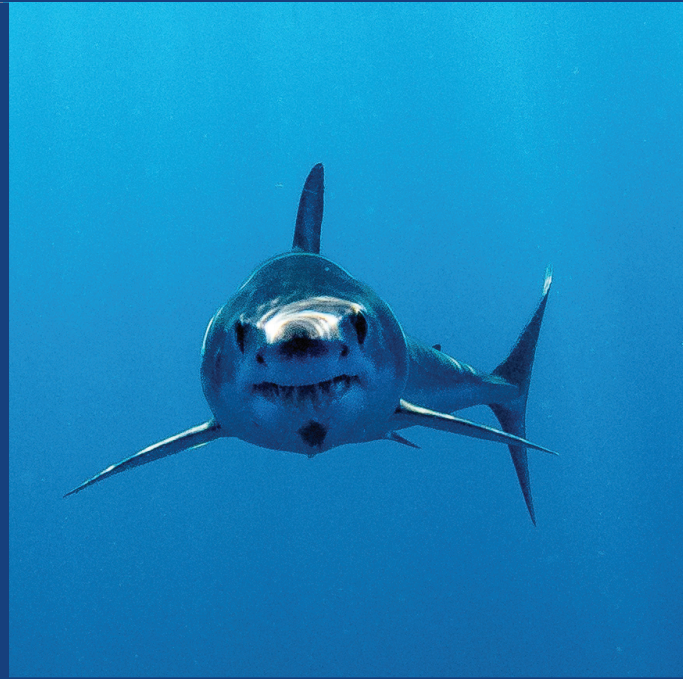
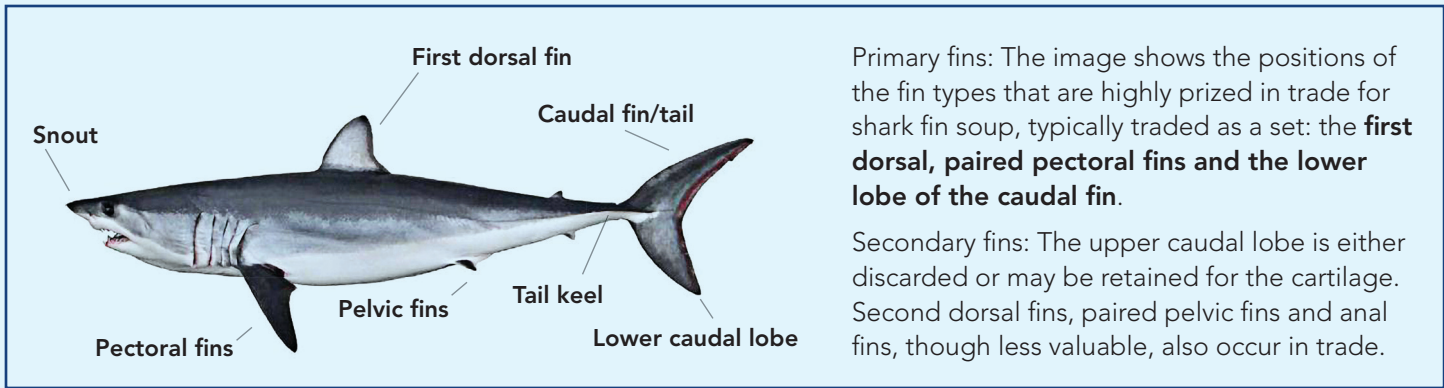


Identifying Shark Fins:

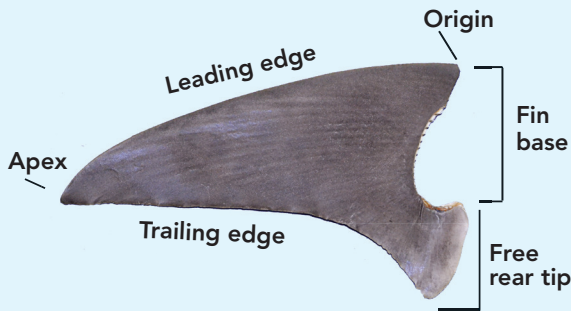
Shortfin Mako (*Isurus oxyrinchus*) and
Longfin Mako (*Isurus paucus*)



