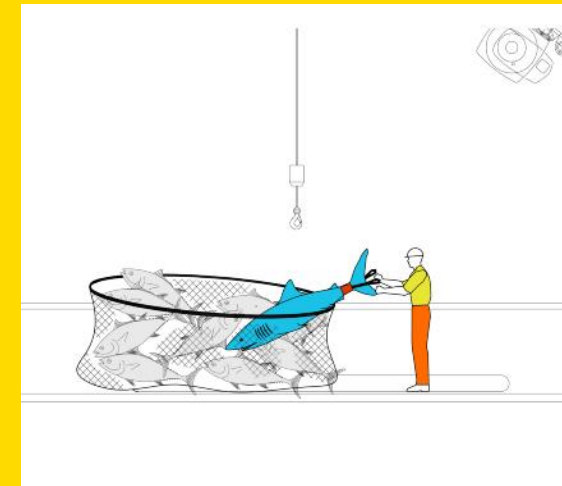
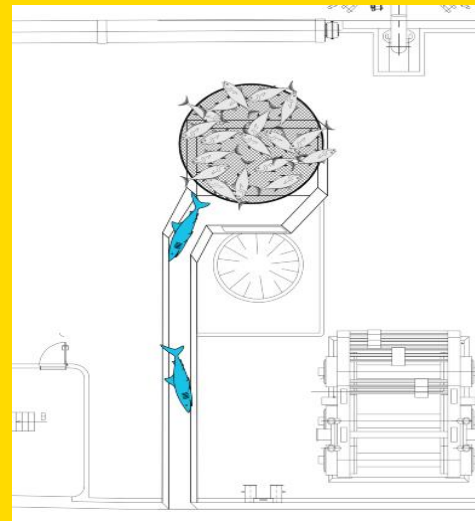
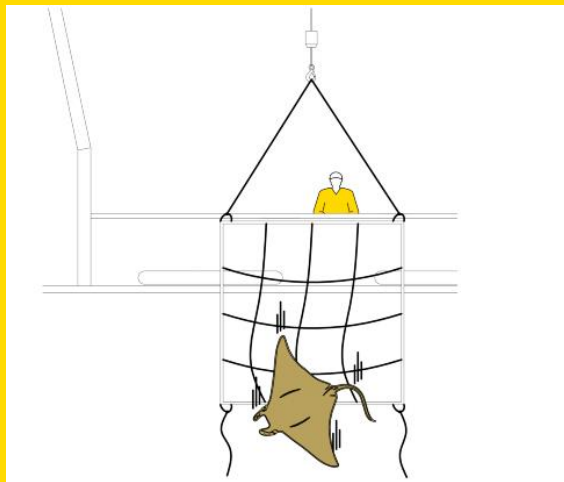




IATTC-AZTI joint research for developing and testing on deck bycatch release devices for elasmobranchs in tuna purse seiners (M.1.d)



J. Murua, J. Lopez, J. Ferarios, M. Grande, I. Onandia, J. Santiago, M. Hall,
A. da Silva , E. Altamirano, M. Roman, G. Moreno, H. Murua

IATTC RESOLUTIONS ON ELASMOBRANCHS

Resolution C-19-05 Conservation on Shark Species, emphasis Silky Shark

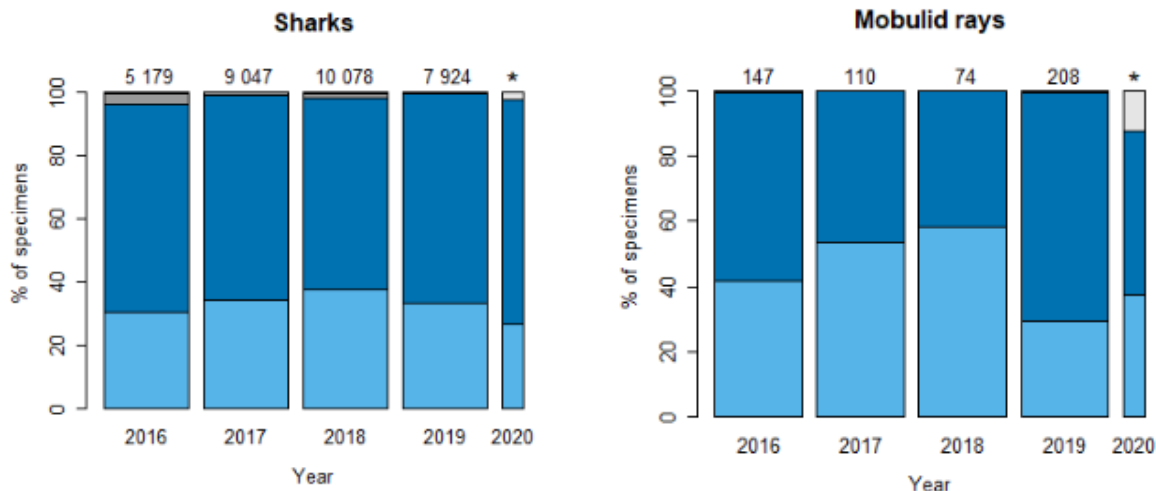
The Commission shall prioritize research by the scientific staff in survival of sharks caught on all types of gears and improve handling practices for live sharks to maximize post-release survival.

