IDENTIFYING FINS OF SHARKS AND RAYS USING 3D REPLICAS:
A GUIDEBOOK
INTRODUCTION

3D FIN IDENTIFICATION GUIDE

KEY FEATURES OF FINS

BIGEYE THRESHER

COMMON THRESHER

PORBEAGLE SHARK

SHORTFIN MAKO SHARK

BLUE SHARK

OCEANIC WHITETIP SHARK

SILKY SHARK

GREAT HAMMERHEAD SHARK

SCALLOPED HAMMERHEAD SHARK

BOWMOUTH GUITARFISH

GIANT GUITARFISH

WEDGEFISH

REFERENCES
Sharks and rays belong to elasmobranchs—Elasmobranchii—a subclass of Chondrichthyes (cartilaginous fish). There are over 500 species of sharks (Ebert et al., 2021) and 630 rays (Last et al., 2016) found worldwide, of which 160 species of sharks and 68 species of rays are found in India (Kizhakudan et al., 2018). Sharks and rays are considered among the most threatened species in the world. Commercial fisheries supply to an increasing demand for fins used in preparing fin soup in cultural cuisine. This is propelling the decline in sharks and rays populations worldwide. Loss of sharks and rays can disrupt the critical ecosystem functions, including controlling a wide array of species they prey upon and nutrition distribution in the oceanic habitats.

Recognising these conservation concerns, international trade in sharks and rays has been regulated under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). At least, five species of Sawfishes Family Pristidae spp. have been listed under Appendix I of the CITES, and trade in these species is only authorised in exceptional circumstances as Appendix I includes all species threatened with extinction. While more than 100 species are listed in Appendix II and III. Appendix II includes species not necessarily threatened with extinction, but in which trade is controlled in order to avoid utilisation incompatible with their survival. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

In India, 18 species of sharks and rays are protected under the Schedule I and eight species under the Schedule II of the Wild Life (Protection) Act, 1972 as amendment in 2022. In order to curb over-exploitation and regulate trade, other policies and as per the regulations have been put in place.

In 2013, the Ministry of Environment, Forests and Climate Change, Government of India banned shark finning in the sea under its ‘Fins Naturally Attached’ policy. In 2015, a blanket ban on shark fin trade was declared in India; under the EXIM (Export-Import) policy of the Foreign Trade (Development and Regulation) Act, 1992.
Over 100 shark and ray species are listed in the CITES Appendices and many of these are targeted for their valuable fins, mainly for consumption in Asia. The law enforcement agencies often do not have reference photos or training and they have to identify fins against over 1,000 potential sharks and rays species to monitor the trade.

Identifying the fins of CITES-listed sharks and rays quickly and reliably is key in ensuring the effective implementation of CITES and national regulations. Hence, this 3D Fin Identification Guide has been developed to help law enforcement officials identify dried and unprocessed fins of 11 commercially traded shark and rays species based on physical characteristics.

The fins covered in this publication are those of most commonly found in international trade. All of them are for shark and rays species listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The fin types used in this guide are the dorsal and pectoral fins. Dorsal fins are the same colour on both sides and pectoral fins are darker on the top surface and lighter on the bottom surface. QR scan code is included for each fin, which will open up to individual fin identification on the TRAFFIC website.
Other key features used to identify fins using this publication are given below.
IDENTIFYING FINS OF SHARKS AND RAYS USING 3D REPLICAS: A GUIDEBOOK

**BIGEYE THRESHER**  
*Alopias superciliosus*

**DISTRIBUTION**

- **Global**: Worldwide in tropical and temperate seas
- **Bhutan**: Species not found
- **India**: Andaman and Nicobar Islands and Gulf of Mannar
- **Nepal**: Species not found

**CONSERVATION STATUS**

- **IUCN status**: Vulnerable

**PROTECTION STATUS**

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**PECTORAL FIN**

- Long and slender fin
- Apex is slightly curved
- Top surface is grey to greyish brown
- Margins of the leading and trailing edges are darker
- The bottom surface is almost the same colour as the top surface with a visible light colouration at the base extending into the middle of the fin
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**COMMON THRESHER**

*Alopias vulpinus*

**DISTRIBUTION**

- **Global**: Worldwide in tropical to cold temperate seas
- **Bhutan**: Species not found
- **India**: South-west and East coast
- **Nepal**: Species not found

