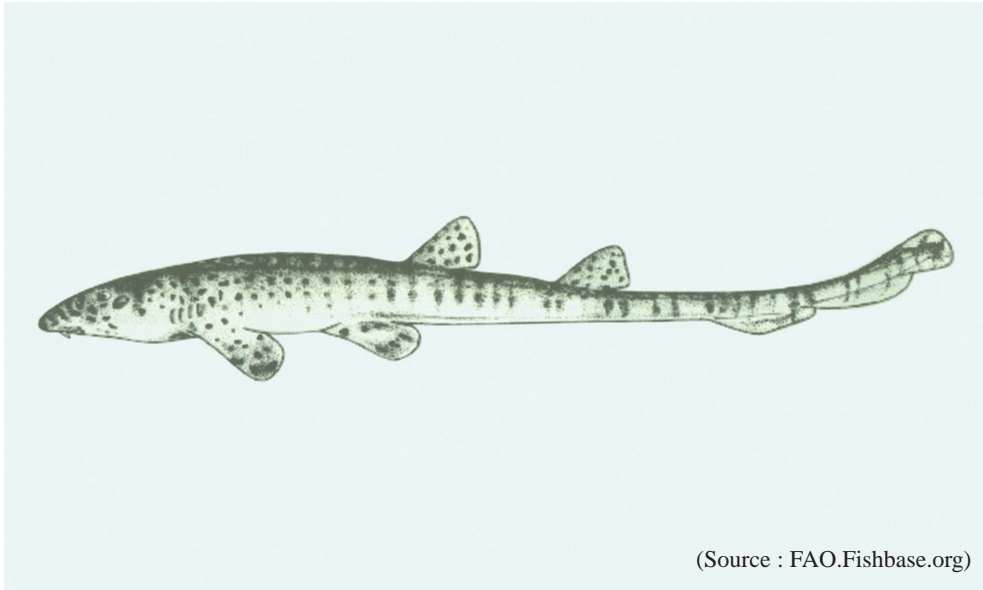
8. Present utilization : Consumed in fresh condition.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Of minor fishery importance in India.

Chiloscyllium indicum



Coastwise abundance (t.) of *Chiloscyllium indicum* along Indian coast

Echinorhinus brucus (Bonnaterre, 1788)

1. Species profile :

Name of species	: <i>Echinorhinus brucus</i>
Comm on name	: Bramble shark
English name	: Bramble shark
Vernacular name :	
Malayalam	: Mullan Sravu

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Squaliformes
Family	: Echinorhinidae
Genus	: <i>Echinorhinus</i>
Species	: <i>brucus</i>

2b. Other scientific names in use : None

3. Field identification characters : A medium sized, heavy bodied shark; short snout, 2 small spineless dorsal fins close together towards posterior part of the body and first dorsal originating behind pelvic fin origin; thorn like denticles on body and fins; anal fin absent; pelvic fin much larger than second dorsal; caudal fin without a subterminal notch. Colour : Dark grey or purplish grey to dull brown or olive above.

4. Maximum size : 187.5 cm (Appukuttan & Nair, 1988), 270 cm (Anon, 1998). 310cm (Compagno, 1984).

5a. Distribution (Global) : Western Atlantic : Verginia, Massachusetts, USA, Argentina. Eastern Atlantic : Scottish, Irish, North Sea to Mediterranean, Morocco, Canary Island, Senegal, Ivory coast, South Africa, Namibia to Cape of Good Hope.

Western Indian Ocean : South Africa, Southern Mozambique, India. Western Pacific : Japan, Australia.

5b. Depth of occurrence : A deep water shark found in continental shelves and slopes; 10-900m (Compagno, 1984)

6a. Resource characters: Average	Coast/ Gear	Trawl	Gill net	Total catch(t)
annual landing (Gearwise%) in India during 2003 & 2004	North West	0	0	0
	South West	30.43	69.56	0.415
	East coast	0	0	0

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Deep sea fishes, catfishes, lizard fishes, smaller sharks, and crabs (Silas and Selvaraj, 1973)

Role in food chain : Tertiary

Type of breeding & reproductive capacity: : Ovoviviparous. 15 to 26 embryos/litter., 52 embryos (Joel & Ebenezer, 1991)

Size at maturity : Male-150 cm, female-213 cm.

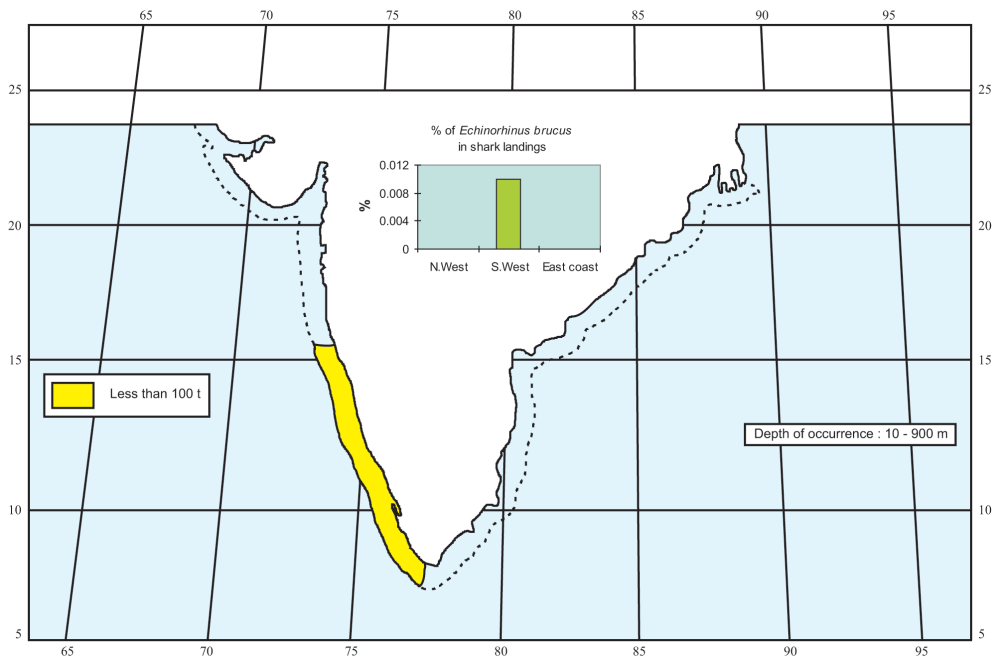
Peak breeding season : See Appendix-I

8. Present utilization : Utilised for fish meal.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Sporadic landing of this species is reported from Indian coast, but there is almost no information regarding its landing and biology. Sporadically landed off Tutthoor, South east coast of India.

Echinorhinus brucusCoastwise abundance (t.) of *Echinorhinus brucus* along Indian coast

Eridachnis radcliffei (Smith 1913)

1. Species profile :

Name of species : *Eridachnis radcliffei*
 Common name : Ground shark
 English name : Pigmy ribbontail catshark

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Proscyllidae
 Genus : *Eridacnis*
 Species : *radcliffei*

2b. Other scientific names in use : *Proscyllium alcocki* (Misra, 1950)

3. Field identification characters : Smallest living shark, not exceeding 24 cm with anal fin and two equal sized spineless dorsal fins. First dorsal fin over abdomen and slightly closer to pelvic fins than pectorals. Nictitating eyelids and a triangular mouth. Labial furrows rudimentary or absent. Colour : Brown with prominent dark marking on tail and on dorsal fin.

4. Maximum size : 218mm (Mandapam) (Nair & Appukuttan, 1974)

5a. Distribution (Global) : Indo - West Pacific: Tanzania, the Gulf of Aden, India,(Gulf of Mannar & Bay of Bengal), the Andaman Islands, Viet Nam, and the Philippines.

5b. Depth of occurrence : 71 to 766m (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 : No commercial landings.

6b. Regional /seasonal abundance : See Appendix -I

7. Biological characters :

Food preferences : Deep sea fishes(*Myctophum* sp.), Crustaceans (*Solenocera hextii*) and squids (Nair & Appukuttan, 1973)

Type of breeding& reproductive capacity : Ovoviviparous, embryo without placenta. 1 or 2 pups/litter Nair& Appukuttan,1974)

Peak breeding season : See Appendix -I

8a. Present utilization : Used as fish meal.

9. Conservation and management:

Whether endangered / banned : Not in IUCN Red List.

10. General remarks : Nil.

Eridachnis radcliffei



Eusphyra blochii (Cuvier, 1817)

1. Species profile :

Name of species : *Eusphyra blochii*
 Comm on name : Hammer head shark
 English name : Wing head shark (Arrow headed hammer head)

Vernacular name :

Gujarati : Kannar, Julio
 Marathi : Zori, Kanar
 Kannada : Khan mushi, Kebichatte
 Malayalam : Kannankodi
 Tamil : Komban - sorrah
 Telugu : Sappu - sorrah

2a. Taxonomical position:

Super order : Selachioidei
 Order : Carcharhiniformes
 Family : Sphyrnidae
 Genus : *Eusphyra*
 Species : *blochii*

2b. Other scientific names in use : *Sphyrna blochii* (Cuvier, 1817) (Compagno, 1984).

3. Field identification characters : An unmistakable shark with its immense wing shaped head nearly quite half the body length, lateral blades of the head very narrow and wing like. Nostrils are greatly elongated and wider than mouth. Body elongated and compressed; first dorsal fin very high, strongly falcate. Colour : Grey or grey-brown above, paler below.

4. Maximum size : 163 cm at Porto Novo (Devadoss, 1977), common size: 104cm (Raje *et al.*, 2002).

5a. Distribution (Global) : Indo - West Pacific : The " Gulf " between the Arabian Peninsula and Iran to Pakistan,

India, Sri Lanka, Bangladesh, Burma, Malaysia, Thailand, Viet Nam, Indonesia, Australia.

5b. Depth of occurrence : A shallow water species (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Gill net	Hooks & line	Total catch(t)
North West	0	0	0
South West	0	0	0
East coast	89.3	10.7	49

6b. Regional / seasonal abundance : See Appendix -I

7. Biological characters :

Food preferences : Small fishes, crustaceans and cephalopods.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Viviparous with yolksac placenta; 6-14 embryos/litter (common) at Mumbai; upto 20 at Porto Novo (Devadoss, 1988a).

Gestation period : 10-11 months .

Size at birth : 32 to 45 cm (Compagno, 1984).

Peak breeding season : See Appendix -I

Other remarks : Reproductive cycle is annual.

8a. Present utilization : Meat used for human consumption, offal for fish meal.

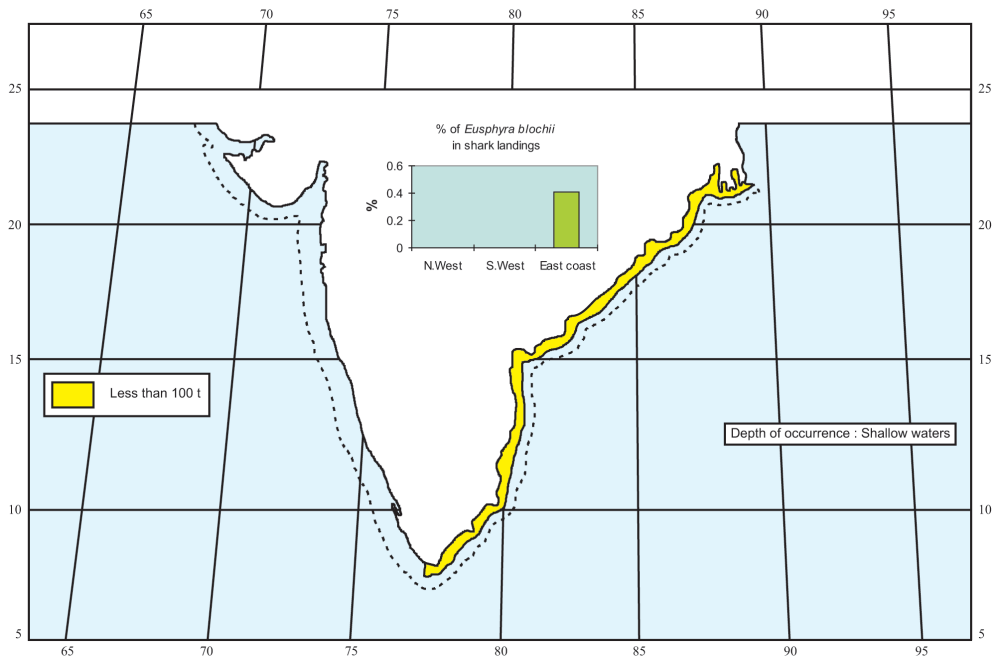
8b. Drug and medicinal value : Liver is a source of high - potency vitamins.

9. Conservation and management:

Whether endangered / banned : No.

10. General remarks : Nil.

Eusphyra blochii



Coastwise abundance (t.) of *Eusphyra blochii* along Indian coast

Galeocerdo cuvier (Peron & Le Sueur, 1822)

1. Species profile :

Name of species : *Galeocerdo Cuvier*
 Comm on name : Ground shark
 English name : Tiger Shark

Vernacular name :

Gujarati : Bhoovar
 Marathi : Waghbeer
 Kannada : Pullia
 Malayalam : Kalvari, Kalla - Sravu
 Tamil : Vari Sorrah
 Telugu : Kethalam - Sorrah, Vulluvan - Sorrah
 Oriya : Vorimiyaru, Valiyasurav
 Lakshadweep Islands : Puli Sorrah

2a. Taxonomical position:

Super order : Selachioidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Galeocerdo*
 Species : *cuvier*

2b. Other scientific names in use : *Galeocerdo arcticus* (Faber, 1829);
Galeocerdo rayneri Mc Donald & Barron, 1868.

3. Field identification characters : A large fusiform shark. Snout very short and bluntly rounded. Spiracles small slit-like. Upper labial folds long reaching the eyes. Teeth coarsely serrated, their outer edges deeply notched and the tips directed obliquely outward. Second dorsal much smaller than first. Keel on each side of caudal peduncle. Upper caudal lobe with long tapering tip. Colour : Vertical tiger-stripe marking on side and fins, but fading with growth.

4. Maximum size : 740 cm; (Raje and Joshi, 2003); 378cm (Kasim & Khan, 1984); 399cm (Setna & Sarangdhar, 1949); common size: 250cm.

5a. Distribution (Global) : Circumglobal in temperate and tropical seas. Western Atlantic : Massachusetts, USA, Mexico, Caribbean Islands. Eastern North Atlantic : UK, Morocco, Canary Island, Senegal, Gambia, Guinea and Angola. Indo-West Pacific : South Africa, Red Sea, Pakistan, India, Sri Lanka, Thailand, Viet Nam, Southern China, Indonesia, Japan, Philippines, Australia and New Zealand. Western Central Pacific: Palau, Soloman, Marshall, Hawaiian Islands. Eastern Pacific : Southern California, Peru, Cocos, Galapagos.

5b. Depth of occurrence : Surface and intertidal to 140m depth (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/ Gear	Trawl	Gill net	Hooks & line	Total catch(t)
	North West	100	0	0	9
	South West	8.5	50	41.5	11.12
	East coast	0	0	0	0

6b. Regional /seasonal abundance : See Appendix-I.

7. Biological characters :

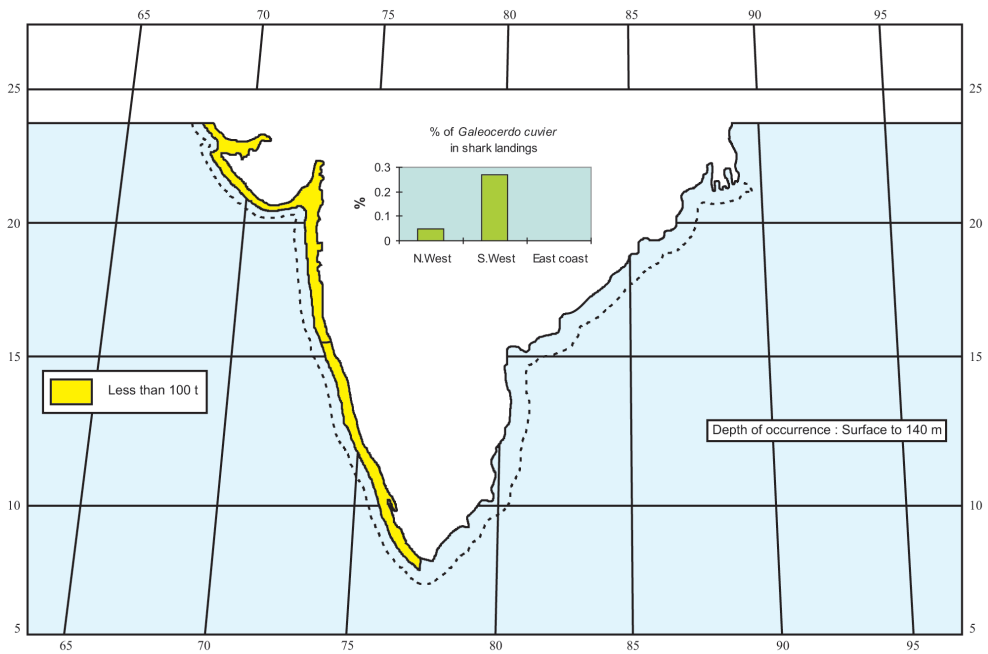
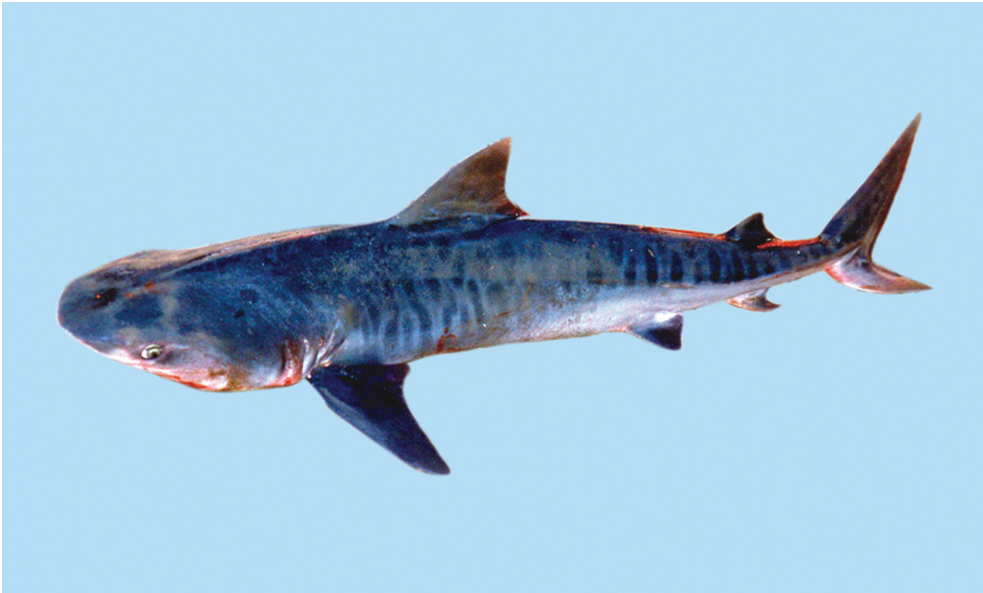
Food preferences : Eels, cat fishes, parrot fishes, flatfishes, flying fishes, porcupine fishes, puffers, skates, marine reptiles, turtles, sea birds, sea lion, seals, dolphins, terrestrial birds and mammals (Devadoss *et al.*, 1989).

Role in food chain : Predator

Type of breeding & reproductive capacity: : Ovoviviparous; 26 to 44 embryos / litter (Setna and Sarangdhar, 1949); 10-82 (MRC, 2003).

- Size at maturity : Male-290 cm, female-290 cm (Raje *et al.*, 2002).
Size of pregnant female: 360 cm.
- Size at birth : 60-104 cm (Fischer & Bianchi, 1984).
- Peak breeding season : See Appendix -I
- 8a. Present utilization** : Hide for leather, cartilage for medicine, teeth for ornaments, fin for soup, liver oil for vitamin.
- 8b. Drug and medicinal value** : Liver contains high vitamin 'A' potency.
- 9. Conservation and management :**
- Whether endangered / banned : No
- 10. General remarks** : Tiger sharks are caught throughout India, but surprisingly there is no data on fishery and reproductive biology to assess the impact. Most dangerous shark.

Galeocerdo cuvier



Coastwise abundance (t.) of *Galeocerdo cuvier* along Indian coast

Halaelurus hispidus (Alcock,1891)

1. Species profile :

Name of species : *Halaelurus hispidus*
 Common name : Ground shark
 English name : Bristly catshark

Vernacular name :

Tamil : Sorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Scyliorhinidae
 Genus : *Halaelurus*
 Species : *hispidus*

2b. Other scientific names in use : None

3. Field identification characters : Snout tip not upturned and knoblike; anterior nasal flaps subtriangular, labial furrows rather short, mouth moderately large. First dorsal origin over last third of pelvic bases, second dorsal in front of anal midbase; abdomen moderately long in adults. Colour : Pale brown or whitish, sometimes with obscure grey cross bands, white spots or dusky spots.

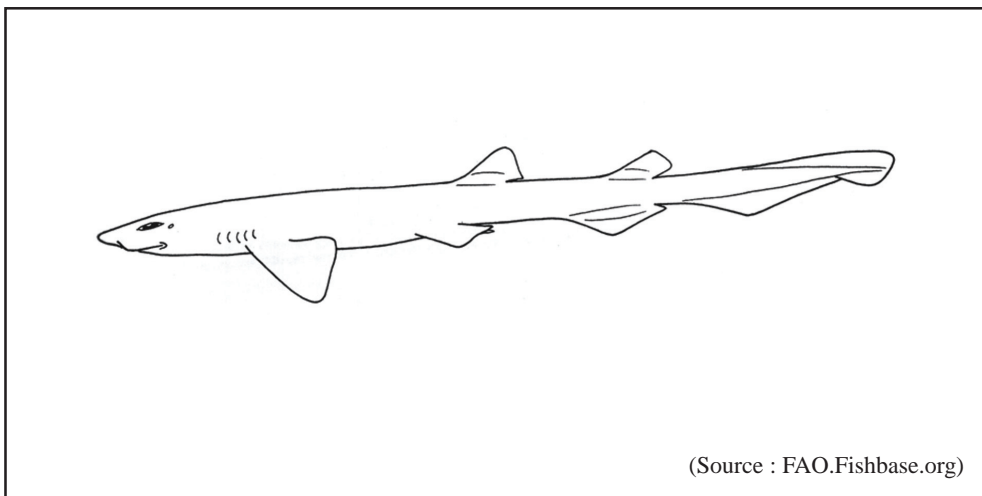
4. Maximum size : 29 cm(Nair&Lal Mohan, 1973; Appukuttan & Nair, 1988)

5a. Distribution (Global) : Indian Ocean , Southern India, Andaman Islands

5b. Depth of occurrence : A common deep water shark found at depths of 293m to 766m (Compagno, 1984).

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional / Seasonal abundance : Data not available
- 7. Biological characters :**
- Food preferences : Fishes, squids & crustaceans (Nair & Appukuttan, 1973)
- Role in food chain : Tertiary
- Peak breeding season : Data not available
- 8. Present utilization** : Not utilised at present.
9. Conservation and management :
- Whether endangered / banned : No
- 10. General remarks** : Nil

Halaelurus hispidus



Hemipristis elongatus (Klunzinger, 1871)

1. Species profile :

Name of species : *Hemipristis elongatus*
 Common name : Ground shark
 English name : Snaggle tooth shark

Vernacular name :

Malayalam : Puzhu sravu
 Tamil : Vizha

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Hemigaleidae
 Genus : *Hemipristis*
 Species : *elongatus*

2b. Other scientific names in use : *Carcharhinus ellioti* (Day. 1878)

3. Field identification characters : A moderately large fairly slender shark with broadly rounded long snout. Lateral eyes with nictitating eyelids. Long gill slits. Fins strongly falcate. Lower teeth protrude prominently when mouth is closed. Posterior margin of anal, second dorsal, pectoral and pelvic fins deeply concave. Second dorsal origin ahead of anal origin, anal fin smaller than second dorsal. Crescentic caudal pits. Colour : Grey, with no prominent markings.

4. Maximum size : 240 cm (Setna & Sarangdhar, 1949).

5a. Distribution (Global) : Indo - West Pacific : South Africa, Madagascar, Mozambique, Tanzania, Aden, Red Sea, Pakistan, India, Thailand, Viet Nam, China, Australia and Philippines.

5b. Depth of occurrence : A coastal shark found in depth of 1 to 30 m (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/Gear	Trawl	Total catch(t)
:	North West	0	0
	South West	100	2.37
	East coast	0	0

6b. Regional / seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Anchovies, cat fish, Bombay duck, croakers, carcharhinid shark and butter fly rays (Devadoss and Chandrasekhar, 1991).

Role in food chain : Secondary

Type of breeding & reproductive capacity : Viviparous with yolk-sac placenta; 5-6 embryos/ litter (Devadoss & Chandrasekhar, 1991).

Size at birth : 45cm (Fischer & Bianchi, 1984).

8a. Present utilization : In India, it is considered as one of the best shark food. Used in fresh and dried condition. Fish meal, fins used for soup, in shark fin trade and offal for fish meal.

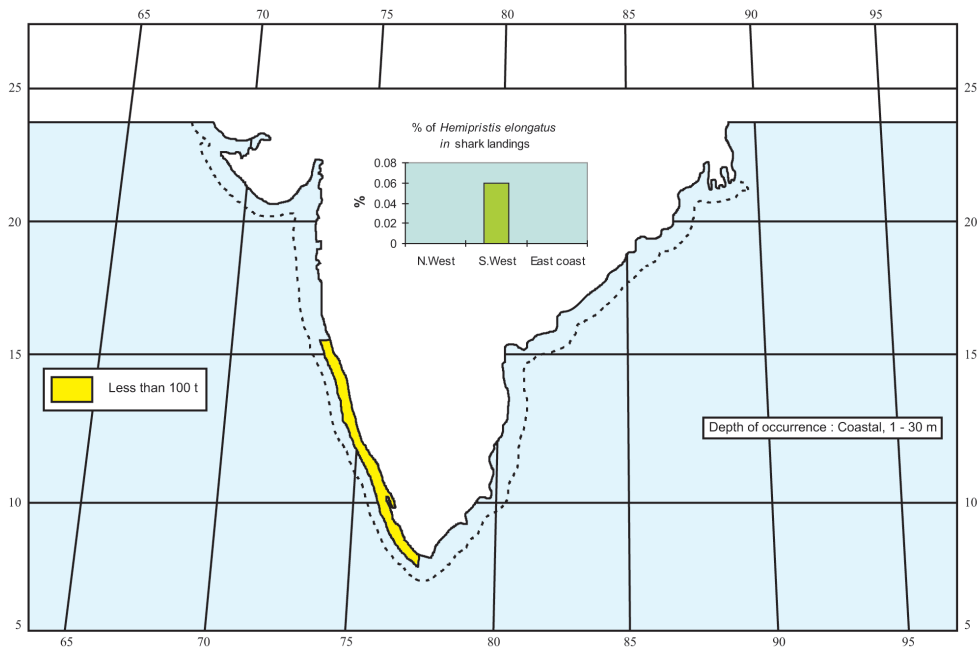
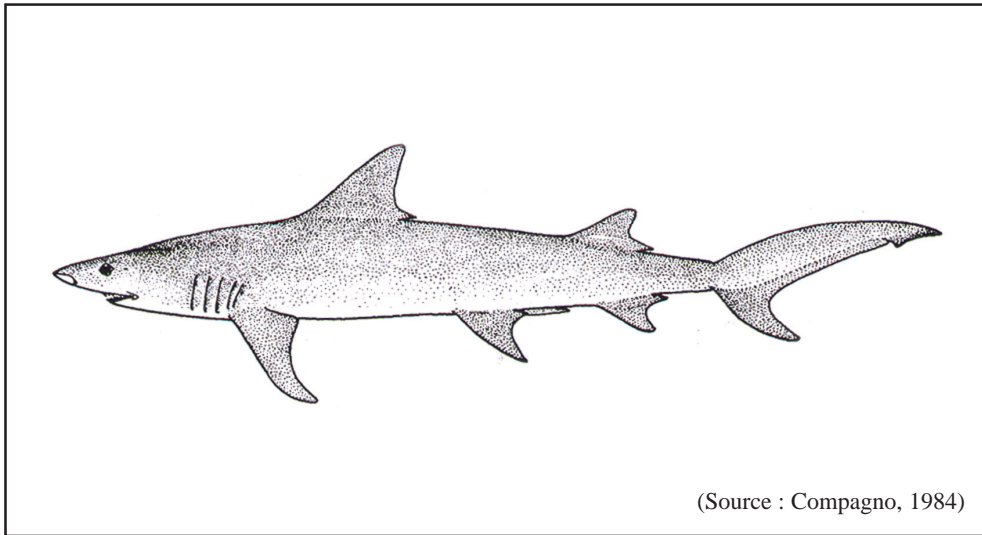
8b. Drug and medicinal value : Liver processed for vitamin.

9. Conservation and management :

Whether endangered / banned : No

10. General remarks : Except for its sporadic occurrence at Calicut off South west coast of India, there is no sufficient information on its fishery.

Hemipristis elongatus



Coastwise abundance (t.) of *Hemipristis elongatus* along Indian coast

Iago omanensis (Norman, 1939)

1. Species profile :

Name of species : *Iago omanensis*
Comm on name : Houndshark
English name : Big eye houndshark

Vernacular name :

Tamil : Sorrah

2a. Taxonomical position:

Super order : Selachoidei
Order : Carcharhiniformes
Family : Triakidae
Genus : *Iago*
Species : *omanensis*

2b. Other scientific names in use : *Galeorhinus omanensis* (Norman, 1939),
Eugaleus omanensis Norman, 1939.

3. Field identification characters : A large hound shark with a moderately long snout. Interdorsal ridge present. Lateral eyes with the subocular ridges obsolete. Narrow interorbital space. Hump backed trunk. First dorsal small and origin far anterior over the pectoral fin base. Second dorsal nearly or quite as large as first dorsal. Caudal peduncle without keels or precaudal pits. Ventral caudal lobe hardly developed. Colour : Brownish or greyish above and lighter below with no conspicuous markings. Margin of dorsal fins often darker.

4. Maximum size : 745 mm (Devadoss & Batcha, 1997).

5a. Distribution (Global) : Red Sea and Gulf of Oman to Pakistan and India.

5b. Depth of occurrence : A deep water shark distributed from 110m or less depth to 1000m depth, but probably entering shallow waters (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/ Gear	Trawl	Gill net	Total catch(t)
	North West	100	0	0.005
	South West	0	0	0
	East coast	92.84	7.16	251

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Bony fishes particularly lantern fishes and also deep water squids, crustaceans, bivalves and gastropods (Nair and Appukuttan, 1973)

Role in food chain : Tertiary

Type of breeding & Reproductive capacity : Viviparous with a yolksac placenta; 2 to 8 youngones / litter (Devadoss & Batcha, 1997)

Size at birth : 17cm (Compagno, 1984)

Peak breeding season : See Appendix-I. (Pregnant females were noticed during March off Mumbai, North west coast of India).

Other remarks : Females are larger in size than males (Compagno, 1984).

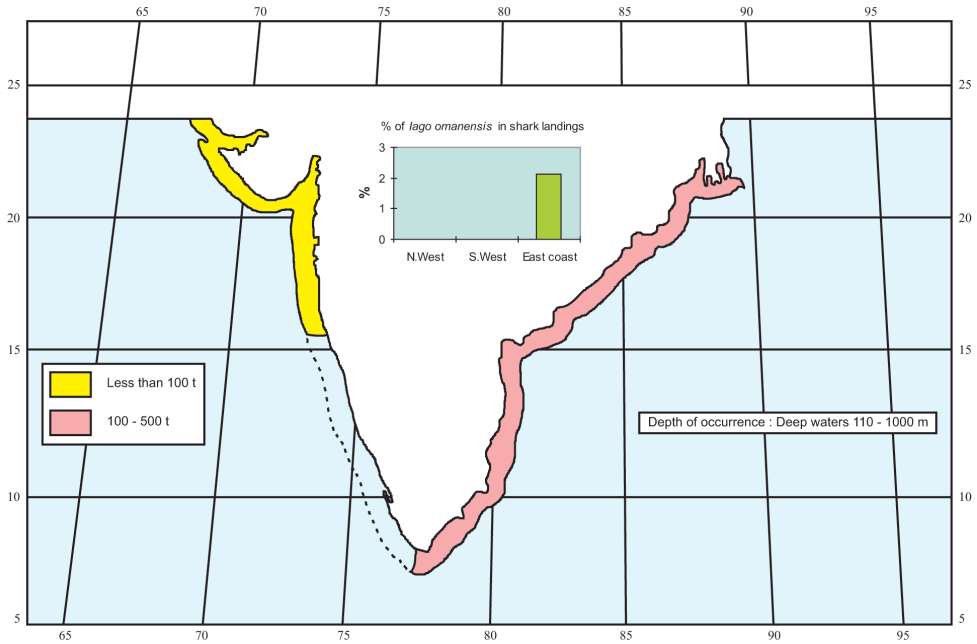
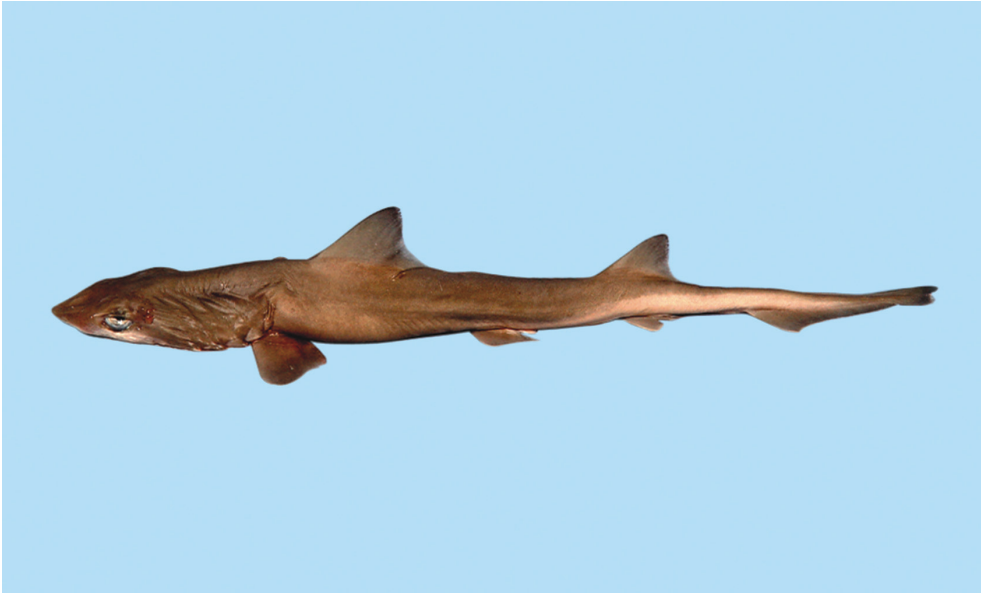
8. Present utilization : Meat utilised fresh for human consumption.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Iago omanensis



Coastwise abundance (t.) of *Iago omanensis* along Indian coast

Isurus oxyrinchus (Rafinesque, 1810)

1. Species profile :

Name of species : *Isurus oxyrinchus*
 Common name : Shortfin mako shark

Vernacular name :

Tamil : Gaumu - sorrah
 Lakshadweep Islands : Vorimasmiyaru

2a. Taxonomical position:

Super order : Selachoidei
 Order : Lamniformes
 Family : Lamnidae
 Genus : *Isurus*
 Species : *oxyrinchus*

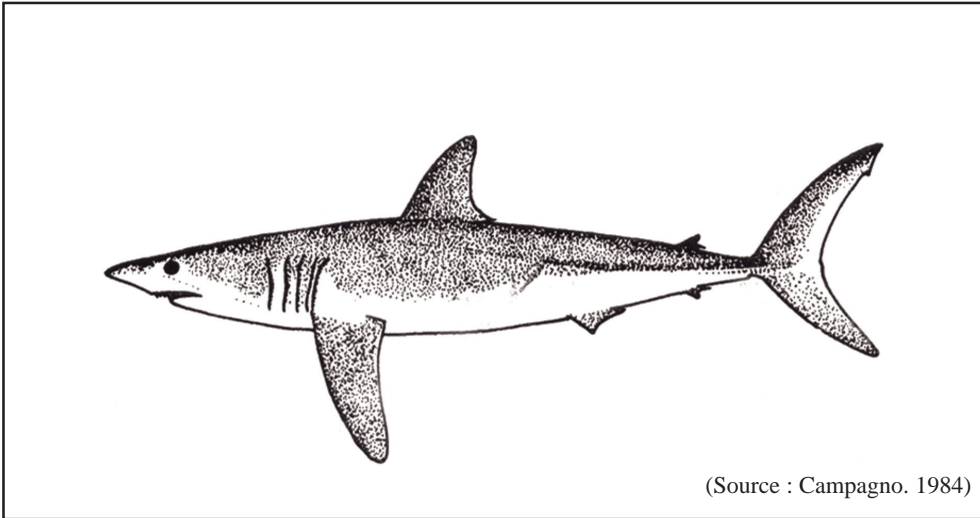
2b. Other scientific names in use : *Isurus glaucus* (Muller & Henle, 1839).