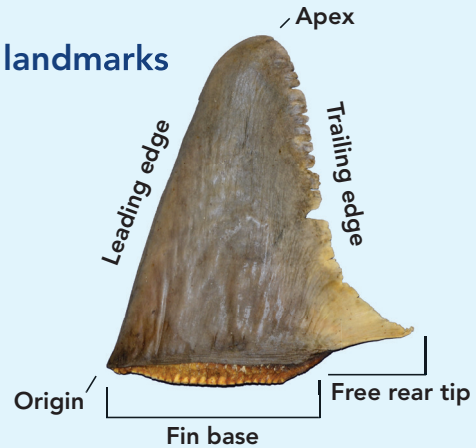


The following pages focus on **raw or unprocessed pectoral fins, in wet or dried form**, because they are the most easily identified of the traded fins for both species. For information on mako shark dorsal fins, please see page 4. Lower caudal lobes are generally not easily identifiable to the species level for many shark species and are not covered in this document.

Pectoral fin landmarks



Dorsal fin landmarks

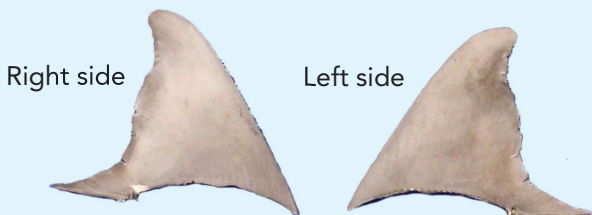


How to distinguish first dorsal fins and pectoral fins from lower caudal lobes

Check the fin color on each side.

Dorsal fins are the same color on both sides (see right and left side views below). In contrast, pectoral fins are darker on the top side (dorsal view) and lighter underneath (ventral view) also known as countershading. The exception to this rule is that thresher shark pectoral fins have a ventral surface that is only slightly lighter in color than the dorsal surface, making them easy to distinguish from mako shark pectoral fins (see page 2).

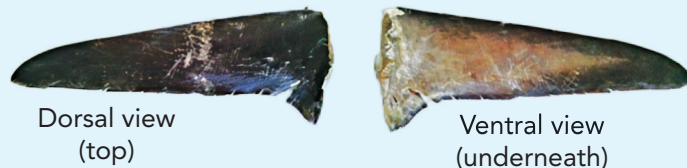
Dorsal fin



Pectoral fin



Example of distinctive coloration seen in thresher shark pectoral fins.



Background

A proposal for the inclusion of shortfin mako (*Isurus oxyrinchus*) and longfin mako (*Isurus paucus*) sharks in Appendix II of the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) will be considered at the 18th meeting of the Conference of the Parties (CoP18). Mako sharks are among the most commercially important shark species caught in high seas and tuna fisheries worldwide. While they are retained primarily for their high-quality meat, fins are a secondary product traded internationally in large numbers annually^{1,2,3}.

The ability to quickly and reliably identify unprocessed fins from CITES listed sharks has been key to the implementation of commercially traded shark species listed since 2013, with several guides now available^{4,5,6}. Visual identification using morphological characteristics, coupled with more targeted genetic screening if desired, provides governments with the means to successfully implement the CITES shark listings while allowing for legal, sustainable trade and fully meeting their obligations under the convention.

Information on the identification of fins is already widely available for mako sharks. However, a summary of the key characters of the most easily identifiable fins from mako species—the highly distinctive pectoral fins—are included here together with a comparison to morphologically similar pectoral fins from other pelagic shark species.

