

ETP

identification techniques

trait-based

external



BRIN
BADAN RISET
DAN INOVASI NASIONAL

Anung Widodo

Fisheries Research Center

BRN



Ade January

Directorate of Management

Fish Resources - KKP

HTS, ERS dan ETP

HTS

Hasil tangkapan sampingan (HTS) atau bycatch adalah spesies ikan atau hewan laut lainnya yang ikut tertangkap secara tidak sengaja saat memancing / menjaring ikan target (spesies dan ukuran tertentu).

ERS

Istilah ERS (ecologically related species) dipromosikan CCSBT (Article 2 Convention for the Conservation of Southern Bluefin Tuna) untuk menyebut spesies yang terkait secara ekologis pada sumberdaya dan perikanan tuna sirip bitu selatan (southern bluefin tuna) tidak terbatas sebagai prey maupun predator, namun termasuk species hewan laut yang tertangkap sebagi bycatch termasuk penyu dan burung laut pada saat memancing/menjaring tuna sirip biru selatan. Spesies yang tergolong sebagai ERS adalah hiu-pari (shaks-rays), mamalia laut (marine mammals) penyu laut (marine turtles) dan burung laut (seabirds).

ETP

Istilah spesies **ETP** (endangered, threatened, protected) dipromosikan oleh Marine Stewardship Council (MSC), untuk menyebut spesies laut yang terdaftar sebagai spesies yang dilindungi oleh konvensi nasional dan internasional. Konvensi internasional yang terkait dengan spesies ETP diantaranya **CITES** (Convention on International Trade in Endangered Species of Wild Fauna and Flora) dan **CMS** (Convention on Migratory Species).

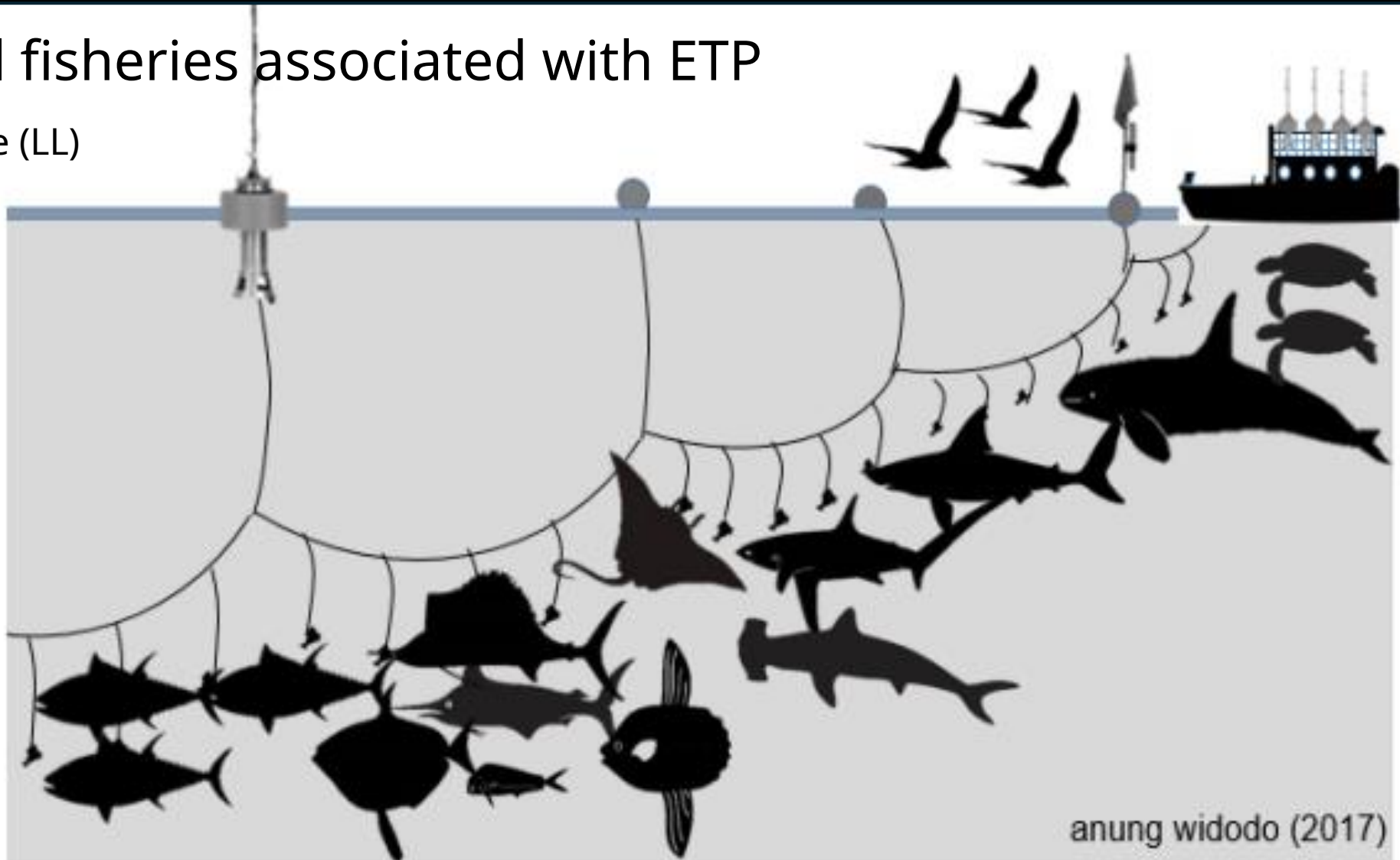
CITES terdiri dari tiga apendiks:

- **Apendiks I:** daftar seluruh spesies tumbuhan dan satwa liar yang **dilarang dalam segala bentuk** perdagangan internasional.
- **Apendiks II:** daftar spesies (satwa dan tumbuhan) liar yang tidak terancam kepunahan, tetapi mungkin terancam punah bila perdagangan terus berlanjut tanpa adanya pengaturan. Pihak otoritas dari suatu negara (produsen) mengeluarkan **ijin ekspor berbasis kuota** berdasarkan saran otoritas ilmiah (scientific authority).
- **Apendiks III:** daftar spesies (satwa dan tumbuhan) liar yang dilindungi di negara tertentu dalam batas-batas kawasan habitatnya. Jika negara tertentu mengusulkan memasukan spesies tertentu ke dalam daftar Apendiks II namun negara lain tidak menyepakatinya dalam suatu sidang CITES, maka spesies tersebut akan dimasukkan ke daftar Apendiks III, dan implementasi pengelolaannya terbatas di negara yang mengusulkan perlindungan spesies tertentu tersebut.

FISHERY

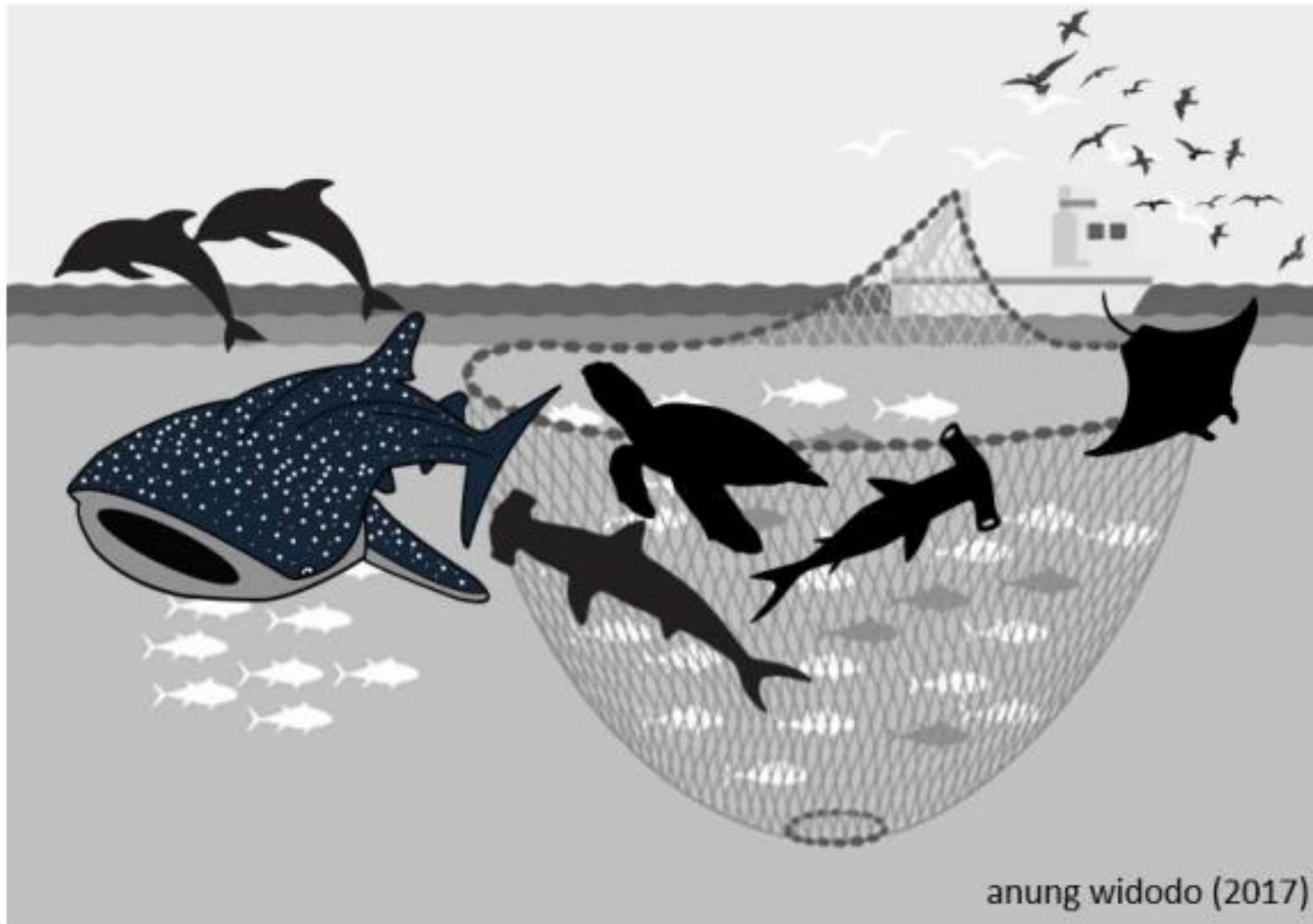
potential fisheries associated with ETP

Tuna longline (LL)

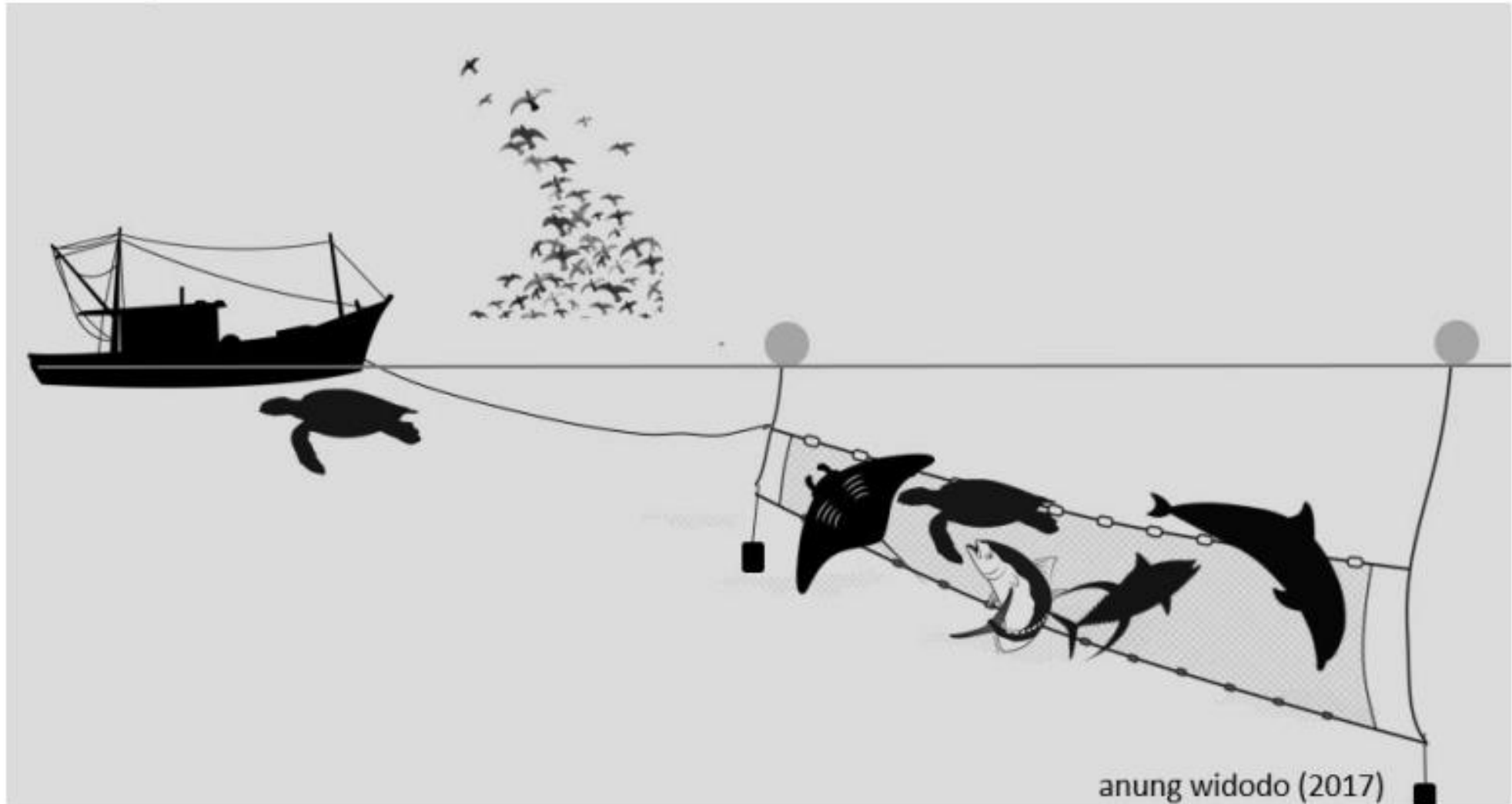


anung widodo (2017)