3. Field identification characters : Long spindle shaped body. Snout long acutely conical. First dorsal fin large; second dorsal and anal fins minute. First dorsal fin origin usually behind pectoral free rear tip. Second dorsal fin origin well in front of the anal fin origin. Large blade like teeth without cusplets or serrations. Strong lateral keel. Caudal fin lunate. Colour : Dark blue above, ventral surface of body white.

4. Maximum size : 400 cm, Common - 270 cm (Raje et al, 2002).

5a. Distribution (Global) : Coastal and Oceanic, Temperate and tropical. Western Atlantic : Gulf of Maine to Southern Brazil. Eastern Atlantic : Norway, British Isles, Ghana, South Africa. Indo-West Pacific : South Africa, Red Sea to Pakistan, India, Indonesia, Korea, Japan,

- USSR, Australia, New Zealand, Fiji. Central Pacific : From south of Aleutian Island to Society Island. Eastern Pacific :Southern California, Washington, Chile.
- 5b. Depth of occurrence** : Coastal pelagic. Usually in surface waters down to 152 m (MRC, 2003)
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. Regional /seasonal abundance** : Data not available.
- 7. Biological characters :**
- Food preferences : Fishes, squids & crustaceans.
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous; 12-20 embryos/litter (Raje *et al.*, 2002).
- Gestation period : 12 months.
- Size at birth : 60-70 cm (Fischer & Bianchi, 1984).
- 8. Present utilization** : Fins are widely marketed. Meat is utilised fresh and dried salted for human consumption. Hide used for leather, jaws and teeth used for decoration and ornaments.
- 9. Conservation and management**
- Whether endangered / banned : No.
- 10. General remarks** : Its biology and fisheries are virtually unknown from Indian waters.

Isurus oxyrinchus

(Source : Campagno. 1984)

Lamiopsis temminckii (Muller&Henle, 1839)**1. Species profile :**

Name of species : *Lamiopsis temminckii*
 English name : Broadfin shark

Vernacular name :

Marathi : Kirwa, Mushi
 Kannada : Neduntu
 Malayalam : Thekkan - sravu
 Tamil : Korasura
 Telugu : Noeti sura

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Lamiopsis*
 Species : *temminckii*

2b. Other scientific names in use : *Carcharhinus temminckii* (Muller&Henle, 1839); *Eulamia temminckii* (Muller &Henle, 1839)

3. Field identification characters : A small shark with moderately long snout equal to mouth width. Small round eyes with nictitating eyelids. Second dorsal fin nearly as large as the first; longitudinal upper precaudal pit. Pectoral fins broad and triangular. Anal fin with posterior margin slightly concave. Colour : Grey or yellow-grey above, lighter below, no conspicuous markings.

4. Maximum size : 168 cm (Setna & Sarangdhar, 1949)

5a. Distribution (Global) : Indian Ocean & Western Pacific, off Pakistan, India, Burma, Indonesia, Sarawak and China.

5b. Depth of occurrence : An inshore shark commonly found only along the west coast of India(In the Bombay region) (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	Hooks & line	Total catch(t)
North West	94.8	3.15	2.4	513
South West	0	0	0	0
East coast	0	0	0	0

6b. Regional / seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Small fishes and invertebrates.

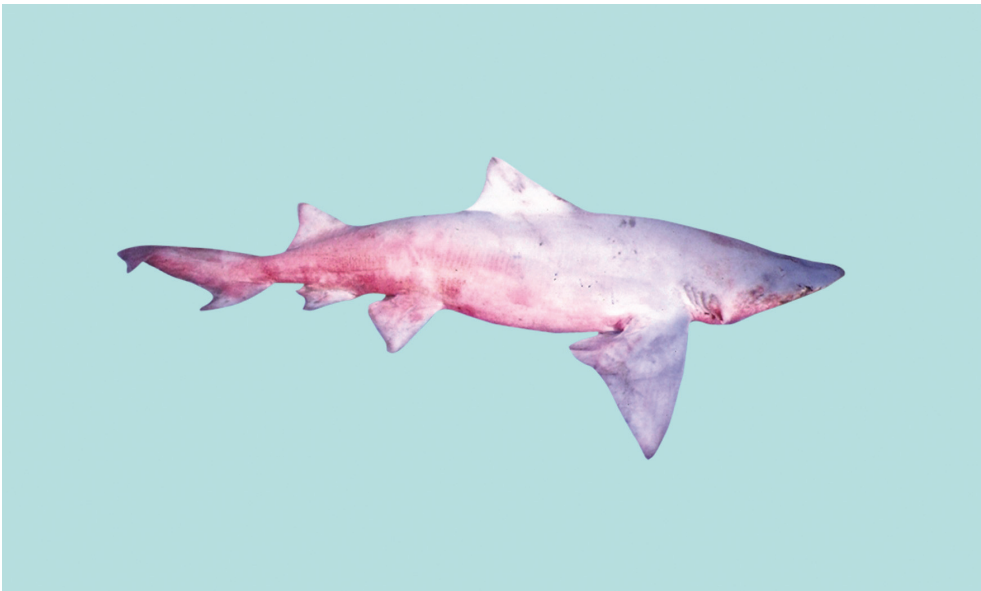
Role in food chain : Tertiary

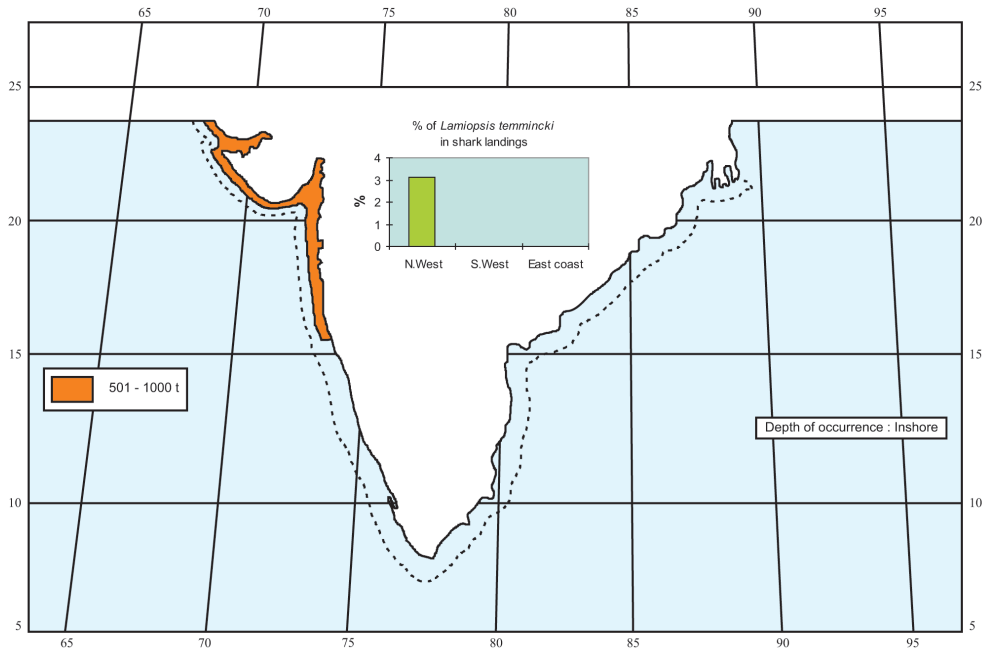
Type of breeding & reproductive capacity : Viviparous; 4 to 8 youngones / litter.

Peak breeding season : See Appendix-I

- 8a. Present utilization** : Meat utilized fresh for human consumption, fins for soup.
- 8b. Drug and medicinal value** : The liver oil of this species is reported to be of high vitamin A potency.
- 9. Conservation and Management :**
- Whether endangered / banned : No
- 10. General remarks** : Common along the west coast of India (Mumbai region) during January-March and September-December period.

Lamiopsis temminkii





Coastwise abundance (t.) of *Lamiopsis temminckii* along Indian coast

Loxodon macrorhinus (Muller & Henle, 1839)

1. Species profile :

Name of species : *Loxodon macrorhinus*
 Comm on name : Slit eye shark

Vernacular name :

Marathi : Mushi

Kannada : Cosorrah

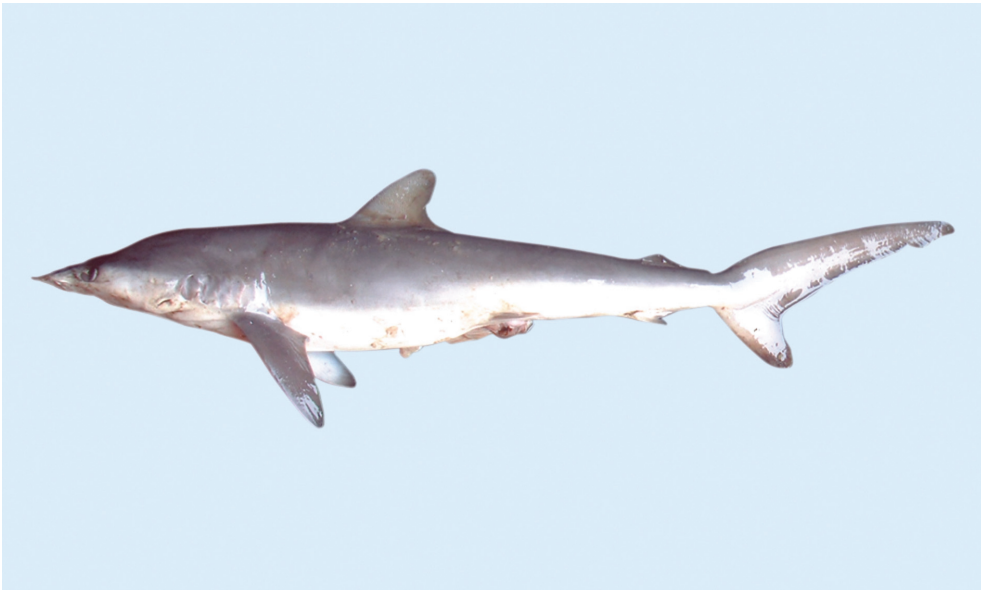
2a. Taxonomical position:

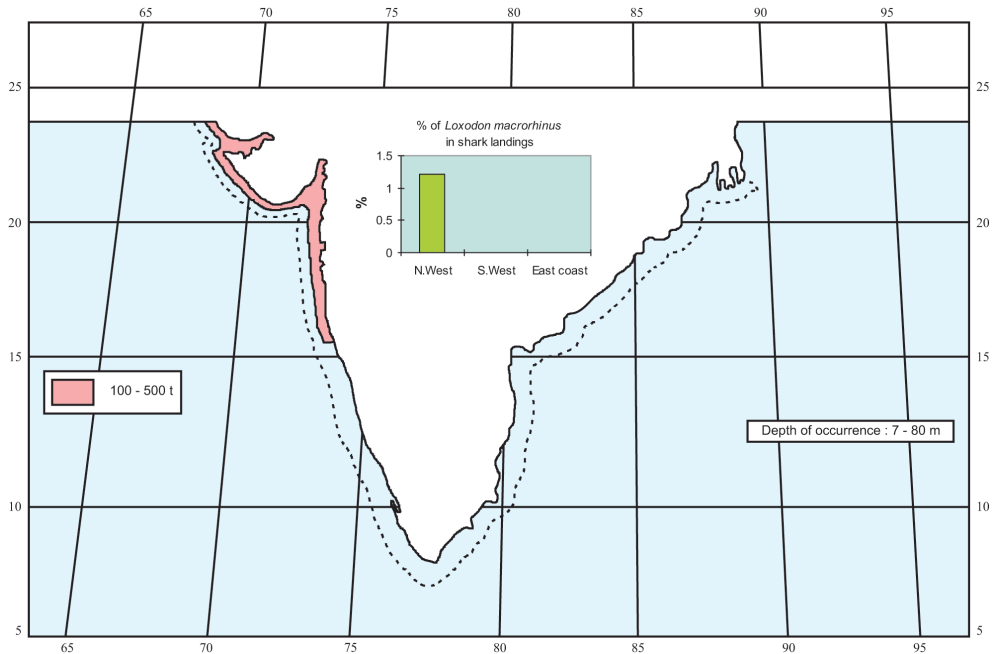
Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Loxodon*
 Species : *macrorhinus*

- 2b. Other scientific names in use** : *Scoliodon acutus* (Ruppell, 1837) *Scoliodon ceylonensis* (Setna & Sarangdhar, 1946).
- 3. Field identification characters** : A small slender shark, snout very long parabolic in shape with very small labial furrows. Eyes large with a posterior notch. First dorsal origin behind pectoral free rear tips. Second dorsal much smaller than the first, its origin about over anal insertion . Anal fin larger than second dorsal with very long preanal ridges. Colour : Greyish to brownish, without a prominent colour pattern.
- 4. Maximum size** : 91cm; Common size: 71cm(Raje *et al.*, 2002).
- 5a. Distribution (Global)** : Indo West Pacific : South Africa, Madagascar, Seychelles, Red Sea, India, Sri Lanka, Indonesia, China, Taiwan, Japan, Philippines, Australia.
- 5b. Depth of occurrence** : Coastal waters: 7 to 80 m depth (Compagno, 1984).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004**
- | Coast/Gear | Trawl | Total catch(t) |
|------------|-------|----------------|
| North West | 100 | 199 |
| South West | 0 | 0 |
| East coast | 0 | 0 |
- 6b. Regional /seasonal abundance** : See Appendix-I
- 7. Biological characters :**
- Food preferences : Small bony fishes, anchovies, croakers, cephalopods and crustaceans (Appukuttan & Nair, 1988).
- Role in food chain : Tertiary

- Type of breeding & reproductive capacity : Viviparous, with a yolk-sac placenta; One embryo (142-465mm) in each uterus.
- Size at maturity : Male-62-66cm; female-79cm (Compagno, 1984).
- Size at birth : 40-43cm (Fischer & Bianchi, 1984).
- Peak breeding season : See Appendix-I.
- 8. Present utilization** : Its meat is utilized fresh for human consumption.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : Nil

Loxodon macrorhinus





Mustelus mosis (Hemprich & Ehrenberg, 1899)

1. Species profile :

Name of species : *Mustelus mosis*
 Comm on name : Hardnosed smoothhound
 English name : Arabian smoothhound

Vernacular name :

Gujarati : Kajari - Magar
 Marathi : Pal - sorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Triakidae
 Genus : *Mustelus*
 Species : *mosis*

2b. Other scientific names in use : *Mustelus manazo* (not Bleeker, 1854)

3. Field identification characters : Snout relatively long and narrowly rounded with hyper calcified rostrum which can be easily felt by pinching. Last two gill slits over the pectoral fin bases. Origin of first dorsal fin posterior, over or behind pectoral inner margin. Dorsolateral eyes and strong subocular ridges. Narrow interdorsal space. Second dorsal fin almost as large as first dorsal, and much larger than anal fin, its origin well in front of anal fin. Interdorsal ridge present. Caudal peduncle without keels or precaudal pits. Colour: Back and sides plain grey or grey -brown, underside cream white.

4. Maximum size : 150 cm (Compagno, 1984).

5a. Distribution (Global) : Western Indian ocean : Red Sea and the "Gulf" to India, Pakistan, Sri Lanka, Natal, South Africa.

5b. Depth of occurrence : Found in outer slopes in depths of 100-200m (MRC, 2003).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	100	0.442
East coast	0	0

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Feeds on small bottom fishes, molluscs and crustaceans.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Viviparous. 6 - 10 youngones / litter.

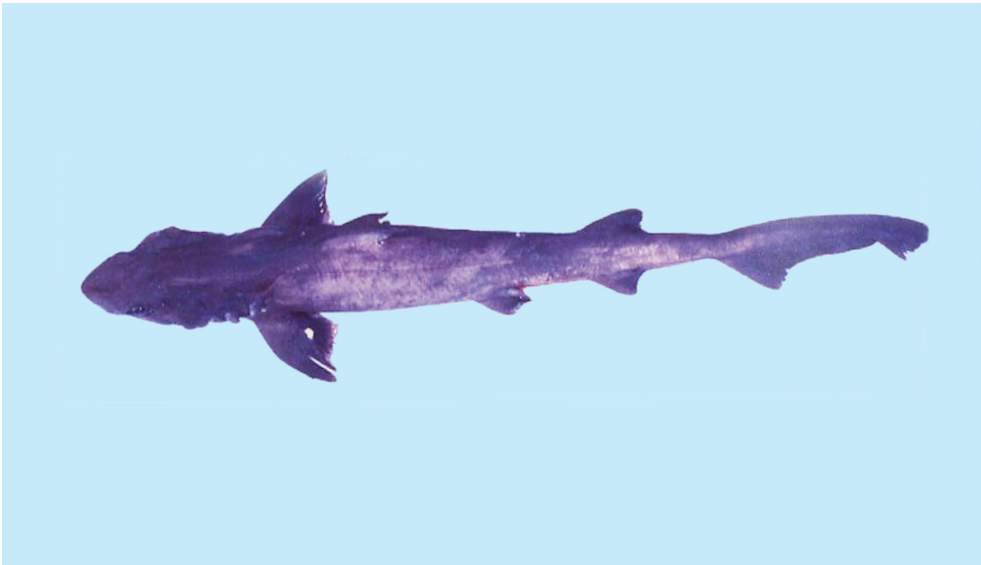
8. Present utilization : Used for human consumption.

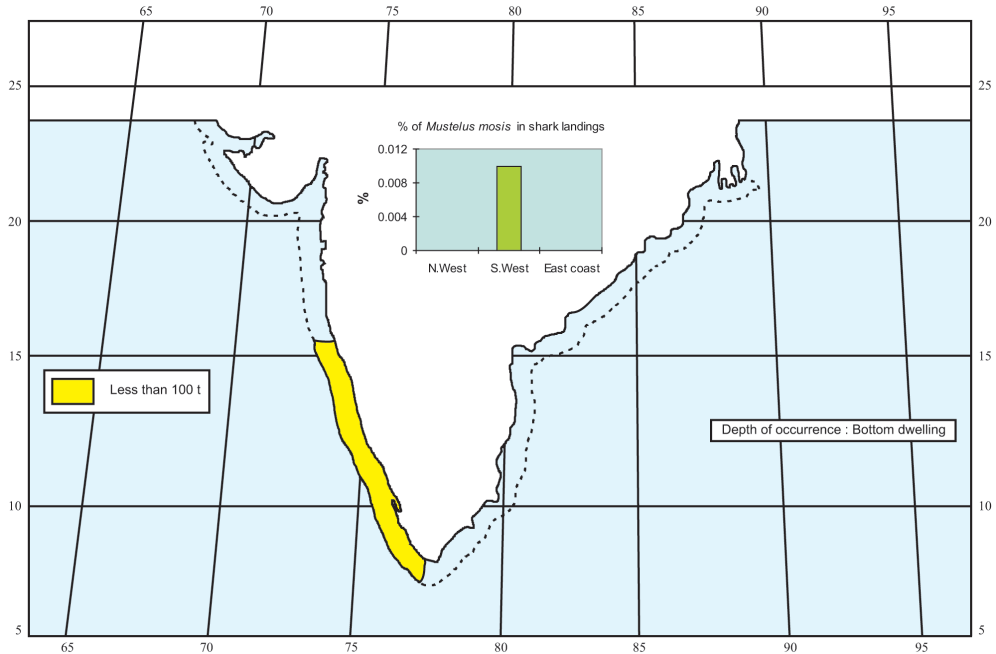
9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Caught in small quantities off (Cochin)
South west Coast of India.

Mustelus mosis





Prionace glauca (Linnaeus,1758)

1. Species profile :

Name of species	: <i>Prionace glauca</i>
Common name	: Blue shark
English name	: Blue shark

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Prionace</i>
Species	: <i>glauca</i>

2b. Other scientific names in use : None

3. Field identification characters : Body slender and elongated. Snout long, its length greater than mouth width. Large eyes,

nictitating membrane present. Spiracles absent, unique papillose gillrakers on the intergill opening. First dorsal fin in front of ventral fin or midway between pectoral and ventral. Pectoral fin large, long, elongated and compressed, A weak keel present on each side of caudal peduncle. Colour : Dorsal portion of the body is brilliant dark blue, becoming lighter but still bright blue on the side and then abruptly white ventrally.

- 4. Maximum size** : 383 cm, Most specimens below 335 cm (Fischer & Bianchi, 1984).
- 5a. Distribution (Global)** : Oceanic and circumglobal. Western Atlantic : Newfoundland to Argentina. Central Atlantic, Eastern Atlantic : Norway to South Africa, Mediterranean. Indo-West Pacific: South Africa and Southern Arabian Sea to Indonesia, Japan, Australia, New Caledonia and New Zealand. Central Pacific. Eastern Pacific: Gulf of Alaska to Chile.
- 5b. Depth of occurrence** : Surface to 152 m depth (Compagno, 1984).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : No commercial landings.
- 6b. Regional /seasonal abundance** : See Appendix-I
- 7. Biological characters :**
- Food preferences : Bony fishes, small sharks, squids, pelagic crustaceans and sea birds.
- Type of breeding & reproductive capacity : Viviparous, with a yolk sac placenta; 4-135 youngones / litter (Smith, 1997).
- Gestation period : 9 to 12 months

- 8a. Present utilization** : Utilized fresh, smoked and dried salted form for human consumption. Hide from leather, fins for soup, fish meal from flesh.
- 8b. Drug and medicinal value** : Liver oil for Vitamin 'A'.
- 9. Conservation and management:**
Whether endangered / banned : No.
- 10. General remarks** : This Oceanic shark is rarely caught from Indian waters.

Prionace glauca



Rhincodon typus (Smith, 1828)

1. Species profile :

Name of species	: <i>Rhincodon typus</i>
Common name	: Whale shark
English name	: Whale shark
Vernacular name :	
Gujarati	: Barar, Barrel
Marathi	: Karanj, Behirat, Deo-mushi, Bhari, Bahiri
Malayalam	: Makara-sravu, Thimingalam sravu.
Tamil	: Pulli -udumban-sravu, Usman-sravu, Amini-uluvai, Panaimeen
Telugu	: Pulibokku - sorrah
Oriya	: Dhalla magar
West Bengal	: Sisu magar
Lakshadweep Island	: Vorimas meer

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Rhincodontidae
Genus	: <i>Rhincodon</i>
Species	: <i>typus</i>

2b. Other scientific names in use : *Rhiniodon typus* Smith, 1829

3. Field identification characters : A very large shark with broad flat head. Head with 5 large gill slits, the posterior 3 over the pectoral fin base. No gill rakers but with filter grids of transverse bars and lobes across the internal gill slits. Mouth subterminal in front of the eyes, very wide, transverse and short. Teeth very small and numerous. Prominent skin ridges along the back and sides, lower most one expanded into a prominent keel on each side of the caudal peduncle. Large first dorsal , small

second dorsal and anal fin; caudal fin asymmetrical crescentic with a strong lower lobe and an upper lobe without subterminal notch. Colour : Dark grey, reddish or greenish grey above, with white or yellow spots and transverse stripes.

- 4. Maximum size** : 3.27 - 21.4 m in Indian coast (Fischer & Bianchi, 1984).
- 5a. Distribution (Global)** : Western Atlantic: New York to central Brazil, Gulf of Mexico and Caribbean. Eastern Atlantic: Senegal, Mauritiana, Gulf of Guinea. Indo -West and Central Pacific: South Africa, Red Sea to Pakistan, India, Sri Lanka, Malaysia, Thailand, China, Japan, Philippines, Indonesia, Australia, Hawaiian Island. Eastern Pacific : Southern California to Northern Chile.
- 5b. Depth of occurrence** : Coastal and oceanic
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. Regional / seasonal abundance** : See Appendix-I
- 7. Biological characters :**
- Food preferences : Filter - feeder, feeds on a wide variety of planktonic and nectonic organisms. Crustaceans, shoaling fishes, anchovies and squids also noticed in diet of this fish.
- Role in food chain : Secondary
- Type of breeding & reproductive capacity : Ovoviviparous. Embryos are encapsulated in cases. Late term embryos shed their egg case within the uterus. 300 youngones / litter
- Size at birth : 35 cm (Fischer & Bianchi, 1984)

- 8a. Present utilization** : Meat, liver oil, skin, fins. Liver oil for preservation of fishing boats, fresh or frozen meat for export purpose, cured for domestic consumption. Skin for leather and fins for export.
- 8b Drug and medicinal value** : Cartilage for medicinal purpose, used in Chinese medicine
- 9. Conservation and management:** Endangered species and the species is under threat of extinction.
- Whether endangered / banned : Included in the Appendix II of CITES since May 2003. Has been protected by inclusion in IUCN Red List (2000) as vulnerable species. Targeted fishery along Gujarat coast has been banned; trade regulation in Appendix II of CITES (Raje et al., 2002).
- 10. General remarks** : Good fishery off Gujarat (Vivekanandan, 1994).
- Hooks & Line, Purse seining, Harpooning at Gujarat.

Rhincodon typus



Rhizoprionodon acutus* (Ruppell, 1837)*1. Species profile :**

Name of species	: <i>Rhizoprionodon acutus</i>
Comm on name	: Requiem shark
English name	: Milk shark
Vernacular name	:
Gujarati	: Sandho, Pisori, mooshi
Marathi	: Balda, Pisori, Mushi, Mori
Malayalam	: Palsravu
Tamil	: Co- sorrah, Pal sorrah
Telugu	: Kukka sorrah
Oriya	: Eidah

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Carcharhinidae
Genus	: <i>Rhizoprionodon</i>
Species	: <i>acutus</i>

2b. Other scientific names in use : *Scoliodon sorrakowah* (Bleeker, 1853),
Scoliodon walbeehmi (Bleeker, 1856).

3. Field identification characters : Grey requiem shark with long well developed upper and lower labial furrows; upper labial furrows longer than the lower; snout long and depressed; first dorsal fin origin usually over or slightly in front of pectoral rear tips, second dorsal fin smaller than anal, its origin far posterior to midlength of anal fin base. Colour : Grey or grey brown above white below.

4. Maximum size : 170cm (Nair *et al.*, 1974) Mumbai:93cm, common size: 76cm.

5a. Distribution (Global) : Eastern Atlantic : Madeira and Mauritiana to Angola.

Indo- West Pacific: South Africa and Red Sea to Pakistan, India, Malaysia, Indonesia, Thailand, China, Japan, The Philippines and Australia (Queensland).

5b. Depth of occurrence : Inshore species - upto 50 m (Fischer & Bianchi, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/ Gear	Trawl	Gill net	Hooks & line	Long line	Total catch(t)
	North West	75.13	10.74	0	14.13	750
	South West	13.26	86.74	0	0	90.63
	East coast	26	24	50	0	1263

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Silverbellies, squids, cephalopods, lizardfish, goatfish, Sardine, threadfin, sciaenids, cynoglossids, crabs&shrimps.

Role in food chain : Predator.

Type of breeding & reproductive capacity : Viviparous with a yolksac placenta; 6 youngones/litter. (Devadoss, 1988a).

Size at maturity : Male : 68-72 cm (Raje *et al.*, 2002); female : 65 cm (Raje & Joshi, 2003)

Size at birth : 30 - 35 cm (Raje *et al.*, 2002)

Peak breeding season : See Appendix - 1

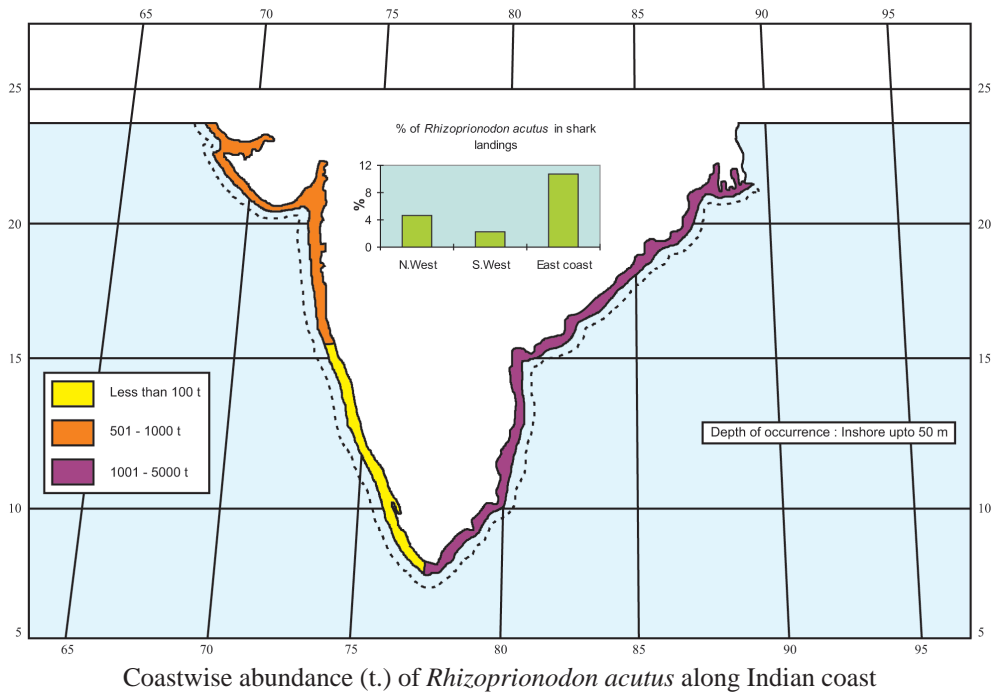
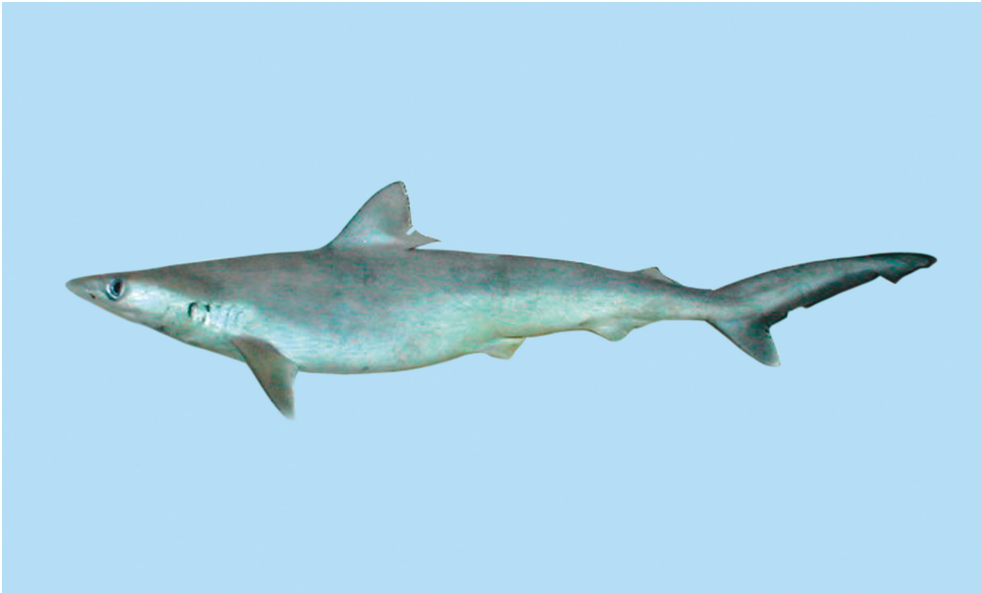
8. Present utilization : Meat utilized fresh and dried salted and for fish meal. Its flesh promotes lactation in women.

9. Conservation and management:

Whether endangered / banned : Endangered species and the species is under threat of extinction.

10. General remarks : Nil

Rhizoprionodon acutus



Rhizoprionodon oligolinx (Springer,1964)

1. Species profile :

Name of species : *Rhizoprionodon oligolinx*
 Comm on name : Grey sharpnose shark
 English name : Grey Dog shark

Vernacular name :

Malayalam : Pearl shark
 Tamil : Purooway sorrah, Pal sorrah;
 Telugu : Sem-sorrah

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Rhizoprionodon*
 Species : *oligolinx*

2b. Other scientific names in use : *Scoliodon palasorrah* Bleeker,1853

3. Field identification characters : A small slender shark, snout long and depressed ; labial furrows very short; origin of first dorsal fin over or posterior to inner corners of pectoral fins, its free rear tip usually anterior to pelvic fin origin; second dorsal fin smaller than anal fin, its origin far posterior to mid length of anal fin base, anal fin with slightly concave posterior margin. Colour : Grey or grey-brown above, white below, dorsal and anal fins with dusky or blackish edges, fin slightly darker.