Identifying mako shark pectoral fins

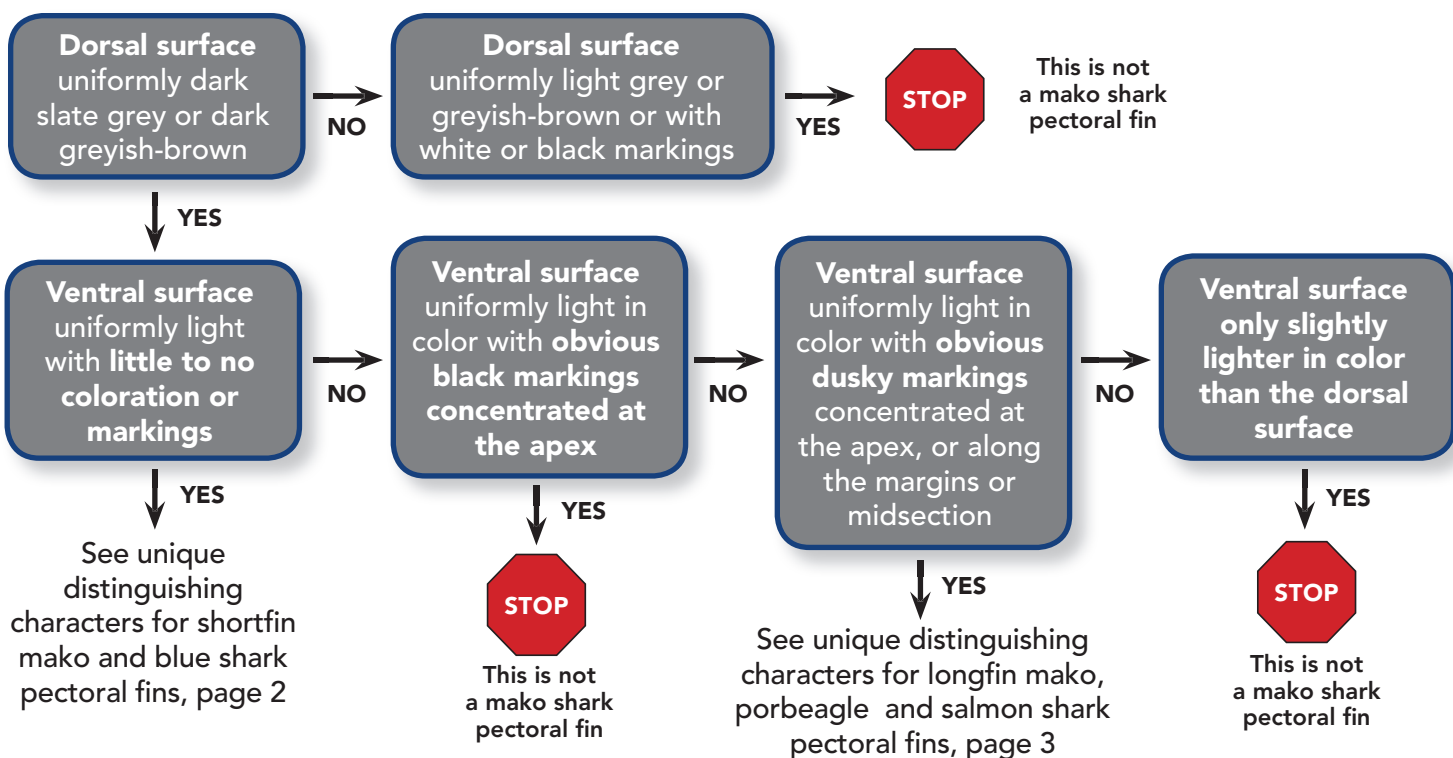
The easiest way for border control officers and enforcement agents to identify mako sharks in trade is through distinct characteristics in size, shape and coloration of their pectoral fins. Because dorsal fins and pectoral fins are generally traded together as fin sets, focusing on pectoral fins will be the easiest way to identify fins from these species during routine inspections and CITES enforcement contexts. While the key diagnostic characters on the ventral surface of the pectoral fins have been described in other fin ID field guides already referenced, a summary is provided below.