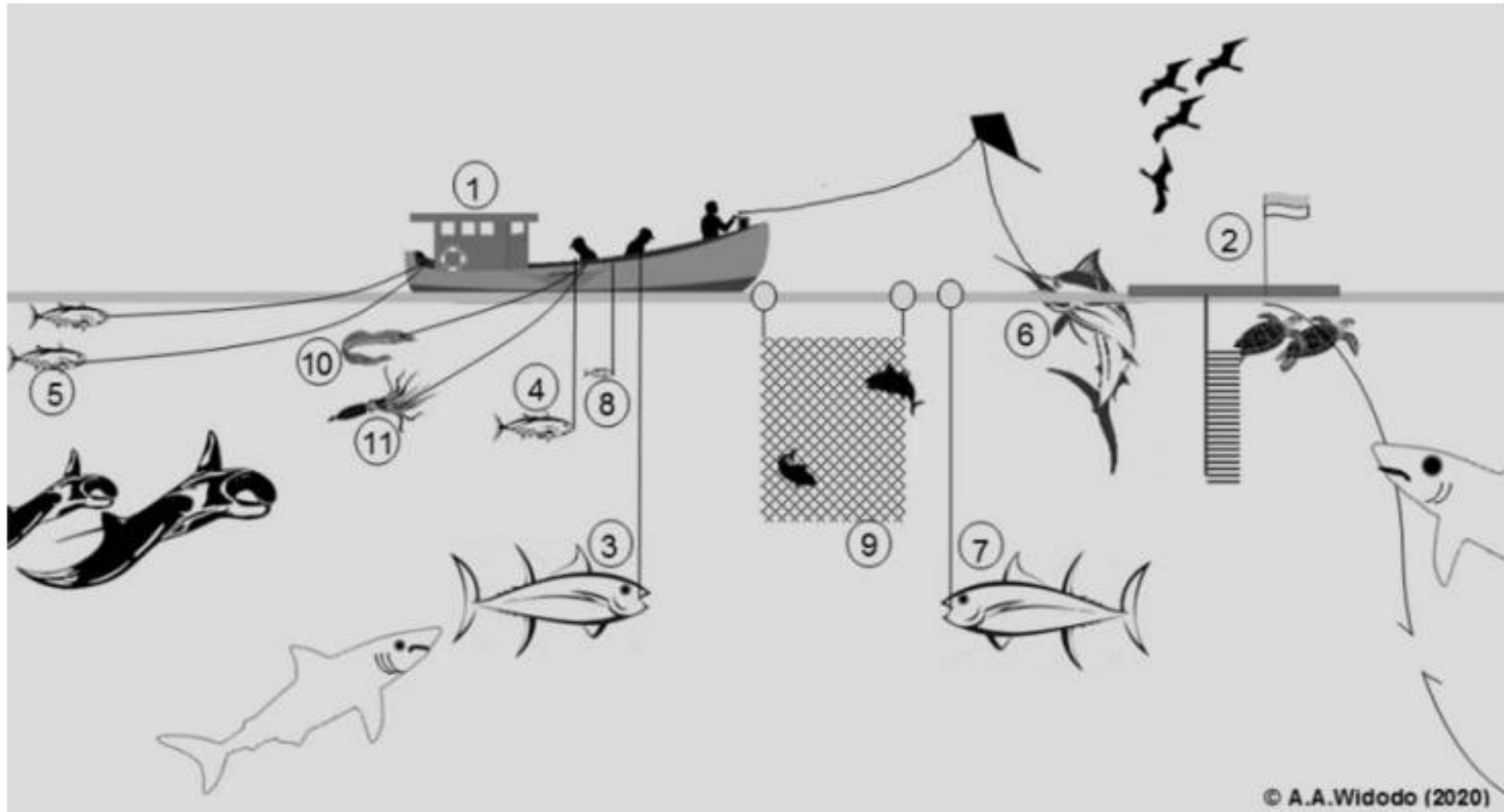
Purse seine (PS)



Drift gill net (d-GN)



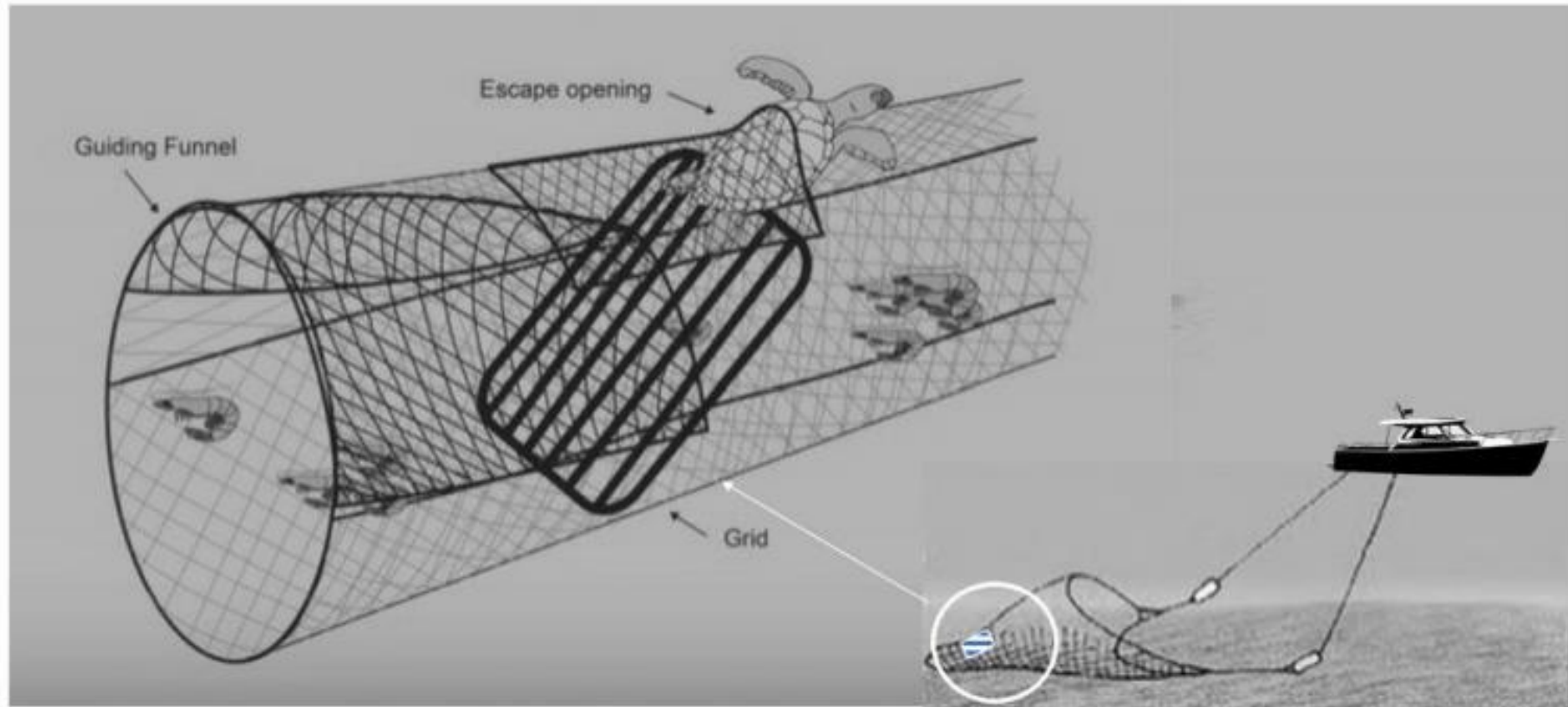
Tuna handline (HL)



Huhate (PL)



Trawling net



NOAA (DEC. 2019)

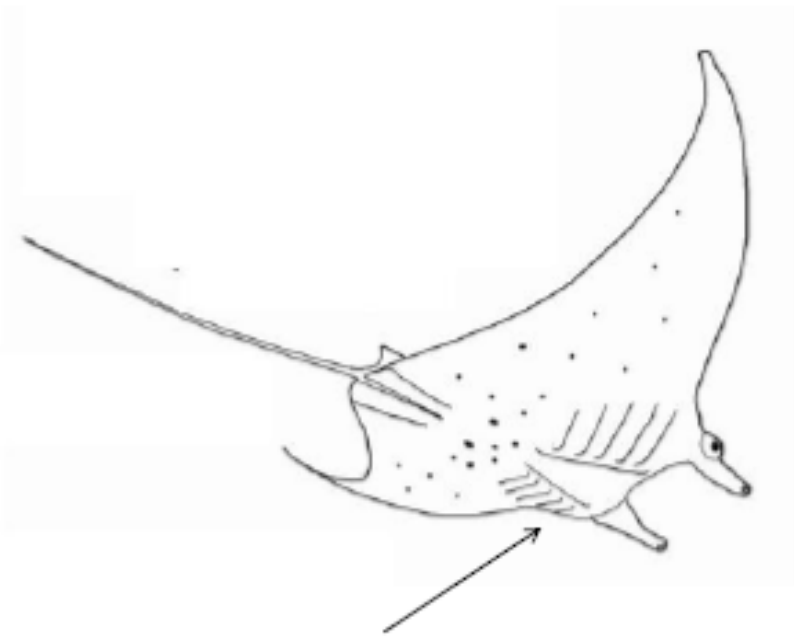
ETP IDENTIFICATION TECHNIQUE

ETP species

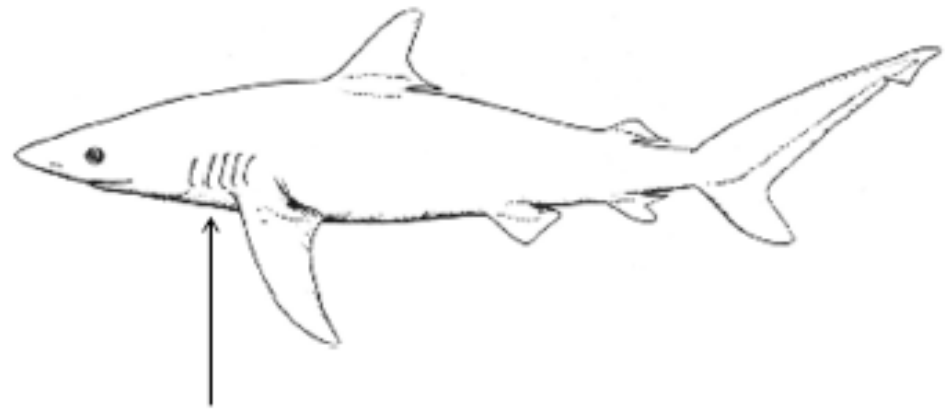
- ❖ sharks and rays
- ❖ whale, dolphin, porpoise (cetaceans :
whale, dolphin, porpoises)
- ❖ sea turtle
- ❖ seabirds

sharks and rays

Beda Utama Pari dan Hiu



Pari : posisi gill-slits di bagian bawah



Hiu : posisi gill-slits di bagian samping

long-tailed shark

THREASER SARKS (hiu berekor panjang)