4. Maximum size : 61 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : India, Pakistan, Sri Lanka, Thailand, Indonesia, Malaysia, Singapore, Java and Japan.

5b. Depth of occurrence : A tropical littoral shark occurring upto 36 m depth (Fischer & Bianchi, 1984); but also occurs offshore (Compagno, 1984)

6a. Resource characters: Average : annual landing (Gearwise%) in India during 2003 & 2004	Coast/ Gear	Trawl	Gill net	Hooks & net	Long line	Dol net	Total catch (t)
	North West	77.86	18.8	0	0	3.34	892
	South West	100	0	0	0	0	5.35
	East coast	55.31	17	1.9	25.8	0	1027

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Pelagic fishes, crustaceans and cephalopods.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Viviparous, with a yolk sac placenta; 2 to 6 youngones / litter.

Gestation period : 10 to 11 months.

Size at maturity : Male-29 to 38cm; female-32 to 41 cm (Compagno, 1984).

Size at birth : 21 to 26 cm (Raje *et al.*, 2002).

Peak breeding season : See Appendix-I

Other remarks : Right ovary is functional; mature egg is 15mm in diameter.

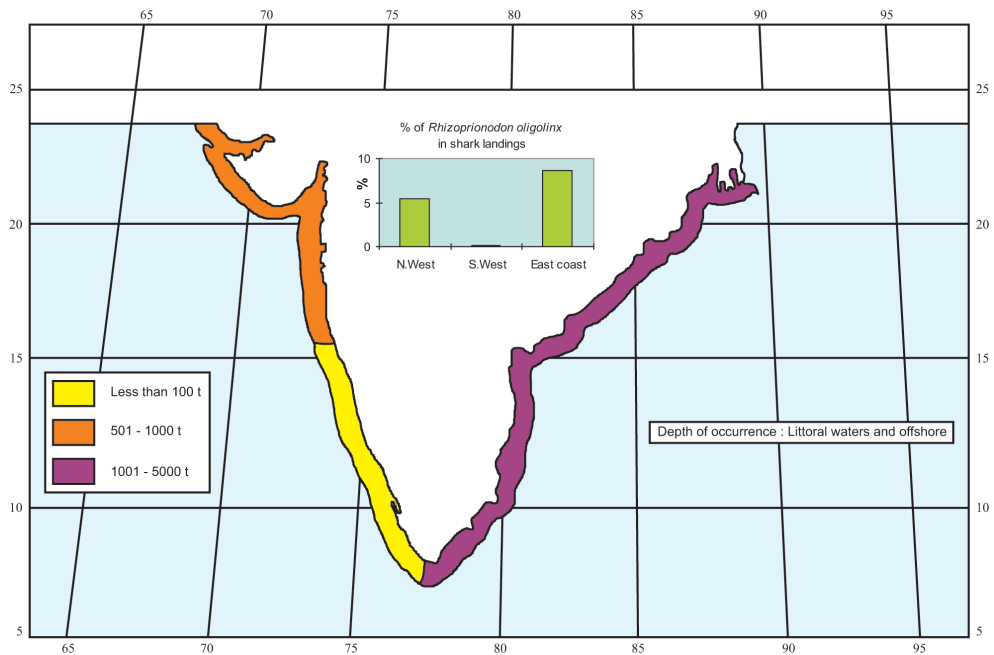
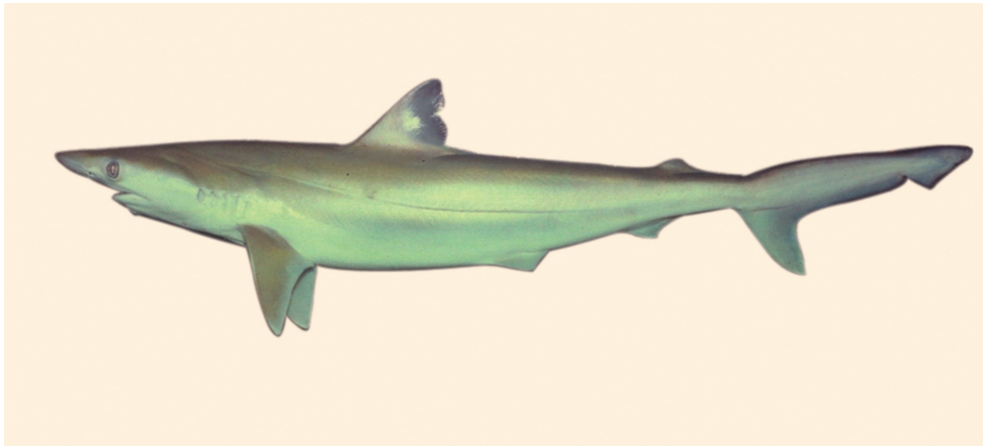
8. Present utilization : Utilized fresh and dried salted for human consumption.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks

: The contribution of this species in the fishery from Orissa coast and Gulf of Mannar (Southeast coast of India) is reported.

Rhizoprionodon oliginx

Coastwise abundance (t.) of *Rhizoprionodon oliginx* along Indian coast

Scoliodon laticaudus (Muller & Henle, 1838)

1. Species profile :

Name of species : *Scoliodon laticaudus*
 Comm on name : Spadenose shark
 English name : Indian Dog - shark

Vernacular name :

Gujarati : Moosi, Sandha
 Marathi : Mushi, Son - mushi
 Malayalam : Mori
 Tamil : Poozhi sravu, Alupidiyan
 Telugu : Pillai - sorrah
 Oriya : Palah - sorrah, Nullian - sorrah,
 Pasupukukka - sorrah
 Bengali : Haldia magar

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Carcharhinidae
 Genus : *Scoliodon*
 Species : *laticaudus*

2b. Other scientific names in use : *Physodon muelleri* (Valenciennes, 1839; Carcharias (*Scoliodon*) *macrorhynchos* (Bleeker, 1852); *Carcharias sorrakowah* "Cuvier, 1817". (Compagno, 1984).

3. Field identification characters : Body small moderately stout; head and snout strongly depressed, spadelike; small eyes; short and broad triangular pectoral fins; first dorsal fin moderately large, its origin well behind the free rear tips of pectoral; anal fin larger than second dorsal and with a straight posterior margin. Caudal fin with its postventral margin moderately concave, not deeply notched. Colour : Bronzy grey above and white below.

4. Maximum size : 65 cm.; Common size : 26-48 cm (Raje et al., 2002).

5a. Distribution (Global) : Indo -West Pacific, Tanzania, Pakistan, India, Sri Lanka, Malaysia, Singapore, Thailand, Java, Borneo, China, Taiwan Island and Japan. Indo- West Pacific: South Africa and Red Sea to Pakistan, India , Malaysia, Indonesia, Thailand, China, Japan, The Philippines and Australia (Queensland).

5b. Depth of occurrence : A tropical shark occurring close inshore.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	Hooks & line	Long line	Total catch(t)
North West	93	5.17	0	1.75	11795
South West	56	44	0	0	47
East coast	50	0	50	0	162

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Bottom feeders, eating cephalopods, a variety of crustaceans (Squilla, prawns, crabs) and fishes (sciaenids, *Nemipterus* spp., *Platycephalus* spp., *Harpodon nehereus*, Threadfins (Devadoss et al., 1989)

Role in food chain : Carnivore

Type of breeding & reproductive capacity : Viviparous; 1-20 youngones / litter.

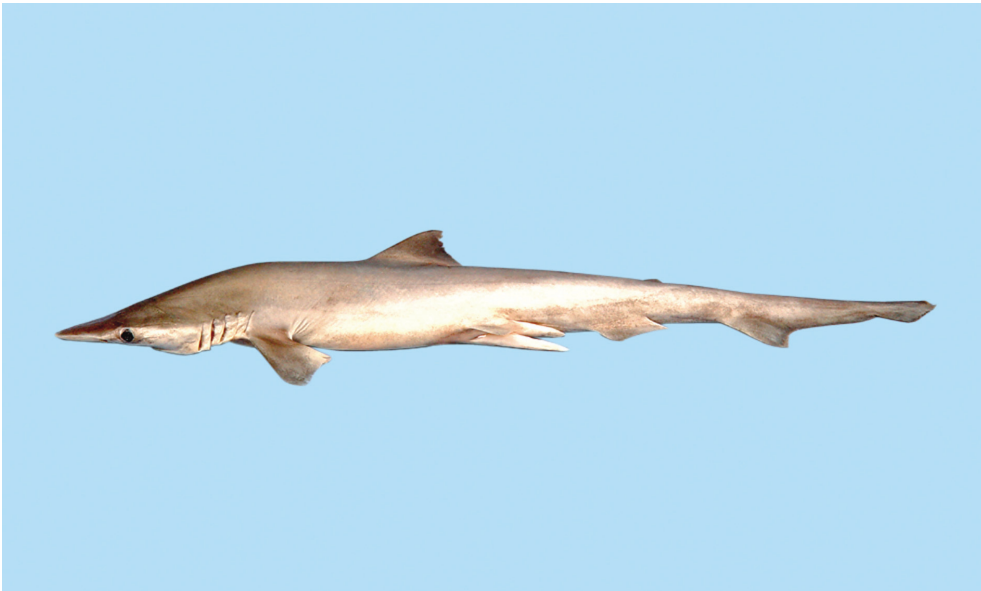
Size at maturity : Male-24-36cm; female-33-35cm (Compagno, 1984)

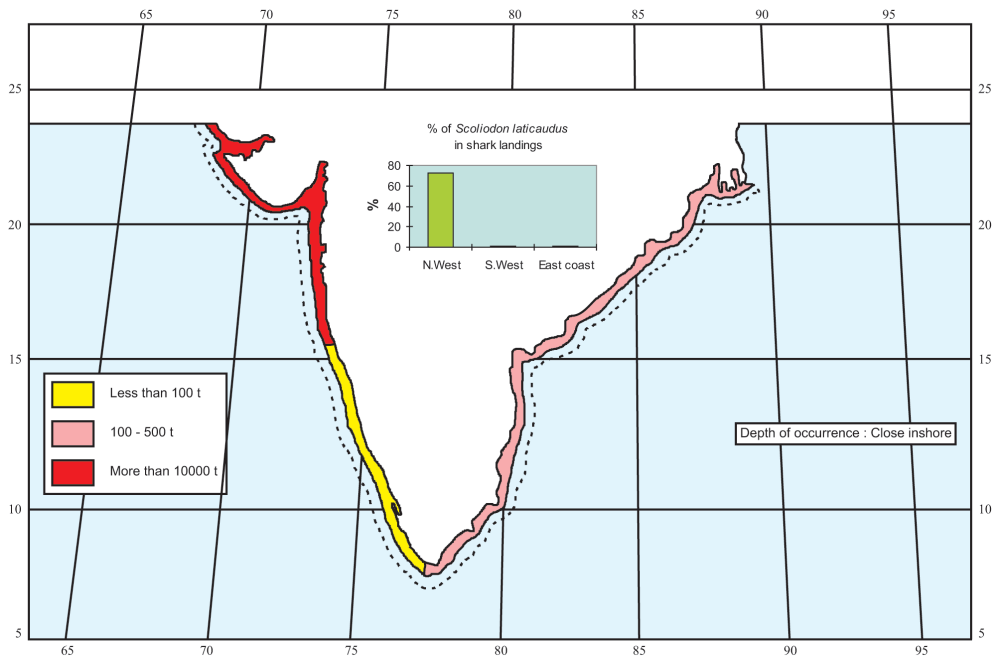
Size at birth : 13-15 cm (Fischer & Bianchi, 1984).

Peak breeding season : See Appendix-I

- 8. Present utilization** : Utilized for human consumption in fresh, dried and dried salted form. Processed to fish meal, as bait for other shark and bony fishes.
- 9. Conservation and management:**
Whether endangered / banned : No
- 10. General remarks** : Abundant in Northern Indian Ocean. Limited fecundity suggests that it would be vulnerable to recruitment over fishing. This species has been exploited to the optimum level (Mathew and Deveraj, 1997), therefore conservation/ regulation is required off Mumbai (North west coast of India).

Scoliodon laticaudus





Coastwise abundance (t.) of *Scoliodon laticaudus* along Indian coast

Sphyrna lewini (Griffith & Smith, 1834)

1. Species profile :

Name of species	: <i>Sphyrna lewini</i>
Common name	: Ground Shark
English name	: Scalloped hammerhead shark

Vernacular name :

Gujarati	: Kannar
Marathi	: Magala, Kanmushi, Kannar.
Malayalam	: Chadayan sravu
Tamil	: Komban sorrah
Telugu	: Koma - sorrah

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes

Family : Sphyrnidae
Genus : *Sphyrna*
Species : *lewini*

- 2b. Other scientific names in use** : *Zygaena malleus* (Val.1822), *Zygaena indica* (Van Hasselt, 1823), *Cestracio oceana*, Garman, 1913; *Sphyrna diplana* (Springer, 1941).
- 3. Field identification characters** : A large hammerhead shark with a broad narrow bladed head, anterior margin of head very broadly arched in adults and with a prominent median indentation; posterior margin of eyes at about level of front of mouth. Moderately falcate first dorsal fin origin over or behind pectoral insertion and free rear tip in front of pelvic origin; anal base longer than second dorsal; second dorsal fin nearly reaching upper caudal fin origin. Posterior margin of pelvics nearly straight. Colour : Uniform grey, greyish brown above, shading to white below. Pectoral fins tipped grey or black ventrally.
- 4. Maximum size** : 420cm;common size: 360cm (Raje et al., 2002)
- 5a. Distribution (Global)** : Western Atlantic : New Jersey to Brazil,Gulf of Mexico, Caribbean sea. Indo - West Pacific : South Africa, Red Sea, India, Thailand, Burma, Pakistan, Indonesia, China, Japan. Central Pacific : Hawaii and Tahiti. Eastern Pacific: Southern California, Panama and Equador.
- 5b. Depth of occurrence** : Coastal pelagics, semi oceanic warm temperate and tropical species- intertidal surface down to at least 275 m depth (Compagno, 1984)

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	Hooks & line	Total catch(t)
North West	93.05	6.95	0	296
South West	50	50	0	104.7
East coast	69.7	30	0.3	3603

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Sardine, herring, anchovies, eels, cat fish, half beaks, mullets, lizardfishes, barracudas, mackerel, goat fish, parrot fish, gobies, sharks, rays, squids, octopus, crabs and lobsters.(Devadoss et al.,1989).

Role in food chain : Secondary carnivore

Type of breeding & reproductive capacity : Viviparous with a yolk - sac placenta; 15 - 31pups/litter (Raje et al., 2002) ; 17-25 off Chennai (Personal observation).

Gestation period : 9-10 months (Raje et al., 2002).

Size at maturity : Male-140-165cm; female-200cm.

Size at birth : 38-50cm (Raje et al., 2002).

Peak breeding season : See Appendix-I

Other remarks : Reproductive cycle is annual. Shallow coastal waters serve as nurseries.

8a. Present utilization : Meat for human consumption. Fins have good export value.

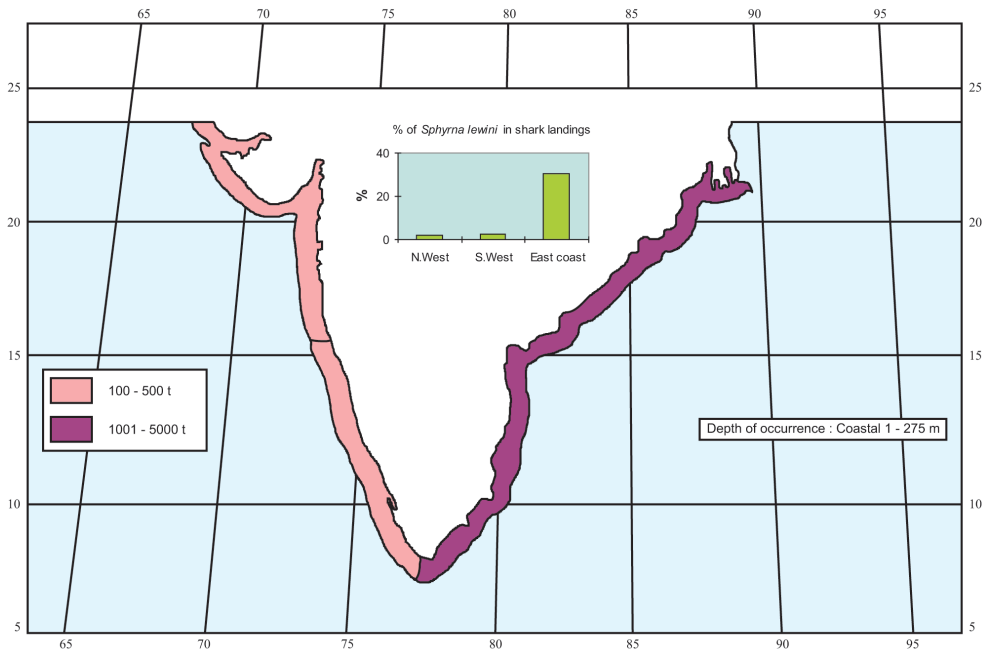
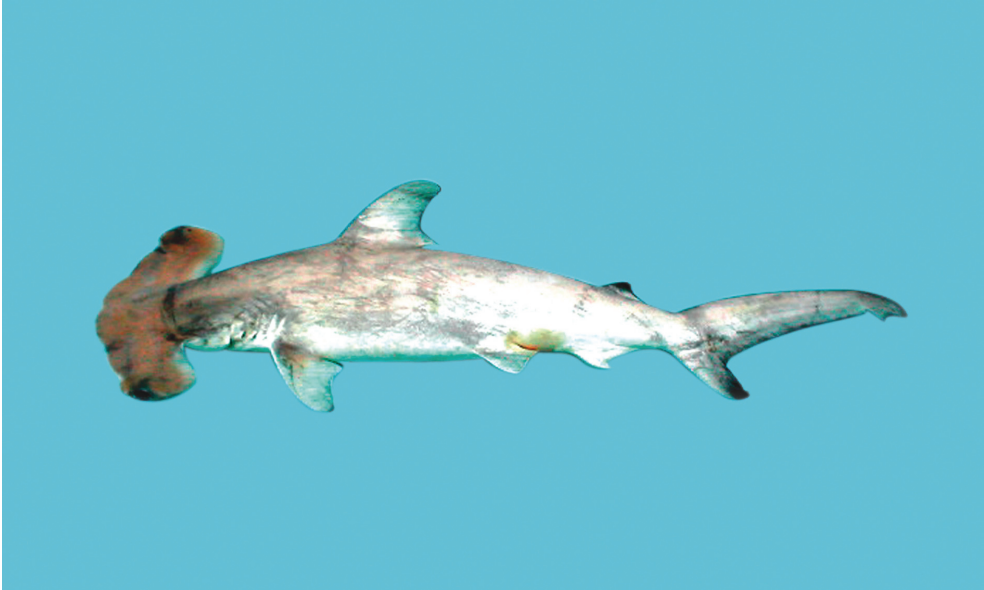
8b. Drug and medicinal value : Liver oil for vitamin 'A'

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Sphyrna lewini



Coastwise abundance (t.) of *Sphyrna lewini* along Indian coast

Sphyrna mokarran (Ruppell,1837)

1. Species profile :

Name of species : *Sphyrna mokarran*
 Comm on name : Great hammerhead shark
 English name : Great hammerhead shark

Vernacular name :

Telugu : Kammu sorrah
 Oriya : Zuali magur

2a. Taxonomical position:

Super order : Selachoidei
 Order : Carcharhiniformes
 Family : Sphyrnidae
 Genus : *Sphyrna*
 Species : *mokarran*

2b. Other scientific names in use : *Zygaena mokarran* Ruppell, 1837; *Zygaena dissimilis* Murray 1887, *Sphyrna ligo* Fraser-Brunner, 1950.

3. Field identification characters : Body elongated and laterally compressed. Head hammer shaped, a median indentation on anterior margin of head. Posterior margins of eyes well anterior in front of mouth. First dorsal fin very high, strongly falcate. Second dorsal very large about a third as high as first with a rather short inner margin. Pectoral fins short and broad. Posterior margin of second dorsal and pelvic fins deeply concave. Anal fin base about as long as second dorsal base. Colour : Grey or grey-brown above, paler below, fins with dusky tips in young.

4. Maximum size : 600cm, common : 240cm to 365 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Western Atlantic : North Carolina to Brazil, Mexico and Caribbean. Eastern North Atlantic : Morocco, Senegal, Mediterranean. Indo - West Pacific : South Africa and Red Sea to India, Thailand, China, Taiwan, Riu Kyu Islands, Australia, New Caledonia, French Polynesia. Eastern Pacific: Southern Baja California and Gulf of California to Panama, Ecuador and northern Peru.

5b. Depth of occurrence : Near surface to over 80 m depth (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Gill net	Total catch(t)
North West	0	0	0
South West	1.41	98.58	125.685
East coast	0	0	0

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Sting rays, groupers, cat fishes, sardines, sciaenids, serranids, tongue-sole, sharks, guitar fish, skates, cow nosed rays, crabs and squids.

Role in food chain : Predator

Type of breeding & reproductive capacity : Viviparous with a yolk sac placenta; 20-40 pups/litter.

Gestation period : 11 months (Raje et al., 2002).

Size at maturity : Male- 365 cm (Raje et al., 2002).

Size at birth : 60-70cm (Fischer & Bianchi, 1984).

8a. Present utilization : Meat for human consumption; fins for soup. Meat, fins, liver oil, hide, carcass. Meat in

fresh, frozen, dried salted and smoked form for human consumption. Fins for soup, hide for leather and carcass for fish meal.

8b. Drug and medicinal value : Liver oil for vitamins

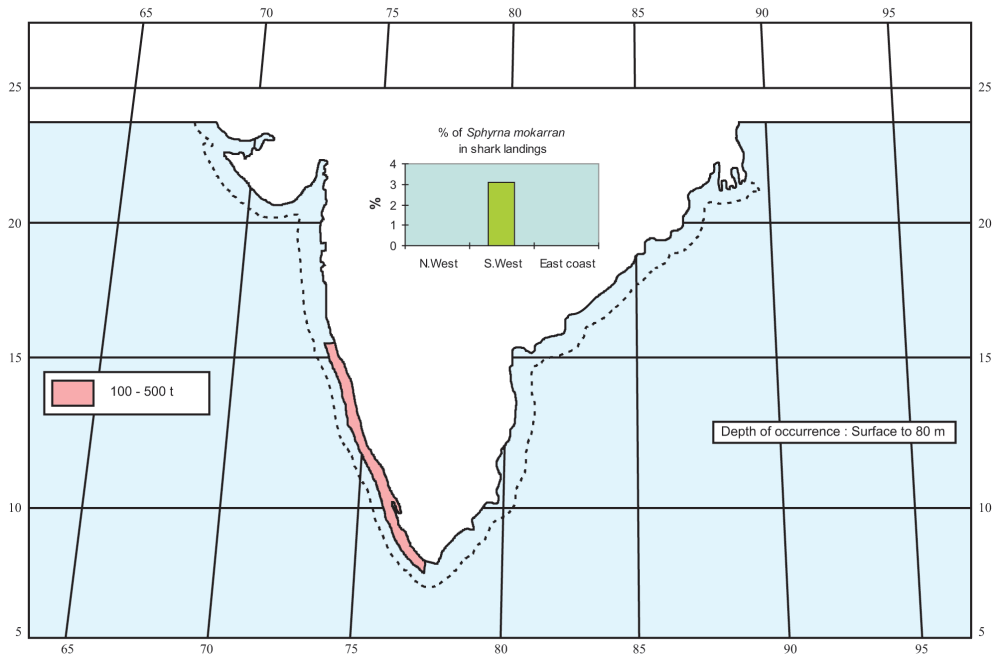
9. Conservation and management:

Whether endangered / banned : No

10. General remarks : This species forms a regular fishery off Porto Novo, Tamil Nadu, South east coast of India.

Sphyrna mokarran





Sphyrna zygaena (Linnaeus, 1758)

1. Species profile :

Name of species : *Sphyrna zygaena*
 Comm on name : Smooth hammerhead shark
 English name : Round headed hammerhead

Vernacular name :

Gujarati : Boot, Kaner / Kaneri
 Marathi : Variocha
 Malayalam : Chattythalayan - Sravu
 Tamil : Komban - Sorrah
 Telugu : Kannu - Pakhi magur
 Oriya : Komban - Sorrah

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Carcharhiniformes
Family	: Sphyrnidae
Genus	: <i>Sphyrna</i>
Species	: <i>zygaena</i>

2b. Other scientific names recently in use

: None

3. Field identification characters : A hammerhead with a broad , narrow-bladed head, anterior margin of head broadly arched in adults and without median indentation .Moderately falcate first dorsal fin with free rear tip in front of pelvic origin.Free rear tip of second dorsal fin well ahead of upper caudal origin. Anal fin base about as large as that of second dorsal. Colour : Brownish - olive , or plain grey above, white or grey - white below. Fins nearly plain, dusky or blackish - tipped.

4. **Maximum size** : 400cm; Common size: 275 to 335cm (Fischer & Bianchi, 1984)

- 5a. **Distribution (Global)** : Western Atlantic : Nova Scotia ,Florida, Southern Brazil to Argentina . Eastern North Atlantic : Mediterranean, British Isles to Senegal, Cape Verde Islands, Guinea and Ivory Coast. Western Indian Ocean : South Africa, Southern Mozambique, India and Sri Lanka. Western Pacific : Viet Nam, Southern Japan, Southern Siberia, Australia. Eastern Pacific : Northern California to Gulf of California, Panama, Galapagos Islands and Chile. Central Pacific : Hawaiian Islands.

- 5b. **Depth of occurrence** : A coastal pelagic species occurring in depths from surface down to 20m and more (Compagno, 1984).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	Hooks & line	Long line	Total catch(t)
North West	0	0	0	0	0
South West	19.56	0	60.21	20.22	529.137
East coast	58.03	40.94	0	1.03	176

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Cat fishes, sea bass, mackerel, sharks, skates, rays, crabs and cephalopods.

Role in food chain : Secondary

Type of breeding & reproductive capacity : Viviparous; 29-37 young ones/ litter (Raje et al., 2002)

Size at birth : 50-60 cm. (Raje et al., 2002)

Peak breeding season : See Appendix-I

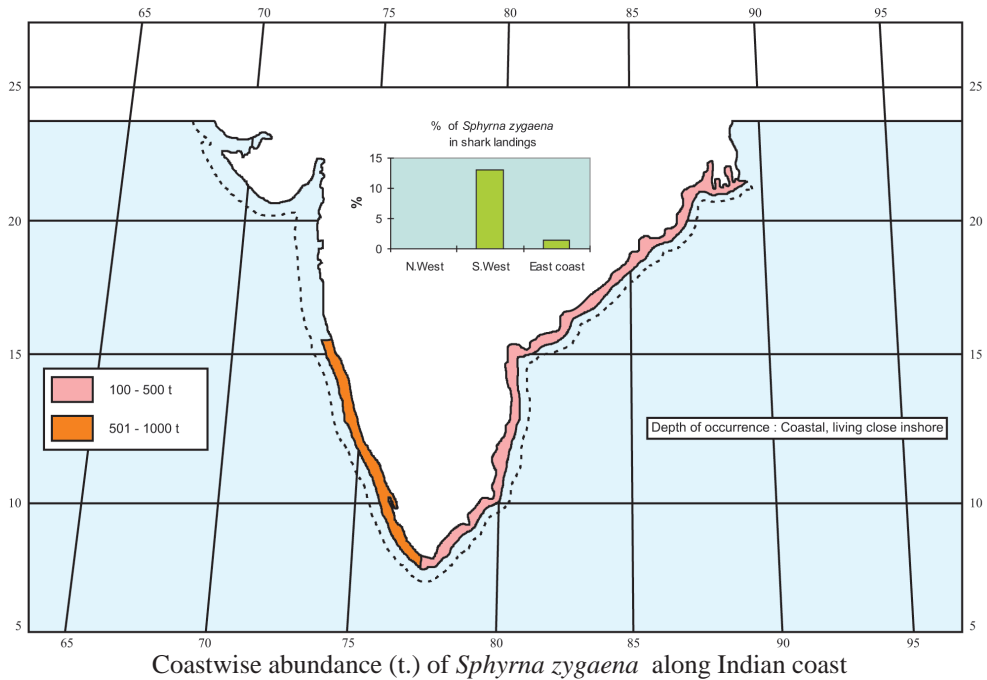
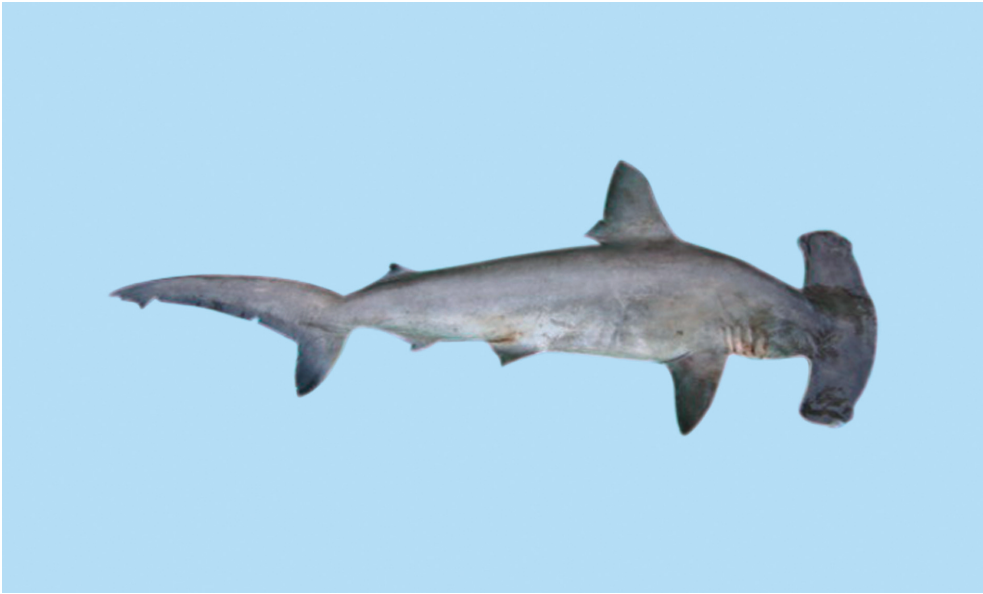
8a. Present utilization : Meat used for human consumption, fins for soup, hide for leather, carcass for fish meal. Meat used fresh, dried/ salted and smoked. Hide, fins and cartilage exported.

8b. Drug and medicinal value : Cartilages exported for medicinal product and liver oil for vitamin 'A'.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : This species was reported to be frequently caught off Vishakhapatnam and Gulf of Mannar, Southeast coast of India. Significant mortality in large scale long line and driftnet fishery is reported although the impact of fishing on the population is not known.

Sphyrna zygaena

Squalus acanthias* (Linnaeus 1758)*1. Species profile :**

Name of species : *Squalus acanthias*
 Common name : Piked dog fish, Spotted spiny dogfish.

2a. Taxonomical position:

Super order : Selachoidei
 Order : Heterodontiformes
 Family : Squalidae
 Genus : *Squalus*
 Species : *acanthias*

2b. Other scientific names in use : None

3. Field identification characters : Two dorsal fins with ungrooved large spines; first dorsal spine origin behind pectoral rear tips, white spots on grey sides, oblique-cusped cutting teeth in both jaws; no subterminal notch on caudal fin, no anal fin, no upper precaudal pit and lateral keel on caudal peduncle. Colour: Grey above, white below, usually with conspicuous white spots present on sides of body.

4. Maximum size : 160cm (Compagno, 1984)

5a. Distribution (Global) : Cold and temperate water species currently reported from South - west coast of India (Cochin), off the Cape coast of South Africa, West to Namibia. It is abundant in cold waters at Eastern North Atlantic.

5b. Depth of occurrence : Benthopelagic, 0-1460m.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	100	0.903
East coast	0	0

6b. Regional /seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Bony fishes, also molluscs, crustaceans and other invertebrates (Compagno, 1984)

Type of breeding & reproductive capacity : Ovoviviparous; 1 to 20 youngones / litter.

Gestation period : 2 years.

8a. Present utilization : Human consumption, preparation of sand paper, leather, fertilizer etc. Eaten fried, broiled and baked.

8b. Drug and medicinal value : Liver oil, vitamins.

9. Conservation and management:

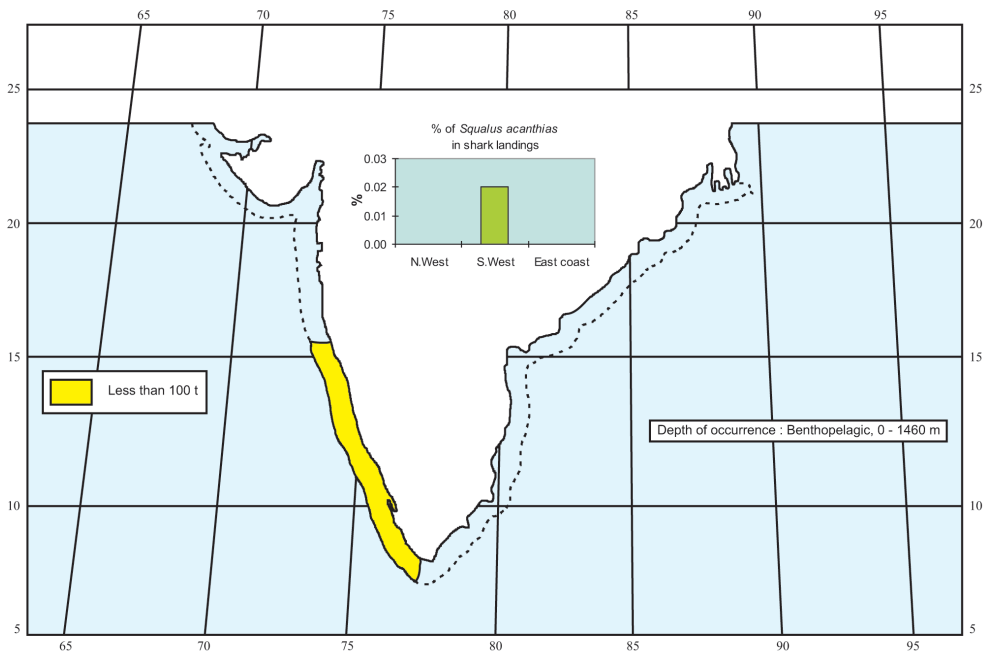
Whether endangered / banned : No

10. General remarks : Nil

Squalus acanthias



(Source : Mgdalski & Fichter, 1976)



Stegostoma fasciatum (Hermann,1783)

1. Species profile :

Name of species : *Stagostoma fasciatum*

Common name : Zebra - shark

English name : Zebra - shark

Vernacular name :

Gujarati : Shinwala, Magara

Marathi : Choti mushi

Malayalam : Corungun - sorrah

Tamil : Pallee - Makum, Komarasi, Orookoolti - Sorrah, Siga - Sorrah.

