Commonly Encountered ETP Species in the Indian Ocean Longline Tuna Fishery (FCF)

(Summarised from Indian Ocean observer data)

Species habitats, characteristics, biology

MJ Chen

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Purpose

- To raise fishers' awareness in recognising Endangered, Threatened, Protected (ETP) species
- To provide fishers with some biological characteristics of the mentioned ETP species
- To inform fishers of best practices and bycatch handling methods

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mj@keytraceability.com

Definition of ETP

- E – Endangered
- T – Threatened
- P – Protected
- Appendix I and II of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Resolutions (12/09, 17/05, 19/05) from Indian Ocean Tuna Committee (IOTC)
- Banned species regulated by flag/port states

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Common points of ETP species

- Susceptible to human destruction
- Slow growth
- Late maturity
- Small number of offspring (low fecundity)
- High mortality – fishing pressure

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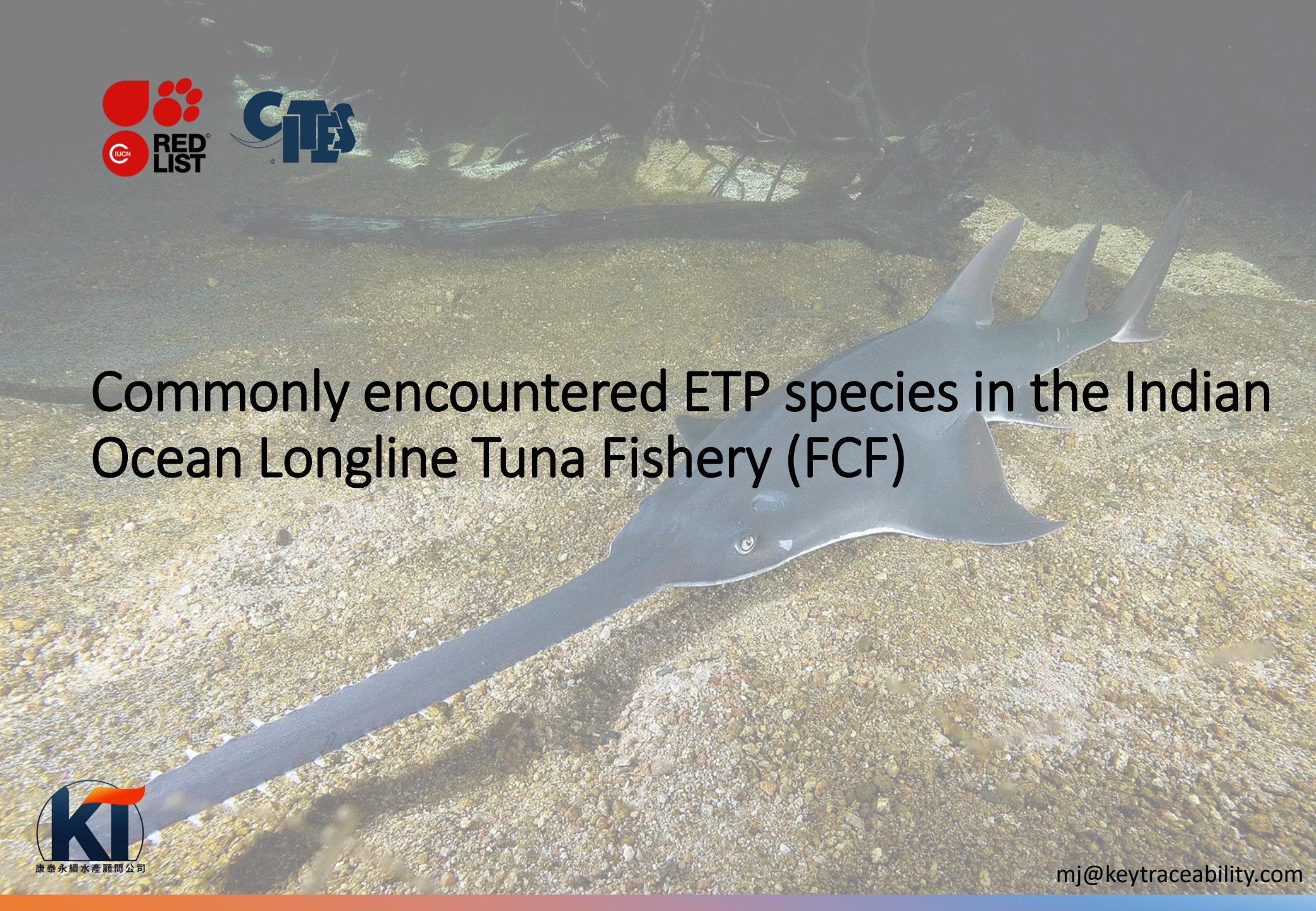