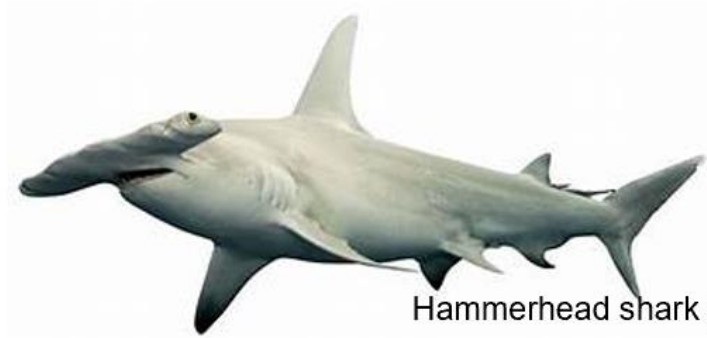
Alopias pelagicus - Pelagic Thresher (hiu monyet, hiu tikus)
TL = 365 cm



Alopias superciliosus - Bigeye Thresher (hiu monyet, hiu tikus, paitan)
TL = 461 cm

hammerhead shark

HAMMERHEAD SARKS (hiu kepala martil)



Hammerhead shark (*Sphyrna* spp..) – IDN = hiu martil, hiu capil, hiu caping

benttuk kepala melengkung
ada lekukan di tengah



Sphyrna lewini

SPL

benttuk kepala melengkung
tidak ada lekukan di tengah



Sphyrna zygaena

SPZ

benttuk kepala rata
ada lekukan di tengah



Sphyrna mokaran

SPK

shark blue skin color

SARKS with BLUE COLORING (hiu berwarna kulit biru)

BSH



snout (moncong)
sangat panjang

sirip punggung kecil, posisi jauh di
belakang kepala (sekitar pertengahan
badan)

Blue shark (*Prionace glauca*) – IDN = hiu karet, hiu lendng, hiu aer

TL ~ 383 cm

shark blue skin color

SARKS with BLUE COLORING (hiu berwarna kulit biru)

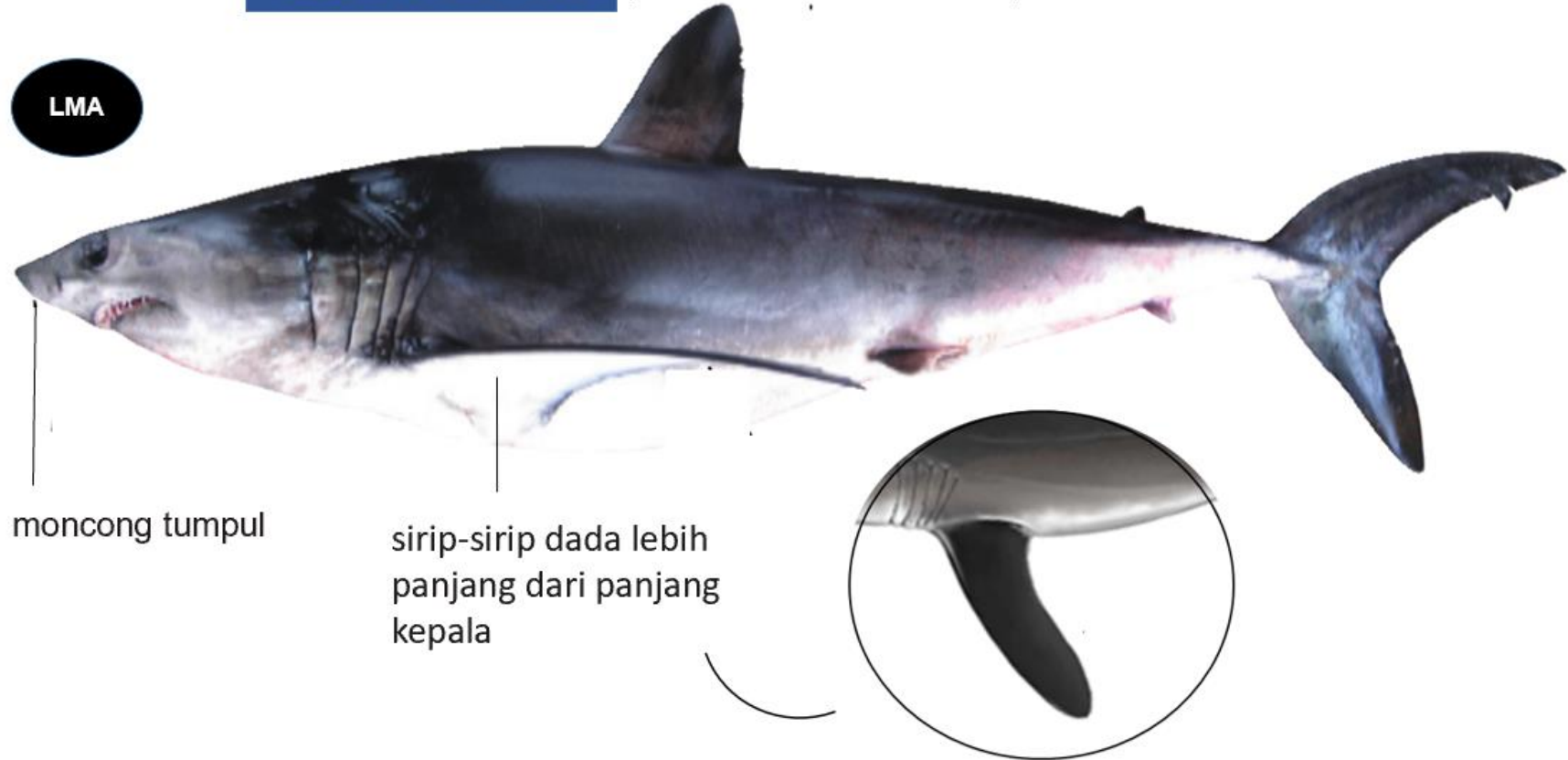


Shortfin Mako (*Isurus oxyrinchus*) – IDN = hiu tenggiri, hiu anjing, hiu kakap

TL ~ 400 cm

shark blue skin color

SARKS with BLUE COLORING (hiu berwarna kulit biru)



moncong tumpul

sirip-sirip dada lebih panjang dari panjang kepala

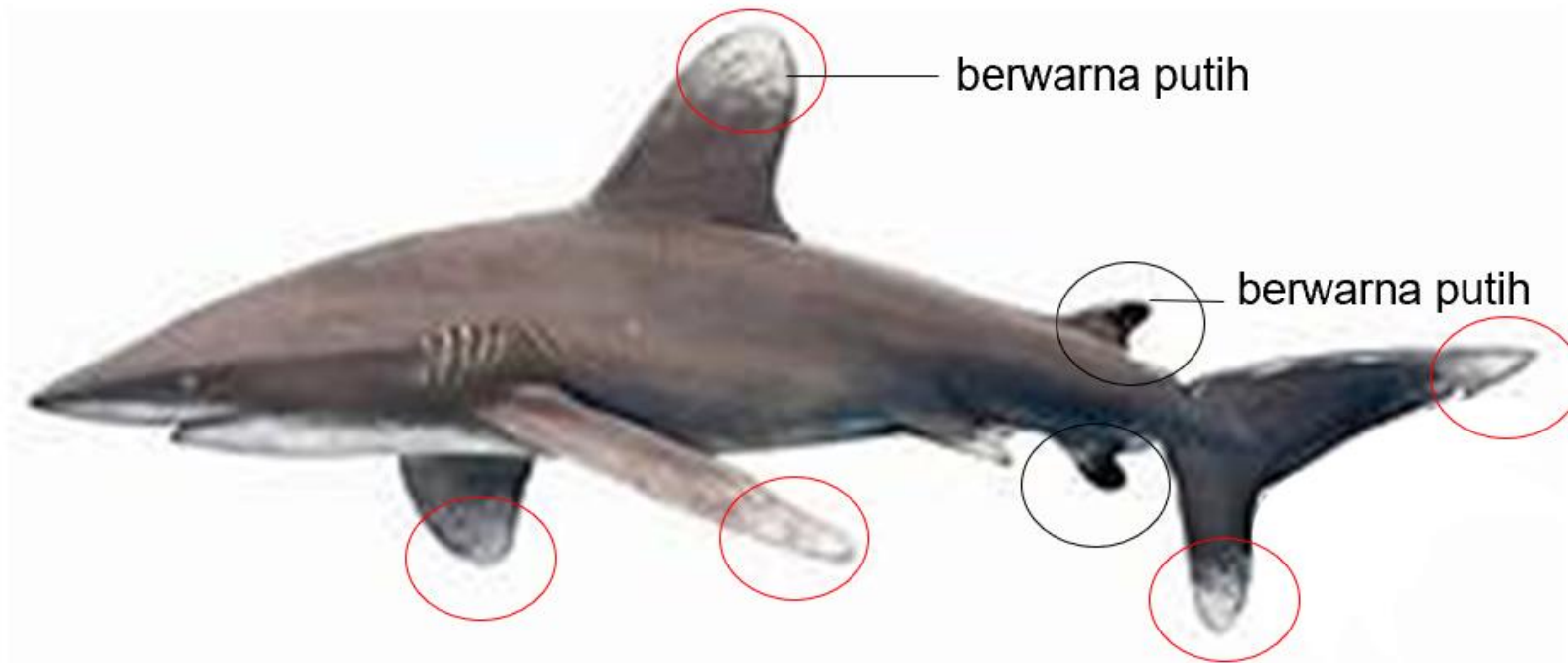
Longfin Mako (*Isurus paucus* - (hiu mako bersirip panjang, hiu anjing)

TL ~ 417 cm

Sharks have white on the tips of their fins

SARKS with WHITE TIPS (hiu berwarna putih pada ujung sirip)