Telugu : Dhall magar

Oriya : Poochasura

2a. Taxonomical position:

Super order	: Selachoidei
Order	: Orectolobiformes
Family	: Stegostomatidae
Genus	: <i>Stegostoma</i>
Species	: <i>fasciatum</i>

2b. Other scientific names in use : None

3. Field identification characters : A large shark, body cylindrical, 5 small gill slits, the last three behind pectoral fin origin. Prominent ridges on sides. A small transverse mouth in front of the lateral eyes. Barbels present, spiracles subequal in size of eye, pectoral fin large, broad and rounded. Second dorsal fin about half the size of first dorsal fin. First dorsal origin far anterior to pelvic fin base. Caudal fin nearly or half the total length. Caudal peduncle with dermal ridges extending forward on sides. Colour : Young below 60 cm have the back dark brown or blackish, with vertical yellow bars, spots and reticulations, but in adults the dark areas breakup into scattered dark spots on a yellowish background.

4. Maximum size : 354 cm (Fischer & Bianchi, 1984).

5a. Distribution (Global) : Indo-West Pacific : South Africa, Red Sea to Pakistan, India, Sri Lanka, Bangladesh, Indonesia, Thailand, Viet -Nam, Kampuchea, Philippines, China, Japan, Australia, New Caledonia and Palau.

5b. Depth of occurrence : Inshore species.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 : Data not available.

6b. Regional / seasonal abundance : See Appendix-I

7. Biological characters :

Food preferences : Molluscs like gastropods and bivalves, Crustaceans (crabs and shrimps) and small bony fishes.

Role in food chain : Secondary

Type of breeding : Oviparous, laying eggs in dark brown cases.

Size at birth : Size at hatching 20-36 cm.

8a. Present utilization : Meat, utilized fresh and dried salted for human consumption, fin dried and processed for shark fin trade.

Offal used for fish meal.

8b. Drug and medicinal value : Liver processed for vitamins.

9. Conservation and management:

Whether endangered / banned : No.

10. General remarks : Of minor fishery value in India except at Chennai.

Stegostoma fasciatum



RAYS

Aetobatus flagellum (Schneider, 1801)

1. Species profile :

Name of species	: <i>Aetobatus flagellum</i>
Common name	: Eagleray
English name	: Plain eagleray

2a. Taxonomical position:

Super order	: Batoidei
Order	: Rajiformes
Family	: Myliobatidae
Genus	: <i>Aetobatus</i>
Species	: <i>flagellum</i>

2b. Other scientific names in use : None

3. Field identification characters : Disc rhomboid, much broader than longer. Head distinctly recognizable from the rest of the body. Snout conical , elongated about 1.8 times in mouth width; longitudinal groove between eyes on top of head which is extended to the midline of its shoulder. Floor of the mouth with a row of papillae. Outer corner of pectoral fins pointed. Skin naked. Tail with two serrated , strong spines. Colour : Upper surface of the disc and pelvic fins uniform dark greenish bronze coloured, without spots.
4. Maximum size : Cuddalore : 115 - 158 cm.
- 5a. Distribution (Global) : Indo - West Pacific.
- 5b. Depth of occurrence : Inhabits shallow inshore waters, often enters brackish waters.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	0	0
East coast	100	13.891

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : Fishes, crustaceans and molluscs

Role in food chain : Secondary

Type of breeding & reproductive capacity : Ovoviviparous. Nearly 3 full term embryos have been obtained from the uterus .

Peak breeding season : See Appendix-II

8. Present utilization : Flesh used fresh and dried salted for human consumption.

9. Conservation and management:

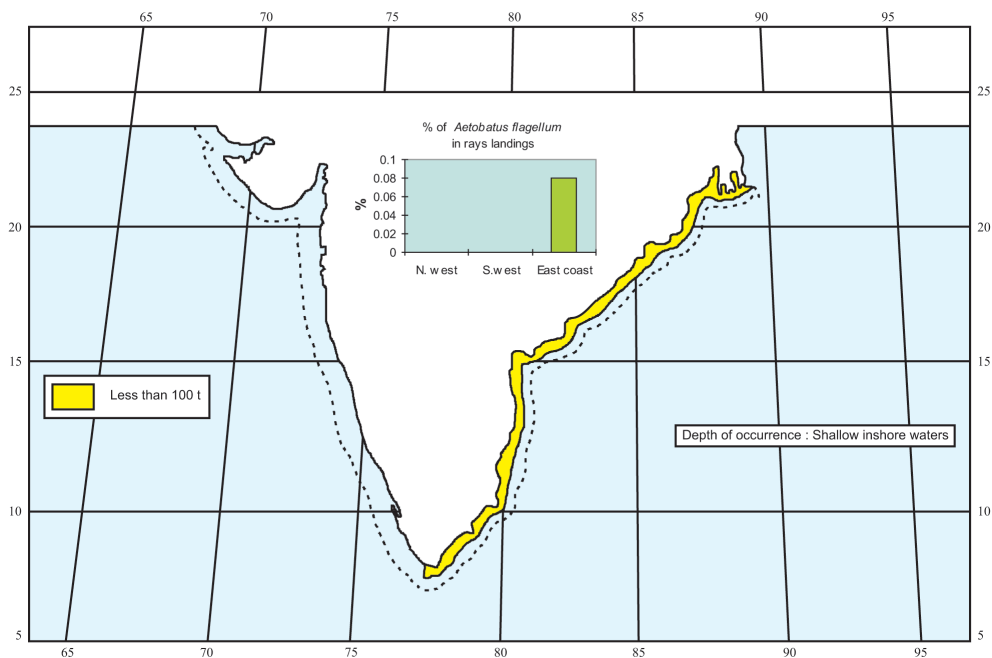
Whether endangered / banned : Endangered (EN).

10. General remarks : This eagle ray has been observed in the Chilka Lake (Orissa) and is of minor interest to fisheries in the lake.

Aetobatus flagellum



(Source : Anon, 1975)



Coastwise abundance (t.) of *Aetobatus flagellum* along Indian coast

Aetobatus narinari (Euphrasen, 1790)

1. Species profile :

Name of species : *Aetobatus narinari*
 Comm on name : Ray
 English name : Spotted eagleray

Vernacular name :

Gujarati : Wagali
 Marathi : Bolad, Wagali
 Malayalam : Pulli thirandi / Kakka thirandi
 Tamil : Kuruvi Thirukai, Vaval thirukkai
 Telugu : Eel - tenkee
 Oriya : Chili
 Lakshadweep Island : Madi, Vaval
 Andaman Island : Ra - Ta - charm - dal

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Myliobatidae
 Genus : *Aetobatus*
 Species : *narinari*

2b. Other scientific names recently in use

: None

3. Field identification characters : Disc rhomboid, much broader than long; snout projecting as a single lobe, snout elongated, narrow with a narrow ridge under eye to disc. One row of tooth plates in each jaw. Outer corners of pectoral fins pointed. Caudal spine present. Long whiplike tail with a long spine near the base. Colour : Dorsal surface blue or black with solid white spots.

4. Maximum size : 49-134 cm at Mumbai, 36-186 cm at Mandapam, 150 cm at Calicut, 198cm at Chennai.

5a. Distribution (Global) : Cosmopolitan species. Occurs worldwide in tropical and subtropical water in the Atlantic, Indian and Pacific ocean. It enters in estuarine waters of India to Malay Archipelago and beyond.

5b. Depth of occurrence : Coastal; 20-40m.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	BSGN*	Long line	Total catch(t)
North West	0	0	0	0	0
South West	100	0	0	0	38.09
East coast	87.77	11.27	0.55	0.41	3545.539

*Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences	: Bivalves, molluscs, prawns, crabs, clams, oysters, <i>Perna</i> spp., <i>Nemipterus</i> spp and <i>Apogon</i> spp.
Role in food chain	: Secondary
Type of breeding & reproductive capacity	: Ovo-viviparous with no placenta;3 pups / litter.
Size at maturity	: At Madras, males mature at a size of 135 cm and females at 150cm across the disc.
Size at birth	: 200- 225 mm.
Peak breeding season	: See Appendix-II
Other remarks	: Gravid females in good number reported during April - May. At Calicut females are bigger than males and mature at 500 - 600 mm.

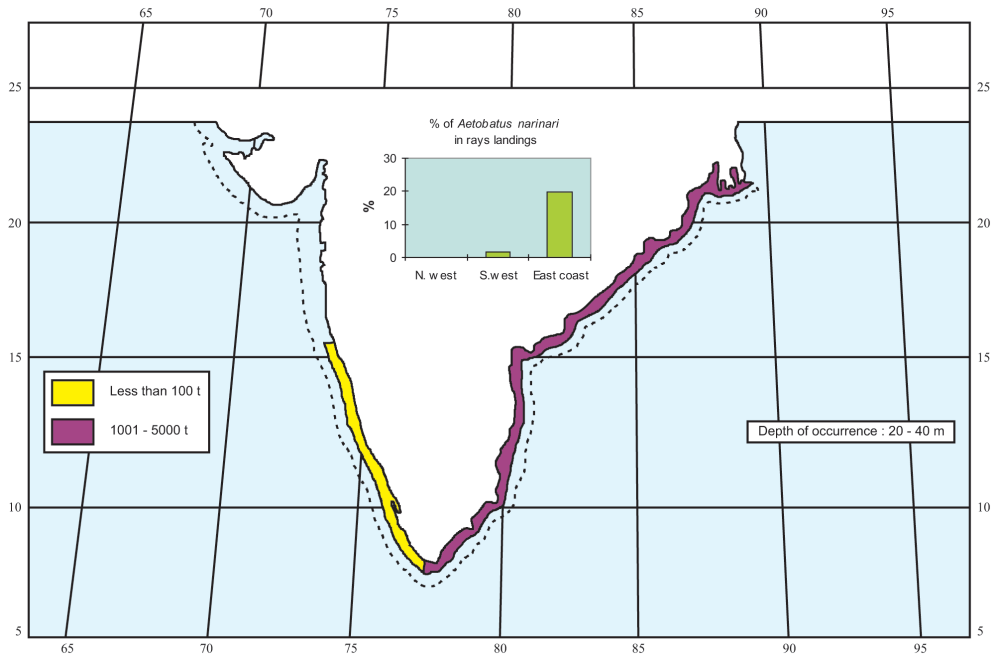
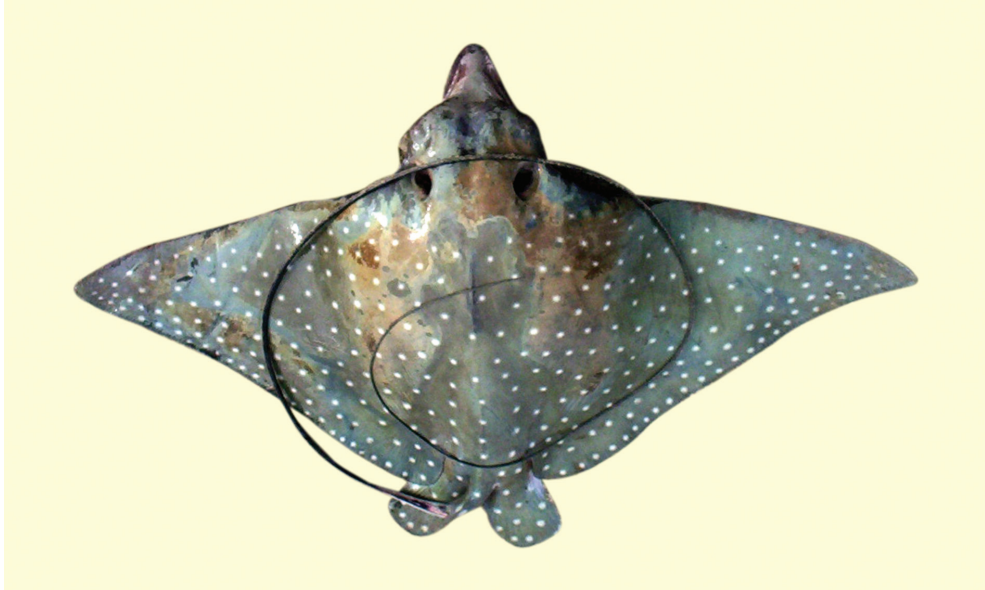
8. Present utilization : Meat of this ray is used in fresh as well as dried salted form for human consumption.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Aetobatus narinari



Coastwise abundance (t.) of *Aetobatus narinari* along Indian coast

Aetomylaeus nichofii (Schneider, 1801)

1. Species profile :

Name of species : *Aetomylaeus nichofii*

Common name : Nieuhof's eagleray

Vernacular name :

Gujarati : Karaj

Marathi : Bolad

Malayalam : Kaniyen- thirandi, Kuruvi- thirukkai

Tamil : Tuppa - kollee

Telugu : Mookaran tonkee

2a. Taxonomical position:

Super order : Batoidei

Order : Rajiformes

Family : Myliobatidae

Genus : *Aetomylaeus*

Species : *nichofii*

2b. Other scientific names in use : None

3. Field identification characters : Disc rhomboid, about twice as wide as long. Teeth in 3 rows, median wider and lateral narrow. Orbital horn present. Spiracle twice in size than eye. Dorsal fin origin opposite end of pelvic base. No caudal spine. Colour: Back dark brown anteriorly with 3 - 5 transverse or horizontally grey bands, posteriorly with large, close set rounded greyish blotches.

4. Maximum size : Chennai - 69 cm.

5a. Distribution (Global) : Indo-West Pacific; India, Burma, Pakistan, Sri Lanka, through the East Indies to Japan.

5b. Depth of occurrence : Inhabits shallow inshore waters, enters to brackish water, salt lakes and estuaries.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	0	0
East coast	100	2.6

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : Crustaceans like *Thenus* spp, *Acetes* sp, prawns, crabs. Teleostean fishes are also included (Apogonids, Nemipterids and soles). Squids and gastropods formed a considerable portion of diet (Raje & Joshi, 2003).

Type of breeding & reproductive capacity : Viviparous, No. of embryo 1 - 3 / litter .

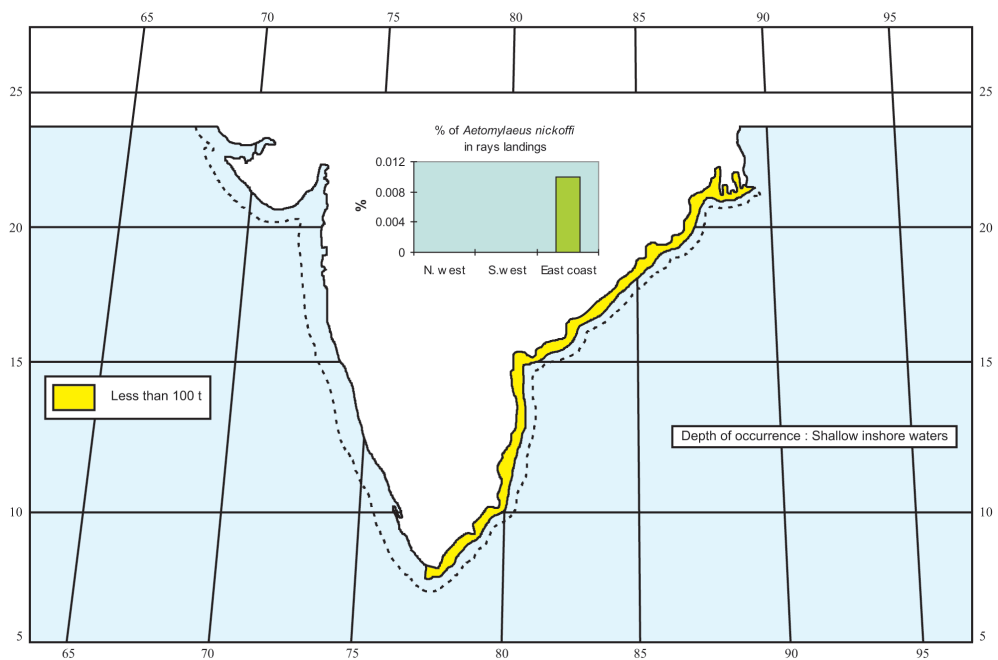
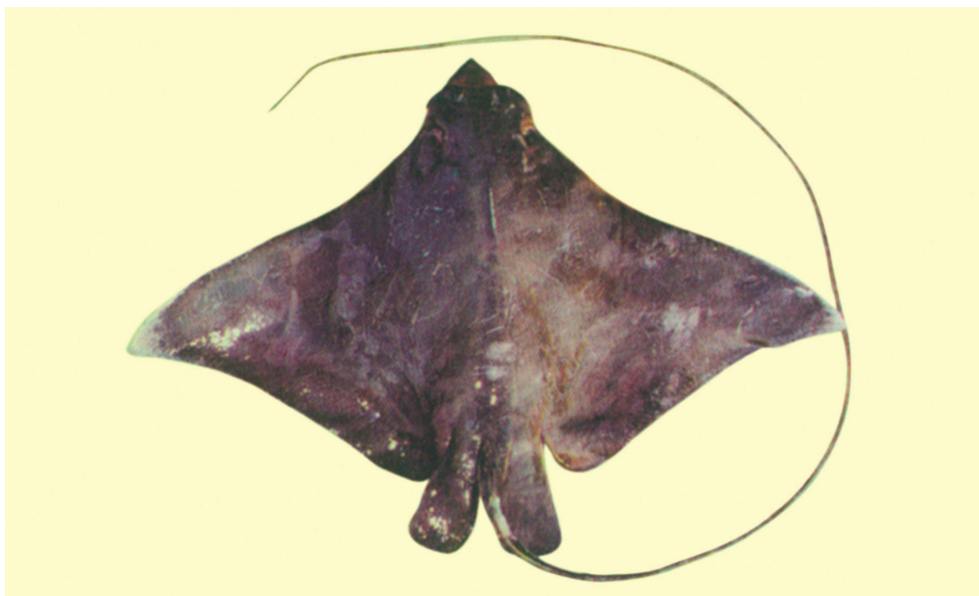
Size at birth : 200 - 235 mm (Devadoss, 1998).

8. Present utilization : This species is priced very much as table fish at Cuddalore, off South east coast of India.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Aetomylaeus nichofiiCoastwise abundance (t.) of *Aetomylaeus nichofii* along Indian coast

Dasyatis alcockii* (Annandale,1909)*1. Species profile :**

Name of species : *Dasyatis alcockii*
 Comm on name : Stingray
 English name : Pale-spot stingray

Vernacular name :

Marathi : Goras
 Tamil : Aaran Thirukai

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Dasyatis*
 Species : *alcockii*

2b. Other scientific names in use : None

3. Field identification characters : Disc rhomboid. Snout triangular and produced. Length of snout about 4 times in disc. Tail without cutaneous fold, long and without bands. Eye diameter about 2 times in interorbital width. Pale greenish tubercles on middle of back. One serrated spine on tail. Colour : Dorsal surface greenish or brownish, ventral surface white.

4. Maximum size : 1320 mm (Devadoss, 1978a)

5a. Distribution (Global) : Indian ocean, India to Indonesia.

5b. Depth of occurrence : 20-40 m

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Gill net	Total catch(t)
North West	100	0	1391
South West	0	0	0
East coast	40	60	475

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : Squilla, *Thenus* sp., crabs, polychaetes, fishes and molluscs (Devadoss, 1978a)

Role in food chain : Tertiary

Type of breeding& reproductive capacity : Ovoviviparous, 1-2 pups/litter; Pup size: 21 cm at Chennai.

Peak breeding season : See Appendix-II

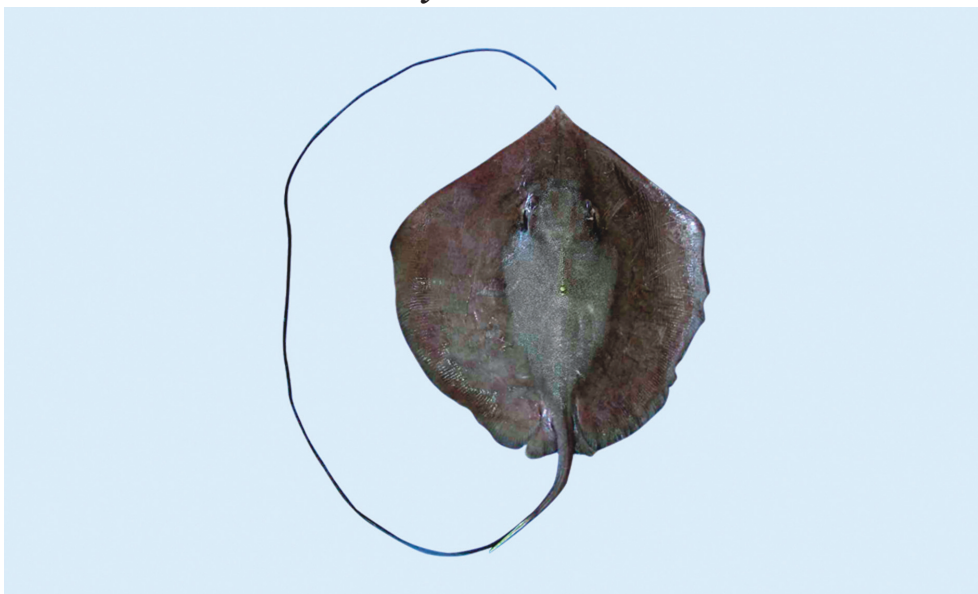
8. Present utilization : Meat for human consumption; fins for soup. Consumed in fresh and salt cured form.

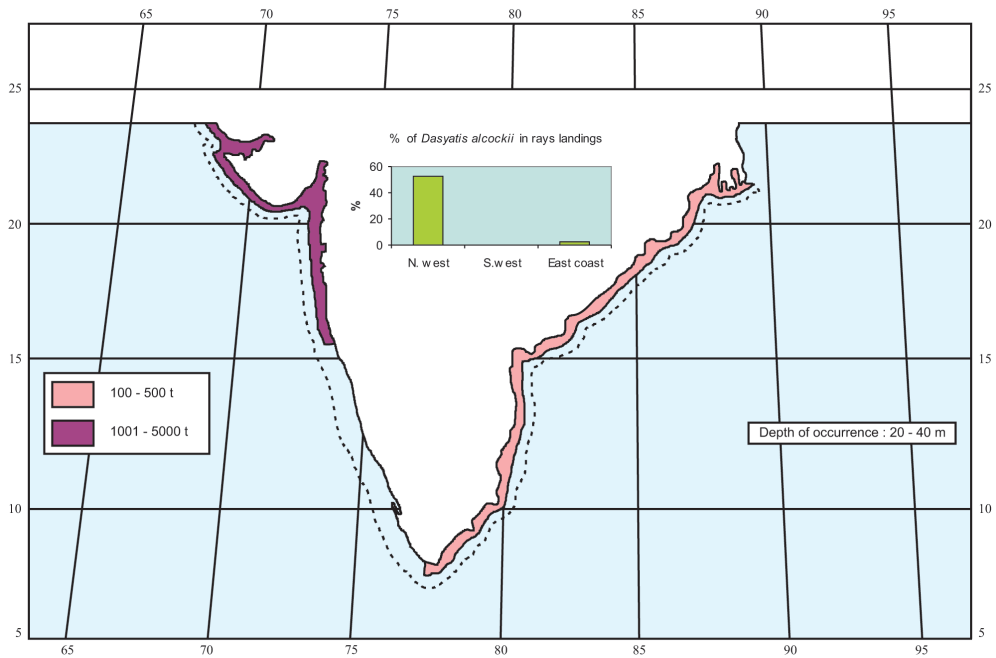
9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Dasyatis alcockii





Dasyatis centroura (Mitchill, 1815)

1. Species profile :

Name of species : *Dasyatis centroura*
 Common name : Ray
 English name : Rough-tail stingray

Vernacular name :

Tamil : Thirukkai

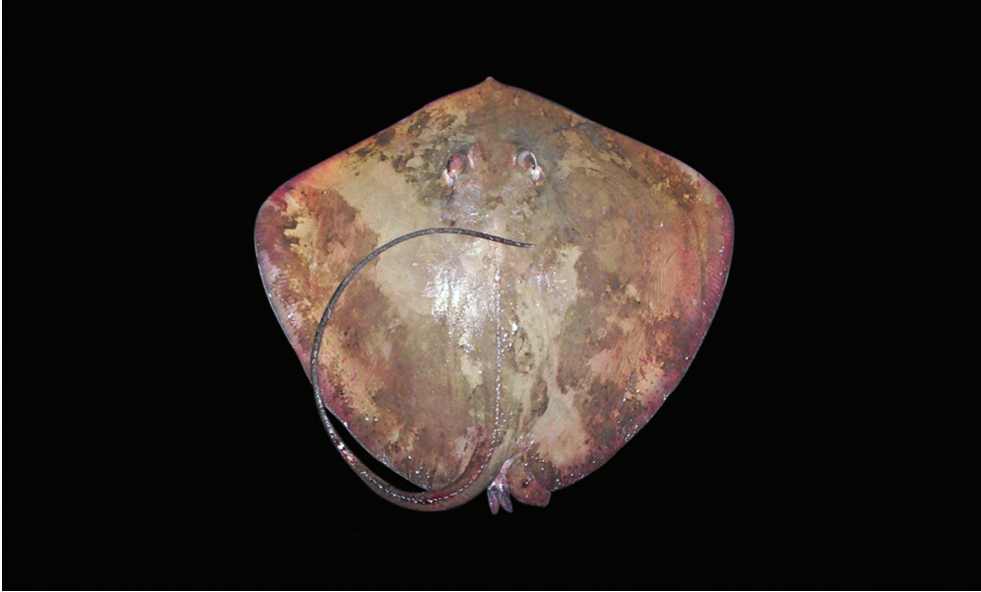
2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Dasyatis*
 Species : *centroura*

2b. Other scientific names in use : None

3. **Field identification characters** : Disc partly quadrangular, wider than long. Snout blunt. Head region armed with few flattened tubercles. A row of depressed dermal denticles along mid dorsal line of the body. Tail black fairly thick at base, cylindrical, tapering with numerous rows of small spines. Colour : Dorsal side uniform dark brown to dusky with dermal denticles dispersed irregularly. Anterior margin of pectoral white.
4. **Maximum size** : 242 cm at Quilon, Kerala (Silas and Selvaraj, 1985).
- 5a. **Distribution (Global)** : Atlantic from Mediterranean. Coasts of India. Eastern and Western Atlantic.
- 5b. **Depth of occurrence** : Common near the coast; 10-45m.
- 6a. **Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. **Regional/seasonal abundance** : Data not available
7. **Biological characters :**
- Food preferences : Feeds on invertebrates and fishes.
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous.
- 8a. **Present utilization** : Consumed in fresh, smoked and salt cured form; offal used for fish meal.
- 8b. **Drug and medicinal value** : Oil extracted from this fish.
9. **Conservation and management:**
- Whether endangered / banned : No
10. **General remarks** : Nil

Dasyatis centroura



Dasyatis kuhlii (Muller & Henle, 1841)

1. Species profile :

Name of species : *Dasyatis kuhlii*
Common name : Blue spotted stingray
English name : Blue spotted stingray

Vernacular name :

Marathi : Palwa, Pakat
Tamil : Munakkannu thirukkai, Katti thirukkai,
Pulli thirukkai
Telugu : Shemen - tenkee

2a. Taxonomical position:

Super order : Batoidei
Order : Rajiformes
Family : Dasyatidae
Genus : *Dasyatis*
Species : *kuhlii*

2b. Other scientific names in use : *Trygon kuhlii* (Muller & Henle, 1841);
Amphotistius kuhlii (Munro, 1955).

3. Field identification characters : Disc broader than long. Snout somewhat obtuse. Spiracles larger than eye. Mouth with papillae or precess. Tail one half longer than the disc, with a cutaneous fold above and below. Colour : Above of a dull brown, covered with numerous small black spots and larger round blue ocelli. Black and white bands behind sting of tail.

4. Maximum size : 24 - 80 cm at Chennai.

5a. Distribution (Global) : Widely distributed from Indian Ocean to Japan and Australia, Zanzibar, India, Sri Lanka, Singapore, Siam, China, Japan, Java, Celebes, Philippines, Melanesia, Polynesia and Australia.

5b. Depth of occurrence : Usually found in deeper waters but moves onto the reef flat and shallow lagoons.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/ Gear	Trawl	Gill net	BSGN*	Total catch(t)
	North West	100	0	0	0.12
	South West	100	0	0	73
	East coast	84	10	6	577.5

*Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : Fish, prawns, crabs and other crustaceans

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous, 1- 2 young / litter.

Peak breeding season : See Appendix-II

8. Present utilization : It is utilized fresh and dried salted for human consumption.

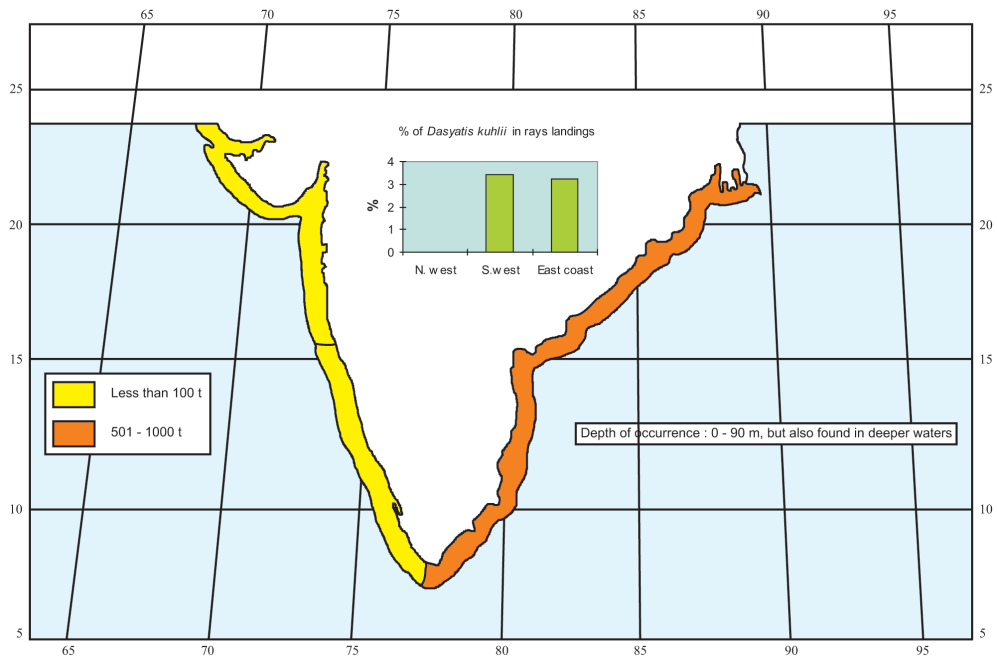
9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Dasyatis kuhlii





Dasyatis microps (Annandale, 1908)

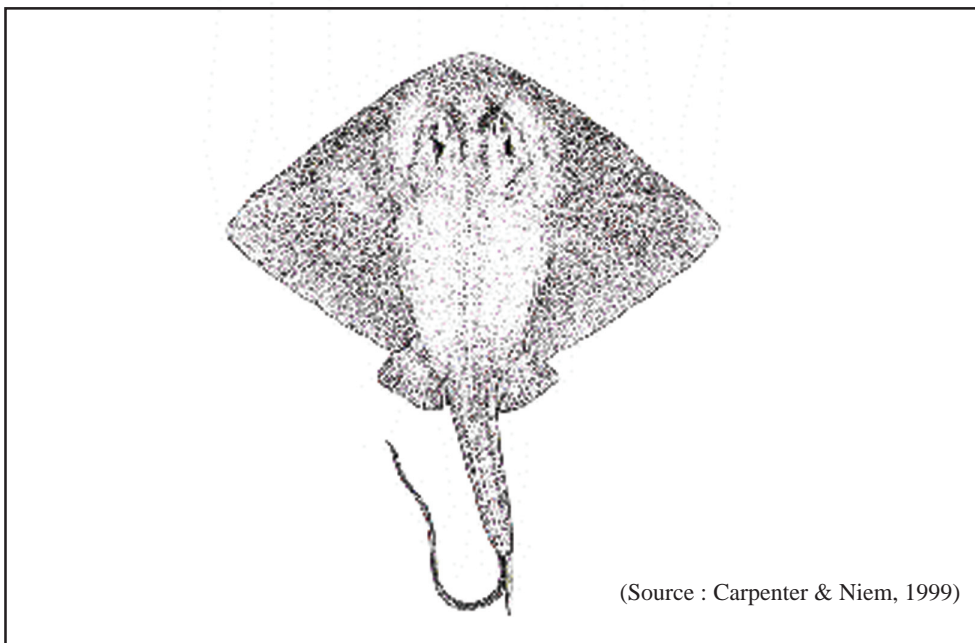
1. Species profile :

Name of species	: <i>Dasyatis microps</i>
Common name	: Ray
English name	: Small-eye stingray
Vernacular name :	
Tamil	: Sembatathan thirukkai

2a. Taxonomical position:

Super order	: Batoidei
Order	: Rajiformes
Family	: Dasyatidae
Genus	: <i>Dasyatis</i>
Species	: <i>microps</i>

- 2b. Other scientific names in use :** *Trygon microps* Annandale, 1908
- 3. Field identification characters :** Disc with numerous stellate, basal denticles, slightly enlarged around eyes and spiracles. Floor of the mouth with four buccal processes. Tail as long as or little longer than disc. It has a thick, low cutaneous fold giving the appearance of a ridge on the ventral side. Base and sides of tail with enlarged denticles; ventral with small denticles. Tail upto caudal spine broad, flat and narrow, cylindrical posterior part. Colour : Whitish brown dorsally, pale ventrally. Whitish spots on either side of disc, middorsal and pectoral. Few spots around the orbit, spiracle and base of tail.
- 4. Maximum size :** 2.05 m at Gulf of Mannar (Nair and Soundararajan, 1976).
- 5a. Distribution (Global) :** India (east coast) and Philippines, Indo West Pacific: India; Bangladesh, and Australia.
- 5b. Depth of occurrence :** Inhabits coastal waters and river mouths; found in Continental shelf.
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 :** Data not available.
- 6b. Regional /seasonal abundance :** Data not available.
- 7. Biological characters :**
- Type of breeding & reproductive capacity : Ovoviviparous.
- 8. Present utilization :** Consumed in fresh and salt cured form.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks :** Nil