Flow chart for identifying pectoral fins

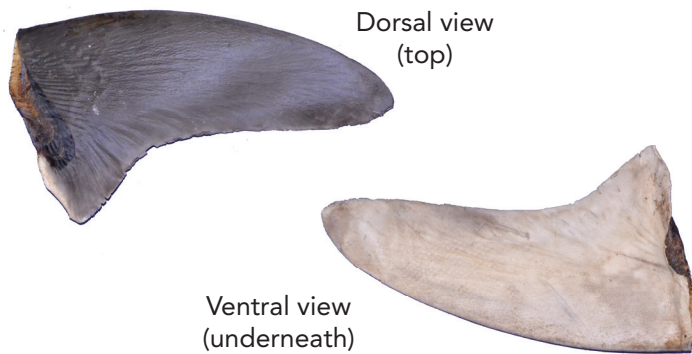
Black vs Dusky definitions:

The term 'black' refers to markings that are dark (inky black) in color with a stark demarcation between the white or light coloration on the ventral surface.

The term 'dusky' refers to markings that are slightly greyish or dark but diffuse in color. There is no stark demarcation between the white or light coloration on the ventral surface.

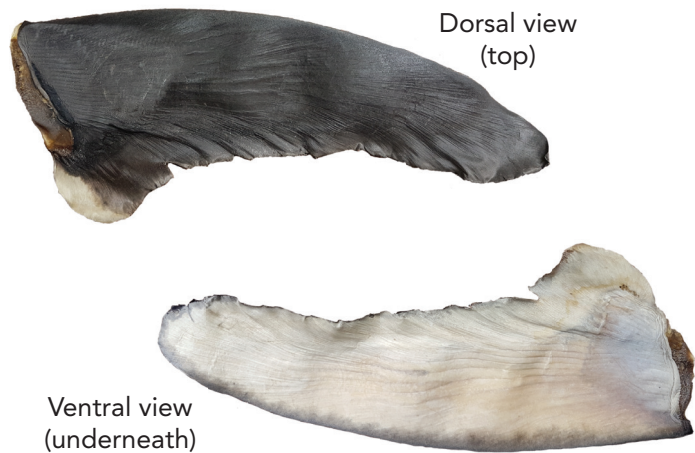


Shortfin mako shark (*Isurus oxyrinchus*) pectoral fins



- Ventral surface is uniform white or light in color with no obvious dark or dusky markings
- Moderately broad (leading edge to trailing edge), with a narrowly rounded apex

Longfin mako shark (*Isurus paucus*) pectoral fins



- Ventral surface is mostly white or light in color with dusky or dark markings at the apex and along the margins of the leading and trailing edges
- Extremely elongated, with a moderately rounded apex



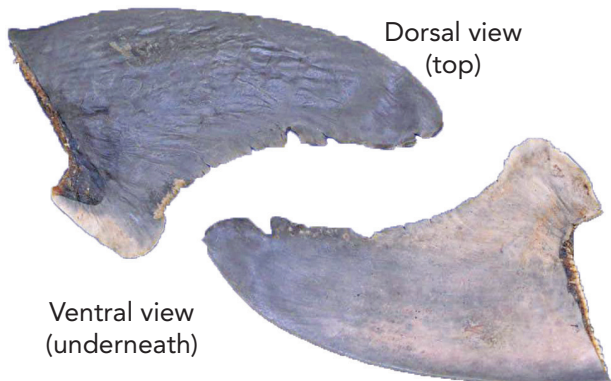
Dorsal surface is dark slate grey (wet) or greyish-brown (dried, semi-dried) in color with an obvious white margin running along the edge of the free rear tip for both shortfin and longfin mako sharks.

NOTE: For both shortfin mako and longfin mako, the ventral surface can sometimes have small, mottled light grey spots visible along the ventral surface of the pectoral fins.