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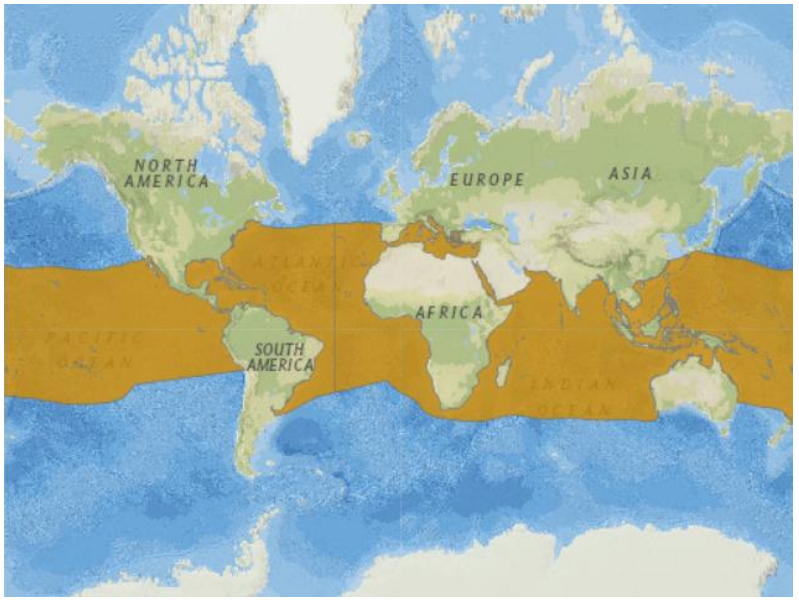
Oceanic whitetip shark, OCS

Carcharhinus longimanus

- Circumglobally distributed (40°N – 40°S) and coastal waters, preferably equatorial waters
- Epipelagic (0 – 200 metres), lives with temperatures above 20°C
- Banned from retain in Atlantic, Indian, and Pacific Oceans
- Characterised with large upper caudal fin, very large first dorsal fin and pectoral fins with rounded tips and have a whitish colour
- Observed maximum length can reach 3 metres
- Age at maturity – 6 to 7 years in Atlantic Ocean, 8.8 – 15.8 years in Pacific Ocean
- Length at maturity – 170 to 190 cm in Indian Ocean, 175 – 258 cm in Pacific Ocean
- Reproductive strategy – ovoviviparous
- Fecundity / gestation – < 20 pups / 9 – 12 months of gestation



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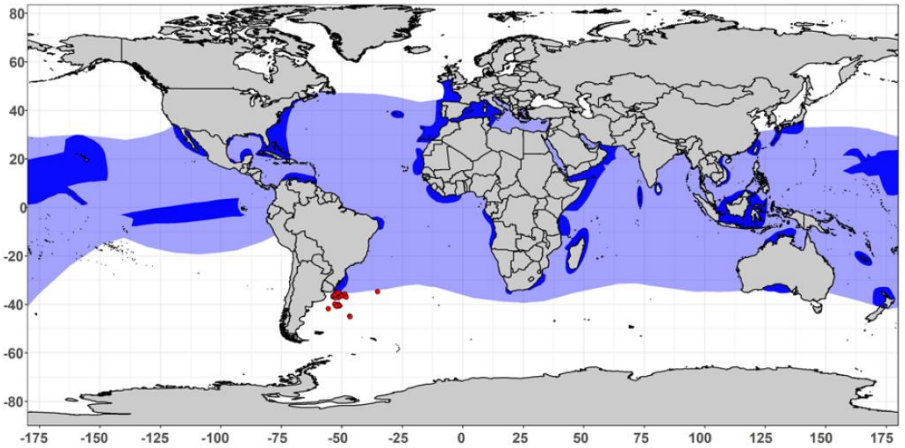
Bigeye thresher, BTH