Resolution C-15-04 Conservation of Mobulid Rays

Requires vessels to release unharmed, and to the extent practicable, Mobulid rays as soon as they are seen in the net or the deck and do it in a manner that will result in the least possible harm to the Mobulid Rays captured without compromising the safety of any person, following the guidance in Annex I (prohibits gaffing and lifting by gill slits and require to the extent possible to brail them out of the net or returned as soon as possible, preferably with a ramp or with a sling or net).

ARE BEST RELEASE PRACTICES REALLY WORKING?

“Results tend to indicate that the techniques considered as Good Practices are less easily applicable for large individuals (mobulid rays and large sharks), dangerous individuals (large sharks) and less detectable individuals (small rays and small sharks)” (Maufroy et al., 2020; IOTC-2020-WPEB16-11)





AZTI- IATTC RESEARCH COLLABORATION OBJECTIVES



- 1) Promote close collaboration to share expertise between scientific groups from AZTI, CIAT and others like ISSF
- 2) Develop ETP species specific devices that contribute to more efficient releases (e.g., faster, less handling stress)
- 3) Construct devices that increase crew safety during releases and minimize interference with fishing operations
- 4) Evaluate benefits of devices in terms of species survival using satellite tags and other biological indicators
- 5) Collect device utilization data through IATTC observers and scientific cruises, project lasts 2 years (revisable)
- 6) Use results of the project to inform conversations with fishermen during the skippers' workshops
- 7) Promote the utilization of efficient devices in the region and help shape recommendations for their adoption



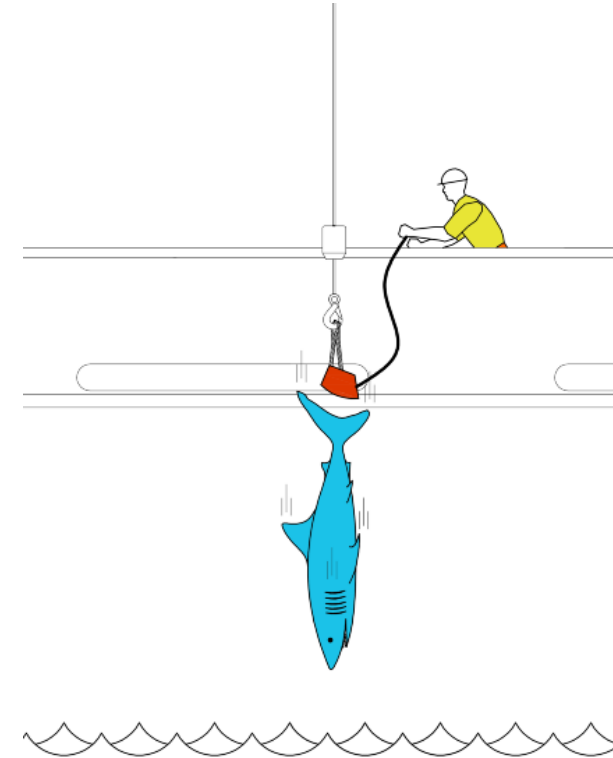
Release Bycatch Reduction Devices to be trialed

- Shark velcros
- AZTI sorting grid for mantas
- Release ramps
- Hopper with ramps
- Suction discs (pending funding)

Working in coordination with other similar IATTC projects:

- Other mobulid initiatives such as the manta brail-grids (M.2.c)
- Small silky shark studies for Dynamic Ocean Management (N.1.c)