Dasyatis microps

(Source : Carpenter & Niem, 1999)

Dasyatis pastinaca (Linnaeus, 1758)**1. Species profile :**Name of species : *Dasyatis pastinaca*

Common name : Blue stingray

Vernacular name :

Tamil : Thirukay

2a. Taxonomical position:

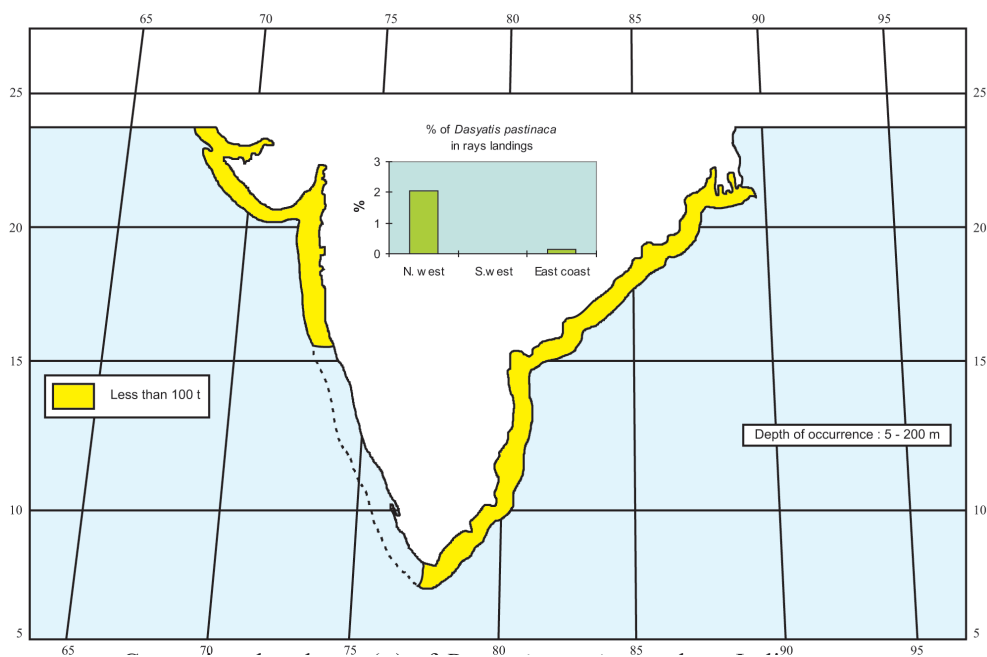
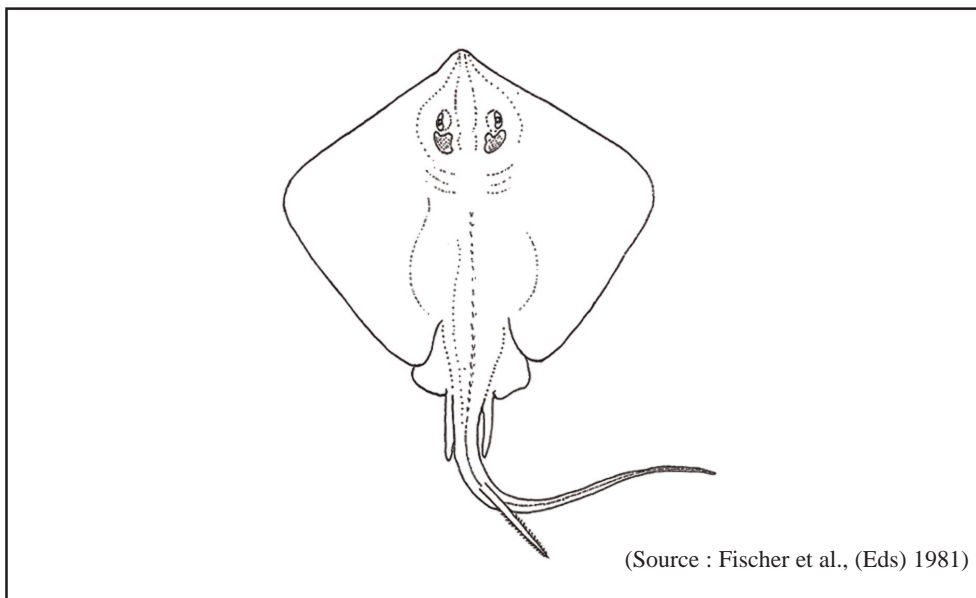
Super order : Batoidei

Order : Rajiformes

Family : Dasyatidae

Genus : *Dasyatis*Species : *pastinaca***2b. Other scientific names in use : None**

- 3. Field identification characters** : Disc rhomboid, about 1.2 times as broad as long. Snout obtusely pointed. Spiracles larger than eye. Mouth nearly straight, a transverse row of 3 to 5 fleshy papillae on floor of mouth. Tail slender, about 1.5 times as long as disc with usually 1 long serrated spine on its base, a long, low longitudinal fold on ventral side of tail from origin of spine backward. Several tubercular thorns in a medium row along back and on shoulders. Colour : Variable grey to sea blue above, mottled with golden brown spots, ventral surface creamy white.
- 4. Maximum size** : 410 mm
- 5a. Distribution (Global)** : Eastern Atlantic, North Sea, Western Baltic, Mediterranean, Natal coast, Madagascar and India.
- 5b. Depth of occurrence** : Brackish; marine; depth range 5-200 m
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** :
- | | Coast/Gear | Trawl | Gill net | Total catch(t) |
|------------|------------|-------|----------|----------------|
| North West | 100 | | 0 | 54 |
| South West | 0 | | 0 | 0 |
| East coast | 0 | | 100 | 23 |
- 6b. Regional /seasonal abundance** : Data not available.
- 7. Biological characters** : Data not available.
- 8. Present utilization** : Flesh used for human consumption, skin for leather.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : Nil

Dasyatis pastinaca

Dasyatis zugei (Muller & Henle, 1841)

1. Species profile :

Name of species : *Dasyatis zugei*
 Common name : Pale edged stingray
 English name : Pale edged stingray

Vernacular name :

Gujarati : Varala
 Marathi : Wagli, Pakat
 Tamil : Chumbara - kan, Sen thirukkai
 Telugu : Teruchep
 Oriya : Kalasankara, Sankucha

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Dasyatis*
 Species : *zugei*

2b. Other scientific names in use : *Trygon zugei* (Muller & Henle, 1841);
Amphotistius zugei (Muller & Henle, 1841).

3. Field identification characters : Disc subquadrangular, as long as wide; spiracles much larger than eyes; snout very pointed and produced; mouth undulated, inter orbital space concave. A few tubercles in median line on back; tail whiplike, roughened with tubercles; upper and lower cutaneous folds and one serrated spine. Colour : Yellowish to reddish brown, rather pale marginally on disc.

4. Maximum size : Size range at Mumbai: 18-40 cm; 28 cm at Chennai

5a. Distribution (Global) : Southern Japan to Indian Ocean: India, Burma, Sri Lanka, Malay Peninsula, China, Java, Philippines.

5b. Depth of occurrence : Primarily marine, common in estuaries, found in relatively deeper waters.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004	Coast/Gear	Trawl	Total catch(t)
	North West	100	1.60
	South West	100	5
	East coast	100	12

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : Prawns, crab, squilla, fishes and molluscs.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous, no. of embryos 1-2 per litter.

Size at birth : 112 - 125 mm.

Peak breeding season : See Appendix-II

Other remarks : Only left uterus is developed.

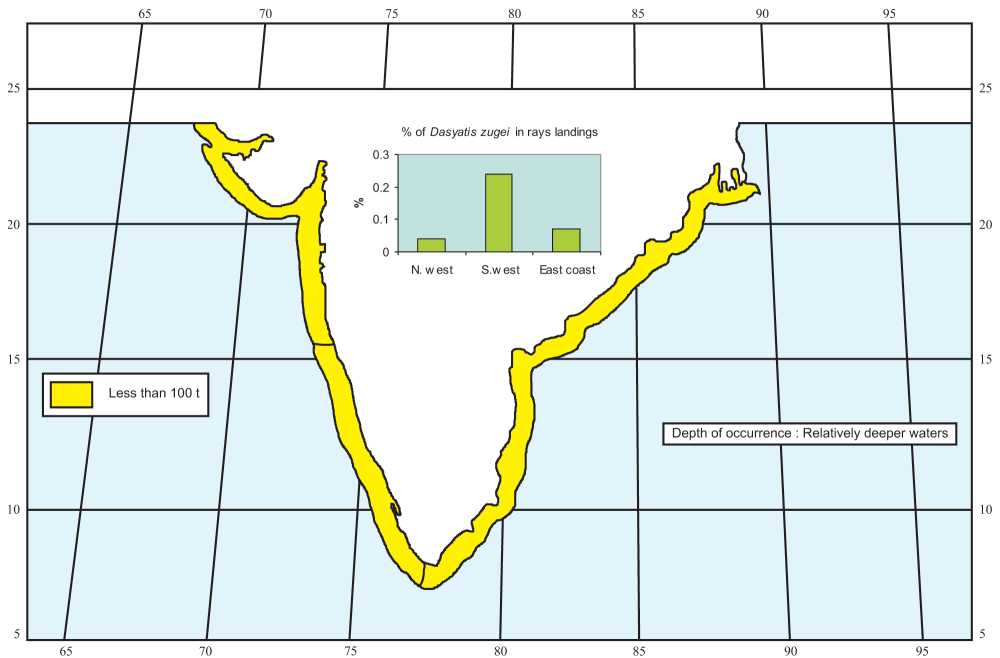
8. Present utilization : Consumed fresh and dried salted form.

9. Conservation and management:

Whether endangered / banned : Near threatened(NT).

10. General remarks : Nil

Dasyatis zugei



Gymnura japonica (Temminck & Schegil, 1850)

1. Species profile :

Name of species : *Gymnura japonica*
 Common name : Japanese butterflyray

Vernacular name :

Tamil : Mazhmi - thirukkai
 Marathi : Randgi, Shevta

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Gymnuridae
 Genus : *Gymnura*
 Species : *japonica*

2b. Other scientific names in use : None

3. Field identification characters : Disc broader than long, extremely flattened, butterfly shaped. Anterior margin slightly concave beside spiracles. Snout broadly obtuse with a slight projection in front. Body smooth, without any denticles or thorns. Eyes very small. Spiracles large about equal to eye diameter. Tail slender, 1.3 to 1.4 times in length of disc, armed with a small weak serrated spine at proximal part. No dorsal , anal and caudal fins. Colour : Dorsal surface of the disc dark grey . Tail with alternating black and white bands (about 6 to 8 black bands).

4. Maximum size : 100 cm (Masuda et al., 1975.)

5a. Distribution (Global) : North West Pacific: Southern Japan to the China Seas. Possibly in Thailand, Reported from India.

5b. Depth of occurrence : Marine, demersal, 20-40 m

6a. **Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004**

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	0	0
East coast	100	26

6b. **Regional /seasonal abundance** : See Appendix-II.

7. **Biological characters** : Data not available

8. **Present utilization** : Flesh is used for human consumption in fresh and dried condition.

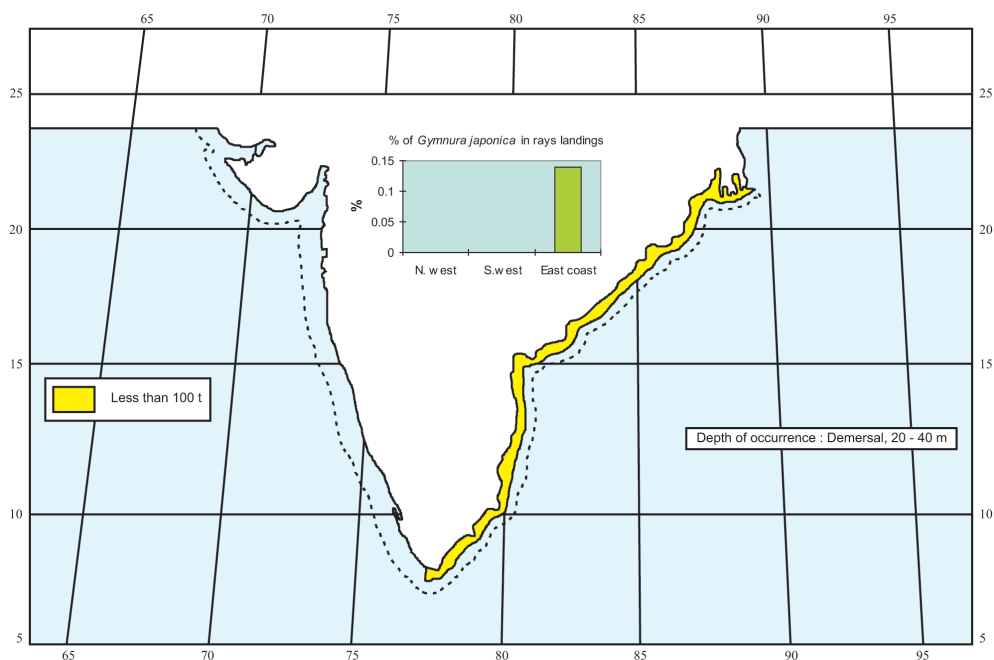
9. **Conservation and management:**

Whether endangered / banned : No

10. **General remarks** : This species is reported to be common in commercial catch at Orissa, North east coast of India

Gymnura japonica





Coastwise abundance (t.) of *Gymnura japonica* along Indian coast

Gymnura micrura (Bloch & Schneider, 1801)

1. Species profile :

Name of species : *Gymnura micrura*
 Common name : Smooth butterflyray
 English name : Short tail butterflyray

Vernacular name :

Marathi : Chamali , Pakat
 Malayalam : Perum - tirike, Tappor kooti tiriki
 Tamil : Advani - tiriki
 Telugu : Tappu - cooti, tenkee - kunsul

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes

Family	: Gymnuridae
Genus	: <i>Gymnura</i>
Species	: <i>micrura</i>

2b. Other scientific names in use : *Raja micrura* (Schneider, 1801)

3. Field identification characters : Broad diamond shaped ray with a very short tail, lacking in dorsal spine. Small rudimentary dorsal fin as large as the eye. Disc about twice as wide as long, snout protruding. One or two small spines on caudal fin. Skin smooth. Tail with a low dorsal and ventral fin folds and 3-4 dark cross bars. Colour : Reddish brown, young ones are covered all over with small brown spots.

4. Maximum size : Calicut - 137 cm.

5a. Distribution (Global) : India, Sri Lanka, Malaysia, Singapore, Viet Nam, Borneo, Sumatra, Indonesia, Philippines, Africa, Siam, Burma.

5b. Depth of occurrence : Prefers neritic waters of continental shelf; depth range upto 40m.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	100	506
East coast	0	0

6b. Regional/seasonal abundance : See Appendix-II

7. Biological characters :

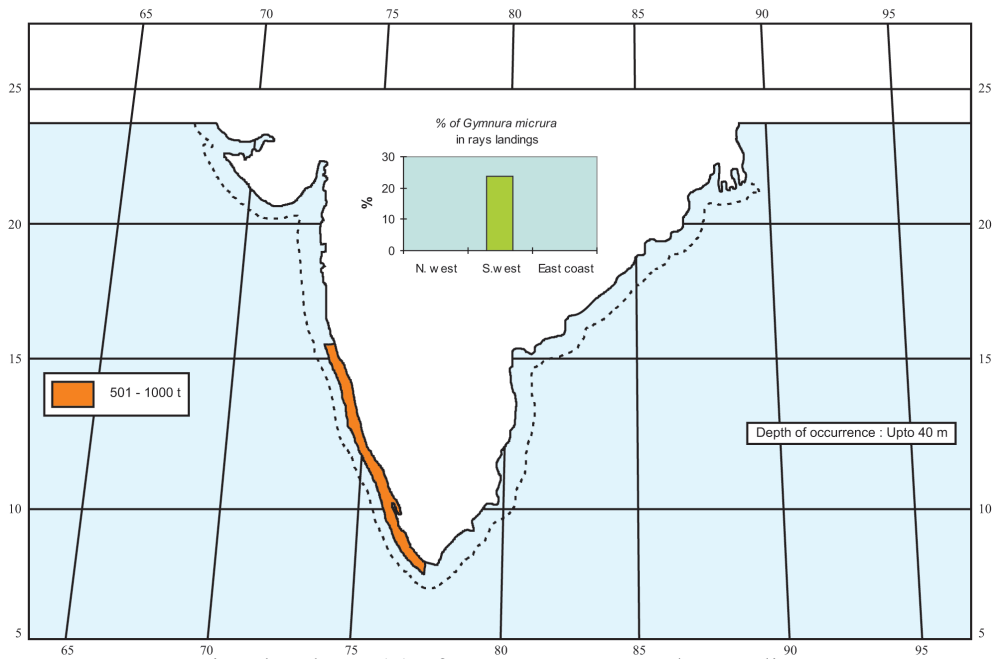
Food preference : Teleosts : *Coilia dussumieri*, Sciaenids, *Trypauchen vagina*. Crustaceans : *Solenocera* sp, *Parapenaeopsis stylifera*, *Nematopalaemon tenuipes*.

Role in food chain : Tertiary

- Type of breeding & reproductive capacity : Ovoviviparous, No. of embryo 2 / litter.
- Peak breeding season : See Appendix-II
- 8. Present utilization** : Flesh is used for human consumption in fresh or salt cured form.
- 9. Conservation and management**
- Whether endangered / banned : No
- 10. General remarks** : Nil.

Gymnura micrura





Coastwise abundance (t.) of *Gymnura micrura* along Indian coast

Gymnura poecilura (Shaw, 1804)

1. Species profile :

Name of species : *Gymnura poecilura*
 Common name : Ray
 English name : Long tailed butterflyray

Vernacular name :

Marathi : Randgi, Slevta
 Malayalam : Perum - thirandi
 Tamil : Advani - tiriki
 Telugu : Tappu - cooti, tenkee - kunsul
 Oriya : Sankusa

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes

Family : Gymnuridae
 Genus : *Gymnura*
 Species : *poecilura*

2b. Other scientific names in use : None

3. Field identification characters : Disc lozenge -shaped, twice as broad as long. The tip of the snout projects slightly in angular form. Tail almost as long as disc with a small weak serrated spine at the proximal part. A low median ridge is present on both the sides of tail. Skin smooth. Colour : On dorsal side varies, generally various shades of grey with light greenish yellow reflection. Circular creamy - yellow spot scattered all over the dorsal surface. Ventral surface yellowish or whitish. Tail whitish with a broad blackish bands, much wider than pale interspaces.

4. Maximum size : Mumbai- 108 cm, Chennai- 108 cm, Mandapam- 91.5 cm.

5a. Distribution (Global) : Indo - West Pacific : Red Sea, India, Sri Lanka, Malay Peninsula, Siam, China, Japan, Java, Sumatra, Philippines.

5b. Depth of occurrence : Found on sandy bottom of shallow inshore waters & offshore banks .

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Gill net	Total catch(t)
North West	100	0	24.74
South West	0	0	0
East coast	83.48	16.53	240

6b. Regional/seasonal abundance : See Appendix-II

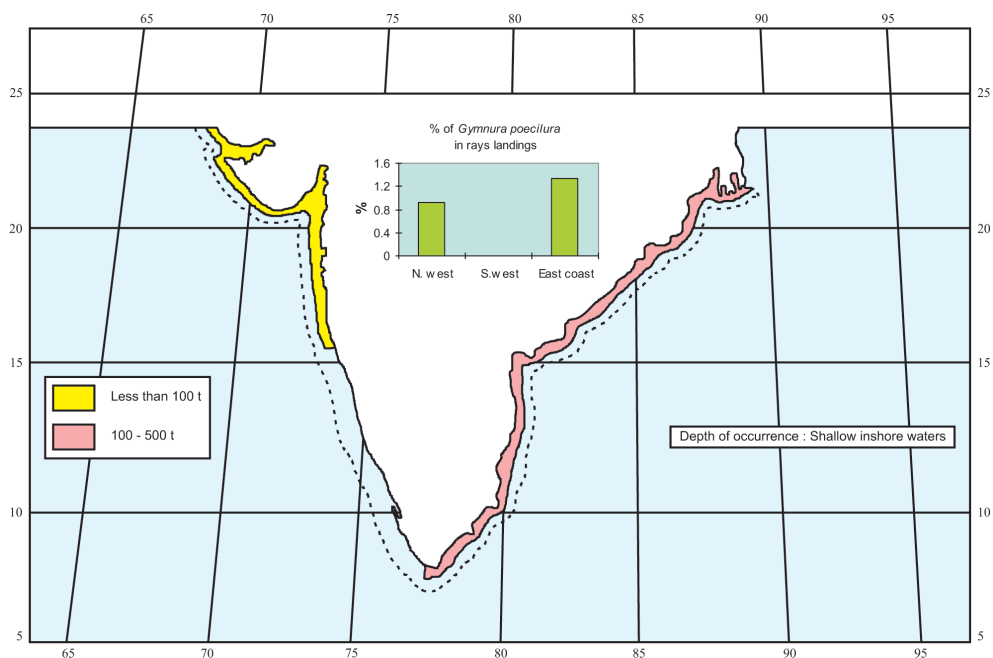
7. Biological characters :

Food preference : Feeds on prawns, crabs and other crustaceans.

- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous. 1 -4 embryos /litter.
- Size at birth : 237 - 256 mm.
- Peak breeding season : See Appendix-II
- 8. Present utilization** : Flesh of this fish consumed both in fresh and cured state.
- 9. Conservation and management :**
- Whether endangered / banned : No
- 10. General remarks** : Nil

Gymnura poecilura





Coastwise abundance (t.) of *Gymnura poecilura* along Indian coast

Himantura bleekeri (Blyth, 1860)

1. Species profile :

Name of species : *Himantura bleekeri*
 Comm on name : Whip tail stingray
 English name : Bleeker's whipray

Vernacular name :

Marathi : Waghra, Pakat, Chamli
 Malayalam : Chembadan, Thirandi
 Tamil : Seman- tirik, Savukku thirukkai
 Telugu : Mulluteku
 Oriya : Sankara, Sankkucha

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes

Family : Dasyatidae
 Genus : *Himantura*
 Species : *bleekeri*

2b. Other scientific names recently in use : *Trygon bleekeri* (Blyth, 1860); *Dasyatis bleekeri* (Blyth, 1860).

3. Field identification characters : Disc oval and flat; snout narrowly triangular; a large rounded tubercle in the middle of back and three smaller one before and three more behind; Tail more than 3 times longer than the disc, and is without cutaneous fold. Colour: Uniform dark - brown above, ventral surface white with broad dark - brown margin; increasing in area with age.

4. Maximum size : 5 feet across the disc. Specimens of 105 cm disc width and 20 Kg wt are often caught from Palk Bay and Gulf of Mannar, South east coast of India.

5a. Distribution (Global) : Wide spread in the tropical Indo - West Pacific : Pakistan, India, Sri Lanka, Myanmar, Thailand, and Malaya Peninsula.

5b. Depth of occurrence : Inshore to at least 30 m (Compagno, 1997).

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 :

Coast/ Gear	Trawl	Gill net	BSGN*	Long line	Total catch(t)
North West	100	0	0	0	431
South West	100	0	0	0	182
East coast	80	17	2	1	2829.4

*Bottom Set Gill Net

6b. Regional/seasonal abundance : See Appendix-II

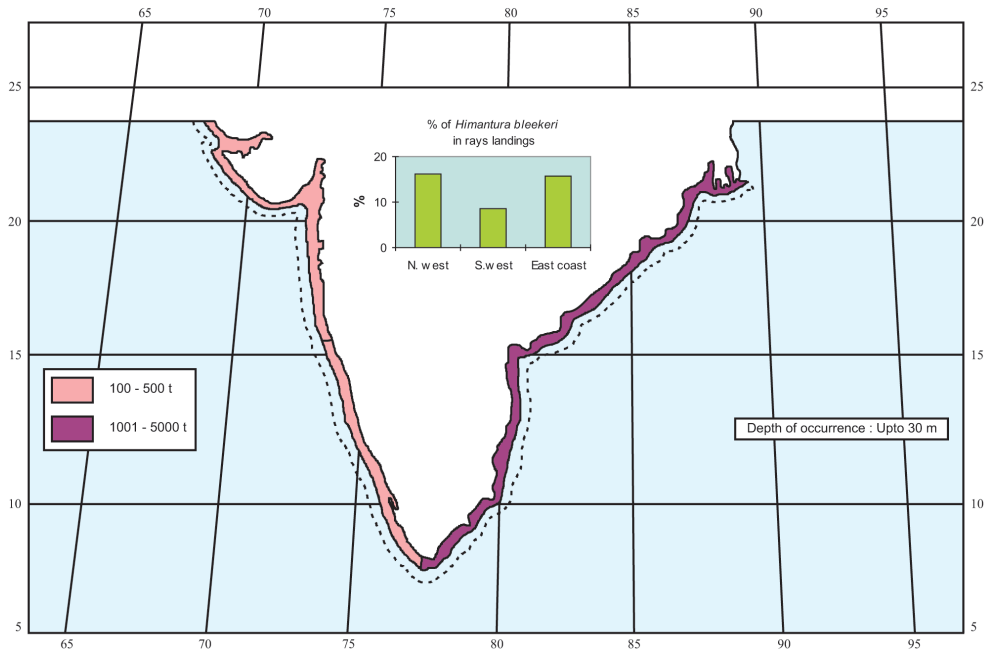
7. Biological characters :

Food preferences : Fishes, crustaceans, molluscs, polychaetes and ascidians.

- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous, 1 - 2 embryos/litter.
- Size at birth : 200 - 225 mm (Setna and Sarangdhar, 1949).
- Peak breeding season : See Appendix-II
- 8a. Present utilization** : Average weight of the liver is 2.2 Kg and yields 60% of oil. Flesh consumed fresh and dried salted form. Skin used for leather.
- 8.b Export potential** : The skin is exported to Nepal to prepare bags, shoes, purse etc. The price of the skin depends on the size (Rs. 15/- to 25/- Piece) at Mumbai.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : This species is common at several localities on the Indian coast, but detailed information on its fishery is not available.

Himantura bleekeri





Coastwise abundance (t.) of *Himantura bleekeri* along Indian coast

Himantura gerrardi (Gray, 1851)

1. Species profile :

Name of species : *Himantura gerrardi*
 Comm on name : Sharpnose stingray

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Himantura*
 Species : *gerrardi*

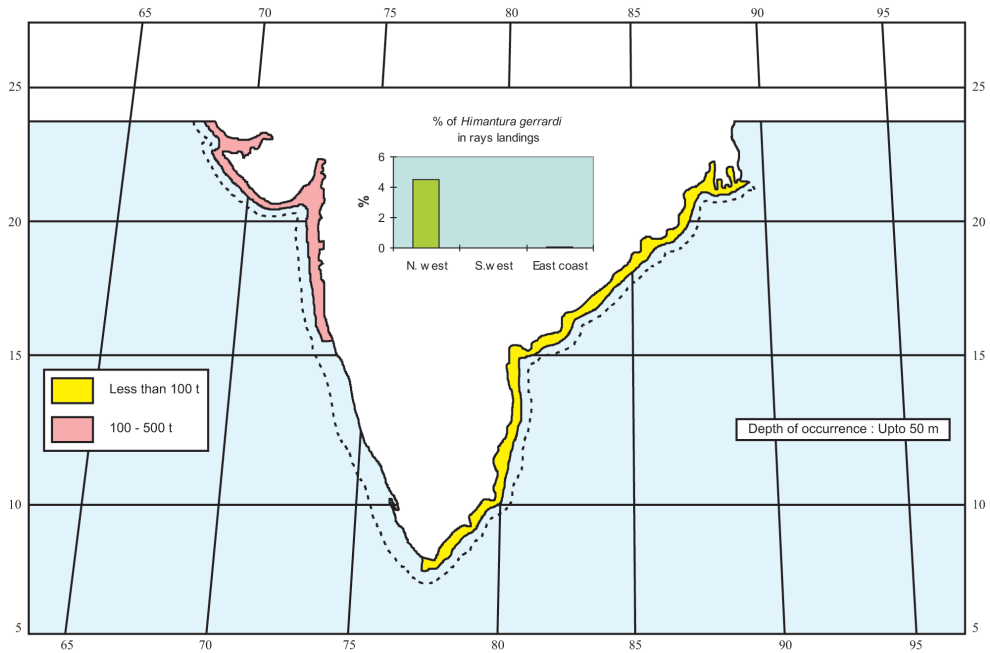
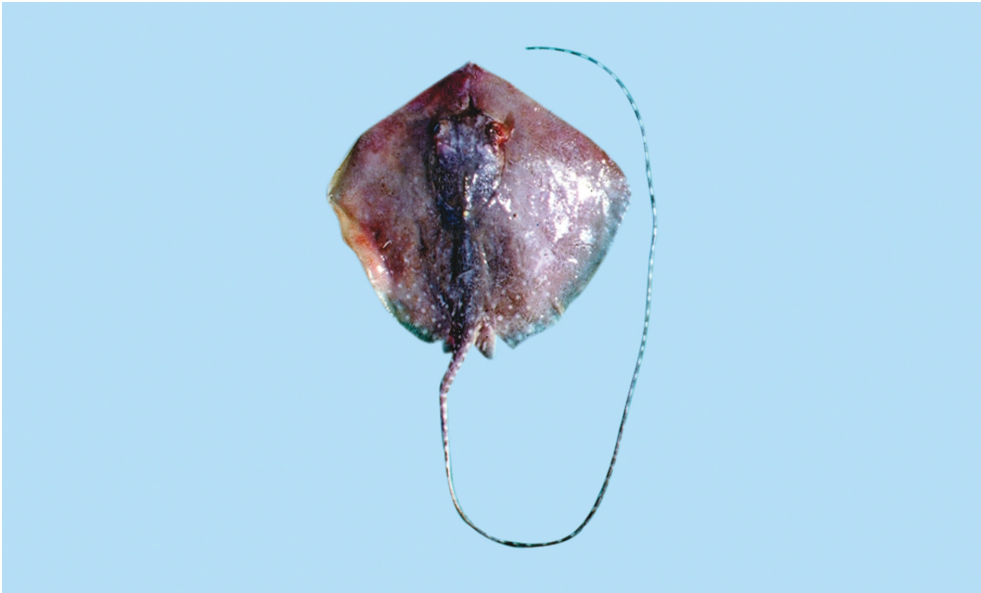
2b. Other scientific names in use : *Trygon gerrardi* (Gray, 1851); *Dasyatis gerrardi* (Gray, 1851)

3. Field identification characters : Disc slightly wider than long. Snout forms widely obtuse angle. Tail several times

longer than disc. Tail without upper or lower folds. Teeth 13 rows in upper and 23 rows in lower jaw. Colour: Dorsal surface of disc brown or grey, with obscure pale spots. Tail banded.

- 4. Maximum size** : 22 - 88 cm at Mumbai
- 5a. Distribution (Global)** : Eastern Cape to Natal and Mozambique. Widespread in Indian Ocean and Western Pacific from Zanzibar, the Red Sea , India, Sri Lanka, Indonesia, Japan, Philippines and Australia.
- 5b. Depth of occurrence** : Confined to inner continental shelf (upto 50m).
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004**
- | | Coast/Gear | Trawl | Gill net | Total catch(t) |
|--|------------|-------|----------|----------------|
| | North West | 100 | 0 | 120 |
| | South West | 0 | 0 | 0 |
| | East coast | 62 | 38 | 15.4 |
- 6b. Regional/seasonal abundance** : See Appendix-II
- 7. Biological characters :**
- Food preferences : Bottom crustaceans including shrimps, crabs and small lobsters.
- Type of breeding & reproductive capacity : Ovoviviparous , 2 embryos / litter.
- 8. Present utilization** : Meat for human consumption. Flesh consumed fresh and skin is exported to Nepal from Mumbai.
- 9. Conservation and management:**
- Whether endangered / banned : No.
- 10. General remarks** : Harmless.

Himantura gerrardi



Coastwise abundance (t.) of *Himantura gerrardi* along Indian coast

Himantura imbricata (Bloch & Schneider, 1801)

1. Species profile :

Name of species : *Himantura imbricata*
 Common name : Ray
 English name : Schneider's scaly - stingray

Vernacular name :

Marathi : Pakat, Hagar
 Tamil : Savukku thirukkai, Senthirukkai,

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Himantura*
 Species : *imbricata*

2b. Other scientific names in use : *Amphotisteus imbricatus* (Bloch & Schneider, 1801).

3. Field identification characters : Disc as wide as long ; snout slightly produced; spiracles slightly larger than eyes. Floor of the mouth with two buccal processes. Tail shorter than the length of the disc with 2 spines. Interspace between spiracles and middle of back with rough tubercles-continued backward to caudal spine; row of conical spines along the shoulder and back. Colour : Brownish above and whitish below.

4. Maximum size : 32 cm at Mumbai, 24.9 cm at Chennai, 22 cm at Port Novo.

5a. Distribution (Global) : Red Sea and Mauritius to the Lacadives, coasts of India, Coromandal coast of India, Ceylon

5b. Depth of occurrence : Found in inshore coastal waters.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	BSGN*	Total catch(t)
North West	100	0	0	417
South West	100	0	0	20
East coast	83.7	4.4	12	530.3

*Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : It is a bottom feeder, feeding on small burrowing and berried crustaceans, Polychaetes and molluscs, *Acetes*, *Amphioxus lanceolatum*, Amphipods, Mysids, Copepods and crabs.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous, 1-2 young/litter, it develops both ova and embryo simultaneously (Devadoss, 1978b).

Size at birth : 75 mm at Porto Novo (Devadoss, 1978b).