Alopias superciliosus



- Circumglobally distributed (30°N – 30°S) and coastal waters
- Epipelagic species (0 – 200 metres of depth)
- Banned in Atlantic and Indian Oceans
- Characterised by very long upper caudal fin. Curved pectoral fins with broad tips. Snout is more rounded and less pointy than other thresher species. Dorsal part is characterised with greyish colour and white or grey underside
- Age at maturity – 8 to 12 years
- Length at maturity – 266 cm for males, 350 cm for females
- Fecundity – 2 to 4 pups per litter
- Reproductive strategy – ovoviviparous

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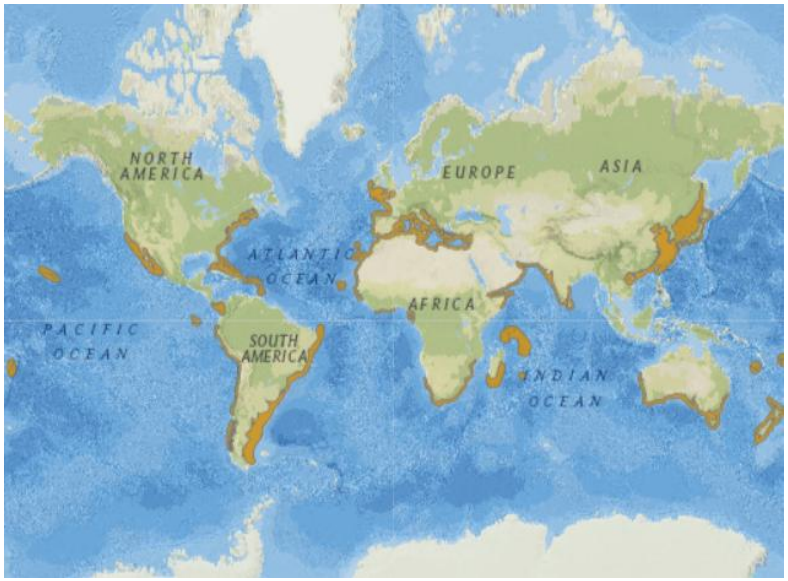
Smooth hammerhead, SPZ

Sphyrna zygaena

- Circumglobally distributed, preferably 0 – 20 metres of depth and coastal waters
- Banned in Atlantic Ocean
- Characterised by unique hammer-shaped head, the front edge of the head is curved and has no central notch. First dorsal fin has origin in front of the pectoral fin insertion. Pectoral fins are large and wide. Body is mostly coloured in grey or brown with white at ventral part
- Length at maturity – 2.1 to 2.4 metres
- Length at birth – around 50 cm
- Reproductive strategy – ovoviviparous
- Fecundity / gestation – 20 – 40 pups per litter / 10 – 11 months



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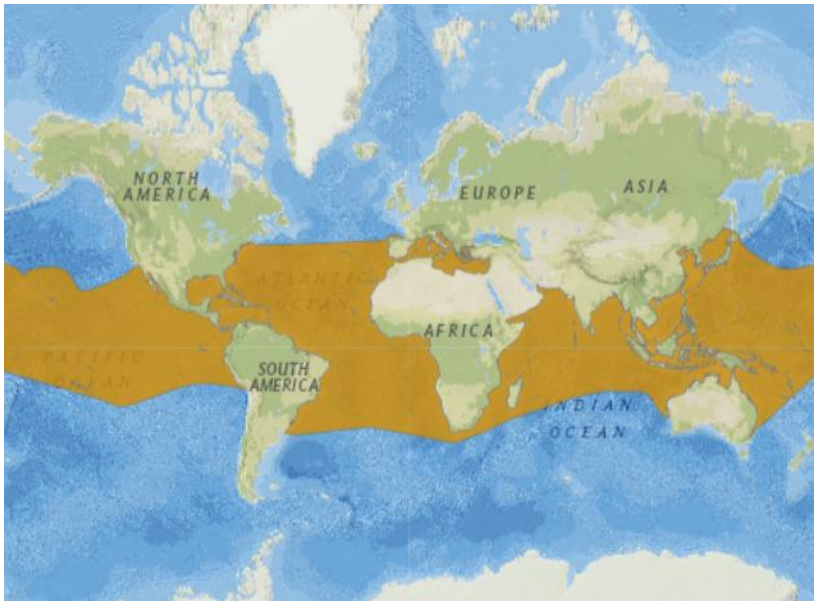
Longfin mako, LMA