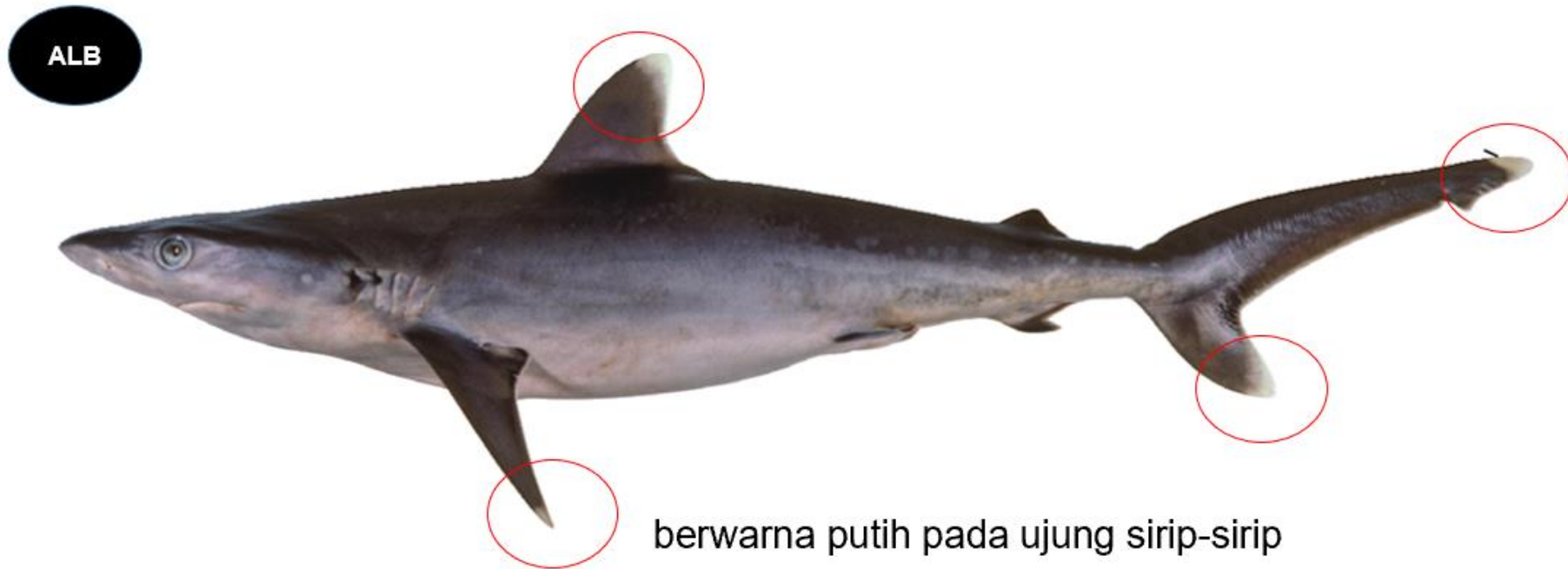
OSC



Oceanic whitetip shark (*Carcharhinus longimanus*) – IDN = hiu koboy
TL = 300 cm

Sharks have white on the tips of their fins

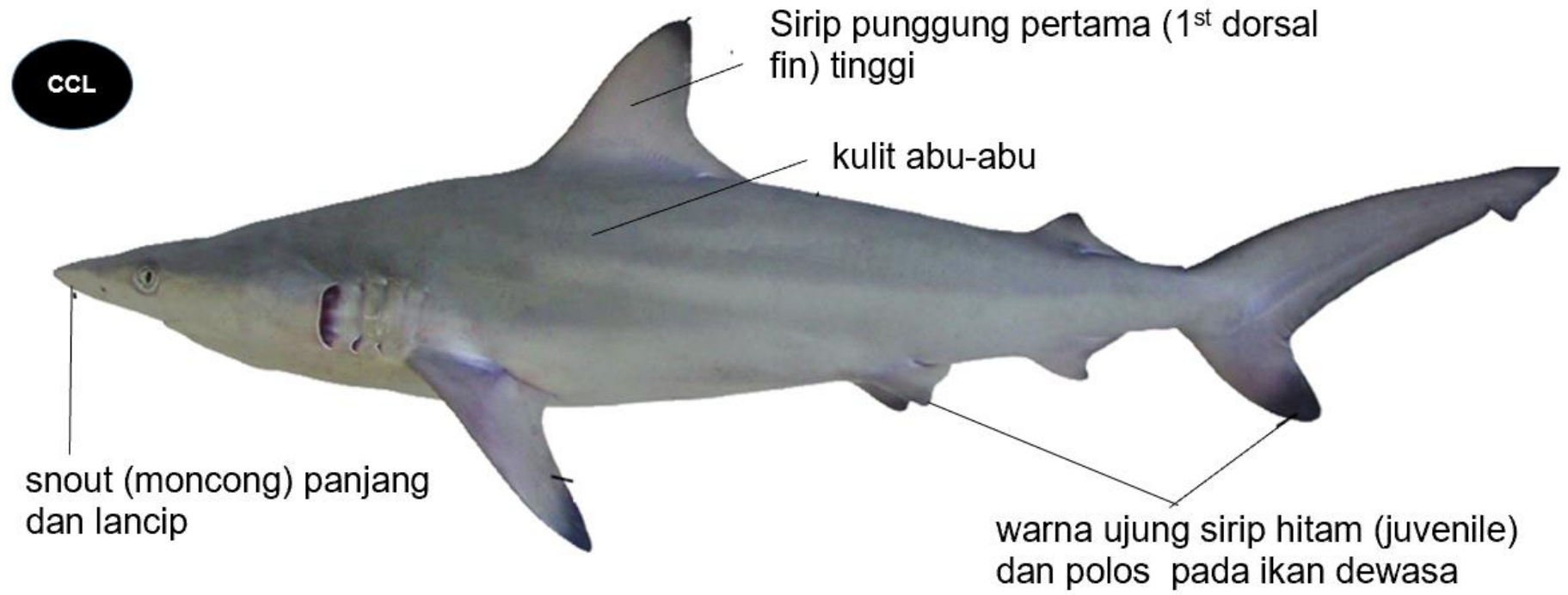
SARKS with WHITE TIPS (hiu berwarna putih pada ujung sirip)



Silvertip shark (*Carcharhinus albimarginatus*) – IDN = hiu lanjaman, hiu pelen
TL ~ 300 cm

shark **gray skin color** -ash

SARKS with **GRAY COLORING** and **BLACK TIPS** (hiu berwarna kulit abu-abu dan ujung sirip berwarna hitam)



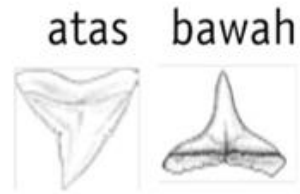
Common blacktip (Carcharhinus limbatus) - IDN = hiu lanjaman, hiu merak bulu, TL = 255 cm

shark **gray skin color** -ash

SARKS with GRAY COLORING (hiu berwarna kulit abu-abu)

FAL

pangkal sirip punggung
di belakang ujung sirip-
sirip dada



Silky shark (*Carcharhinus falciformis*) – IDN = hiu lonjor, hiu lanaman
FL 350 cm

shark gray skin color -ash

SARKS with GRAY COLORING (hiu berwarna kulit abu-abu)

CCP



Sandbar shark (*Carcharhinus plumbeus*) – IDN = hiu lanjaman, hiu teteri
TL =240 cm

shark gray skin color -ash

SARKS with GRAY COLORING (hiu berwarna kulit abu-abu)

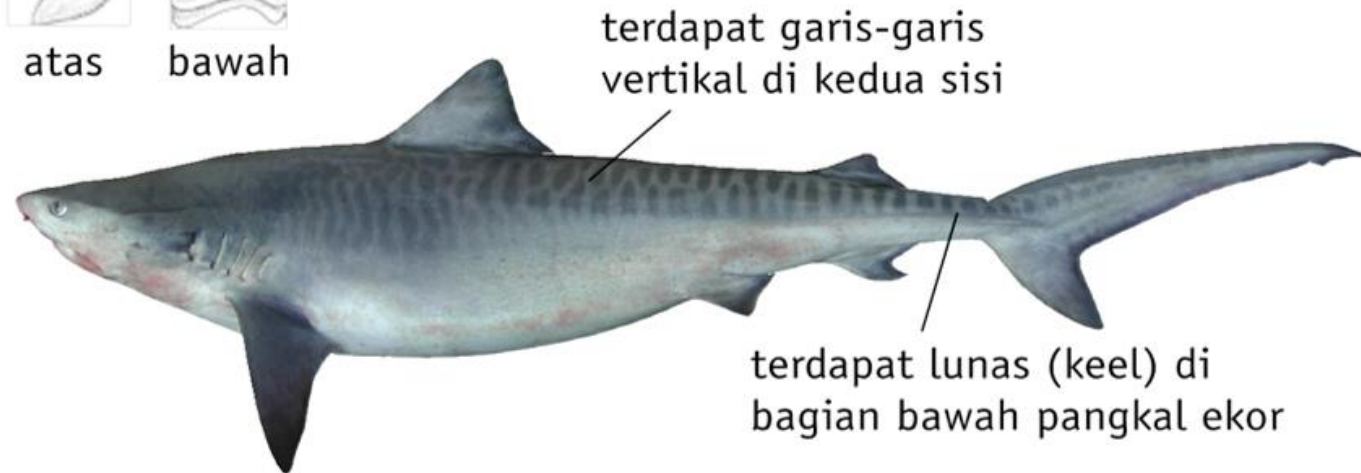
TIG



atas



bawah



terdapat garis-garis vertikal di kedua sisi

terdapat lunas (keel) di bagian bawah pangkal ekor

Tiger shark (*Galeocerdo cuvier*) – IDN = hiu mungsing jara, hiu macan)
TL = 740 cm

shark **gray skin color** -ash

SARKS with GRAY COLORING (hiu berwarna kulit abu-abu)

PSK

(cuping bagian atas sirip ekor jauh lebih panjang dari bagian bawahnya)

mata sangat besar



terdapat lunas (keel) di bagian bawah pangkal ekor

Crocodile shark (*Pseudocarcharias kamoharai*) – IDN = hiu tonggar
TL = 110 cm

shark with a specific body shape

SARKS with **SPECIFIC BODY** (hiu dengan bentuk badan khusus)

RHN



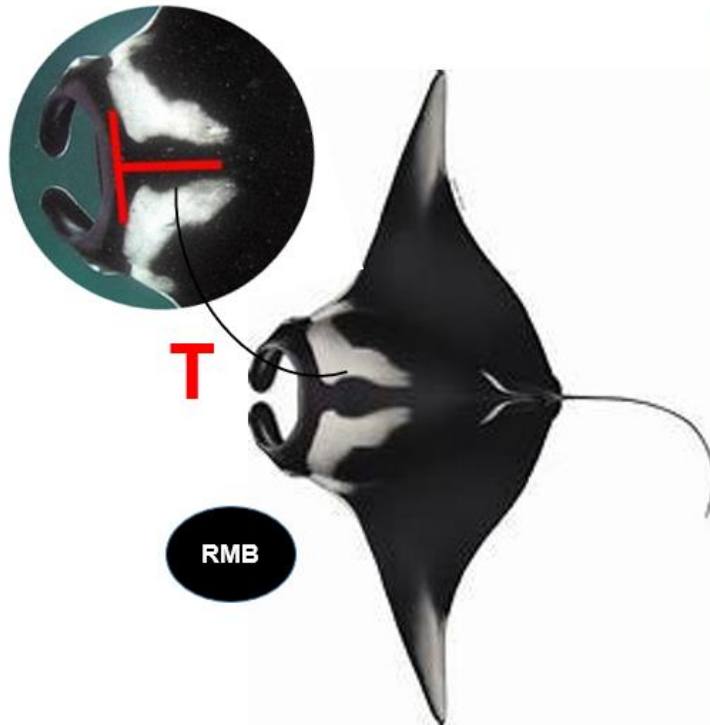
Whale shark (*Rhincodon typus*) – IDN = geger lintang

mobula

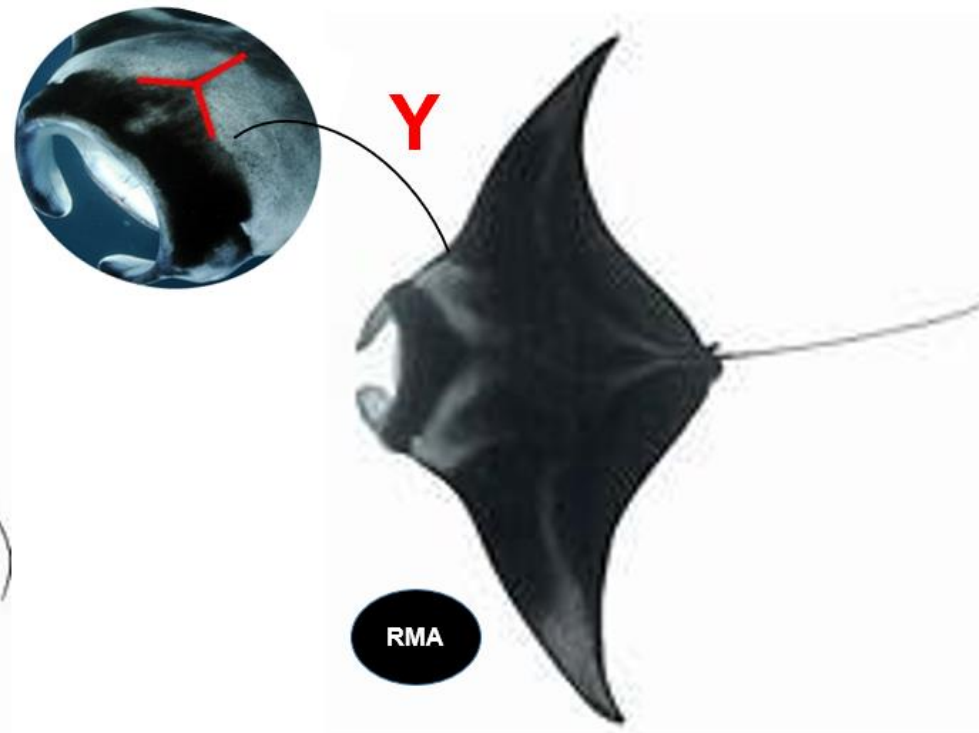
There are 10 species of Mobula rays, 2 are called 'manta rays' and 8 are 'devils' rays.

manta ray

Manta spp



Manta birostris – IDN Plampangan-manta oseanik)



Manta alfredi – IDN = Plampangan, manta karang

devil rays

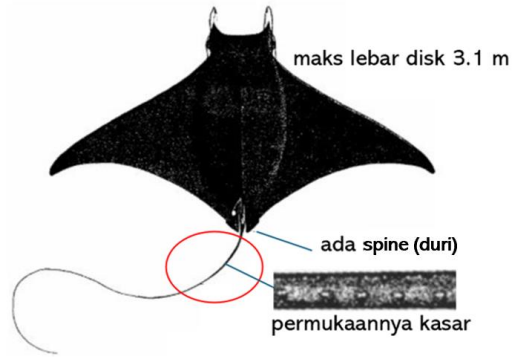
Mobula spp



external characteristics

Spinetail mogul / devil
Mobula japanica

RMJ



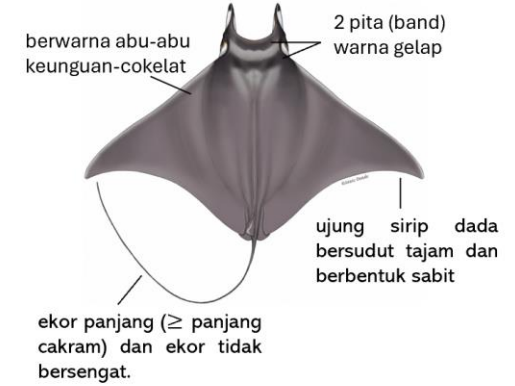
Smoothtail / bentfin devil
Mobula thurstoni