Comparing mako shark pectoral fins to pectoral fins originating from other pelagic species: porbeagle, salmon, and blue sharks

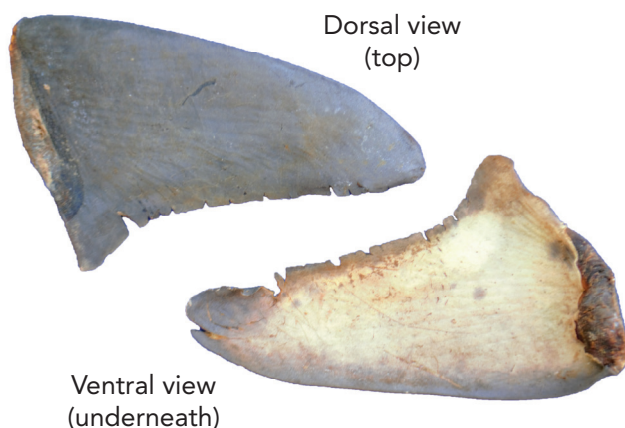
Because pectoral fins originating from mako sharks may be of similar size, shape and coloration to the commonly traded pectoral fins from other mackerel sharks and thresher sharks (CITES and non-CITES listed), the key diagnostic characters on the ventral surface of these pectoral fins are provided below for reference.

Porbeagle shark (*Lamna nasus*) pectoral fins



- Moderately large but short and broad (from leading edge to trailing edge) with a rounded apex
- Dorsal surface is dark grey or greyish-brown in color and there is a white margin running along the edge of the free rear tip, as seen in lamnid species with fins of similar size and color (e.g., shortfin mako, longfin mako)
- The ventral surface is white or light in color with a dusky coloration throughout the midsection of the fin and along the margins of the leading and trailing edge

Salmon shark (*Lamna ditropis*) pectoral fins



- Moderately large but short and broad (from leading edge to trailing edge) with a rounded apex
- Dorsal surface is dark grey or greyish-brown in color and there is **no white margin running along the edge of the free rear tip**, as seen in lamnid species with fins of similar size and color (e.g., shortfin mako, longfin mako, porbeagle)
- Ventral surface is uniform white or light in color with **obvious dark or dusky markings at the apex and along the margins of the leading edge and trailing edge**

NOTE: For both porbeagle and salmon sharks, the ventral surface can sometimes have small, mottled light grey spots visible along the ventral surface of the pectoral fins originating from this species.

Blue shark (*Prionace glauca*) pectoral fins



- Extremely elongated, slender (from leading edge to trailing edge) with a narrowly rounded to slightly pointed apex
- Dorsal surface is dark grey or greyish-brown in color and there is **no white margin running along the edge of the free rear tip**, as seen in lamnid species with fins of similar size and color (e.g., shortfin mako, longfin mako, porbeagle)
- Ventral surface is uniform white or light in color with no obvious dark or dusky markings
- Radial cartilage is easily seen extending from the base towards the apex

Similar coloration to pectoral fins originating from shortfin mako, but much longer and more slender.

A note on mako shark first dorsal fins

The first dorsal fins for both the shortfin (*Isurus oxyrinchus*) and longfin (*Isurus paucus*) mako sharks (Family Lamnidae) are morphologically similar in size, shape and coloration at all life stages. Additionally, first dorsal fins originating from the three species of thresher sharks (Family Alopiidae) look extremely similar and are often mistaken for first dorsal fins originating from mako sharks.

Shortfin mako



Longfin mako



Mako shark and thresher shark 1st dorsal fins:

- Uniform, dark slate grey (wet) or greyish-brown (dried, semi-dried) in color
- Tall, very erect fin due to the steep angle of the leading edge
- Moderately rounded apex, and nearly straight trailing edge
- Short free rear tip



Common thresher shark
(*Alopias vulpinus*; CITES App II)



Pelagic thresher shark
(*Alopias pelagicus*; CITES App II)



Bigeye thresher shark
(*Alopias superciliosus*; CITES App II)

First dorsal fins from mako sharks are morphologically very similar in size, shape and color not only to each other, but also to those originating from the porbeagle shark and salmon shark (Family Lamnidae). The first dorsal fins from these species are also uniform dark slate grey (wet) or greyish-brown (dried, semi-dried) in color; tall, very erect fin due to the steep angle of the leading edge.



Porbeagle shark
(*Lamna nasus*; CITES App II)

- Porbeagle shark 1st dorsal fin has a very distinctive white patch on the free rear tip not seen in any other species of shark.



