SAVING THE MOBULA RAYS

Working together to reduce Mobula bycatch in tuna fisheries

Mobula rays are also called "manta rays," "Mobulid rays," and "devil rays." This project focuses on the six species of Mobula rays listed below.

Giant Oceanic Manta Ray
Mobula birostris

- Front-facing mouth
- Mostly black back with white shoulder markings forming two mirrored triangles, creating a black 'T'
- Mostly white stomach with dark shading on back of the wings and gills
- Broad head with long cephalic lobes (protruding 'horns')
- Small bump at the base of the tail

Spinetail Devil Ray
Mobula mobular

- Downward-facing mouth
- Dark blue to black back
- White patches on the tips of the cephalic lobes and just behind the eyes
- Extremely long tail with small spine at the base
- Small white patch on the back fin

Sicklefin Devil Ray
Mobula tarapacana

- Downward-facing mouth
- Olive green/brown back
- Mostly white stomach with gray zig-zagged shading toward back of the wings and around gills and mouth
- Pronounced ridge running vertically down the center of the back
- Wings curved backward away from the head

Bentfin Devil Ray
Mobula thurstoni

- Downward-facing mouth
- Dark blue to gray back
- Stomach mostly white with dark shading on the front edges of wingtips and brown sheen on the wings
- Distinct double-curvature shape on front edges of wings
- Relatively short cephalic lobes and neck

East Atlantic Pygmy Devil Ray
Mobula rochebrunei

- Downward-facing mouth
- Brownish to gray back
- Dark black "collar" with a lighter gray stripe just behind the head
- Light gray stripe runs along the front of wings
- Stomach is white with gray shading at wingtips

West Atlantic Pygmy Devil Ray
Mobula hypostoma

- Downward-facing mouth
- Light brown, black, or gray back
- Some individuals are mottled or spotted
- Often has a dark gray stripe running above the upper jaw
- White markings above and behind eyes
- Stomach is white with brown or gray shading above first gill slits and at the ends of wings

WHY SHOULD WE PROTECT MOBULAS?

	Yellowfin Tuna	Dolphin	Mobula
Number of pups/offspring each year	Up to 8 million	1	1-2
Duration of incubation/pregnancy	1-3 days	12 months	12 months
Maturity age	2-3 years	8 years	3 years
Life expectancy	Up to 7 years	Up to 40 years	Up to 40 years

Map adapted from Lawson *et al.* (2016), *PeerJ*

BEST PRACTICES TO SAFELY RELEASE MOBULA RAYS

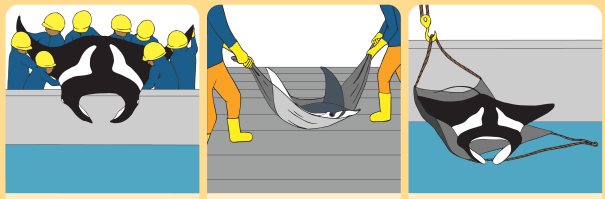
NOT ACCEPTABLE

Do not grab by the cephalic lobes (protruding "horns").

Do not use hooks or grapples to move or lift it.

Do not punch a hole in the body to pass a cable or wire through.

ACCEPTABLE



Release it as quickly as possible.

Use a stretcher or cargo net to remove it from the deck.

Use a brailer net to remove large individuals.

WHAT DO WE NEED TO KNOW TO REDUCE THE IMPACT OF THE FISHERY?

In the Eastern Pacific Ocean, about one in every six purse seine sets contain a Mobula ray, and many of these animals die. But with good practices, we can considerably reduce the chances of incidental mortality for Mobula rays.

To find solutions, researchers are conducting two studies:

1) An investigation of the genetic structure of Mobula populations, and
2) An investigation of the likelihood of mortality after a Mobula ray is released.

These two studies will reveal crucial information to guide conservation efforts and protect these iconic species. This work is led by researchers at UC Santa Cruz, Mobula Conservation Project, The Manta Trust, Monterey Bay Aquarium, and CIAT, and is supported by the International Seafood Sustainability Foundation, the Save Our Seas Foundation, and TUNACONS.

WE APPRECIATE YOUR IDEAS TO IMPROVE THE RELEASE AND PROTECTION OF MOBULAS

TOGETHER WE CAN SAVE THE MOBULA RAYS!

Monterey Bay Aquarium · TUNACONS · Manta Trust · Mobula Conservation Project · University of California Santa Cruz · CIAT IATTC · ISSF International Seafood Sustainability Foundation

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