RMO



Pygmy/munk's devil
Mobula munkiana

RMU



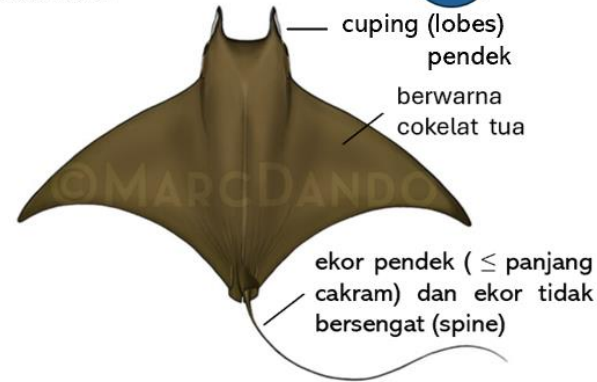
Chilean devil ray
Mobula tarapacana

RMT



Shortfin / shorthorned devil
Mobula kuhlii

RMK



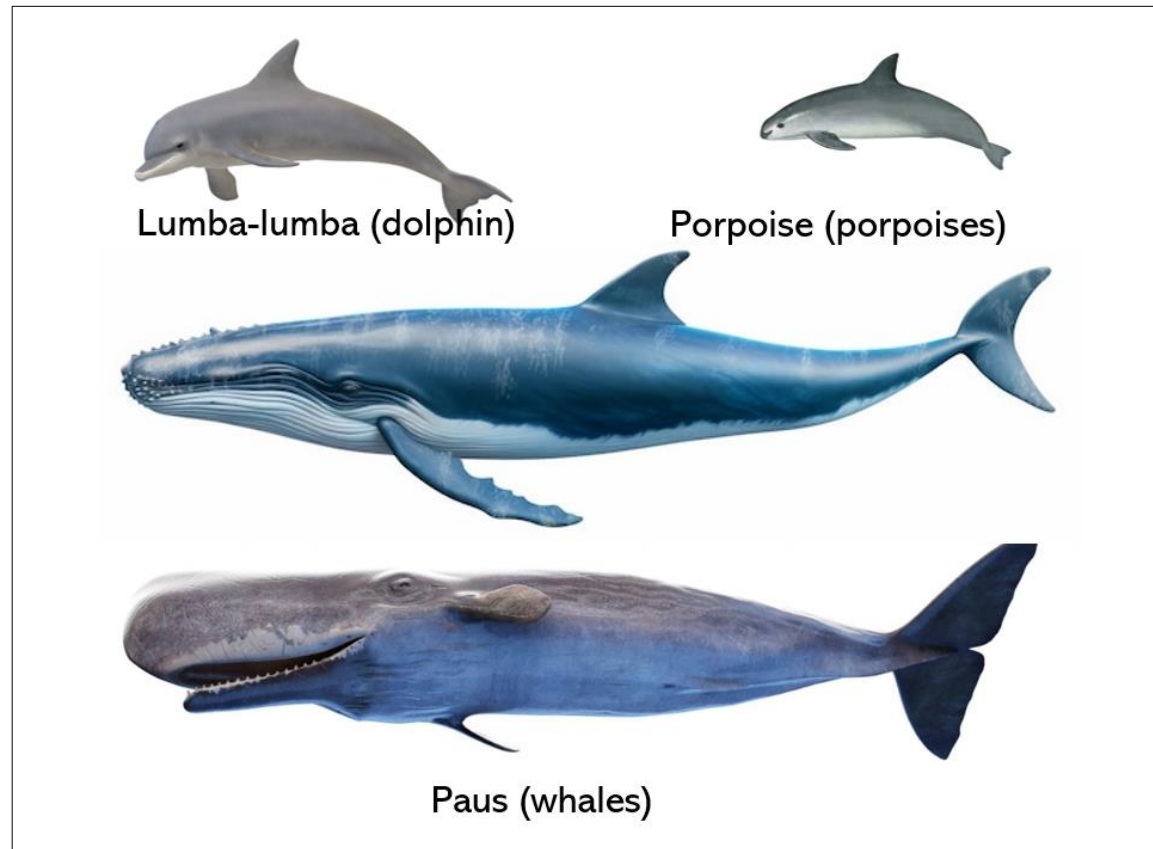
Longhorned mobula
Mobula eregoodootenkee

RME

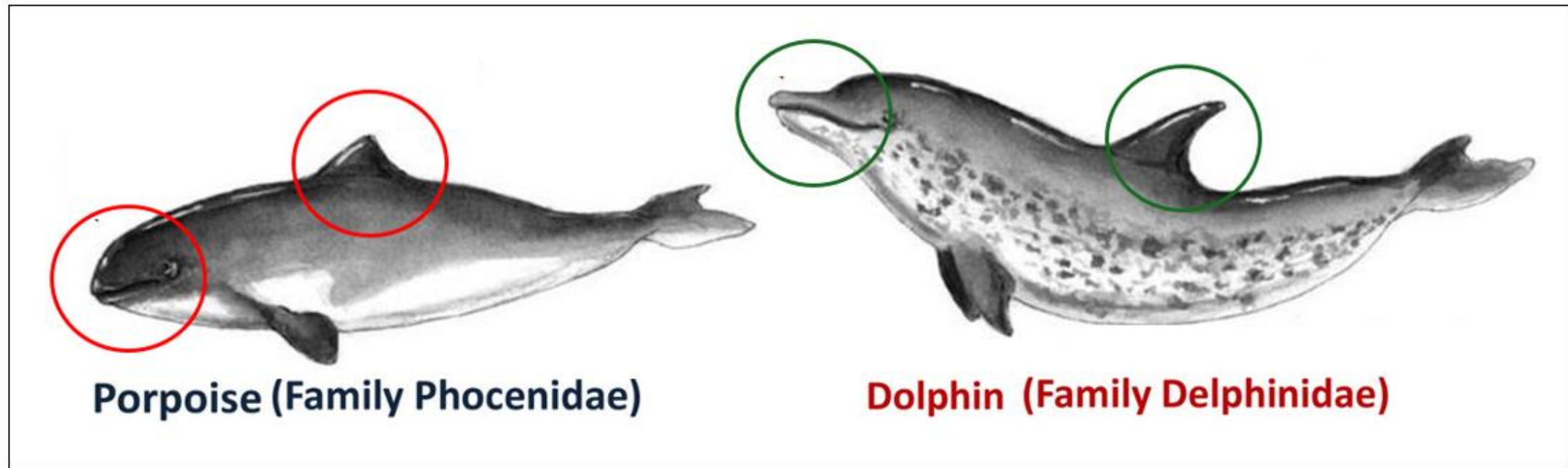


Cetaceans

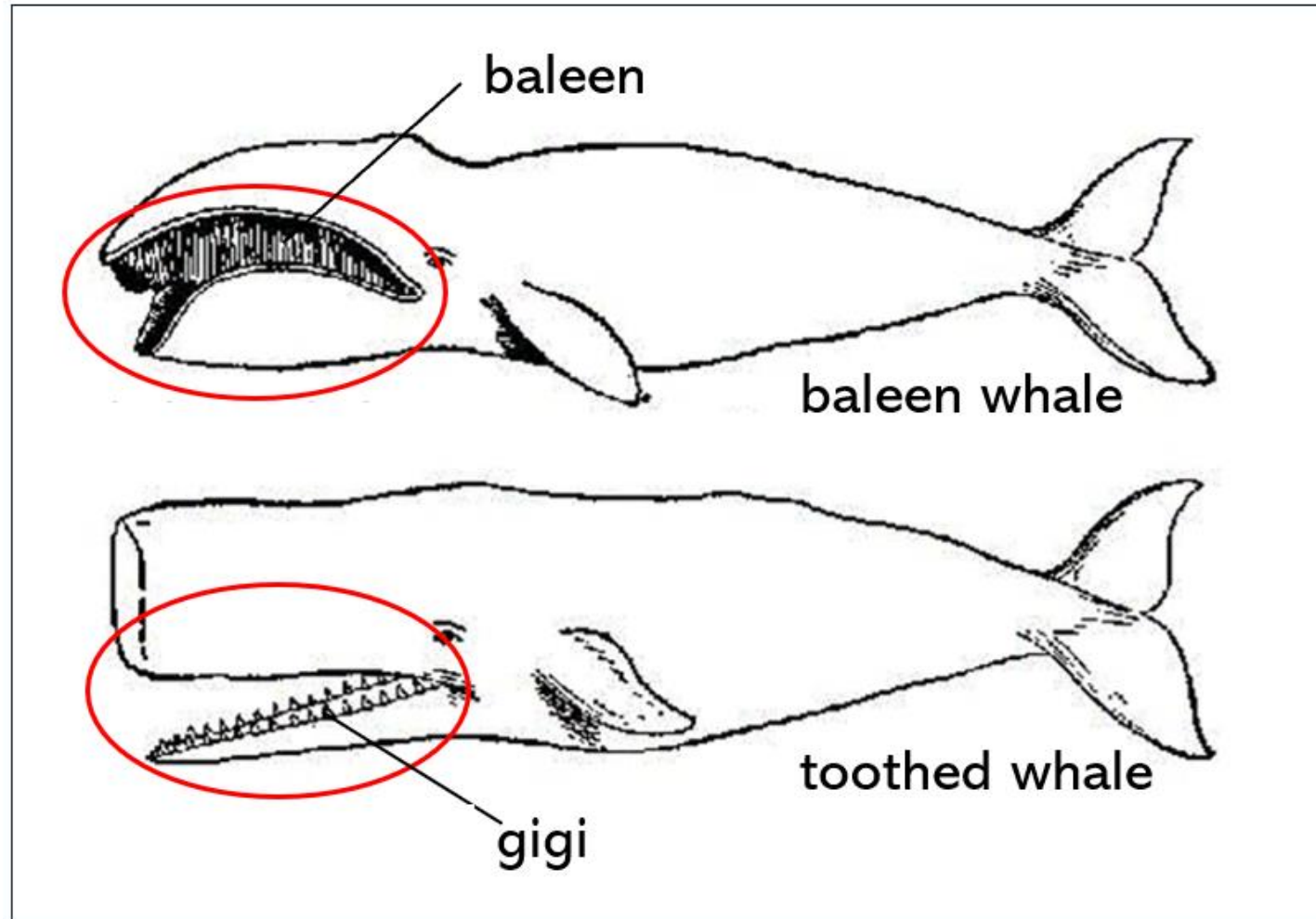
Mamalia laut yang potensial masuk ERS adalah cetaceans yang meliputi lumba-lumba (dolphins), porpoises dan paus (whales). Ilustrasi umum lumba-lumba, porpoises dan paus disajikan pada Gambar berikut :



Sepintas lumba-lumba dan porpoise sangat mirip, perbedaan mendasar dari keduanya adalah bentuk moncong. Bentuk moncong lumba-lumba runcing sedangkan moncong porpoise umumnya bulat. Panjang tubuh lumba-lumba dapat mencapai 8,0 meter, sedangkan porpoise kurang dari 2,5 meter.