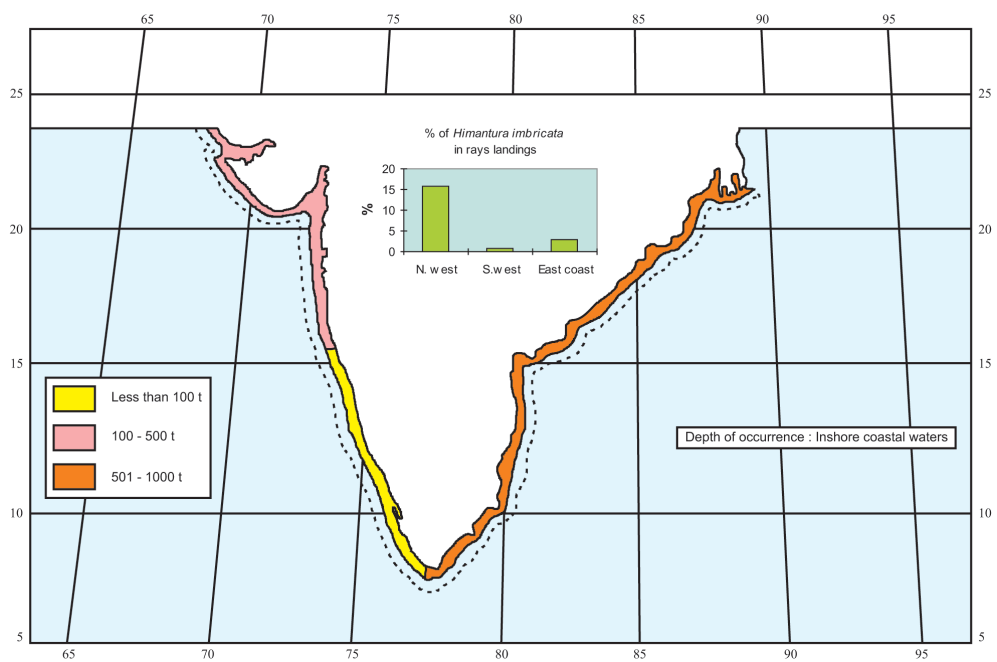
Peak breeding season : See Appendix-II

8. Present utilization : It is utilized fresh and dried salted for human consumption.

9. Conservation and management:

Whether endangered / banned : No.

10. General remarks : Nil.

Himantura imbricata

Himantura jenkinsii (Annandale, 1909)

1. Species profile :

Name of species	: <i>Himantura jenkinsii</i>
Comm on name	: Sharp nose stingray
English name	: Pointed nose stingray

2a. Taxonomical position:

Super order	: Batoidei
Order	: Rajiformes
Family	: Dasyatidae
Genus	: <i>Himantura</i>
Species	: <i>jenkinsii</i>

2b. Other scientific names in use : *Trygon jenkinsii* (Annandale, 1909);
Dasyatis jenkinsii (Annadale, 1909)

3. Field identification characters : Disc broader than long; snout sharply pointed 5.8 times disc length. Spiracles close to eye, eye 2.4 times in interorbital space. Mouth with four buccal processes. Tail 1.9 to 2.4 times longer than the disc, whip like, without cutaneous folds, with one or two serrated spine. skin rough. Colour : Uniformly light brown above, creamy white below. Tail in embryos and juveniles with alternating light and dark bands.

4. Maximum size : 100 cm at Calicut, 20 cm - 105 cm at Chennai.

5a. Distribution (Global) : East coast of Africa and Orissa (Ganjam) coast of India, Philippines.

5b. Depth of occurrence : Inhabits shallow coastal waters; depth range 42- 50m.

6a. Resource characters: Average	Coast/Gear	Trawl	Gill net	Total catch(t)
annual landing (Gearwise%)	North West	100	0	54
in India during 2003 & 2004	South West	0	0	0
	East coast	87.5	12.5	1678.4

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preferences : Feeds on fish, prawns, crabs, Squilla, *Thenus* sp., and polychaetes (Raje & Joshi, 2003).

Role of food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous; 2 embryos per litter.

Gestation period : 10-12 months; Embryos in full term stage (180-190mm) were collected during December-March off Chennai along South east coast of India (Devadoss, 1998).

Size at maturity : Males - 400mm; females -450mm.

Peak breeding season : See Appendix-II

8a. Present utilization : Flesh used for human consumption, skin for leather.

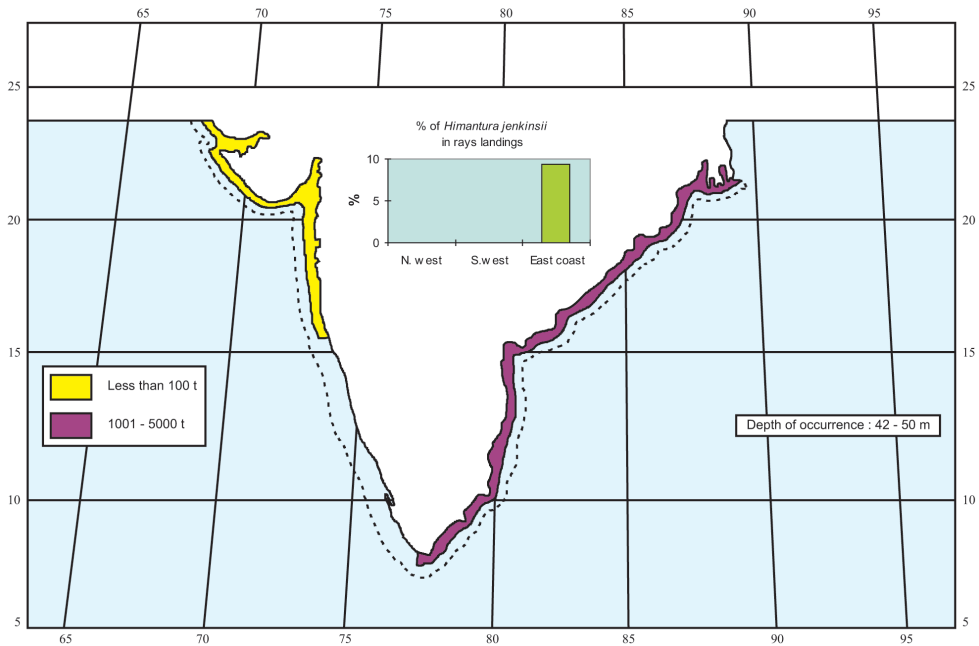
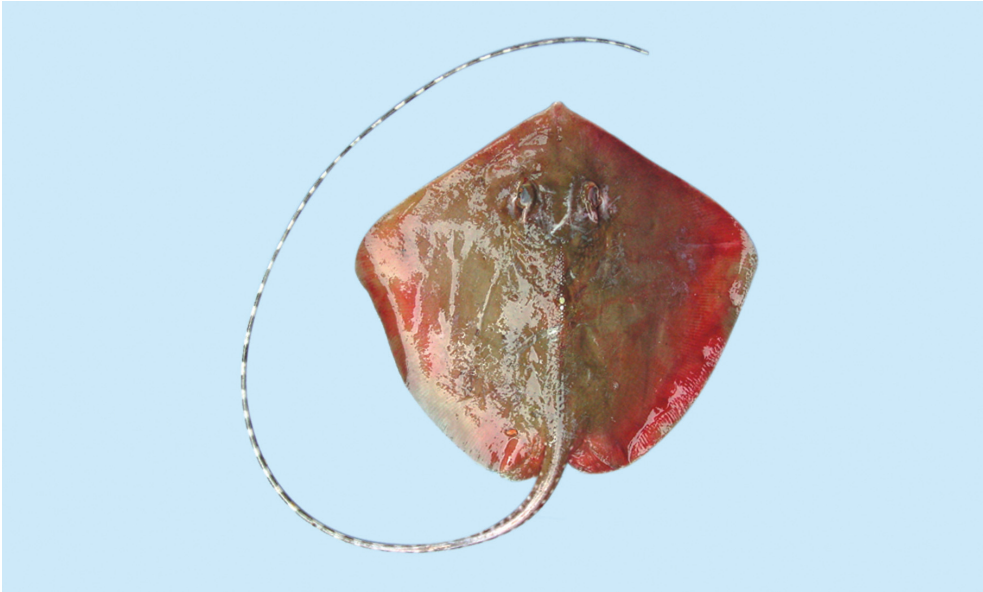
8b. Export potential : Salt dried rays exported to South Asian countries through Kerala.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Of minor commercial significance. Occasionally caught from Tamil Nadu and Orissa coast of India.

Himantura jenkinsii



Coastwise abundance (t.) of *Himantura jenkinsii* along Indian coast

Himantura marginatus (Blyth, 1860)

1. Species profile :

Name of species : *Himantura marginatus*
 Common name : Ray
 English name : Black-edged stingray

Vernacular name :

Tamil : Uppan Thirukai

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : Himantura
 Species : marginatus

2b. Other scientific names recently in use

: *Dasyatis marginatus* (Blyth, 1860).

3. Field identification characters : Disc oval in shape, broad anteriorly and narrow posteriorly. Disc slightly broader than long. Tip of snout projects a little in front of disc on either side of which are two gentle concavities. Floor of the mouth with two papillae. A row of pointed tubercles on the dorsal surface between head and centre of the back. Tail length 2.3 time of disc width. Tail with denticles intermixed with stellate spines. Colour : Grey above, huffy white below with a dark border except in front.

4. Maximum size : 119.2 cm. at Gulf of Mannar (James, 1973).

5a. Distribution (Global) : India, Burma, Ganjam and Gulf of Mannar (James, 1973).

5b. Depth of occurrence : Coastal; 20-40m.

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. Regional /seasonal abundance** : Data not available.
- 7. Biological characters :**
- Food preference : Data not available.
- Type of breeding & reproductive capacity : Ovoviviparous.
- 8. Present utilization** : Utilised in fresh and salt cured form.
- 9. Conservation and management:**
- Whether endangered / banned : No.
- 10. General remarks** : Nil.

Himantura marginatus



Himantura uarnak (Forsskal, 1775)

1. Species profile :

Name of species : *Himantura uarnak*
 Comm on name : Honey comb sting ray
 English name : Banded whip tail sting ray.

Vernacular name :

Marathi : Bhatya, waghya - pakat
 Kannada : Belya
 Malayalam : Thirandi
 Tamil : Sona - kah - tirike, Pulli - thirukkai
 Telugu : Puli - tenke
 Lakshadweep Island : Madi, Thirandi

2a. Taxonomical position:

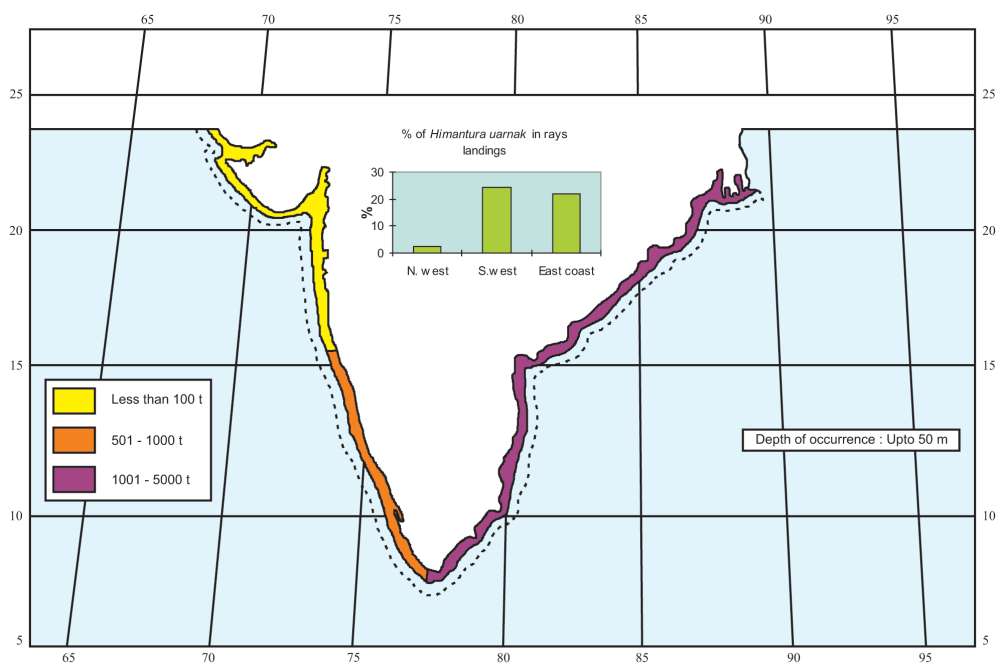
Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Himantura*
 Species : *uarnak*

2b. Other scientific names in use : *Dasyatis uarnak* (Forsskal, 1775); *Trygon uarnak* (Forsskal, 1775).

3. Field identification characters : Disc wider than long, rhomboidal, snout angular with a sharp point. Mouth long, undulated with four fleshy papillae on floor of mouth, outer two smaller than inner ones. Tail cylindrical and whiplike, several times longer than disc, with a single functional sting. No cutaneous fold on tail. Colour: Dorsal surface of disc brown to black with honey-comb or reticulated pattern or leopard pattern in adults. Tail striped with brown or black and white or yellow.

4. Maximum size : 18-162 cm, at Mumbai; 26-176 cm at Mandapam; 160 cm at Chennai (Present observation)

- 5a. Distribution (Global)** : Seas and estuaries of India, Cape of Good Hope, Natal, Madagascar, Seychelles, Zanzibar, Arabia, Sri Lanka, Myanmar, Siam, China, Melanesia and Polynesia.
- 5b. Depth of occurrence** : Shallow estuaries and lagoons; also offshore down to 50m depth.
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** :
- | Coast/
Gear | Trawl | Gill net | BSGN* | Long line | Total Catch(t) |
|----------------|-------|----------|-------|-----------|----------------|
| North West | 100 | 0 | 0 | 0 | 66 |
| South West | 100 | 0 | 0 | 0 | 518 |
| East coast | 85 | 9.6 | 2.3 | 3.2 | 3932 |
- *Bottom Set Gill Net
- 6b. Regional / seasonal abundance** : See Appendix-II
- 7. Biological characters :**
- Food preferences : Teleosts (*Coilia dussumieri*, Sciaenids, *Nemipterus mesoprion*, Leiognathids, Sardine, polynemids, anchovies, Mackerel, eels, Soles and Puffer fish) Crustaceans (*Solenocera* spp, *Parapenaeopsis stylifera*, *Nematopalaemon tenuipes*), molluscs (Squids, gastropods) (Devadoss, 1978a).
- Role in food chain : Predator
- Type of breeding & reproductive capacity : Ovoviviparous, 2 embryos / litter (Devadoss, 1984)
- Peak breeding season : See Appendix-II
- 8a. Present utilization** : Flesh consumed in fresh and dried salted condition.
- 8b. Export potential** : Skin of this species exported to Nepal.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : It is reported that trawling off Black Pagoda point and Sand Head region (West Bengal, North east coast of India) indicated fairly good occurrence of this ray.

Himantura uarnakCoastwise abundance (t.) of *Himantura uarnak* along Indian coast

Himantura walga* (Muller & Henle, 1841)*1. Species profile :**

Name of species : *Himantura walga*
 Common name : Ray
 English name : Scaly stingray; Dwarf whipray

Vernacular name :

Telugu : Isacurrah - tenkee, tenkee, Shidraki, Thirachi

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Himantura*
 Species : *walga*

2b. Other scientific names in use : *Dasyatis walga* (Muller&Henle, 1841),
Trygon walga (Muller & Henle, 1841)

3. Field identification characters : Snout pointed and acutely projecting. Disc sub circular, slightly longer than broad or as broad as long. Spiracles nearly equal to eyes. Mouth undulated with two buccal processes on floor of mouth. Tail whiplike, slightly longer than disc length, without upper and lower cutaneous fold, with 1 or 2 large serrated spines. Inter-orbital space concave. A series of small spines between root of tail and caudal spine. Colour : Dull grey or brown above, whitish below.

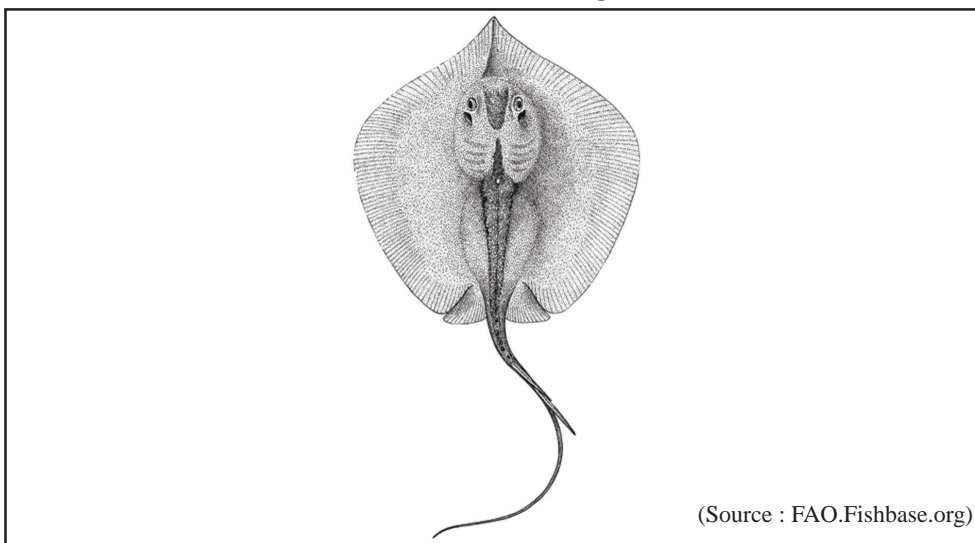
4. Maximum size : 405 mm at Mumbai

5a. Distribution (Global) : The Red Sea, India, Sri Lanka, through out the East India to China.

5b. Depth of occurrence : Abundant inshore, upto 24m.

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. Regional /seasonal abundance** : See Appendix-II
- 7. Biological characters :**
- Food preference : Feeds on teleosts (*Coilia dussumieri*), crustaceans (*Solenocera* spp., *Metapenaeus affinis*, *N. tenuipes* & crabs)
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous.
- Peak breeding season : See Appendix-II
- 8. Present utilization** : Flesh used in fresh condition for human consumption.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : Nil

Himantura walga



(Source : FAO.Fishbase.org)

Manta birostris (Walbaum,1792)

1. Species profile :

Name of species : *Manta birostris*
 Comm on name : Devil ray
 English name : Giant Manta, Manta ray

Vernacular name :

Tamil : Kotuwa - tiriki, Kombu tirukai
 Lakshadweep Island : Kottar, thirandi
 Marathi : Wagla, Bolar, Shing pakat

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Mobulidae
 Genus : *Manta*
 Species : *birostris*

2b. Other scientific names in use : None

3. Field identification characters : Mouth terminal, teeth in lower jaw only, head broad, width of spiracles greater than length from middle of upper jaw to 5th gill opening. Tail slender whip like but short, without a spine, with a small dorsal fin at its base. Cephalic horns rarely curled. Skin smooth. Colour : Dark greenish brown superiorly, ventral side white.

4. Maximum size : 700 cm (Anon, 1998).

5a. Distribution (Global) : South Africa, Red Sea, India, Malay Peninsula, Melanesia, North America, South America, Galapagoes Islands and West Indies.

5b. Depth of occurrence : Mainly in near shore waters; depth range 0-24m.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Gill net	Total catch(t)
North West	0	0	0
South West	100	0	647
East coast	18.7	81.3	43

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preference : Molluscs, crabs, Polychaetes and shrimp.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous, No. of embryo 2 / litter.

Peak breeding season : See Appendix-II

8. Present utilization : It is utilized for human consumption in fresh as well as dried, dried salted and smoked condition. Oil is extracted from the liver

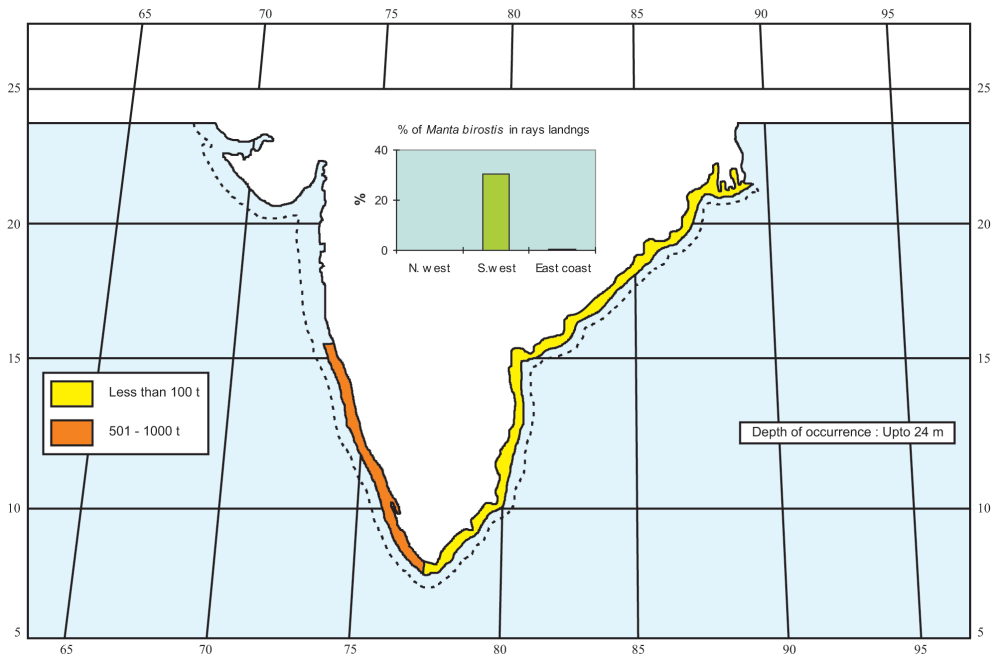
9. Conservation and management:

Whether endangered / banned : No

10. Other remarks : At Kalpeni, off Lakshadweep Islands, this species is abundantly landed using harpoon during June - November with peak during June - August.

At this island, smoking and drying are resorted to when the catch is in excess of the normal fresh fish consumption. Dried and smoked ray meat are transported to other islands of Lakshadweep and mainland.

Manta birostris



Coastwise abundance (t.) of *Manta birostris* along Indian coast

Mobula mobular (Bonnaterre, 1788)

1. Species profile :

Name of species : *Mobula mobular*
 Comm on name : Devil ray
 English name : Devil fish

Vernacular name :

Gujarati : Timri
 Marathi : Shing - Pakat, Mhorch, Karaj
 Kannada : Wagla
 Tamil : Yeliki, Komun, tiriki
 Telugu : Eregoodoo - tenkee, Chinnadeyya Puteku
 Oriya : Hatti sankusa, Enugutenkee
 Lakshadweep Island : Kottar

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Mobulidae
 Genus : *Mobula*
 Species : *mobular*

2b. Other scientific names in use : *Raia mobular* (Bonnaterre, 1788) *Mobula diabolus* (Shaw, 1804)

3. Field identification characters : Disc wider than long, Pectoral tips falcate. Snout produced forward in two fleshy cephalic "horns". Cephalic horns curled. Mouth at front of head and wide, teeth small and numerous, in several rows. Teeth present in both jaws. Tail short normally without serrated spine. Colour : Skin smooth, gray-brown above, whitish below.

4. Maximum size : Mangalore - 62 - 112 cm, Calicut - 105 cm, Gulf of Mannar - 57 - 167 cm, Minicoy - 240 - 375 cm, Chennai - 560 cm.

5a. Distribution (Global) : Wide ranging in Indian ocean, and Western Pacific, South to Port Alfred, common only from Duran Northward. Reported from India.

5b. Depth of occurrence : An epipelagic species found over continental shelves.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 :

Coast/ Gear	Trawl	Gill net	BSGN*	Long line	Total catch(t)
North West	100	0	0	0	30.3
South West	0	0	0	100	33.6
East coast	59	40.6	0.57	0	206

*Bottom Set Gill Net

6b. Regional abundance : See Appendix-II

7. Biological characters :

Food preferences : Feeds on small pelagic fishes and crustaceans.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous; No. of embryo 1 / litter.

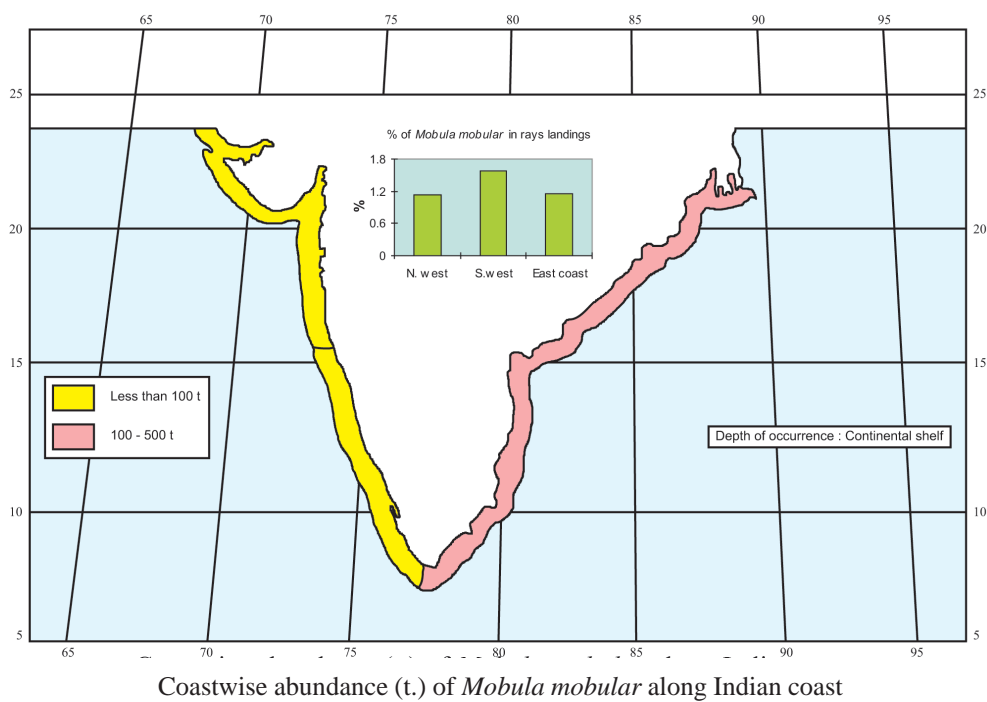
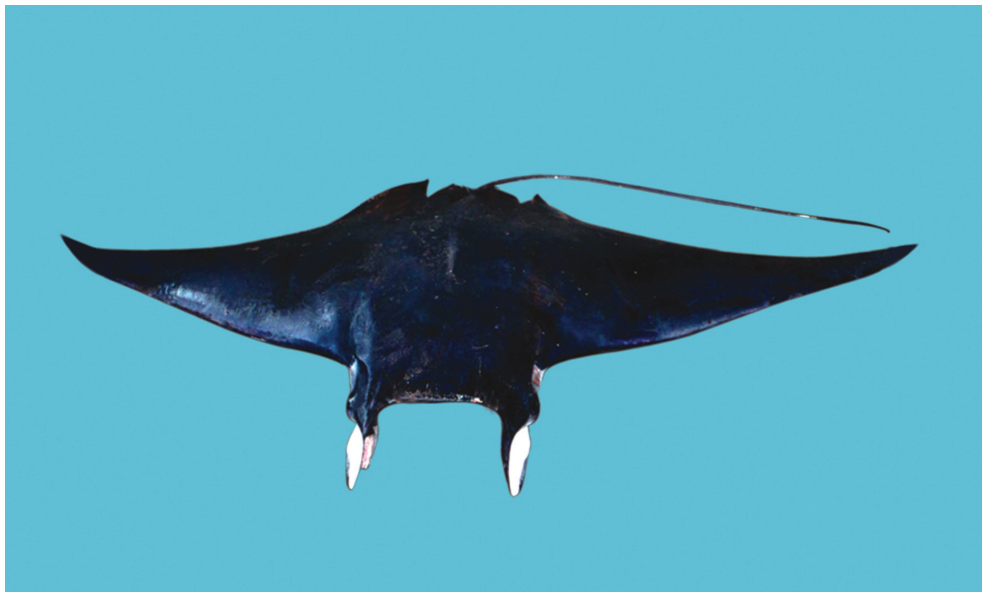
Peak breeding season : See Appendix-II

8. Present utilization : Flesh is used as food in fresh and dried salted form. Skin is used to produce leather, venomous.

9. Conservation and management:

Whether endangered / banned : Vulnerable (VU) (A1 cd). 30-June 2000

10. Other remarks : Occasional landing of this species is reported from Indian coast and biological information is not available.

Mobula mobular

Narke dipterygia (Bloch & Schneider, 1801)

1. Species profile :

Name of species : *Narke dipterygia*
Common name : Numb fish
English name : Spot tail sleeper ray

Vernacular name :

Marathi : Zinzina

2a. Taxonomical position:

Super order : Batoidei
Order : Torpediniformes
Family : Torpedinidae
Genus : *Narke*
Species : *dipterygia*

2b. Other scientific names in use : None

3. Field identification characters : Disc almost circular. Only one dorsal fin. Tail short. Colour : Brown above with diffuse blackish clouding medially.

4. Maximum size : 180 mm.

5a. Distribution (Global) : Indo-West Pacific : Oman and the Arabian Sea, eastward to Japan and south to Singapore and Indonesia.

5b. Depth of occurrence : Found in continental waters both inshore and off shore.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004 : Fishery of minor commercial importance.

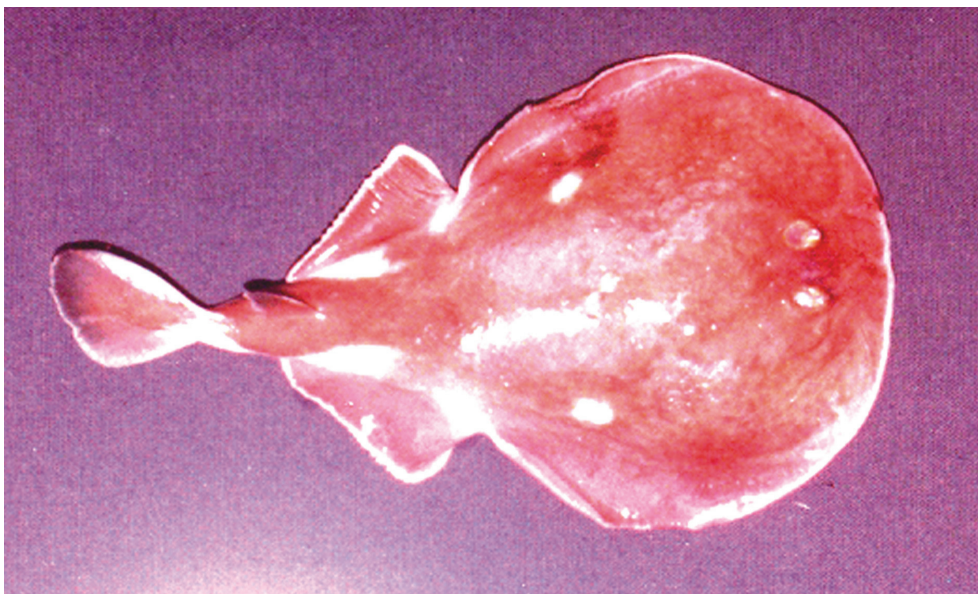
6b. Regional/seasonal abundance : Data not available.

7. Biological characters :

Food preference : Biology little known.

8. **Present utilization** : Flesh used as bait for crab, manure; skin utilized to prepare small drums for kids at Mumbai.
9. **Conservation and management:**
Whether endangered / banned : No
10. **General remarks** : Nil

Narke dipterygia



Pastinachus sephen* (Forsskal, 1775)*1. Species profile :**

Name of species : *Pastinachus sephen*
 Comm on name : Drab stingray
 English name : Feather tail stingray; Cow-tailray

Vernacular name :

Marathi : Goval - Pakat
 Malayalam : Padaiyan - therandee
 Tamil : Adavalan - teriki, Adal - thirikki
 Telugu : Velugiri - tenkee, Wolga - tenkee
 Lakshadweep Island : Madi, Olavalen -thirandi

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Pastinachus*
 Species : *sephen*

2b. Other scientific names in use : *Hypolophus sephen* (Forsskal, 1775);
Dasyatis sephen (Forsskal, 1775)

3. Field identification characters : Disc somewhat quadrangular. Length of disc 1.3 to 1.5 in its width. Dental surface of upper jaw angular. Back granular with three central flattened tubercles in a row. Tail fairly thick and less than twice disc length. Tail depressed with broad cutaneous fold ventrally beginning before a level from insertion of caudal spine and ending below posterior third of tail; serrated caudal spine inserted above the second quarter of tail. Colour: Back leaden grey; ventral surface white.

4. Maximum size : Chennai : Size range : 34 - 180 cm; Mumbai: 22 - 82 cm; Mandapam: 20 - 156 cm;

Mangalore: 180 cm (Present observation).

5a. Distribution (Global) : Red Sea and Indian ocean to Southeast Asia, New Guinea, Australia, Melanesia, Sri Lanka, Singapore, Siam, Myanmar, China, Malay, Okinawa, Japan, Indonesia.

5b. Depth of occurrence : Reef associated, depth range: 60m. This species is reported from fresh & brackish water also.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	BSGN*	Long line	Total catch(t)
North West	100	0	0	0	112
South West	100	0	0	0	77
East coast	89.7	9.5	0.5	0.3	2724.5

*Bottom Set Gill Net

6b. Regional/seasonal abundance See Appendix-II

7. Biological characters :

Food preferences : Fish: *Coilia dussumieri*, Sciaenids, *Trypauchan vagina*, *Harpadon nehereus*, *Nemipterus mesoprion* and leiognathids. Crustaceans: *Solenocera* spp., *Parapenaeopsis stylifera*, *P.sculptilis*, *Metapenaeus affinis*, *Nematopalaeomon tenuipes*, *Acetes* spp., *Exhippolysmata ensirostris*, *Squilla*, Crabs and *Thenus* sp. Molluscs: *Sepia* spp, Octopus, Gastropods and bivalves, polychaetes, prochordates and sea squirts. (Devadoss,1978a,1984,Raje & Joshi, 2003).

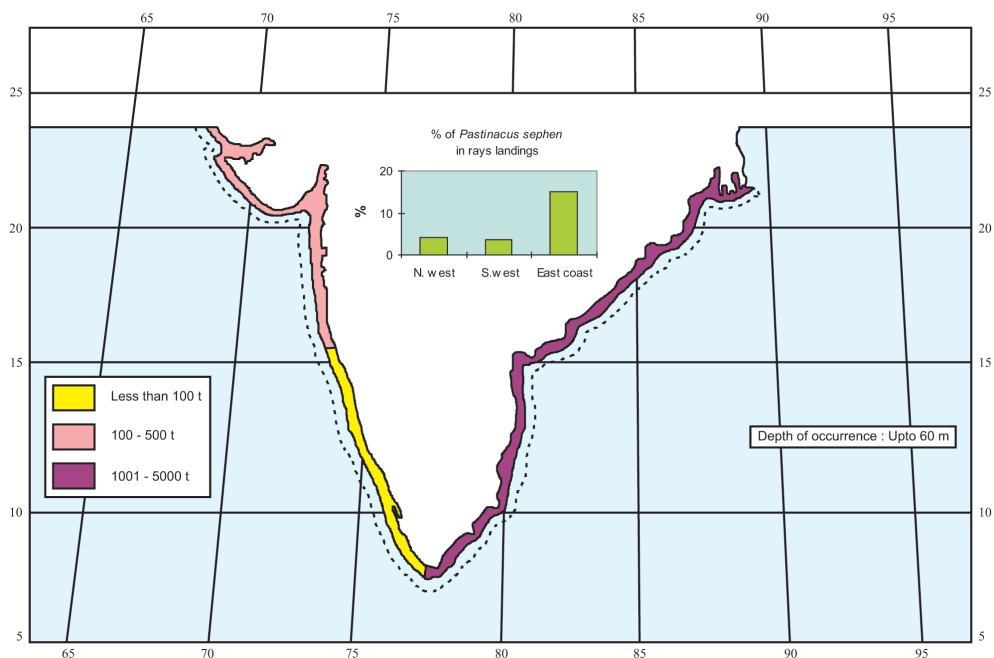
Role in food chain : Tertiary

Type of breeding & Reproductive capacity : Ovoviviparous without any yolk sac placenta, 1 - 2 pups/litter.