**CONSERVATION STATUS**

IUCN status: Vulnerable

**PROTECTION STATUS**

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**DORSAL FIN**

- Thick cartilage at the base
- Tall leading edge
- Slightly curved trailing edge
- Rounded apex tip
- A short free rear tip at the base
- Dark grey on the margins of the leading and trailing edges

**PECTORAL FIN**

- Long and slender from leading edge to trailing edge
- Apex tip is rounded with a tiny white spot which is visible on both top and bottom surfaces
- Dark grey to dark greyish brown on the top surface. The bottom surface has a similar colour to the top surface with a slightly white colouration at the base
PORBEAGLE SHARK
Lamna nasus

DISTRIBUTION

Global: North Atlantic and Southern Hemisphere
Bhutan: Species not found
India: Not distributed or recorded from Indian waters
Nepal: Species not found

CONSERVATION STATUS

IUCN status: Vulnerable

PROTECTION STATUS

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DORSAL FIN

- Thin base
- Apex is rounded
- Dark blue or black to dark greyish brown with a white patch on the free rear tip

PECTORAL FIN

- Apex is rounded
- Short and broad
- Dark grey or greyish brown with a white margin along the edge of the free rear tip
- Bottom surface is white or with dark colouration throughout the mid-section of the fin and along the margins

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DORSAL FIN (Top surface)

PECTORAL FIN (Bottom surface)
SHORTFIN MAKO SHARK
Isurus oxyrinchus

DISTRIBUTION
Global: Worldwide in tropical and temperate waters
Bhutan: Species not found
India: West and East coast
Nepal: Species not found

CONSERVATION STATUS
IUCN status: Endangered

PROTECTION STATUS

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DORSAL FIN
- Short free rear tip
- Moderately rounded apex
- Nearly straight trailing edge
- Uniform slate grey colouration
- Tall, very erect fin due to steep angle of the leading edge

PECTORAL FIN
- Top surface is slate grey in colour with white margin running along the edge of the free rear tip
- Moderately rounded apex
- Bottom surface is uniform white with no obvious dark or dusky markings
Identifying Fins of Sharks and Rays Using 3D Replicas: A Guidebook

**DORSAL FIN**
- Low angular leading edge
- Outwardly curving trailing edge
- A short free rear tip at the base
- Dark grey to brownish

It looks similar to the dorsal fin of a Silky Shark *Carcharhinus falciformis*, a CITES-listed species. However, the dorsal fin of Silky Shark has a longer free rear tip and a steeper slope on the leading edge. It also has a smoother texture and a more uniform grey colour.

**PECTORAL FIN**
- Long and narrow fins with a steep leading and trailing edge
- Radial cartilage extending from the base towards the apex
- The top surface is dark grey or greyish brown
- The bottom surface is white without any markings and has a dark apex

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**Blue Shark**
*Prionace glauca*

**DISTRIBUTION**
- **Global:** Worldwide in tropical and temperate waters
- **Bhutan:** Species not found
- **India:** South-western Indian coast
- **Nepal:** Species not found

**CONSERVATION STATUS**
- **IUCN status:** Near Threatened

**PROTECTION STATUS**

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**CITES**
- **Appendix II**
**Oceanic Whitetip Shark**
*Carcharhinus longimanus*

**Distribution**
- **Global:** Worldwide in tropical and temperate waters
- **India:** West and East coast
- **Bhutan:** Species not found
- **Nepal:** Species not found

**Conservation Status**
- **IUCN Status:** Critically Endangered

**Protection Status**

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**Dorsal Fin**
- Apex tip is large and broadly rounded
- Rear tip at the base is curved
- Non-uniformly white at the apex tip

**Pectoral Fin**
- Apex is long and broadly rounded, and curved
- Non-uniformly white at the apex tip on the top surface. The bottom surface is usually white but can be non-uniformly brown
**SILKY SHARK**
*Carcharhinus falciformis*

**DISTRIBUTION**

Global: Worldwide in tropical waters  
Bhutan: Species not found  
India: East and West coast  
Nepal: Species not found