Dari kebiasaan makan (feeding habit), cetacean dikelompokkan menjadi 2 (dua) yaitu baleen whales (paus ber-baleen) dan toothed whales (paus bergigi). Ilustrasi kelompok baleen whales dan toothed whales disajikan pada Gambar berikut :

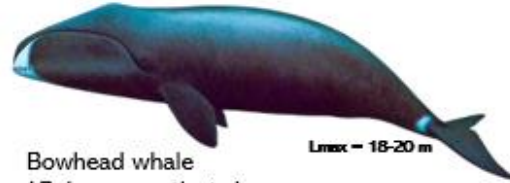


Cetacean
potential
become
ERS

Baleen whales



Northern right whale
(*Eubalaena glacialis*)
FAO Species code: **EUG**



Bowhead whale
(*Balaena mysticetus*)
FAO Species code: **BMJ**



Minke whale
(*Balaenoptera acutorostrata*)
FAO Species code: **MIW**



Bryde's whale
(*Balaenoptera edeni*)
FAO Species code: **BRW**



Humpback whale
(*Megaptera novaeangliae*)
FAO Species code: **HUW**



Fin whale
(*Balaenoptera physalus*)
FAO Species code: **FIW**



Blue whale
(*Balaenoptera musculus*)
FAO Species code: **BLW**



Gray whale
(*Eschrichtius robustus*)
FAO Species code: **GRW**



Sei whale
(*Balaenoptera borealis*)
FAO Species code: **SIW**

Toothed whales



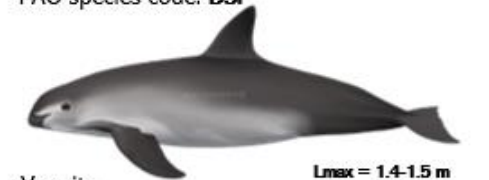
Common dolphin
Delphinus delphis
FAO species code: **DCO**



Spinner dolphin
Stenella longirostris
FAO species code: **DSI**



Dall's porpoise
Phocoenoides dalli
FAO species code: **PDA**



Vaquita
Phocoena sinus
FAO species code: **VAQ**



Harbor porpoise
Phocoena phocoena
FAO species code: **PHR**



White whale / beluga
Delphinapterus leucas
FAO species code: **BEL**



Killer whale
Orcinus orca
FAO species code: **KIW**



Narwhal
Monodon monoceros
FAO species code: **NAR**



Sperm whale
Physeter catodon
FAO species code: **SPW**

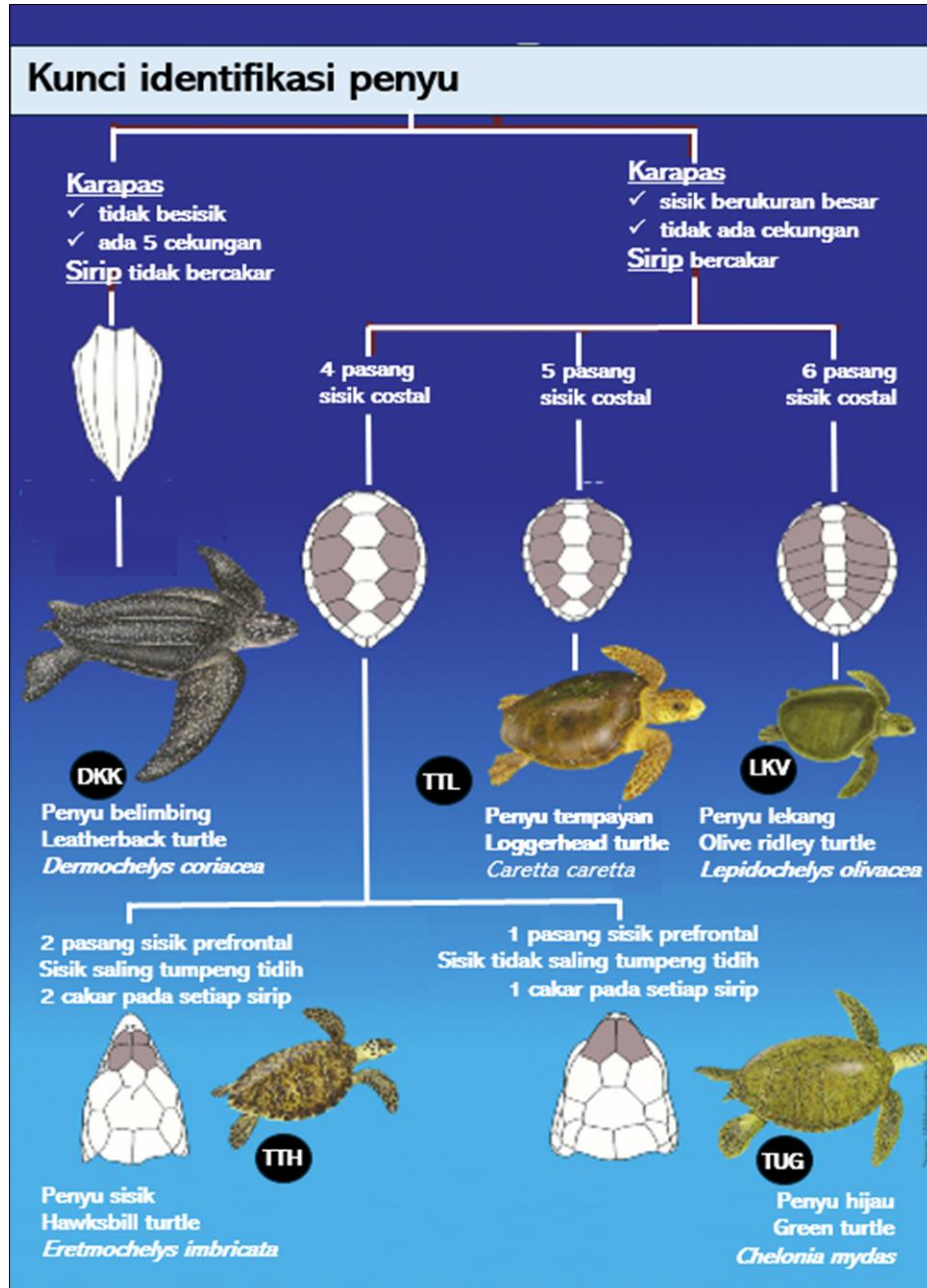


Pilot whale
Globicephala spp
FAO species code: **GLO**



Cuvier's beaked whale
Ziphius cavirostris
FAO species code: **BCW**

Turtle Sea (Marine Turtles)

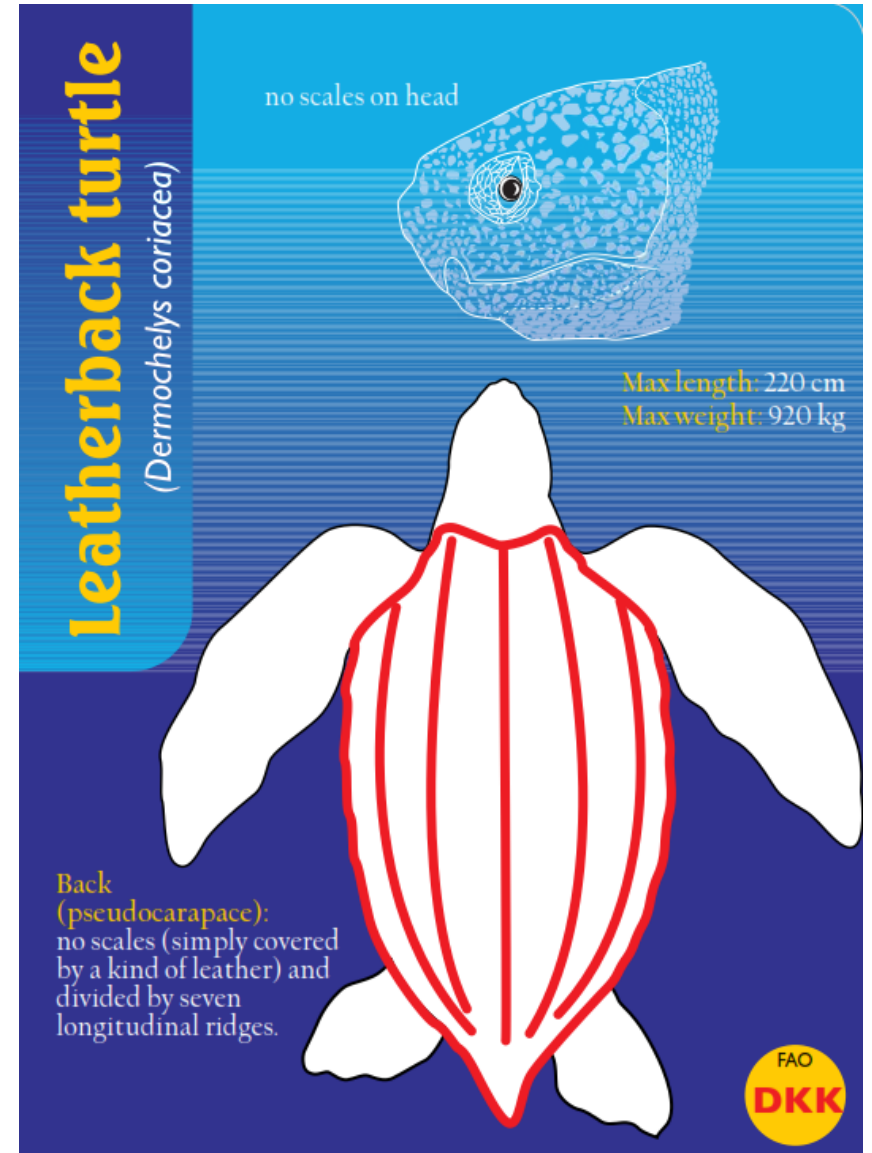
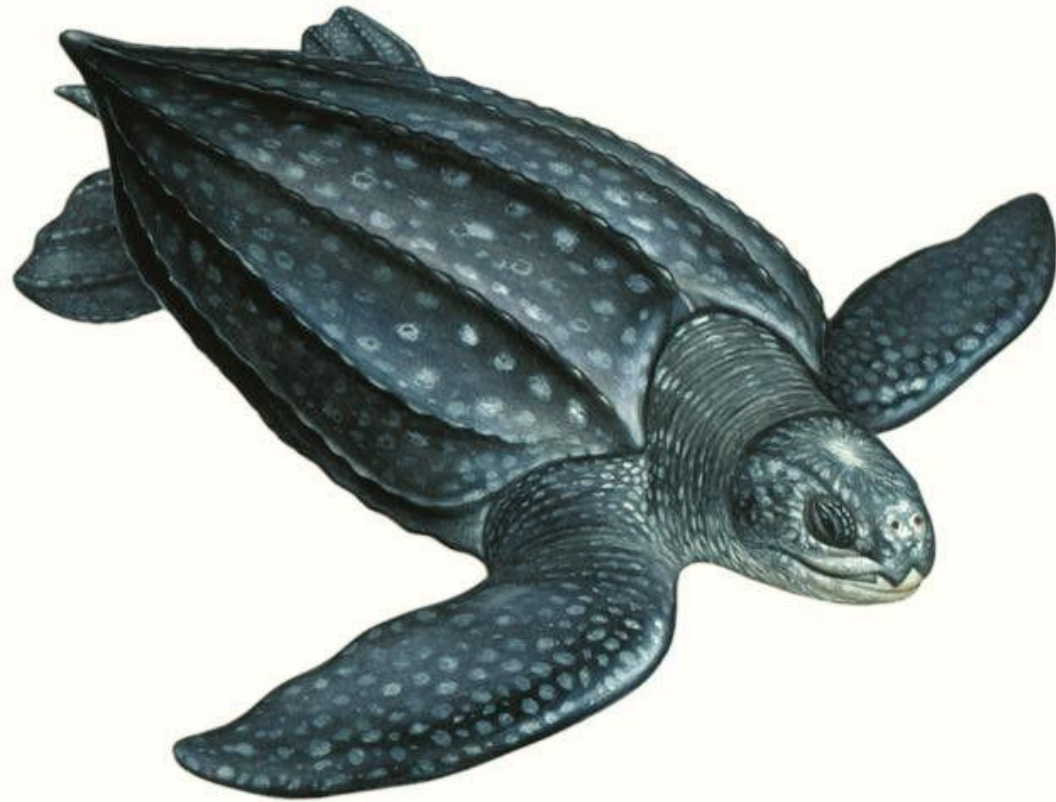


Pelimbing turtle

Leatherback turtle

Dermochelys coriacea

Species code: et al.