Isurus paucus



- Circumglobally distributed in tropical and subtropical waters
- Lives greater than 200 metres depth during daytimes and travels to surface during nights
- Not banned by TFA and any RFMO
- Characterised by streamlined body and tapered head, beneficial to fast swimming. Straight and thin pectoral fins, caudal fin is lunate. Relatively large eyes. Body is usually coloured with dark blue or greenish, with silver white at ventral part
- Length at maturity around 2.1 – 2.5 metres, female size larger than males
- Reproductive strategy – ovoviviparous
- Fecundity / gestation – around 17 pups per parturition / 9 – 25 months of gestation (similar to shortfin mako)

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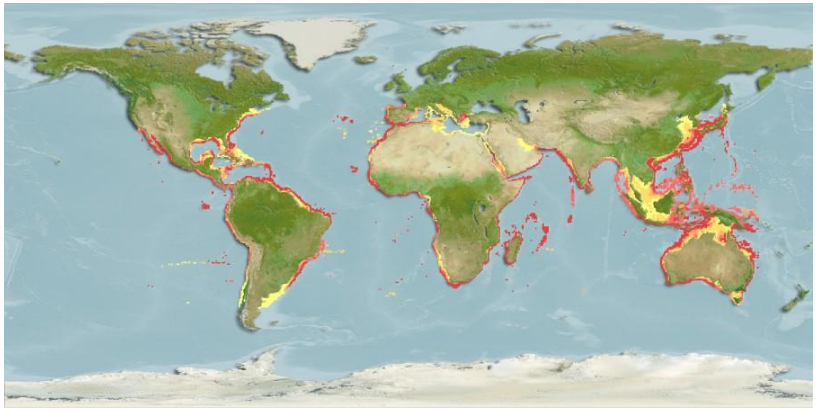
Dusky shark, DUS

Carcharhinus obscurus

- Commonly found at coastal waters across the globe
- Not banned and managed by any flag states and IOTC
- Known for their seasonal migration patterns, moving towards the poles in the summer and towards the equator in the winter
- Characterised by blue-grey above and white below. Slender, streamlined body, a short-rounded snout, long pectoral fins shaped like a sickle and faint markings on the fins
- Age at maturity between 16 – 23 years
- Size at birth 70 – 100 cm, maximum size up to 400 cm
- Reproductive strategy – ovoviviparous
- 3 – 16 pups in every 18 – 22 month of gestation



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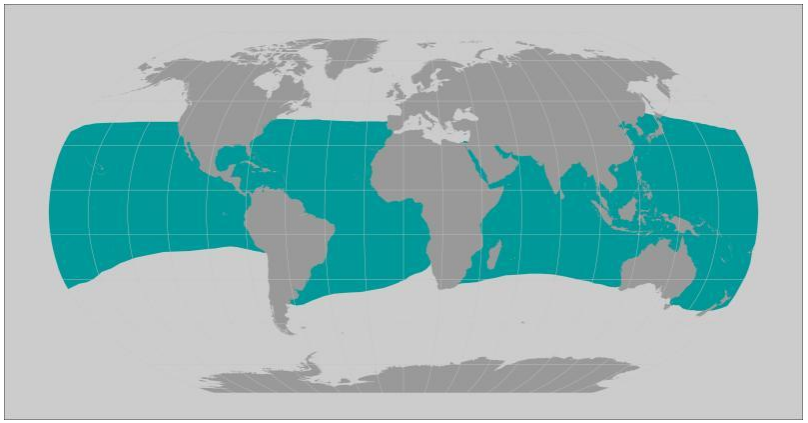
Giant manta, RMB

Manta birostris

- Globally banned by RFMOs
- Female mantas are thought to mature at 8 – 10 years of age and longevity is estimated to be at least 40 years
- Size at maturity varies around 400 cm
- Very conservative life history with an extremely low reproductive output (one pup per litter) every 2 – 3 years
- On average 12 months of gestation
- Recognised by their large diamond-shaped body with elongated wing-like pectoral fins, ventrally-placed gill slits, and laterally-placed eyes
- Cephalic lobes which extend and help to channel water into the mouth for feeding activities