**CONSERVATION STATUS**

IUCN status: Vulnerable

**PROTECTION STATUS**

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**DORSAL FIN**

- Apex tip is moderately rounded  
- Free rear tip is close to half the length of the base  
- Leading edge is sloping  
- Trailing edge is curved outwardly  
- Uniform grey or greyish brown

**PECTORAL FIN**

- Apex tip is narrow and rounded  
- Trailing edge is long and nearly straight  
- Grey or greyish brown on the top surface  
- Bottom surface is white with a dark grey at the apex tip

**CITES**

- Appendix II
**GREAT HAMMERHEAD SHARK**
*Sphyra mokarran*

**DISTRIBUTION**

- **Global:** Worldwide throughout tropical and warm temperate seas
- **Bhutan:** Species not found
- **India:** East and west coast
- **Nepal:** Species not found

**CONSERVATION STATUS**

**IUCN status:** Critically Endangered

**PROTECTION STATUS**

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**DORSAL FIN**

- Apex tip is pointed and curved
- A free rear tip at the base
- Tall and slender
- Light grey

**PECTORAL FIN**

- Broad along the base
- Apex is pointed
- Trailing edge is moderately curved
- Bottom surface is dark grey at the apex and along the trailing edge
SCALLOPED HAMMERHEAD SHARK
*Sphyrna lewini*

**DISTRIBUTION**

*Global*: Worldwide in coastal warm-temperate and tropical seas

*India*: West and East coast

*Bhutan*: Species not found

*Nepal*: Species not found

**CONSERVATION STATUS**

*IUCN status*: Critically Endangered

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**CITES**

*Appendix II*

**PECTORAL FIN**

- Short and broad
- Light brown or light greyish brown on the top surface
- Bottom surface is light greyish brown with distinct black markings at the apex tip

**DORSAL FIN**

- Base is thin
- Leading edge is tall and flat at the apex tip
- Trailing edge is straight and curved at the base
- Light brown

(Top surface)

(Bottom surface)
**BOWMOUTH GUITARFISH**
*Rhina ancylostoma*

**DISTRIBUTION**
- **Global**: Indo-West Pacific ocean
- **Bhutan**: Species not found
- **India**: West and East coast
- **Nepal**: Species not found

**CONSERVATION STATUS**
- **IUCN status**: Critically Endangered

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**DORSAL FIN**
- Tall and narrow
- Multiple irregularly shaped rows of cartilage or two long strips of cartilage present along the base
- Short free tip at the base
- Brownish-grey and usually with white spots

**CAUDAL FIN**
- Crescent moon shaped with symmetrical to the upper and lower sides
- Some faded white spots may be present
**CONSERVATION STATUS**

**IUCN status:** Critically Endangered

**PROTECTION STATUS**

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**DORSAL FIN**
- Multiple irregularly shaped rows of cartilage or two long strips of cartilage present along the base
- Apex is pointed
- Leading edge is slightly curved towards the apex tip
- Trailing edge is curved inwards until the base
- Dull brown to light grey

**SECOND DORSAL FIN**
- The base and the trailing edge are nearly the same lengths
- The leading edge is long
- Dull brown to light grey

**Global**: Western Indian Ocean from South Africa to Oman and the Arabian/Persian Gulf, but it may not be present further east

**Bhutan**: Species not found

**India**: West and East coast

**Nepal**: Species not found

**GIANT GUITARFISH**

*Rhynchobatus djiddensis*

**DISTRIBUTION**

**Global**: Western Indian Ocean from South Africa to Oman and the Arabian/Persian Gulf, but it may not be present further east

**Bhutan**: Species not found

**India**: West and East coast

**Nepal**: Species not found
**WEDGEFISH**
*Rhynchobatus* spp.

**DISTRIBUTION**

*Global*: Worldwide temperate to tropical waters

*Bhutan*: Species not found

*India*: East and West coast

*Nepal*: Species not found

**CONSERVATION STATUS**

*IUCN status*: Critically Endangered

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*Rhynchobatus australiae*  
*Smoothnose Wedgefish  
R. laevis* | Not Found |

**DORSAL FIN**

- Fin base with cartilaginous blocks that don't extend till the entire fin base
- Tall and narrow with a height greater than the width
- Free rare tip on the base
- Light yellowish or brownish
REFERENCES


TRAFFIC. Shark fin identification for CITES-listed species.


TRAFFIC is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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