AZTI SHARK VELCRO

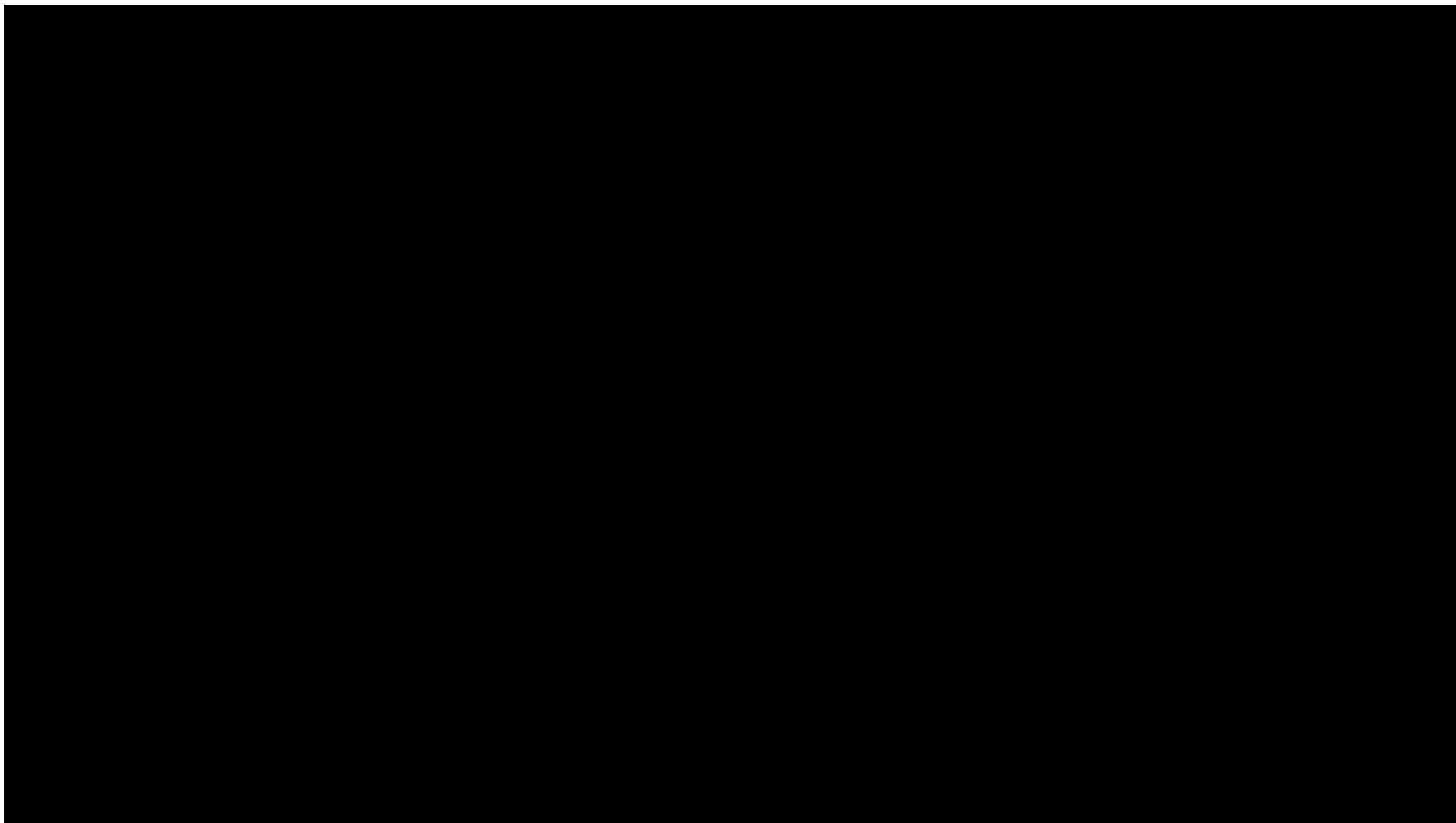


- Padded lifting device better practice to eradicate skin-damaging abbrasive rope practices

AZTI

MEMBER OF
BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

VIDEO HELEA SHARK VELCRO





Moving large mobulids is complicated (> 3 m disc width and +1000 kg)

Some cargo nets are too small and twist manta wings

Mobulids still need to be taken out of brailer (dangerous and time-consuming) los derechos reservados