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Other ETP species - sharks

- Hammerhead sharks (*Sphyrna spp*)
- Characterised by a flattened hammer- or shovel-shaped head, or cephalofoil. Sickle-shaped tail fin, and the upper part is extremely long
- Retention and trading is banned and ICCAT

- Thresher sharks (*Alopias spp*)
- Brown, grey, blue-grey, or blackish on the back and underside of their snout
- sickle-shaped tail fin, and the upper part is extremely long
- Retention and trading is banned by IOTC and ICCAT

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Other ETP species – sea turtles

- **Hawksbill turtle** (*Eretmochelys imbricata*)
- A carapace displaying a gradient from reddish-brown to orange, adorned with dark brown to black markings;
- Banned from retention and trading globally

- **Green turtle** (*Chelonia mydas*)
- Adult possess an olive-green carapace with black spots (> 90 cm); juveniles exhibit a brick-red carapace with stripes (15 – 90 cm)
- Banned from retention and trading globally

- **Olive ridley turtle** (*Lepidochelys olivacea*)
- Olive/greyish-green with a heart-shaped carapace (top shell) having 5 to 9 pairs of lateral scutes. Each of the four flippers of an olive ridley has one or two claws

- **Leatherback turtle** (*Dermochelys coriacea*)
- The turtle's colouration is uniform, with a pale blue back adorned with white spots. This sea turtle lacks scales.
- Banned from retention and trading globally

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Other ETP species – cetaceans

- **Killer whale** *(Orchinus orca*)
- Distinctive black-white markings, exceptionally high dorsal fin

- **False killer whale** (*Pseudorca crassidens*)
- Straight mouth, slender, and conical head. Distinct hump along the anterior edge of the flipper-like limbs
- A member of dolphin family

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Other ETP species – sea birds

- **Wandering albatross** (*Diomedea exulans*)
- A very large white bird with variable amounts of black on the enormous (3 m wingspan) wings and a pinkish-salmon coloured bill
- Solitary at sea but may feed in flocks in association with fishing vessels.

- **Grey petrel** (*Procellaria cinerea*)
- Large, heavy bodied seabirds that are ashy grey above and white below, with slightly darker grey wings and tail

- **Black-footed albatross** (*Phoebastria nigripes*)
- Dusky brown with white around the base of the bill, below each eye, across the rump and under the tail. The large bill, legs and feet are black

- **Laysan albatross** (*Phoebastria immutabilis*)
- White head, body and undertail, contrasting with the black mantle, upper wings, back and tail

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Tips for reducing ETP species bycatch & bycatching handling methods