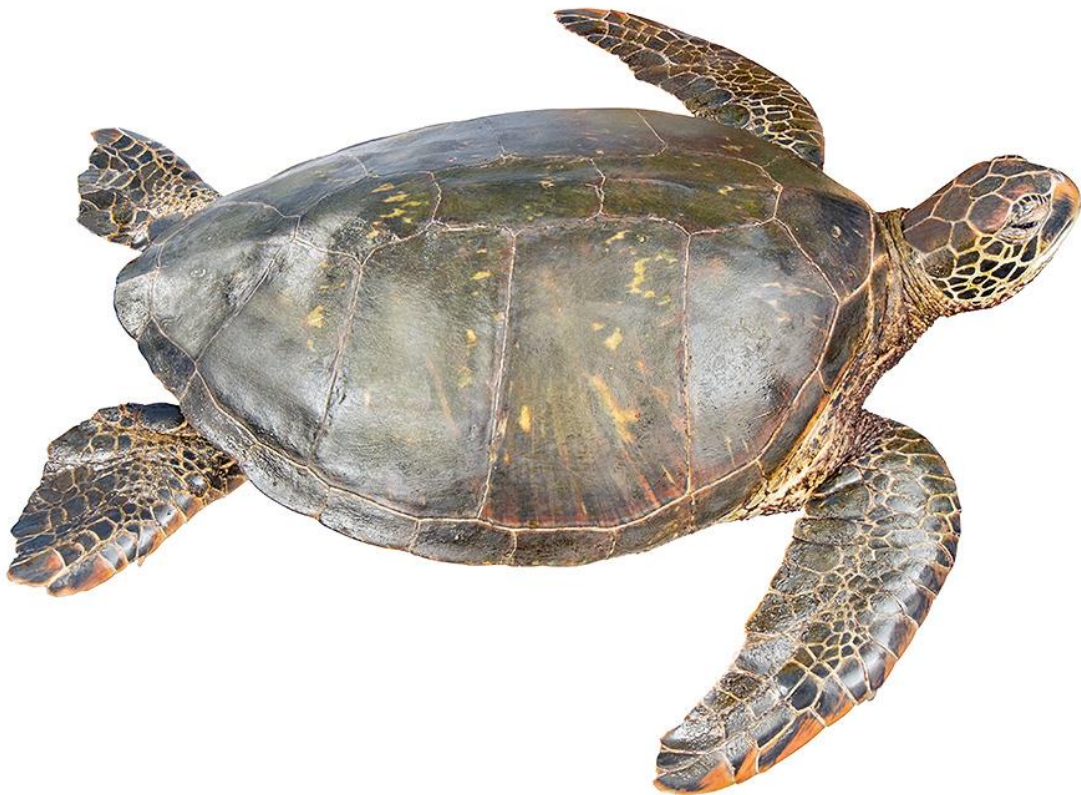


Green turtle

Green turtle

Chelonia mydas

Species code: **TUG**



Green turtle
(*Chelonia mydas*)

1 pair of prefrontal scales

toothed beak

Max length: 120 cm
Max weight: 250 kg

Carapace:
4 pairs of costal scutes, the first pair is not in contact with the nuchal scute.

PREFRONTAL
NUCHAL
COSTAL
VERTEBRAL

FAO
TUG

A diagram of a green turtle's head and carapace. The head is shown in profile, with a yellow highlight on the prefrontal scales and a label '1 pair of prefrontal scales'. The beak is labeled 'toothed beak'. The carapace is shown from a dorsal view, with a red highlight on the nuchal scute and a label 'NUCHAL'. The costal scutes are highlighted in light blue and labeled 'COSTAL'. The vertebral scutes are highlighted in purple and labeled 'VERTEBRAL'. A legend at the bottom left identifies these colors: yellow for PREFRONTAL, red for NUCHAL, light blue for COSTAL, and purple for VERTEBRAL. The text 'Green turtle (Chelonia mydas)' is written vertically on the left. The text 'Max length: 120 cm' and 'Max weight: 250 kg' is on the right. The text 'Carapace: 4 pairs of costal scutes, the first pair is not in contact with the nuchal scute.' is at the bottom left. The FAO TUG logo is at the bottom right.

Hawksbill turtle

Hawksbill turtle

Eretmochelys imbricata

Species code: **TTH**



Hawksbill turtle
(*Eretmochelys imbricata*)

2 pairs of prefrontal scales

pointed hooked beak

Max length: 100 cm
Max weight: 120 kg

Carapace:
4 pairs of costal scutes, the first pair is not in contact with the nuchal scute; carapace scutes are generally overlapping but this trait fades with age.

PREFRONTAL
NUCHAL
COSTAL

FAO
TTH

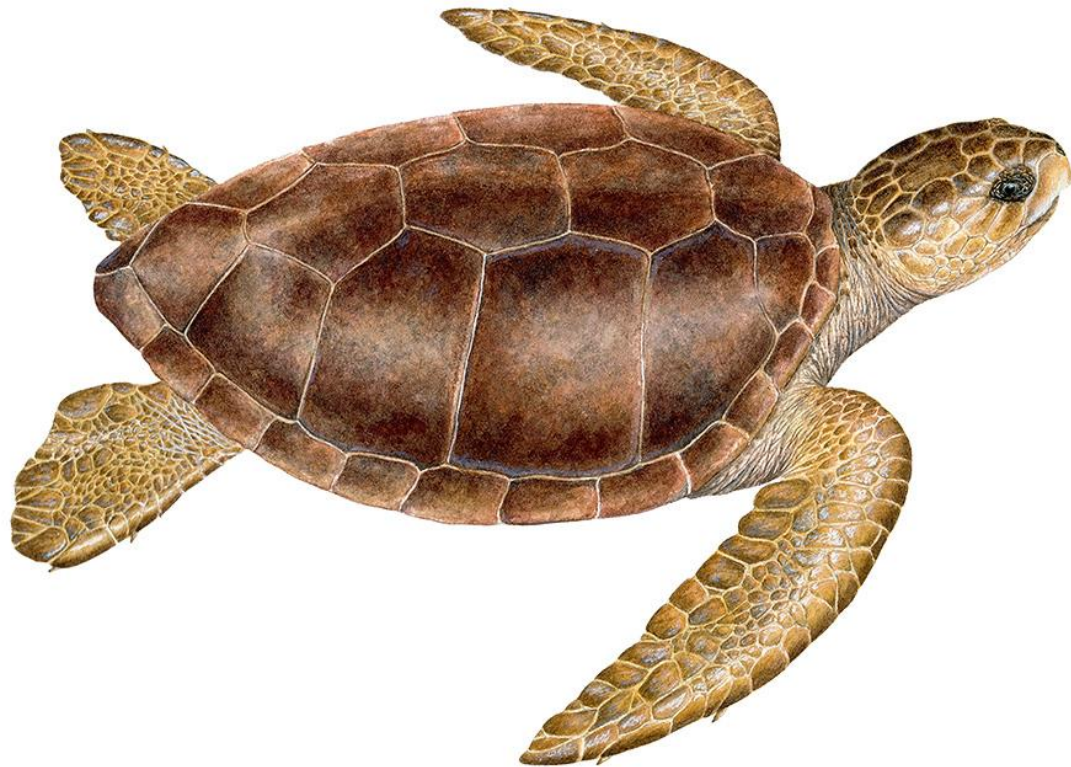
A diagram of a Hawksbill turtle. The top part shows a profile of the head with two pairs of yellow prefrontal scales and a pointed hooked beak. The bottom part shows a dorsal view of the carapace with scutes colored in green, purple, and red. A legend at the bottom identifies the colors: yellow for PREFRONTAL, red for NUCHAL, and green for COSTAL. A legend at the bottom right shows the FAO species code TTH.

Loggerhead turtle

Loggerhead turtle

Caretta caretta

Species code: Date and Time



Loggerhead turtle
(*Caretta caretta*)

5 prefrontal scales

large head

Max length: 110 cm
Max weight: 150 kg

Carapace:
5 pairs of costal scutes, the first pair is in contact with the nuchal scute.

PREFRONTAL
NUCHAL
COSTAL
VERTEBRAL

FAO
TTL

An infographic of a Loggerhead turtle. At the top, a close-up of the head shows five yellow prefrontal scales. Below, a top-down view of the carapace shows a red nuchal scute, a purple vertebral scute, and five pairs of light blue costal scutes. A legend at the bottom left identifies these scutes by color. The text 'Carapace: 5 pairs of costal scutes, the first pair is in contact with the nuchal scute.' is positioned to the left of the carapace diagram. The text 'Max length: 110 cm' and 'Max weight: 150 kg' is to the right. The title 'Loggerhead turtle (Caretta caretta)' is on the left, and the FAO TTL logo is in the bottom right corner.

Olive Ridley Turtle
Olive ridley turtle
Lepidochelys olivacea
Species code: **LKV**



Olive ridley turtle
(*Lepidochelys olivacea*)

2 pairs of prefrontal scales

Max length: 75 cm
Max weight: 80 kg

Carapace:
5 or more pairs of costal scutes (not necessarily the same number on either side), the first pair is in contact with the nuchal scute.

PREFRONTAL
NUCHAL
COSTAL
VERTEBRAL

FAO
LKV

The diagram consists of two parts. The top part is a lateral view of the turtle's head, showing the arrangement of scales on the snout and forehead. Two pairs of prefrontal scales are highlighted in yellow. The bottom part is a dorsal view of the carapace, showing the arrangement of scutes. The nuchal scute is highlighted in red, the costal scutes in light blue, and the vertebral scutes in purple.