Salmon shark
(*Lamna ditropis*; *Not CITES-listed)

- Salmon shark 1st dorsal fin is much broader (leading edge to trailing edge).
- The apex is also more broadly rounded than mako shark 1st dorsal fins.



Blue shark
(*Prionace glauca*; *Not CITES listed)

- Blue shark 1st dorsal fin is similar in that they are dark slate grey (wet) or greyish-brown (dried, semi-dried) in color. However, blue shark dorsal fins are not tall, and have a low sloping leading edge, a moderately rounded apex, are strongly convex (outwardly rounded) and have a longer free rear tip than seen in mako 1st dorsal fins.

NOTE: Dorsal fins, pectoral fins and lower caudal lobes are typically traded together as sets. Because dorsal fins from these species are morphologically similar, we suggest focusing on the pectoral fins for determining species level information.

Conclusion

Provisional identification of fins from CITES listed shark species leads to establishing reasonable or probable cause in enforcement settings (e.g., detaining cargo from a vessel suspected of harvesting these species in prohibited areas; fin shipments crossing international borders without the proper CITES permits required) and is an important step in implementing the provisions of the convention for sharks and rays, thus preventing illegal and unsustainable trade. The aim of this guide is to demonstrate that it is straightforward to visually distinguish mako shark fin sets from similar species in their most commonly traded form, frozen and/or dried and unprocessed. Should shortfin mako sharks be listed on Appendix II of CITES, additional, more comprehensive visual identification tools will be developed.



Acknowledgements

The information in this document was compiled by Debra Abercrombie.

Cover and mako shark photos were provided by Rima Jabado, Andy Murch, Matt Potenski, Stan Shea and Steve DeNeef.

Fin photos were provided by Debra Abercrombie.

Graphic design provided by DJ Mash.

Thanks to Luke Warwick (Wildlife Conservation Society), Mark Bond (Florida International University), Megan O'Toole (IFAW), Stan Shea (Bloom Association, Hong Kong) and Jen Sawada (The Pew Charitable Trusts) for providing funding and review of content throughout this document.

Endnotes

¹ Clarke, S.C., J.E. Magnussen, D.L. Abercrombie, M.K. McAllister and M.S. Shivji. (2006a). Identification of shark species composition and proportion in the Hong Kong shark fin market based on molecular genetics and trade records. *Conservation Biology* 20: 201–211.

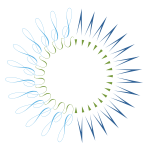
² Clarke, S.C., M.K. McAllister, E.J. Milner-Gulland, G.P. Kirkwood, C.G.J. Michielsens, D.J. Agnew, E.K. Pikitch, H. Nakano and M.S. Shivji. (2006b). Global estimates of shark catches using trade records from commercial markets. *Ecology Letters* 9: 1115–1126.

³ Fields, A.T., G.A. Fisher, S.K.H. Shea, H. Zhang, D.L. Abercrombie, K.A. Felheim, E.A. Babcock and D.D. Chapman. (2017). Species composition of the global Chondrichthyan (shark, batoid, chimera) fin trade assessed by a retail market survey in Hong Kong. *Conservation Biology*. doi:10.1111/cobi.13043

⁴ Abercrombie, D.L. and S. Hernandez. (2017). Identifying shark fins: implementing and enforcing CITES. Abercrombie & Fish, Marine Biological Consulting, Suffolk County, NY. 21 pg.

⁵ Abercrombie, D.L., D.D. Chapman, S.J.B. Gulak and J.K. Carlson. (2013). Visual identification of fins from common elasmobranchs in the Northwest Atlantic Ocean. NMFS-SEFSC-643, 51 p.

⁶ FAO. (2016). SharkFin Guide: identifying sharks from their fins, by Marshall, L.J. and M. Barone. Rome, Italy.



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Debra L. Abercrombie
Research Consultant
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Marine Biological Consulting
Suffolk Co., NY, USA
Tel: +1 954-253-1265
Email: debra.abercrombie@gmail.com
www.identifyingsharkfins.org