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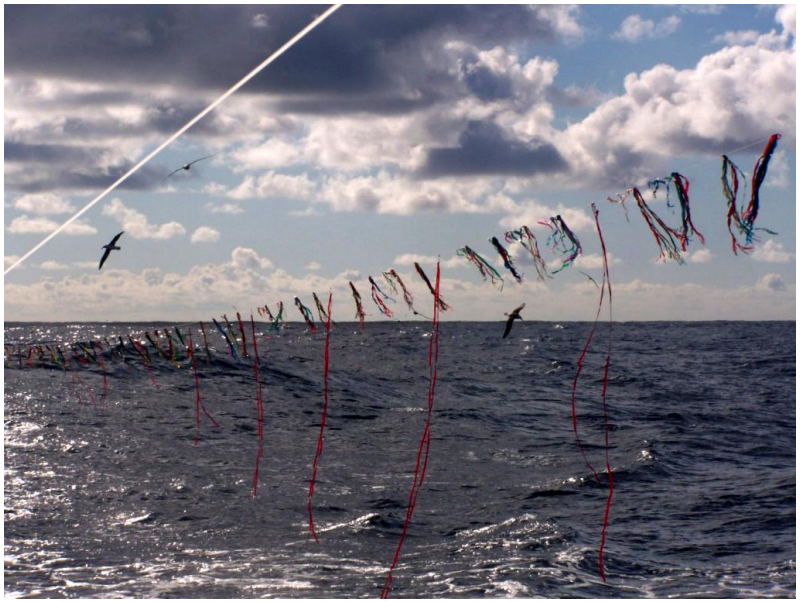
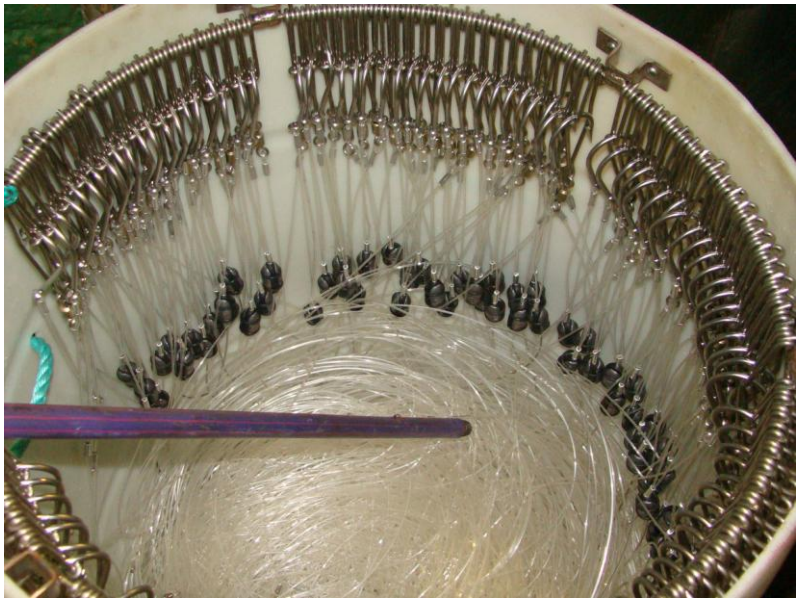
Tips for fishery to improve ETP record and mitigate ETP encounter

- Vessels accurately record all ETP interactions including reporting interactions and fate of any releases (e.g. released fate; retained or discarded, injuries, location of encounter, etc.).
- Share information on ETP hotspots among vessels to avoid high-risk areas.
- Tori lines (vessels fishing in the area 25”S) – to deter sea birds from eating baits
- Line-weighting to ensure that baited hooks sink quickly out of the reach of seabirds during longline setting





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Tips for fishery to mitigate bycatch and handling methods

- Set hooks deeper than 100 metres – avoid the habitat of the most epipelagic sharks and seabird that dive to snatch the bait
- Use circle hooks to improve higher survival rates of ETP – to reduce ETP sea turtles, seabird, and sharks
- Use fish as bait and avoid using squid – to reduce sea turtle bycatch

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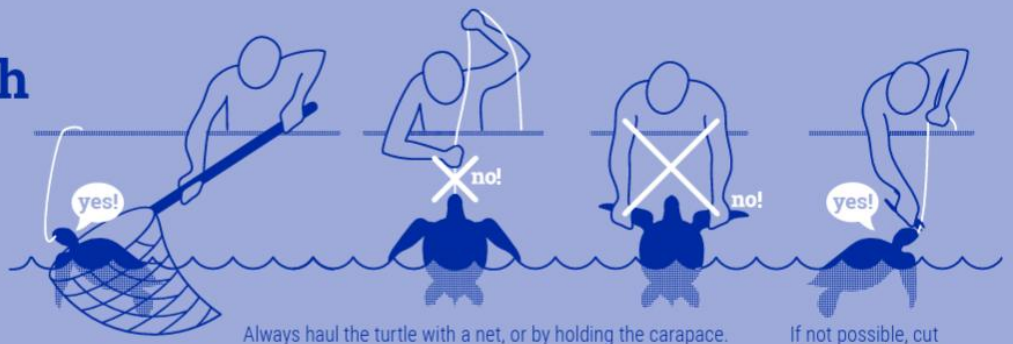
During **Catch**



Always haul the turtle with a net, or by holding the carapace.

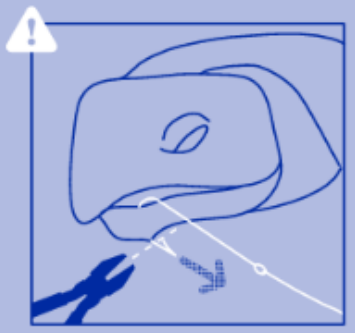
If not possible, cut the line as close to the mouth as possible.