- Size at maturity : Males - 70 cm; females- 80cm.
- Size at birth : 25cm across disc.
- Peak breeding season : See Appendix-II
- 8a. Present utilization** : "Shagreen" is prepared from the skin. Flesh is consumed in fresh and dried salted form. Hard and tough skin is used for leather and polishing wood.
- 8b. Drug and medicinal value** : Liver oil of this ray has high vitamin A potency.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : It is commercially exploited at most of the region, but its reproductive potential is limited to 1-2 pups / litter only.

Pastinachus sephen





Coastwise abundance (t.) of *Pastinachus sephen* along Indian coast

Plesiobatis daviesi (Wallace, 1967)

1. Species profile :

Name of species : *Plesiobatis daviesi*
 Common name : Deepwater stingray

Vernacular name :

Tamil : Thirukai

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Plesiobatis*
 Species : *daviesi*

- 2b. Other scientific names in use** : *Urotrygon daviesi* (Wallace, 1967)
- 3. Field identification characters** : Skin soft, thin and translucent. The entire dorsal surface of the disc covered with small evenly scattered prickles. Tail covered with prickles except on the ventral side of the base of the tail. Ventral side and both sides of the pelvic fin devoid of prickles.
- 4. Maximum size** : 534 cm (Female) off Gulf of Mannar, South east coast of India (Nair and Soundararajan, 1973).
- 5a. Distribution (Global)** : Indo-Pacific : Portuguese, East African waters and East coast of India (Gulf of Mannar). Also from Hawaiian Islands.
- 5b. Depth of occurrence** : Coastal; 20-40m depth.
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : Data not available
- 7. Biological characters :**
- Food preference : Feeds on small pelagic fish, eels, shrimps, lobsters, cephalopods and polychaete worms.
- Role in food chain : Tertiary
- 8. Present utilization** : Not known.
- 9. Conservation and management** :
- Whether endangered / banned : No
- 10. General remarks** : Nil

Plesiobatis daviesi*Rhinoptera javanica* (Muller&Henle, 1841)**1. Species profile :**

Name of species	: <i>Rhinoptera javanica</i>
Comm on name	: Javanese cownose ray
Vernacular name :	
Gujarati	: Wagali
Marathi	: Bolad, Wagali
Kannada	: Walga
Malayalam	: Kakka- thirukai
Tamil	: Valvadi thirukkai; Surul thirukai

2a. Taxonomical position:

Super order	: Batoidei
Order	: Rajiformes
Family	: Myliobatidae
Sub family	: Rhinopterinae

Genus : *Rhinoptera*
 Species : *javanica*

2b. Other scientific names in use : None

3. Field identification characters : Head projects beyond the disc. Snout divided into two rounded lobes by a median notch and a separated flap-like rostral fin on each side which are not continuous with pectoral on sides of head. Disc lozenge-shaped, about twice broader than long. 7 series of teeth in each jaw. Eye and spiracles laterally situated. Disc falcate with pointed outer angle. Mouth wide with numerous papillae covering lower lip. Tail long, whip like with a serrated spine. Dorsal fin situated at base of tail. Colour : Upper surface brown, lower surface white.

4. Maximum size : 170 cm at Chennai, 150 cm at Cuddalore, 120 cm at Calicut.

5a. Distribution (Global) : East coast of Africa to the Laccadives, Sri Lanka, India, Indonesia, Philippines, China and South to Queensland.

5b. Depth of occurrence : Found in bays, estuaries & near coral reefs.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	BSGN*	Long line	Total catch (t)
North West	100	0	0	0	0.54
South West	100	0	0	0	38.4
East coast	68.4	30.7	0.3	1	891

*Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-II

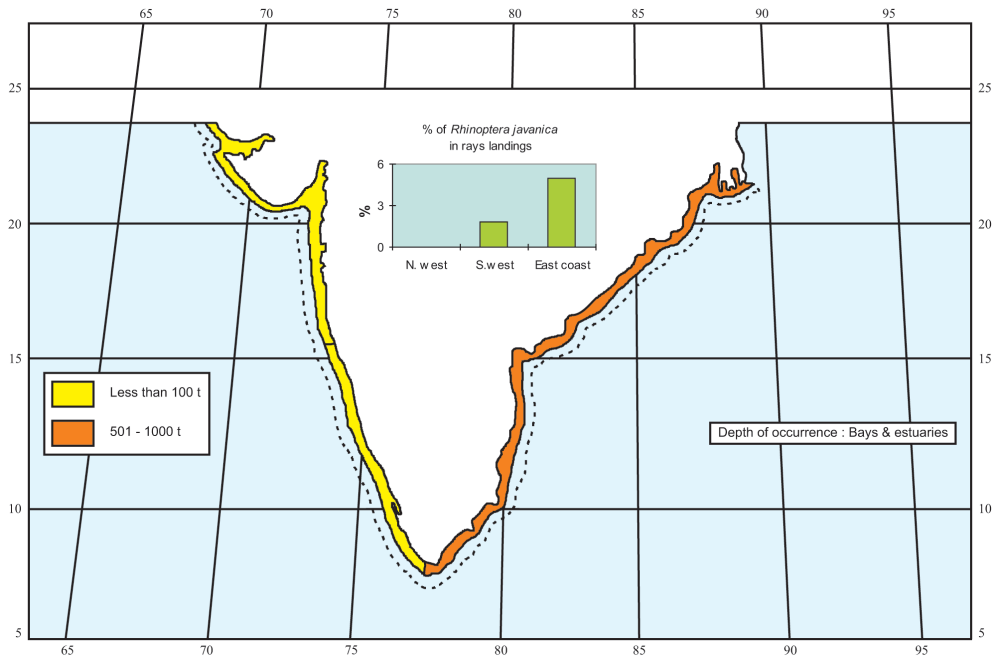
7. Biological characters :

Food preferences : Molluscs, bivalves, crabs, prawns and fishes (Raje & Joshi, 2003).

- Role in food chain : Predator.
- Type of breeding & reproductive capacity : Ovoviviparous;2 embryos/litter.
- Size at birth : 30cm.
- Peak breeding season : See Appendix-I
- 8. Present utilisation** : Utilized fresh, dried and dried -salted for human consumption.
- 9. Conservation&Management** :
- Whether endangered /banned : Vulnerable(VU)
- 10. General remarks** : It congregates in huge shoals and form huge landings in shore seines occasionally at the Gulf of Mannar, South east coast of India.

Rhinoptera javanica





Coastwise abundance (t.) of *Rhinoptera javanica* along Indian coast

Taeniura lymma (Forsskal, 1775)

1. Species profile :

Name of species : *Taeniura lymma*
 Common name : Blue spotted fan tail ray, Ribbon tail ray

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Taeniura*
 Species : *lymma*

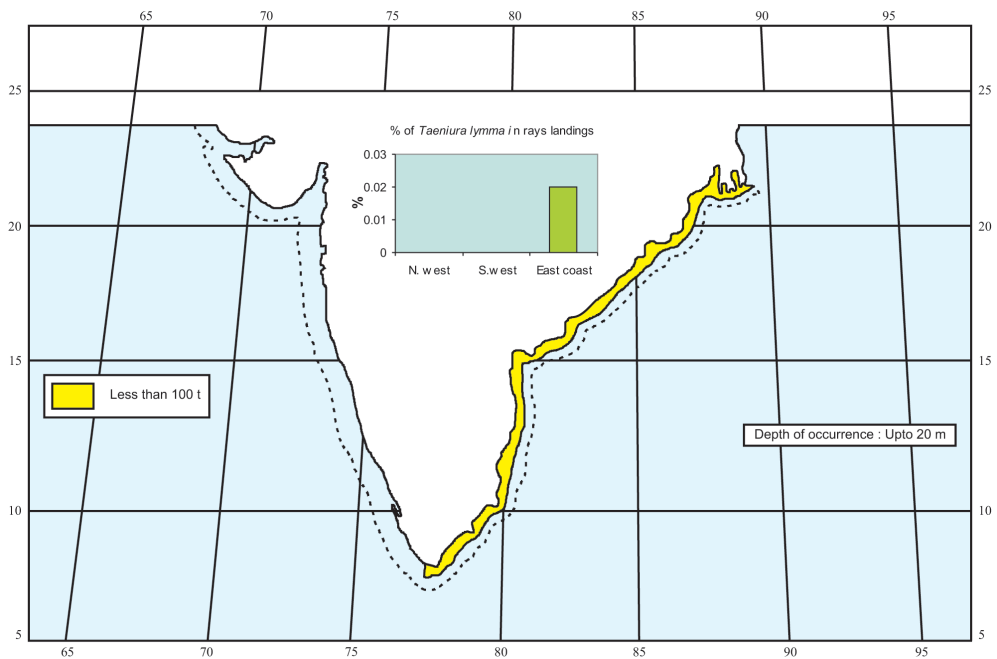
2b. Other scientific names in use : *Raja lymma* (Forsskal, 1775)

3. Field identification characters : Disc oval or rhomboid, skin smooth, except for tubercles along mid-line of back and over shoulders. Two oral papillae. Tail

slightly larger than body. Lower tail fold extending to tail tip. 1 or 2 serrated spines at mid point of the tail. Colour : Dorsal surface brownish - yellow, with bright blue spots. A broad blue stripe along each side of tail; white below.

- 4. Maximum size** : 30 cm
- 5a. Distribution (Global)** : Indo - Pacific - abundant in East Africa.
- 5b. Depth of occurrence** : Reef associated, marine; depth range: upto 20m.
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004**
- | Coast/Gear | Trawl | Total catch(t) |
|------------|-------|----------------|
| North West | 0 | 0 |
| South West | 0 | 0 |
| East coast | 100 | 3.5 |
- 6b. Regional/seasonal abundance** : See Appendix-II
- 7. Biological characters :**
- Food preference : Feeds on molluscs, worms, crustaceans and fishes.
- Role in the food chain : Tertiary
- Type of breeding : Data not available.
- 8. Present utilization** : Both fresh and dried condition, also used as game fish / aquarium fish.
- 9. Conservation and management:**
- Whether endangered / banned : Lower risk : Near threatened.
- 10. General remarks** : Important as game fish and as aquarium fish in addition to fisheries importance.

Taeniura lymma



Taeniura meyeni (Muller & Henle, 1841)

1. Species profile :

Name of species : *Taeniura meyeni*
 Common name : Ray
 English name : Blotched Fantail ray

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatidae
 Genus : *Taeniura*
 Species : *meyeni*

2b. Other scientific names in use : *Taeniura melanospila* (Bleeker, 1853)

3. Field identification characters : Disc circular. Eyes small with protective horny cover. Spiracles dorso-laterally situated and larger than eyes. Tail 1.9 times the length of the disc and has a membraneous fold at the distal half. Spine present opposite to a membraneous fold at the upper surface. Colour : Dorsal side is bluish grey mottled with black and white spots and blotches.

4. Maximum size : 1800 mm(Chennai) (Devadoss, 1988b).

5a. Distribution (Global) : East Africa to Madagascar and Red Sea to East Indies. East coast of India(Chennai).

5b. Depth of occurrence : Reef associated; upto 500m.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	0	0
East coast	100	195.6

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preference : Fish, bivalves, crabs and shrimps.

Type of breeding & reproductive capacity : Ovoviviparous.

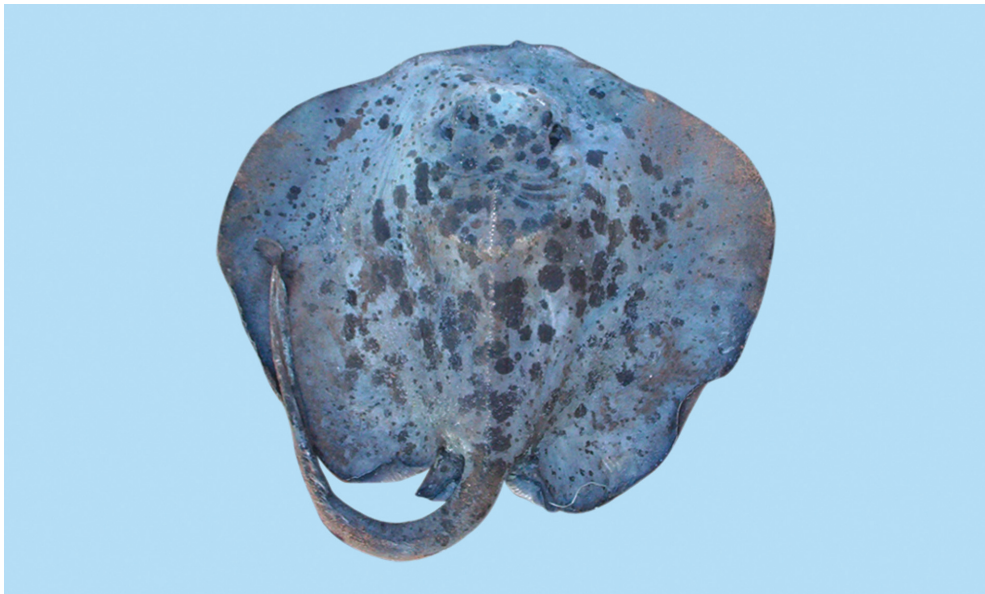
8. Present utilization : Consumed in fresh and salt-cured form.

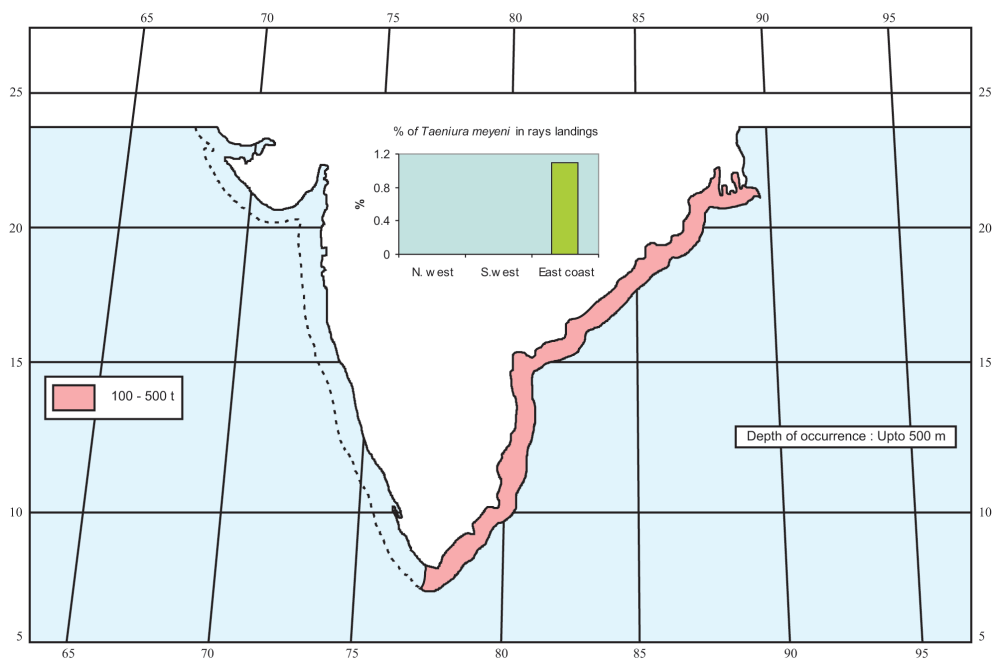
9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Important as game fish, aquarium fish and for consumption.

Taeniura meyeni





Coastwise abundance (t.) of *Taeniura meyeni* along Indian coast

Torpedo marmorata (Risso 1810)

1. Species profile :

Name of species : *Torpedo marmorata*
 Common name : Electric ray
 English name : Electric ray

Vernacular name :

Marathi : *Bijali, Zinzina*
 Lakshadweep Island : *Thimithirandi*

2a. Taxonomical position:

Order : Torpediniformes
 Family : Torpedinidae
 Genus : *Torpedo*
 Species : *marmorata*

- 2b. Other scientific names in use** : Nil
- 3. Field identification characters** : Disc broader than long. Short tail. Spiracle separate from eye. Spiracles with a number of small fleshy tentacles on hind margin. Mouth narrow, without a groove below the lower jaw. The jaws are slender with small mono-cuspid teeth. No labial cartilages. Two dorsal fins; first dorsal fin larger than the second; first dorsal completely over the pelvic base. Caudal somewhat rounded , upper and lower caudal lobes well developed. Colour: Dorsal surface with brown reticulations; ventral surface with a brown edge around the disc and lower surface white.
- 4. Maximum size** : 100cm(Reiner, 1996)
- 5a. Distribution (Global)** : India, Atlantic Ocean, Mediterranean Sea, and Philippines.
- 5b. Depth of occurrence** : Reef associated; brackish;marine; depth range : 2 to 370m
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : Data not available
- 7. Biological characters :**
- Food preference : Feeds on small benthic fishes (*Trichiurus* spp., Mugil, *Dascyllus* spp., *Pomacentrus* spp.) and crustaceans(Moller, 1995).
- Type of breeding& reproductive capacity : Viviparous (Mellinger, 1971)
- Peak breeding season : Data not available

8. Present utilization :

Present utilization and commercial value

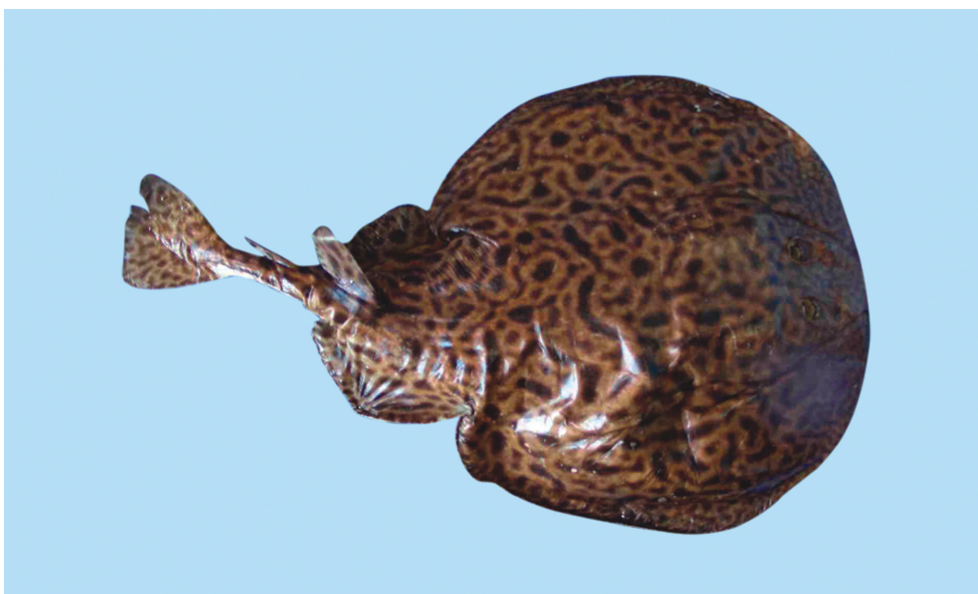
: It is not used as food, but flesh cut into pieces is used as bait for crab. Its skin is used to prepare toy drums at Mumbai, off North west coast of India.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks

: Can produce electric discharges of upto 200 volts (Mellinger et al., 1978)

Torpedo marmorata

Urogymnus asperrimus (Bloch & Schneider, 1801)

1. Species profile :

Name of species : *Urogymnus asperrimus*
 Common name : Thorny ray
 English name : Porcupine ray

Vernacular name :

Marathi : Pakat
 Tamil : Kallu thirukkai, Mullan - thirukkai
 Lakshadweep Island : Karimadi

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Dasyatiidae
 Genus : *Urogymnus*
 Species : *asperrimus*

2b. Other scientific names in use : *Urogymnus africanus* (Bloch & Schneider, 1801).

3. Field identification characters : Disc almost circular, snout scarcely projecting, Length of disc equal to its width. 3-5 oral papillae. Tail long, tapering with or without narrow fold below. No caudal spine. Back covered with osseous tubercles, also on tail. Colour : Body dark brownish, the tubercles whitish or yellowish.

4. Maximum size : 56 - 180 cm (Disc width) at Mandapam, 98 - 110cm at Minicoy .

5a. Distribution (Global) : Red Sea, East Africa, Seychelles, India, Sri Lanka, Malay Peninsula, Siam, Bornio, Java, Australia, Philippines, Melanesia , Gilbert islands and East Atlantic.

5b. Depth of occurrence : Inhabits continental shelf area.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch(t)
North West	0	0
South West	0	0
East coast	100	11.4

6b. Regional /seasonal abundance : See Appendix-II

7. Biological characters :

Food preference : Fishes, molluscs and crustaceans.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous, one embryo/litter.

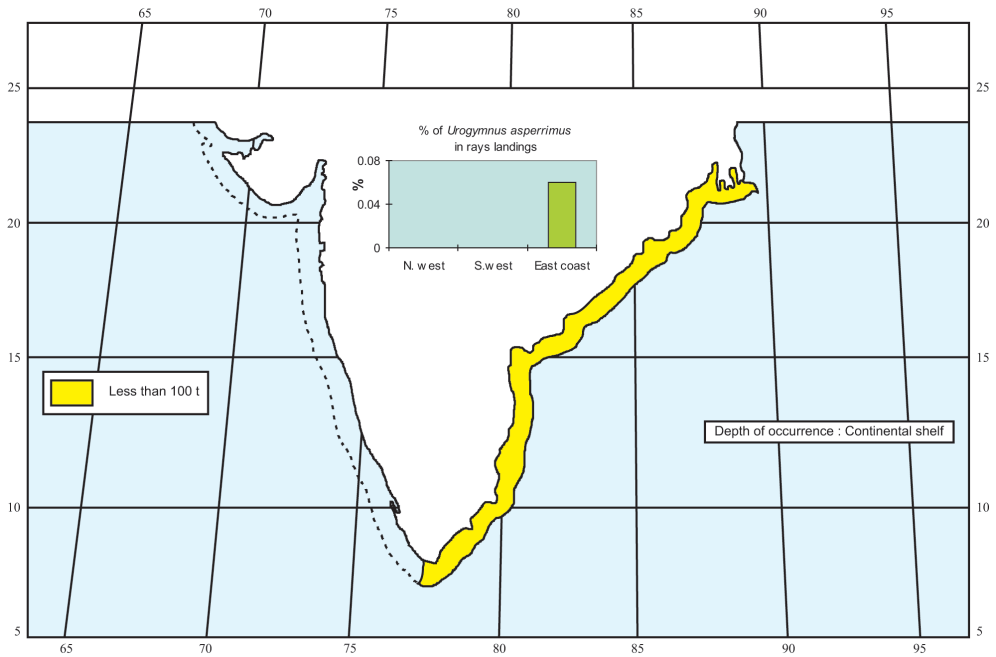
8. Present utilization : Consumed in fresh and dried salted form.

9. Conservation and management:

Whether endangered / banned : Yes, Vulnerable status in IUCN Red list. Banned, protected under wild Life Protection Act 1972 by MoEF, Government of India.

10. General remarks : Nil.

Urogymnus asperrimus



Coastwise abundance (t.) of *Urogymnus asperrimus* along Indian coast

SKATES

Anoxypristis cuspidata (Latham, 1794)

1. Species profile :

Name of species : *Anoxypristis cuspidata*
 Common name : Pointed sawfish
 English name : Pointed sawfish, Knife-tooth sawfish

Vernacular name :

Gujarati : Churia
 Marathi : Nali
 Kannada : Himsi
 Telugu : Ulava
 Malayalam : Komban sravu
 Tamil : Velameen, Vezha Meen
 Oriya : Khanda magar
 Bengali : Korat mach

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Pristidae
 Genus : *Anoxypristis*
 Species : *cuspidata*

2b. Other scientific names in use : *Pristis cuspidata* (Latham (1794)

3. Field identification characters : Body elongated and flattened. Snout saw like with more than 22 pairs of triangular rostral teeth, posterior most rostral teeth ending well anterior to base of rostrum. First dorsal fin distinctly behind pelvic fins. Upper margin of the dorsals deeply concave with posterior lobes produced. Subcaudal lobe well developed and pointed. Colour : Dark drab or neutral grey above, whitish below, margins of fins and lateral fold of tail whitish, rostral teeth white.

4. Maximum size : 300 cm (Raje & Joshi, 2003)

- 5a. Distribution (Global)** : Indo - West Pacific : Red Sea, India, Sri Lanka, Myanmar, Andaman, Malay Archipelago, Japan, China, Philippines, South to Northern Australia.
- 5b. Depth of occurrence** : Benthopelagic;0-40m
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : See Appendix-III
- 7. Biological characters :**
- Food preference : Feeds on small fishes and cuttle fish.
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous (Setna & Sarangdhar, 1949);6-23 embryos/litter.Six embryo were common.The length of the embryo is 330-537mm. Diameter of fully mature ova about 25 mm.Young ones were noticed in spring season at Calicut. Parturition period in Bombay waters is during March to May (Setna & Sarangdhar, 1949).
- 8. Present utilization** : Flesh is equally esteemed with that of sharks, Liver weight 50% of body weight yielding large quantity of oil of high Vitamin 'A' potency. The skin of this species is used for sword scabbard or smoothing down wood. Rostrum for decoration. Offal for fish meal.
- 9. Conservation and management:**
- Whether endangered / banned : Endangered(EN) status given in IUCN Red list.

Conservation and regulation
required

: Protected under Wildlife Protection Act,
1972 by MoEF., Gov.t of India.

10. General remarks

: Nil.

Anoxypristis cuspidata



Pristis microdon (Latham, 1794)

1. Species profile :

Name of species : *Pristis microdon*
 Common name : Small toothed sawfish
 English name : Small toothed sawfish

Vernacular name :

Gujarati : Churia
 Marathi : Shinshi / Khanderee / Win
 Malayalam : Komban sravu
 Tamil : Velasorrah / Valsorrah
 Telugu : Chinnarampamu sorrah

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Pristidae
 Genus : *Pristis*
 Species : *microdon*

2b. Other scientific names in use : None

3. Field identification characters : Body elongated and flattened. Snout saw-like with 16-20 or 17-20 teeth on each side of rostrum . First dorsal fin originates in front of pelvic fin. Lower caudal lobe distinct. Colour : Uniform olive green above, cream below.

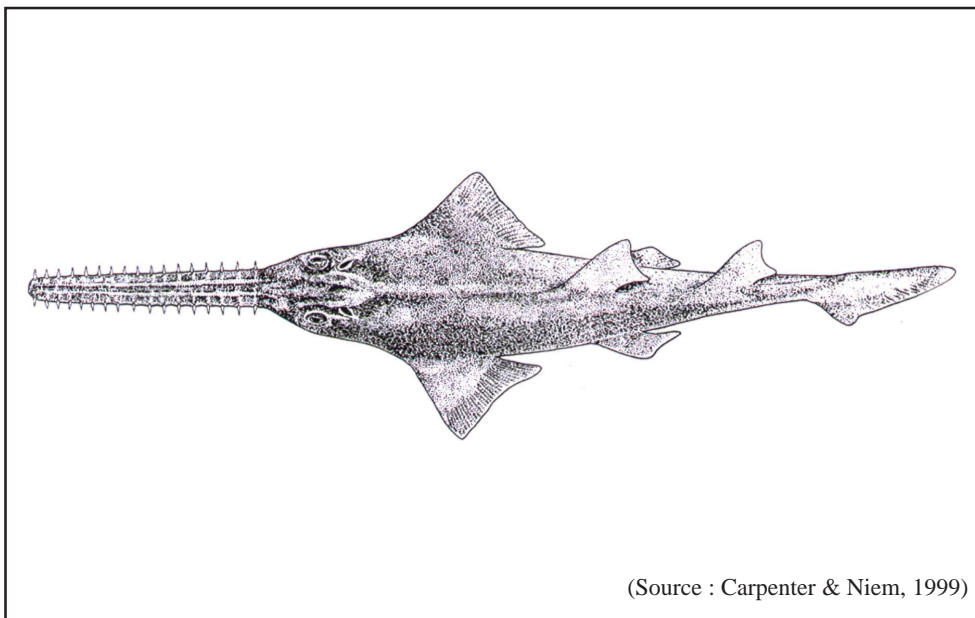
4. Maximum size : 750 cm (Raje & Joshi, 2003)

5a. Distribution (Global) : East coast of Southern Africa, the Mediterranean, Madagascar, India, the East India and the South-west Pacific. Shallow water, estuaries and frequently in fresh water. Very common in the estuaries of Ganga and Brahmaputra.

5b. Depth of occurrence : 0-50m

- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : See Appendix-III
- 6c. Method of fishing : Trawl net, Gill net
- 7. Biological characters :**
- Food preference : Seerfish, mackerel, pomfrets, small sharks, *Otolithus biauritus*, *Engraulis* spp., Sciaenids, ribbon fishes crustaceans and molluscs.
- Role in food chain : Tertiary
- Type of breeding & reproductive capacity : Ovoviviparous, Maximum number of young ones recorded was 30.
- Peak breeding season : See Appendix-III
- 8a. Present utilization** : Flesh for human consumption, fins for export, skin used for smoothing the wood and rostrum for decoration.
- 8.b Drug and medicinal value** : This species has very large liver about 50% of weight of fish yielding large quantity of oil of high vitamin A potency.
- 9. Conservation and management:**
- Whether endangered / banned : Endangered status given in IUCN Red list.
Protected under Wildlife Protection Act, 1972 by MoEF, Govt of India.
- 10. General remarks** : Nil

Pristis microdon



Pristis zijsron (Bleeker, 1851)

1. Species profile :

Name of species : *Pristis zijsron*
Common name : Green sawfish ,Long comb sawfish

Vernacular name :

Marathi : Echar
Malayalam : Komban sravu
Tamil : Vala meen
Bengali : Chiruni

2a. Taxonomical position:

Super order : Batoidei
Order : Rajiformes

Family : Pristidae
 Genus : *Pristis*
 Species : *zijsron*

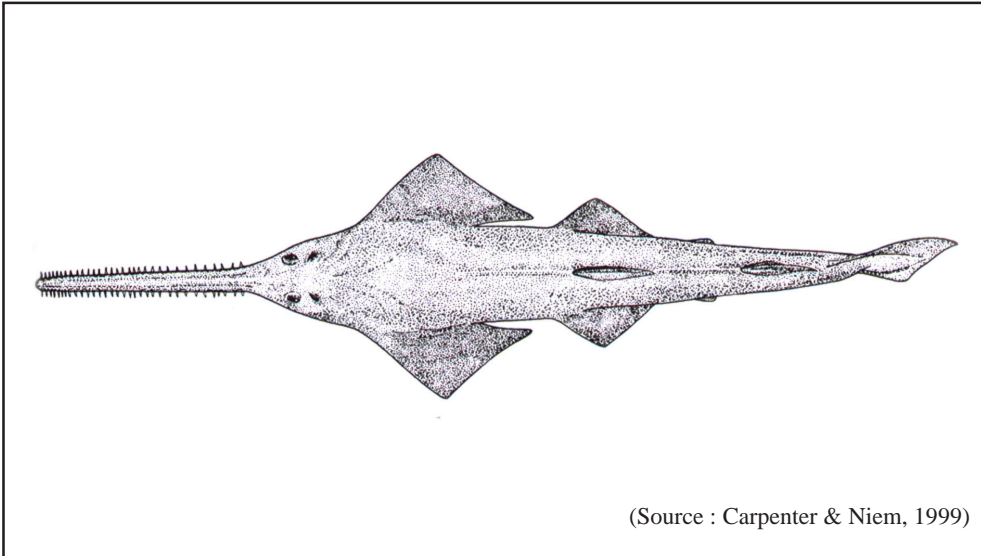
- 2b. Other scientific names in use** : *Pristis pectinata* non Latham, 1794.
- 3. Field identification characters** : Saw long and narrow, tapering towards its tip, with 25 to 32 pairs of rostral teeth. Basal pair of rostral teeth has distinctly more space than anterior pair. First dorsal originates behind pelvic fin. Margins of dorsals slightly concave and without posterior lobes. No subcaudal lobe. Second dorsal fin subequal with first dorsal fin. Colour: Greenish grey above, white below.
- 4. Maximum size** : 500 cm (Anon, 1998)
- 5a. Distribution (Global)** : India, Sri Lanka, East Indies, Indo-West Pacific : Red Sea and East Africa, New Guinea, North to South China. South to New South Wales, Australia.
- 5b. Depth of occurrence** : 0-5m.
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available
- 6b. Regional /seasonal abundance** : Data not available
- 6c. Method of fishing** : Trawl net, Gill net
- 7. Biological characters :**
- Type of breeding & reproductive capacity : Ovoviviparous.
- 8. Present utilization :**
- Present utilization and commercial value : Flesh considered tasty.

9. Conservation and management:

Whether endangered / banned : Endangered(EN) status given in IUCN Red list.

10. General remarks : Intensive exploitation has resulted in population depletion.

Pristis zijsron



Rhina ancylostoma (Bloch & Schneider, 1801)

1. Species profile :

Name of species : *Rhina ancylostoma*
 Comm on name : Bow mouthed guitar fish
 English name : Bow mouthed guitar fish

Vernacular name :

Marathi : Lanj
 Kannada : Pana thorake
 Telugu : Tiragati dimma
 Tamil : Pulaman uluvai

2a. Taxonomical position:

Super order : Batoidei
 Order : Rajiformes
 Family : Rhinobatidae
 Genus : *Rhina*
 Species : *ancylostoma*

2b. Other scientific names in use : *Squatina ancylostoma* (Bloch & Schneider, 1801)

3. Field identification characters : Head depressed, snout broad, and semicircular. Spiracles large, no spiracular fold. Mouth deeply undulated. Heavy ridge with greatly enlarged denticles on back, over eyes and spiracles, and on scapular region. First dorsal fin triangular, its origin above pelvic fins. Subcaudal fin well developed. Colour: Grey above, white below, numerous white spots dorsally on fins, body and tail, black spots on the head and shoulders.