Seabirds

Albatrosses

Southern royal albatross

Diomedea epomophora

Kode spesies : DIP

Lebar bentang sayap mencapai 330 cm



blackish

paruh



kaki



tampak sisi dada

Wandering albatross

Diomedea exulans

Kode spesies : DIX

Lebar bentang sayap mencapai 310 cm



pinkish

paruh



kaki



tampak sisi dada

Shy albatross

Thalassarche cauta

Kode spesies : DCU

Lebar bentang sayap 220 to 256 cm



paruh



kaki



tampak sisi dada

Buller's albatross

Thalassarche bulleri

Kode spesies : DIB

Lebar bentang sayap 205-213 cm



paruh



kaki



tampak sisi dada

Light-mantled sooty albatross

Phoebastria palpebrata

Kode spesies : PHE

Lebar bentang sayap 183 to 218 cm



putih

paruh



kaki



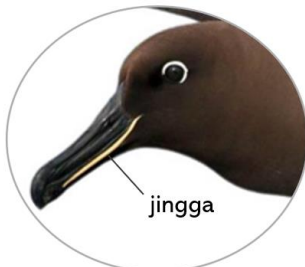
tampak sisi punggung

Sooty albatross

Phoebastria fusca

Kode spesies : PHU

Lebar bentang sayap mencapai 200 cm



paruh



kaki



tampak sisi punggung

Grey-headed albatross

Thalassarche chrysostoma

Kode spesies : DIC

Lebar bentang sayap mencapai 220 cm



paruh



kaki



Tampak sisi dada

Black-browed albatross

Thalassarche melanophrys

Kode spesies : DIM

Lebar bentang sayap 210-250 cm



paruh



kaki



Tampak sisi dada

Indian yellow-nosed albatross

Thalassarche carteri

Kode spesies : TQH

Lebar bentang sayap 180-215 cm



paruh



kaki



Tampak sisi dada

Petrels

Southern / Antarctic giant petrel

Macronectes giganteus

Kode spesies : MAI

Lebar bentang sayap 180-210 cm



paruh



kaki



tampak sisi punggung

Nothorn / Hall's giant petrel

Macronectes halli

Kode spesies : MAH

Lebar bentang sayap 150-210 cm



paruh



kaki



tampak sisi dada

Flesh-footed shearwater

Ardenna carneipes

Kode spesies : PFC

Lebar bentang sayap 90-100 cm



paruh



kaki



tampak sisi dada

Sooty shearwater

Ardenna grisea, old: *Puffinus griseus*

Kode spesies : PFG

Lebar bentang sayap 90-110 cm



paruh



kaki



tampak sisi dada

Great-winged petrel

Pterodroma macroptera

Kode spesies : PDM

Lebar bentang sayap 97–100 cm



paruh



kaki



Tampak sisi punggung

White-chinned petrel

Procellaria aequinoctialis

Kode spesies : PRO

Lebar bentang sayap 134–147 cm



paruh



kaki



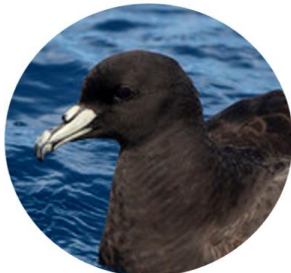
tampak sisi punggung

Black/Parkinson's petrel

Procellaria parkinsoni

Kode spesies : PRK

Lebar bentang sayap ±115 cm



paruh



kaki



tampak sisi punggung

Westland petrel

Procellaria westlandica

Kode spesies : PCW

Lebar bentang sayap 135-140 cm



paruh



kaki



tampak sisi dada

Grey petrel

Procellaria cinerea

Kode spesies : PCI

Lebar bentang sayap 115-130 cm



paruh



kaki



tampak sisi dada

Cape petrel

Daption capense

Kode spesies : DAC

Lebar bentang sayap 80-90 cm



paruh



kaki



Tampak sisi punggung



Sooty spp

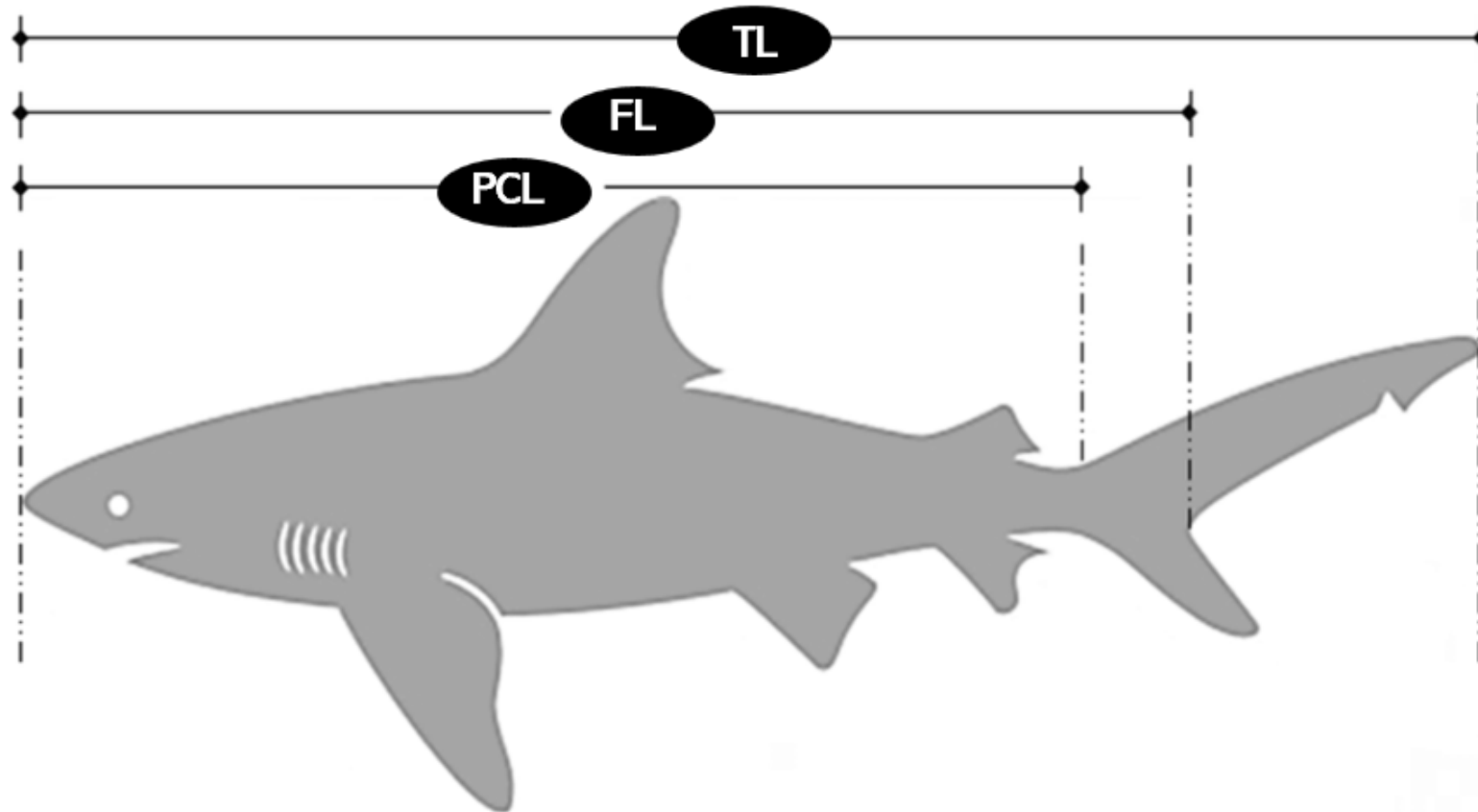
tools and methods for measuring ETP species



caliper



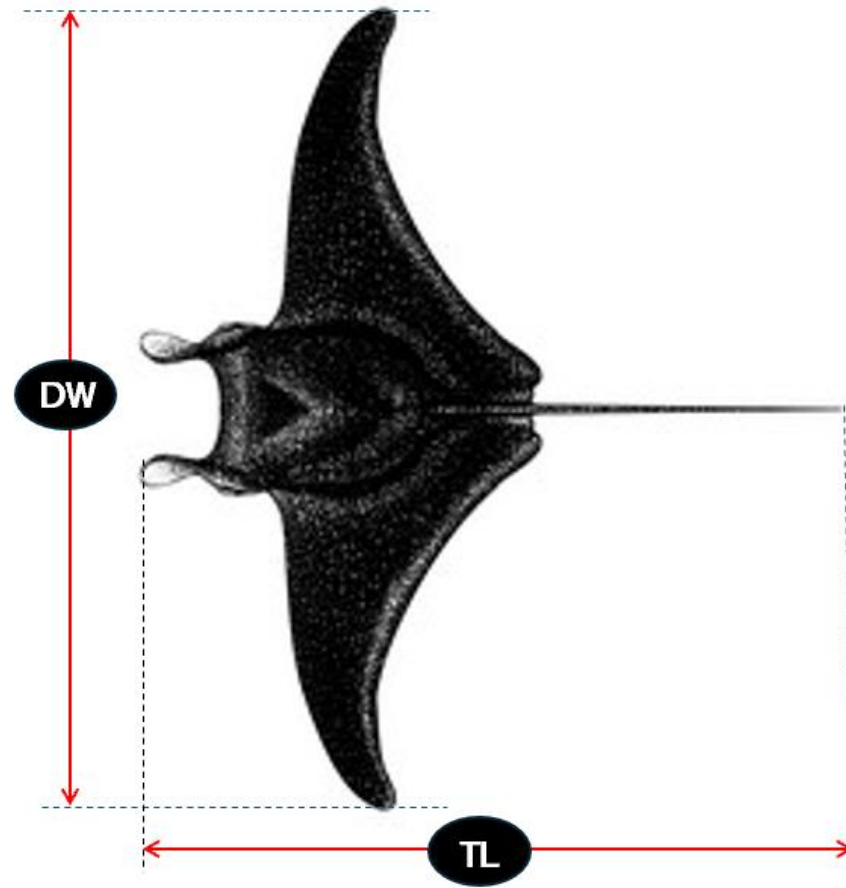
main dimensions to note in shark species



TL = total length ; FL = fork length; PCL = pre-caudal length

...KG

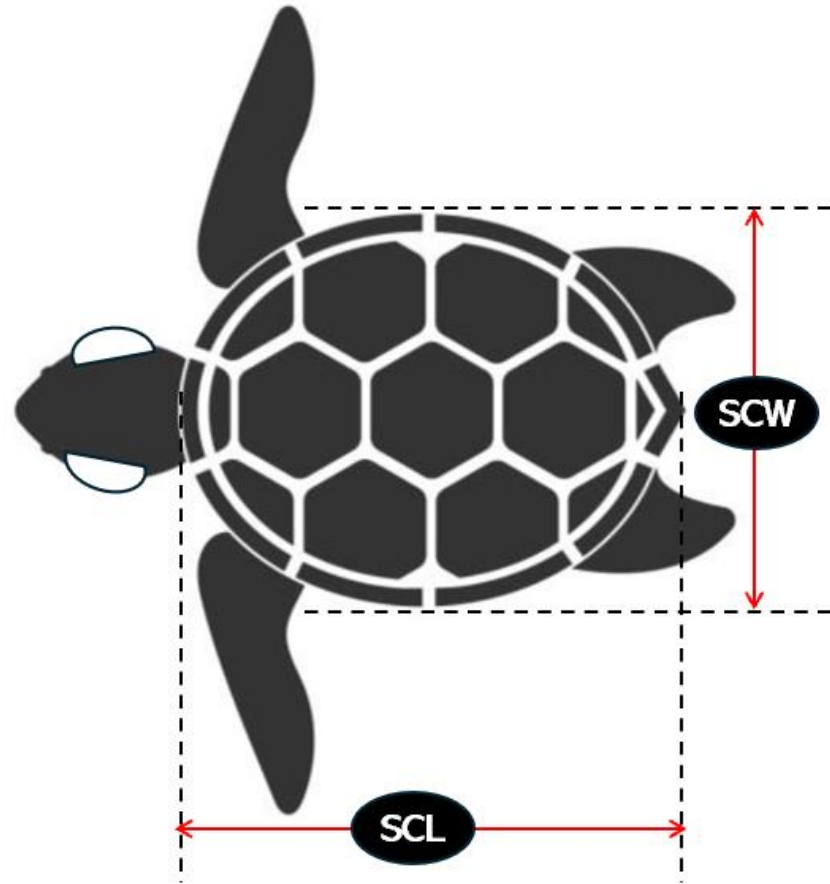
main dimensions to be noted in stingray species



TL = total length ; DW = disk width

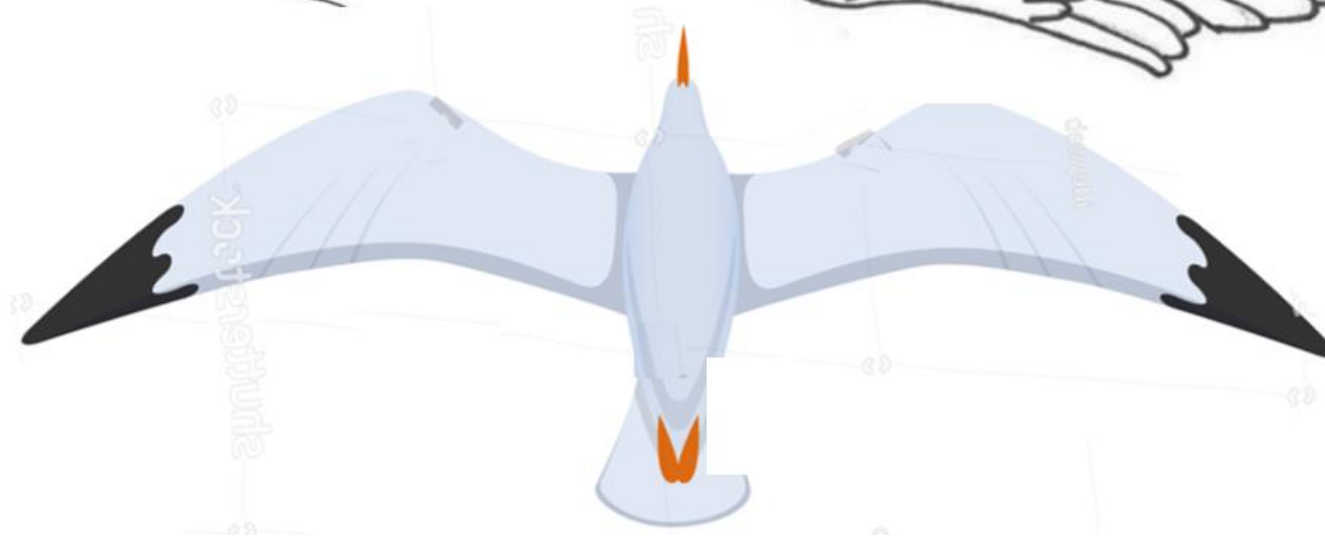
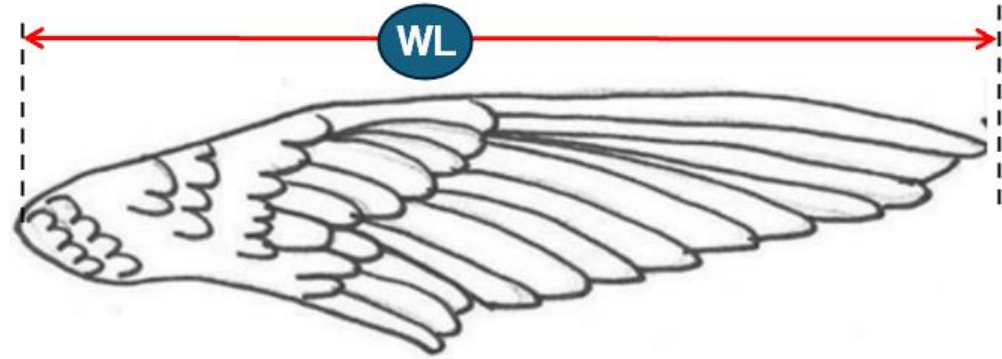
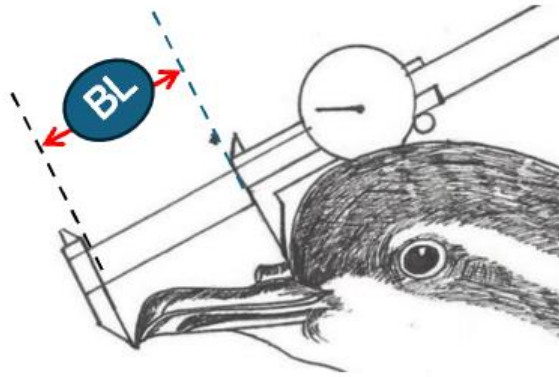
...KG

main measurements to be noted in sea turtle species



SCL = straight carapace length; SCW = straight carapace width

...KG



WL = wing length; BL = bill length

...KG

Data recorded:



in the duty
Dian Novianto 2000's

somewhere in capetown, south africa
november 2017



post briefing



steaming to
fishing ground



at sea latitude
South 25°



enjoy the duty
don't complain



Thank You