During **Release**

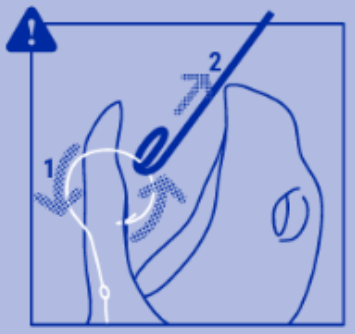
Do not release the turtle if comatose, wait for it to recover; otherwise it might drown.

Place the animal in the shade, with the back end higher than the head. Once the turtle starts moving, release it.

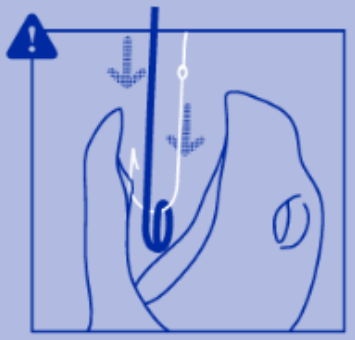
99%
of marine turtles
captured by surface longlines are found alive by fishermen*



To reduce injuries:
When possible, cut the hook prior to removal.



To remove a Circle hook:
Rotate the hook, then pull out with the angle of the skin.



To remove a J hook:
Push or Pull downward.

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Tips for fishery to improve ETP record and mitigate ETP encounter

- Use only monofilament lines to minimise encounter of ETP sharks
- Sharks have a few biological weaknesses that make them susceptible to stress and injury, which can reduce their chances at post-release survival
- If cutting lines aside water gate, ensures bring the line as close to the gate as possible and dehook or cut the line as close to the hook as possible

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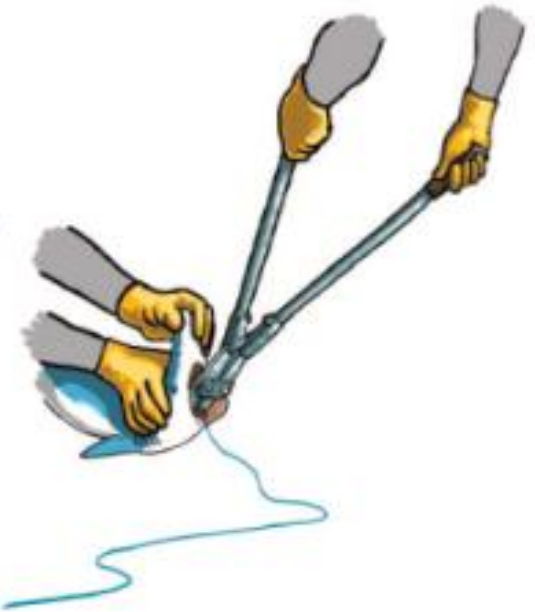
1 Removing the hook from the shark

If the shark is in the water

Cut the line as close as possible to the shark's mouth

If the shark is on board

Cut the hook if possible or cut the line as close as possible to the hook ring



N.B. In order to release the shark as quickly as possible, it is best not to bring it on board.

2 Releasing the shark

Handle the shark holding a pectoral fin with one hand and the tail with the other.

Return the shark to the water, head first, without throwing it. Let the animal slide.

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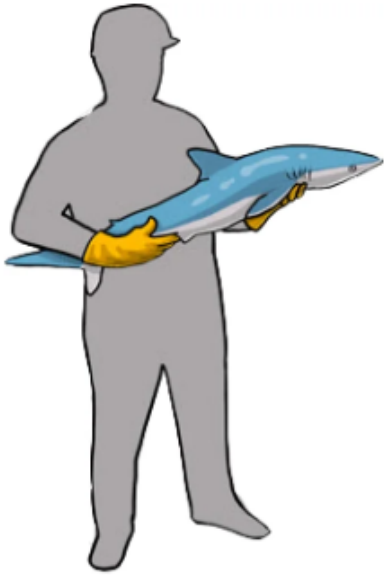
One hand on the dorsal (top) fin and the other holding the body from below (Poisson et al, 2012)



Both hands holding the body (Poisson et al, 2012)

One hand on the pectoral (side) fin and the other holding the tail (Poisson et al, 2012)

Release the fish by pointing its head down toward the water and dropping it in (Poisson et al, 2012)

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