4. Maximum size : 236 cm (Devadoss & Batcha, 1995)

5a. Distribution (Global) : Tropical Indo - West Pacific : South to Natal. East Africa, Red Sea, Seychelles,

India, Sri Lanka, Malay Peninsula, China, Japan and Philippines.

5b. Depth of occurrence : Reef associated; depth range: 3-90m .

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

	Coast/Gear	Trawl	Gill net	Total catch(t)
	North West	100	0	27
	South West	100	0	168.5
	East coast	0	100	1

6b. Regional /seasonal abundance : See Appendix-III

7. Biological characters :

Food preference : Sciaenids, *Harpadon nehereus*, prawns, cephalopods and bivalves.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous; 2 -11 embryo / litter.

Peak breeding season : See Appendix-III

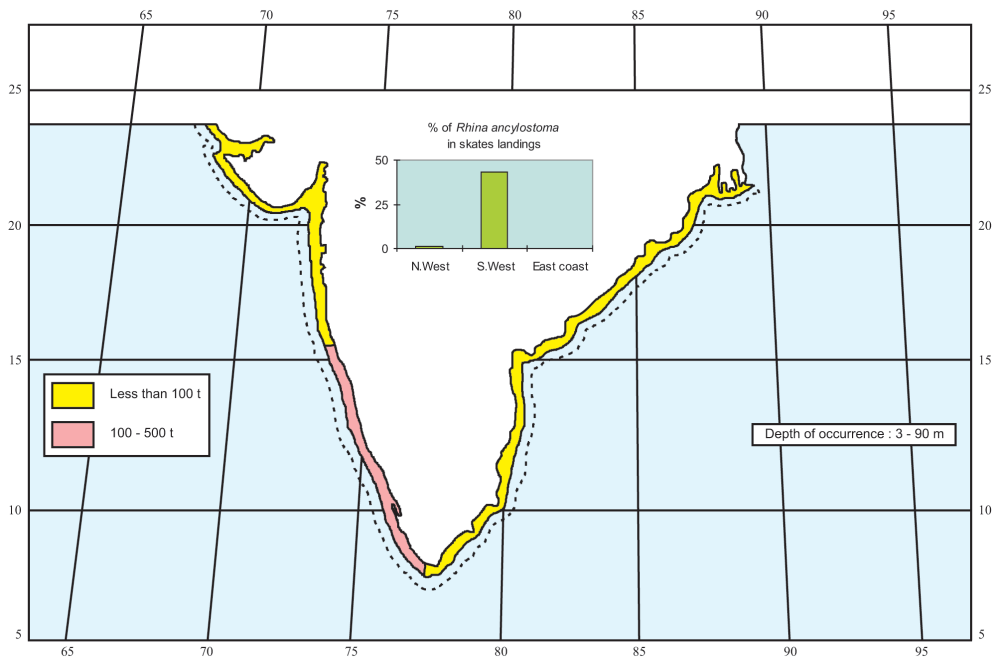
8a. Present utilization : Flesh is considered nourishing whether eaten salted or fresh, oil from liver is much esteemed.

8b. Export potential : Fins fetch very good price in the export market.

9. Conservation and management:

Whether endangered / banned : Vulnerable status in IUCN Red list.

10. General remarks : Nil.

Rhina ancylostomaCoastwise abundance (t.) of *Rhina ancylostoma* along Indian coast

Rhinobatos annandalei* (Norman, 1926)*1. Species profile :**

Name of species	: <i>Rhinobatos annandalei</i>
Common name	: Annandale's shovelnose ray
English name	: Annandale's shovelnose ray

2a. Taxonomical position:

Super order	: Batoidei
Order	: Rajiformes
Family	: Rhinobatidae
Genus	: <i>Rhinobatos</i>
Species	: <i>annandalei</i>

2b. Other scientific names in use : None

3. Field identification characters : Snout moderate, bluntly pointed, rostral ridges separated, spiracles close behind eye, equal to eye diameter. First dorsal fin well behind pelvic fin. Series of small spines in middle of back. Two skinny flaps on hind margin of spiracles. Nasal valves extending onto internarial space. Colour: Body greyish-brown, with indistinct marblings of darker shade and with numerous, round, whitish spots. Ventral surface of body white.

4. Maximum size : 85 cm at Mumbai

5a. Distribution (Global) : India, Sri Lanka, Malaya, and Philippines.

5b. Depth of occurrence : Marine, tropical.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/Gear	Trawl	Total catch (t)
North West	100	38
South West	0	0
East coast	0	0

6b. Regional /seasonal abundance : See Appendix-III

7. Biological characters :

Food preference : *Harpodon nehereus*, sciaenids, *Trichiurus* spp. *Priacanthus hamrur*, prawns and Squilla.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovo viviparous, 7 - 13 embryo / litter.

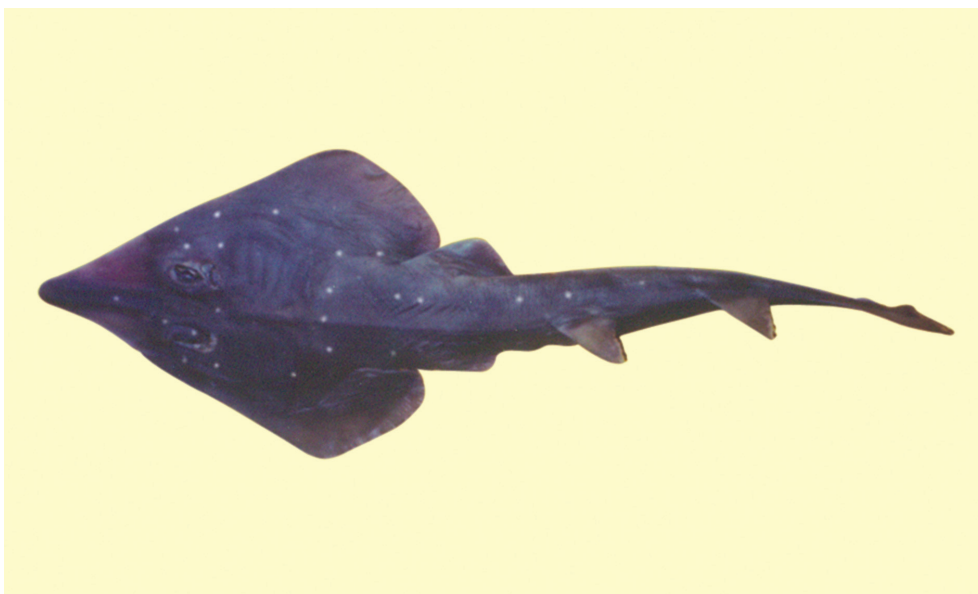
Peak breeding season : See Appendix-III

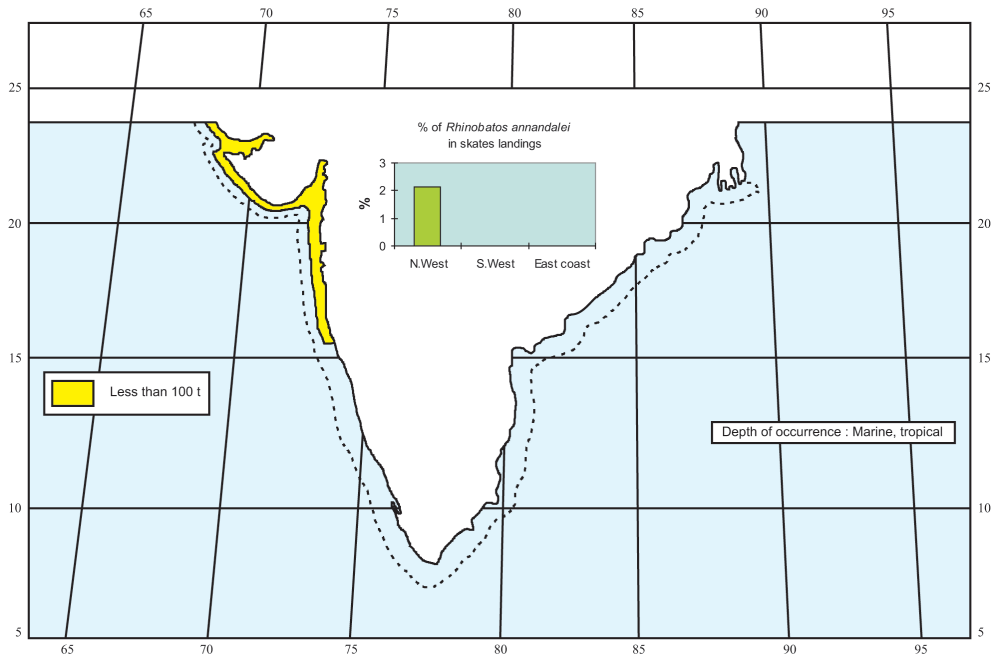
8. Present utilization : Meat of this species is consumed in fresh form.

9. Conservation and management:

Whether endangered / banned : No

10. General remarks : Nil

Rhinobatos annandalei



Coastwise abundance (t.) of *Rhinobatos annandalei* along Indian coast

Rhinobatos granulatus (Cuvier, 1829)

1. Species profile :

Name of species	: <i>Rhinobatos granulatus</i>
Comm on name	: Granulated shoalnose ray
English name	: Sharp-nose guitar fish

Vernacular name :

Gujarati	: Dhos
Marathi	: Lanj, Pok
Kannada	: Fodka
Malayalam	: Kalpoonthi
Tamil	: Padangan, Purrungum, Kal uluvai
Telugu	: Suttiwarah Adalam
Oriya	: Sisna, Yahlava
Bengali	: Harana magar
Andaman Island	: Shenkar

2a. Taxonomical position:

Super order	: Batoidei
Order	: Rajiformes
Family	: Rhinobatidae
Genus	: <i>Rhinobatos</i>
Species	: <i>granulatus</i>

2b. Other scientific names in use : None

3. Field identification characters : Snout elongated, rostral ridges jointed. First dorsal fin well behind pelvic fin, tubercles on the back and a row of compressed spines along its middle, which become obsolete with age. Spiracles slightly smaller than the eye. Colour : Reddish grey superiorly becoming dull white beneath.

4. Maximum size : 147.5 cm (Raje & Joshi, 2003)

5a. Distribution (Global) : Indo - West Pacific: India, Sri Lanka, Andaman, Myanmar, Malay Peninsula, Siam and China.

5b. Depth of occurrence : Depth range upto 119m.

6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004

Coast/ Gear	Trawl	Gill net	BSGN*	Long line	Total catch(t)
North West	100	0	0	0	117
South West	100	0	0	0	26.5
East coast	31	50	18.35	0.65	343

*Bottom Set Gill Net

6b. Regional/seasonal abundance : See Appendix-III

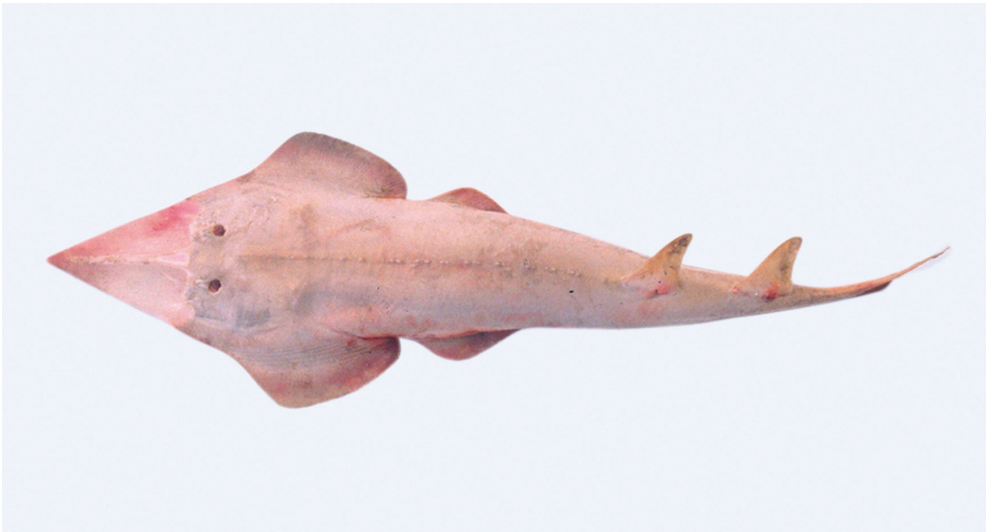
7. Biological characters :

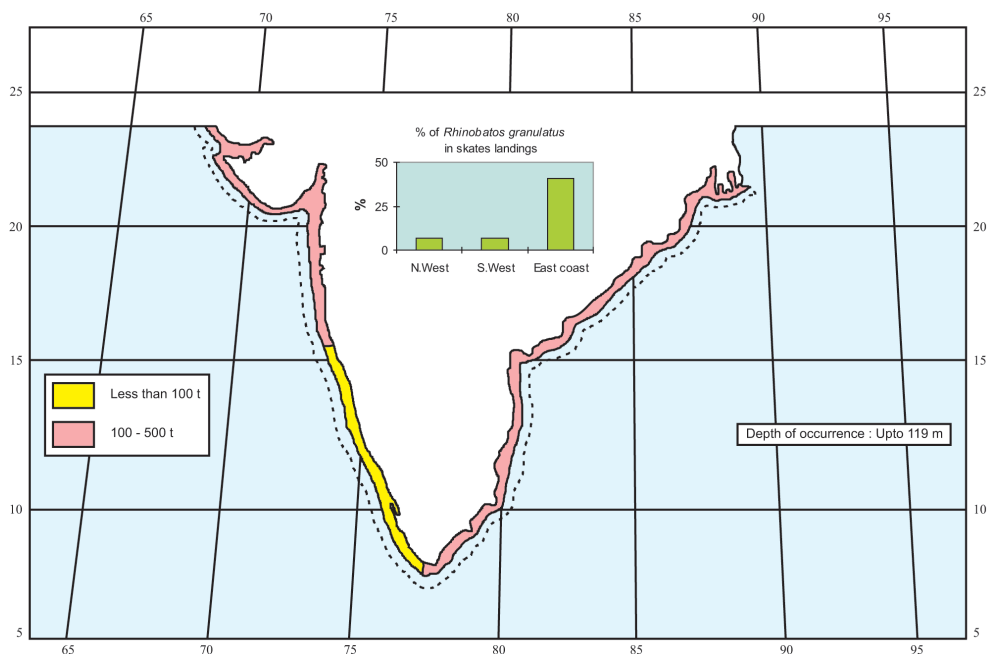
Food preferences : Small crustaceans like amphipods, squilla, crabs and prawns.

Role in food chain : Tertiary

- Type of breeding & reproductive capacity : Ovoviviparous 3 - 16 embryo/ litter at Madras, 12/litter at Cuddalore; size of embryo 240 mm in total length. Diameter of mature egg up to 60mm.
- Gestation period : 6 months (Devadoss, 1998).
- Size at maturity : Female-120cm (Devadoss, 1998).
- Peak breeding season : See Appendix-III
- 8. Present utilization** : Flesh used for human consumption in fresh and dried salted form.
- 9. Conservation and management:**
- Whether endangered / banned : No
- 10. General remarks** : Commonly caught along Palk Bay & Gulf of Mannar region of Tamil Nadu off southeast coast & Maharashtra and Gujarat off North west coast of India.

Rhinobatos granulatus





Coastwise abundance (t.) of *Rhinobatos granulatus* along Indian coast

Rhinobatos obtusus (Muller & Henle, 1841)

1. Species profile :

Name of species : *Rhinobatos obtusus*

Common name : Grey guitar fish

English name : Grey guitar fish

Vernacular name :

Marathi : Lanj

Tamil : Pare (Young), Padangan (Adult)

2a. Taxonomical position:

Super order : Batoidei

Order : Rajiformes

Family : Rhinobatidae

Genus : *Rhinobatos*
Species : *obtusus*

- 2b. Other scientific names in use** : None
- 3. Field identification characters** : Snout rather obtuse, rostrum ridge separated throughout its length. Width of the mouth about 1.9 times in snout length. One skinny projection from hind margin of spiracles. Back with small tubercles, and some spiniform. First dorsal fin well behind pelvic fin. The length of the nostril twice the width of the mouth and equal to internarial space. Colour : Body grey to brownish above, white below; large specimens have occasionally black blotch on back.
- 4. Maximum size** : 180 cm
- 5. Distribution (Global)** : From the Mediterranean, West coast of Africa and Cape of Good Hope, Red Sea through the seas of India (Bay of Bengal, Pondicherry, Malabar), Malay Archipelago, China.
- 6a. Resource characters: Average annual landing (Gearwise%) in India during 2003 & 2004** : Data not available.
- 6b. Regional /seasonal abundance** : See Appendix-III
- 7. Biological characters** : Biology little studied.
- 8. Present utilization** : It is utilized for human consumption in fresh form.
- 9. Conservation and management:**
- Whether endangered / banned : No.
- 10. General remarks** : Nil.

Rhinobatos obtusus*Rhynchobatus djiddensis* (Forsskal, 1775)**1. Species profile :**

Name of species	: <i>Rhynchobatus djiddensis</i>
Common name	: White-spotted shovelnose guitar fish
English name	: Giant Guitar fish

Vernacular name :

Gujarati	: Kasaj
Marathi	: Ranja, Pok, Lanj
Kannada	: Etti - batiar
Malayalam	: Varithalai
Tamil	: Padanagan, Palunga, Kachu uluvai
Telugu	: Tipiulavi, Walawan - tenkee, Nululavi
Oriya	: Sorhora
Bengali	: Foal magar

2a. Taxonomical position:

Super order	: Batoidei
-------------	------------

Order	: Rajiformes
Family	: Rhinobatidae
Genus	: <i>Rhynchobatus</i>
Species	: <i>djiddensis</i>

2b. Other scientific names in use : None

3. Field identification characters : Rostrum short, not saw like . Snout triangularly pointed. Mouth strongly undulated, with three forward projections on the lower jaw. Body elongated. First dorsal fin triangular, its origin about opposite to pelvic fin. Spiracles with two cutaneous folds. Row of small tubercles along anterior and inner margins of the orbit and spiracles. Lower caudal lobe short. Tail depressed and nearly equal to trunk. Colour: A large black ocular spot on the pectoral fin base. Olive green above with rows of white spots on the upper body, lower surface grey-white.

4. Maximum size : 297 cm (Raje & Joshi, 2003).

5a. Distribution (Global) : East Africa, Madagascar, Seychelles, Zanzibar, Red Sea, Arabia, India, Sri Lanka, Andaman, Malay Peninsula, Malay Archipelago, China, Japan and Melanesia.

5b. Depth of occurrence : Reef associated; depth range: 2-50m.

6a. Resource characters: Average annual landing (Gearwise%)	Coast/ Gear	Trawl	Gill net	BSGN*	Total catch(t)
in India during 2003 & 2004	North West	100	0	0	1594
	South West	100	0	0	195
	East coast	37	50.27	13	495

*Bottom Set Gill Net

6b. Regional /seasonal abundance : See Appendix-III

7. Biological characters :

Food preferences : Fishes (*Apogon* spp., Eels, flatheads), prawns, Squilla, Crabs, polychaetes, lobsters, bivalves, crayfish and Pilchard bait.

Role in food chain : Tertiary

Type of breeding & reproductive capacity : Ovoviviparous without placenta; 10-12 embryos/litter. Diameter of ovarian egg : 62mm. Size of young ones: 450- 500mm in initial length.

Peak breeding season : See Appendix-III

8. Present utilization

: Flesh with excellent taste. Smaller ones are eaten fresh. Large specimens are consumed fresh and dried salted.

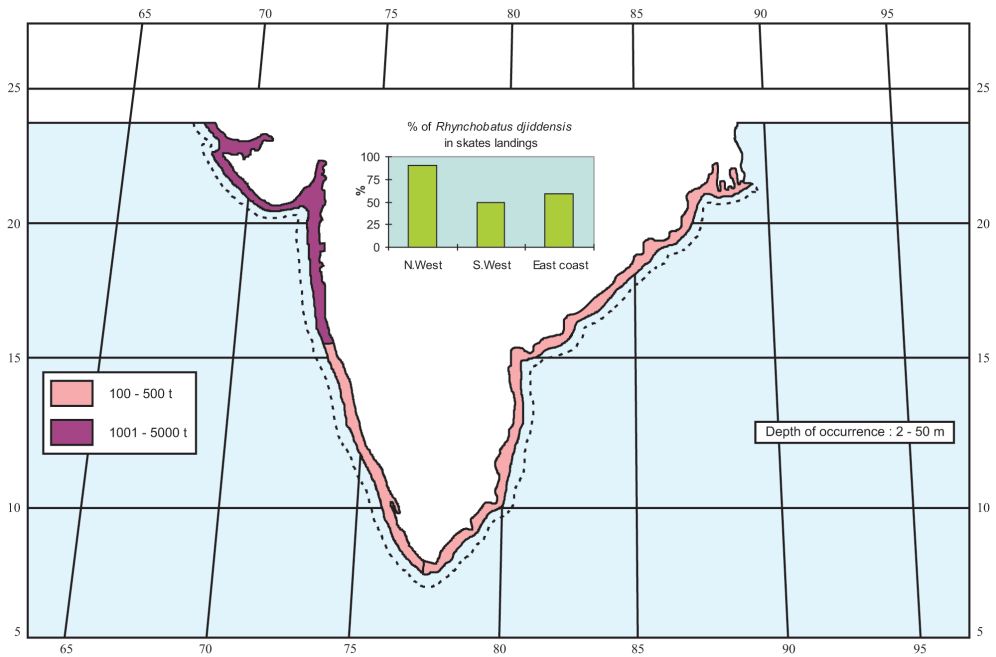
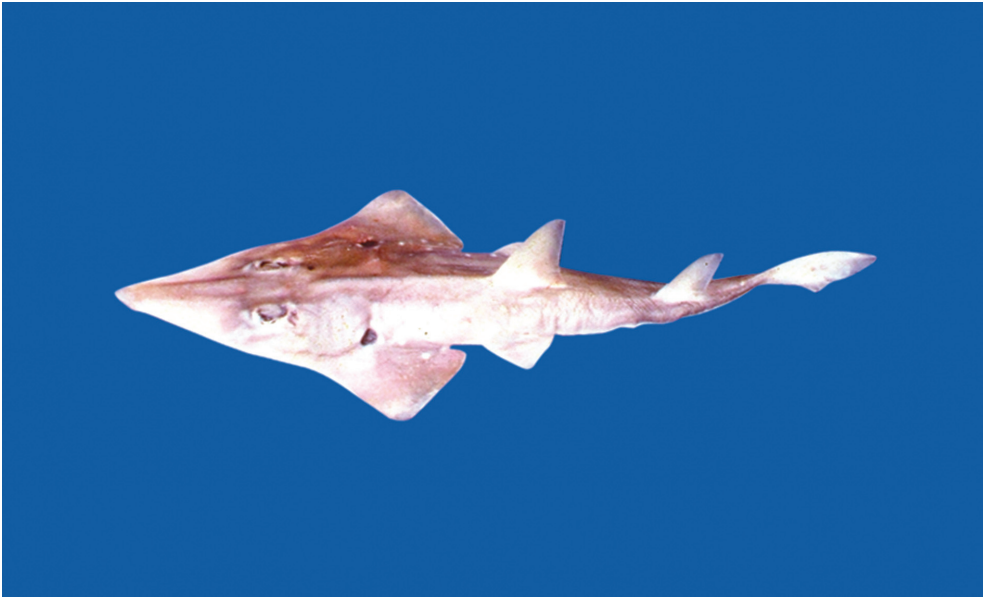
9. Conservation and management:

Whether endangered/banned : Yes, Vulnerable (VU) status in IUCN Red list. Protected under 61 of Wildlife (Protection) Act, 1972 by MoEF, Government of India.

10. General remarks

: This species is confined to the Western Indian Ocean and the catch has drastically come down.

Rhynchobatus djiddensis



Coastwise abundance (t.) of *Rhynchobatus djiddensis* along Indian coast

Appendix I. Regional / seasonal abundance and peak breeding season of sharks along the Indian coast

Species	Coast/Zone	Centre	Seasonal abundance*	Months	Centre/ coast	Peak breeding season	References
1	2	3	4	5	6	7	
<i>Alopias pelagicus</i>	Southwest		Rare				
<i>Alopias vulpinus</i>	East	Chennai	January-March, July-August		Mumbai	November-April	Raje & Joshi (2003)
<i>Carcharhinus amblyrhynchos</i>	North west						
<i>C. amblorensis</i>	South west	Cochin	April, May, August-September		East coast	Throughout the year	Raje & Joshi (2003)
<i>C. dussumieri</i>	South west	Calicut	January-March		East coast	March	Appukkuttan & Nair (1988)
<i>C. hemiodon</i>	North west East coast	Mumbai Chennai	September-October Rare				
<i>C. limbatus</i>	North west South west East coast East coast	Mumbai Calicut Chennai Tuticorin	January-April; September-November April-September June-September January-May		North west East coast	January-March March-May	* Raje & Joshi (2003)
<i>C. longimanus</i>	South west	Calicut	September- May		South west	Early summer	*
<i>C. macloti</i>	North west South west	Mumbai Cochin	September-December March-May, September-November		North west	Nov-March	Sehna & Sarangdhar (1949)
<i>C. melanopterus</i>	North west South west East coast	Veraval Calicut, Cochin Chennai	January-April, August-December January-April, September-December January-April, August -December		North west South west	December-March November-December	Sehna & Sarangdhar (1949) *
<i>C. obscurus</i>	South west	Calicut	November				
<i>C. sealei</i>	Northwest East coast	Mumbai Chennai	Rare Rare				
<i>C. sorrah</i>	North west South west East coast	Mumbai Calicut, Cochin Chennai	January-April, September-December January-May, October-December October-March		North west East coast	November-April March-May	Sehna & Sarangdhar (1949) Devadoss (1988a)
<i>Centrophorus granulosus</i>	South west	Cochin	June				
<i>C. moluccensis</i>	East coast	Gulf of Mannar	July				
<i>Chaenogaleus macrostoma</i>	East coast	Chennai	Rare		North west East coast	February/March November-February	* Raje & Joshi (2003)
<i>Chiloscyllium griseum</i>	East coast	Chennai	January-February, July-August, October-December		North west South west	January-March Throughout the year	* *
<i>C. indicum</i>	East coast	Tuticorin	April-June				

Contd. ...

* Present observation

1	2	3	4	5	6	7
<i>Echinorhinus brucus</i>	South west East coast	Calicut, Cochin Thuthoor	November October	East coast(Thuthoor)	October	Joel & Ebenezer (1991)
<i>Endacris racdoffi</i>	East coast	Chennai	November-December(Rare)	East coast	February	Nair & Appukkuttan(1974)
<i>Eusphyra blochii</i>	North west East coast	Veraval Chennai	March-May, September-December Rare	North west East coast	April-May March-June & November	Raje & Joshi(2003) James (1973), Devadoss (1988a).
<i>Galeocerdo cuvier</i>	North west	Mumbai	March-April; September-November	North west	November-January	Raje & Joshi(2003)
<i>Hemipristis elongatus</i>	South west East coast	Calicut Chennai	Rarely during September Rare			
<i>Iago omanensis</i>	North west East coast	Mumbai Chennai	October & March, June& February	North west	March	*
<i>Lamiopsis temminckii</i>	North west	Mumbai	January-March, September-December	North west	April-May	Setna & Sarangdhar (1949)
<i>Loxodon macrorhinus</i>	North west	Mumbai	April-March & February	North west East coast	January-March July	Raje & Joshi(2003) *
<i>Mustelus mosis</i>	North west South west	Veraval Cochin	September-October September-October			
<i>Prionace glauca</i>			Rarely caught in Indian waters			
<i>Rhinocodon typus</i>	North west South west	Veraval Calicut	April-May January-May(occasionally)			
<i>Rhizoprionodon acutus</i>	North west	Veraval, Mumbai	September -January, March-April	North west East coast East coast	April-May January- June, October-December	Raje & Joshi(2003) *
<i>R. oligolinx</i>	South west East coast	Cochin Chennai	January-May, September-October June-October			
<i>R. olgolinx</i>	North west South west	Mumbai Cochin	September-December April-May; August-November	North west East coast	January-February Throughout the year	* *
<i>Scoliodon laticaudus</i>	North west South west East coast	Veraval, Mumbai Calicut,Cochin Chennai	Throughout the year January-May, July-December Throughout the year	North west South west East coast	Throughout the year March-May September-October	Appukkuttan & Nair (1988) Devadoss, (1988a)
<i>Sphyrna lewini</i>	North west East coast	Mumbai Chennai	January-May, October-December June-July, November-January	East coast East coast	August-October September-October	Devadoss, (1988a) *
<i>S. mokarran</i>	South west	Cochin	April-August			
<i>S. zygaena</i>	South west East coast	Calicut Tuticorin	February-March, August-November January-February;September-October	North east South east	February-May March-May & October	James, (1973) James, (1973)
<i>Squalus acanthias</i>	South west	Cochin	December			
<i>Stegostoma fasciatum</i>	East coast	Chennai	Rare			

* Present observation

Appendix : II. Regional / seasonal abundance and peak breeding season of Rays along the Indian coast

Species 1	Coast/Zone 2	Seasonal abundance*		Coast/Centre 5	Peak breeding season Months 6	References 7
		Centre 3	Months 4			
<i>Aetobatus flagellum</i>	East coast	Mandapam Cuddalore	August, December-January Sporadic	Cuddalore	August-September	Raje & Joshi, (2003)
<i>Aetobatus narinari</i>	North west South west East coast	Mumbai Calicut, Cochin, Lakshadweep Chennai, Tuticorin, Mandapam	January-May;September-October January-June;August-October Through out the year	South west East coast	April-May April-May	Raje & Joshi, (2003) *
<i>Aetomylaeus nichofii</i>	East coast	Chennai, Orissa	Frequently	Cuddalore	December-April	Raje & Joshi, (2003)
<i>Dasyatis alcockii</i>	East coast	Chennai	February-March, October-December	East coast	February-March	*
<i>Dasyatis kuhlii</i>	East coast	Chennai, Tuticorin, Mandapam	June-December, January-April and July-August.	Chennai	February-March, June-July	*
<i>Dasyatis zugei</i>	North west	Mumbai	January & March-May & September-December	Mumbai	Through out the year but peak -February-March.	Raje & Joshi, (2003)
<i>Gymnura japonica</i>	North west East coast	Mumbai Orissa	March-May, September. Common			
<i>Gymnura micrura</i>	North west South west East coast	Mumbai Calicut Mandapam	February-April, October-December October-April April, July & September	Mumbai	Prolonged	Raje & Joshi, (2003)
<i>Gymnura poecilura</i>	North west South west East coast	Mumbai Calicut Chennai, Tuticorin, Mandapam** **(Very common off Palk Bay)	April-May, September-December April-June, October-November Through out the year	Mumbai Mandapam, Chennai	Prolonged, (Peak:April-October) Through out the year	Raje & Joshi, (2003) *

Contd....

* Present observation

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Appendix II. Continued

1	2	3	4	5	6	7
<i>Himantura bleekeri</i>	North west South west East coast East coast	Mumbai Calicut Mandapam Chennai	March-May, October-December Occasionally February-March, June-October October-March	Mumbai Cuddalore Chennai	Throughout the year December-February December & January	*
<i>H. gerrardi</i>	North west	Mumbai	September-October			
<i>H. imbricata</i>	North west East coast	Mumbai Chennai, Tuticorin, Mandapam	January-May; September-December January-April, June, October-December.	Mumbai Porto Novo	throughout the year December-January	Raje & Joshi, (2003) Raje & Joshi, (2003)
<i>H. jenkinsii</i>	Southwest East coast	Chennai	January-April; June-December.	Calicut Chennai	January-November Throughout the year	* Raje & Joshi, (2003)
<i>H. uarnak</i>	North west South west East coast	Mumbai Cochin Chennai, Tuticorin, Mandapam & Cuddalore	January-April, September-October January-March, August-December Throughout the year.	Mumbai Calicut Chennai Mandapam Mumbai	October-November January-March February-March October-November Prolonged	Raje & Joshi, (2003) Raje & Joshi, (2003) *
<i>H. walga</i>	North west	Mumbai	Rare			Raje & Joshi, (2003)
<i>Mania birostris</i>	South west	Lakshadweep	June-November(Peak: June-August)	Lakshadweep	August	*
<i>Mobula mobular</i>	South west East coast	Calicut, Mangalore Mandapam, Chennai	April, October- December February-March, August-October	Mumbai Calicut	April-May April-May	Setna and Sarangdhar(1949) Raje & Joshi, (2003)
<i>Pastinacus sephen</i>	North west South west East coast	Veraval, Mumbai Mangalore Chennai, Tuticorin, Mandapam	January-May; August-September January-May Throughout the year.	Mumbai Calicut Chennai	Throughout the year(Peak: June). Prolonged. January-February, July	Raje & Joshi, (2003) Raje & Joshi, (2003) *
<i>Rhinoptera javanica</i>	North west South west East coast	Mumbai Calicut Chennai, Tuticorin, Mandapam Gulf of Mannar	January-February, September-October October-April October-November; April-September; January-March.	Calicut	July-September	Raje & Joshi, (2003)
<i>Taeniura lymma</i>	East coast	Mandapam	April-May; August-September			
<i>Taeniura meyeni</i>	East coast	Mandapam	Rare (January, February & August)			
<i>Urogymnus asperimus</i>	East coast	Mandapam	April-May; August-September (Sporadic)			

* Present observation

Appendix : III. Regional / seasonal abundance and peak breeding season of skates along the Indian coast

Species	1	2	3	4	5	6	7
	Coast/Zone	Seasonal abundance	Centre	Months	Peak breeding season	Months	References
					Centre		
<i>Aroxypristis cuspidata</i>	South west East coast	Calicut Chennai		Sporadic Abundant throughout.	Mumbai(Northwest)	March-May	Raje & Joshi, 2003
<i>Pristis microdon</i>	East coast	Cuddalore		July-September	Cuddalore	May-July	Devadoss, (1978)
<i>Rhina ancylostoma</i>	North west Southwest	Veraval, Mumbai Cochin		January-April; October-November Rare	Mumbai Coromondal coast	September March	*
<i>Rhinobatos armandalei</i>	North west South west	Mumbai MangaloreCalicut		September-October August-November	Mumbai	September-October	*
<i>R. granulatus</i>	North west East coast East coast East coast	Mumbai Chennai Mandapam, Gulf of Mamar Tuticorin		March-May; September-December January-February Frequently April-May	Chennai Cuddalore	February-September September-October	*
<i>R. oblitus</i>	North west	Mumbai		August-October			
<i>Rhynchobatus djiddensis</i>	North west South west East coast	Veraval, Mumbai Cochin Chennai		January-March; October-December April-May; August-November March, July-August	Mumbai	July-October	Raje & Joshi, 2003

* Present observation

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