AZTI MANTA SORTING GRID

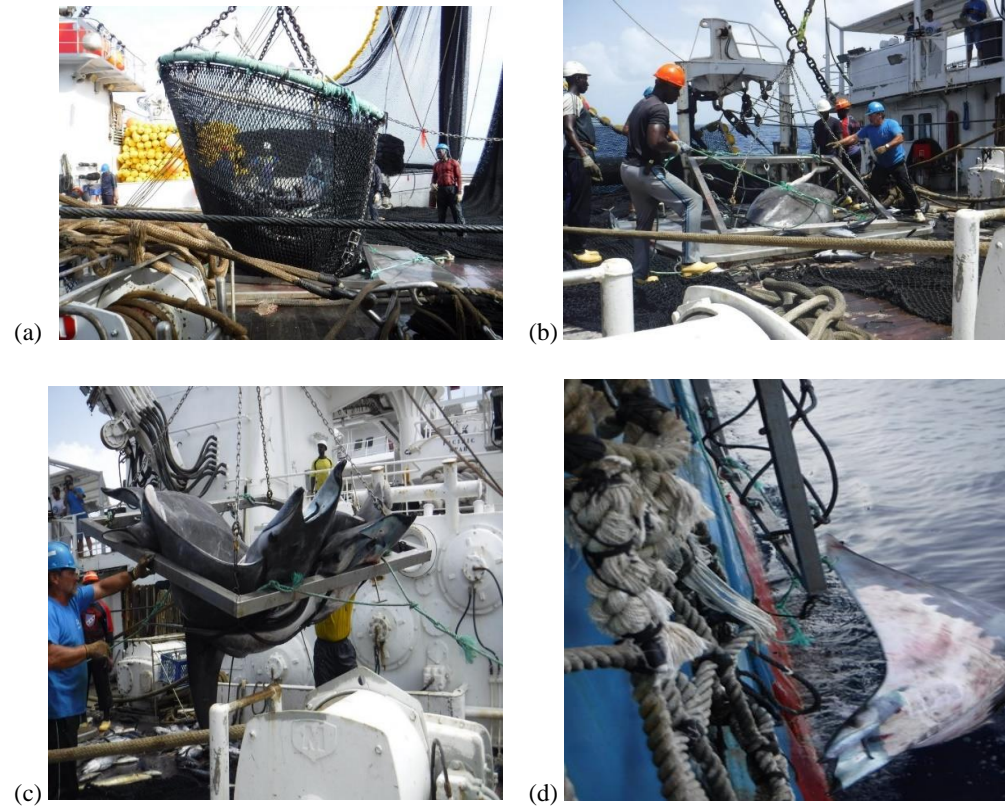


Figure 3. Mobulid ray sorting grid release steps: (1) empty brail contents into unloading hatch, (2) connect grid frame with chains to deck crane, (3) move sorting grid towards starboard railing, and (4) release rays into the water.

- Works well in FAD sets, for free school sets need to try fewer ropes
- Next improvements: anchoring metal square system, clip on grid ropes when needed

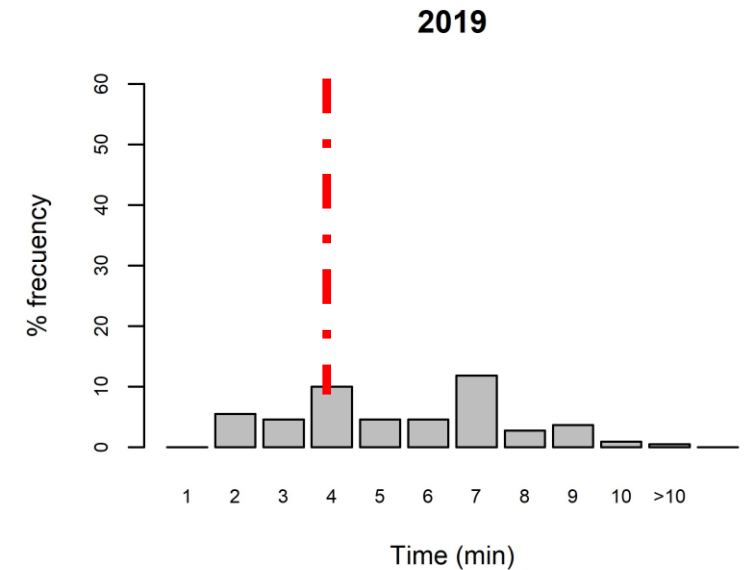
MANTA RAY RELEASES – AZTI GRID

Table 1. Mobulid ray releases with sorting grid during at sea trials on a purse seiner in the Atlantic Ocean

| SET TYPE | TONS SET | NUMBER MOBULIDS | SPECIES | DISC WIDTH (cm) | RELEASE TIME (min) | CONDITION |
|----------|----------|-----------------|---------------|-----------------|--------------------|-----------|
| FAD | 15 | 1 | M. tarapacana | 240 | 2:11 | Dead |
| FAD | 15 | 1 | M. tarapacana | 250 | 2:00 | Dead |
| FAD | 15 | 1 | M. tarapacana | 300 | 1:40 | Alive |
| FAD | 15 | 3 | M. tarapacana | 300,300,300 | 2:14 | Alive |
| FAD | 30 | 1 | M. tarapacana | 330 | 1:13 | Alive |
| FAD | 30 | 1 | M. tarapacana | 300 | 1:02 | Alive |

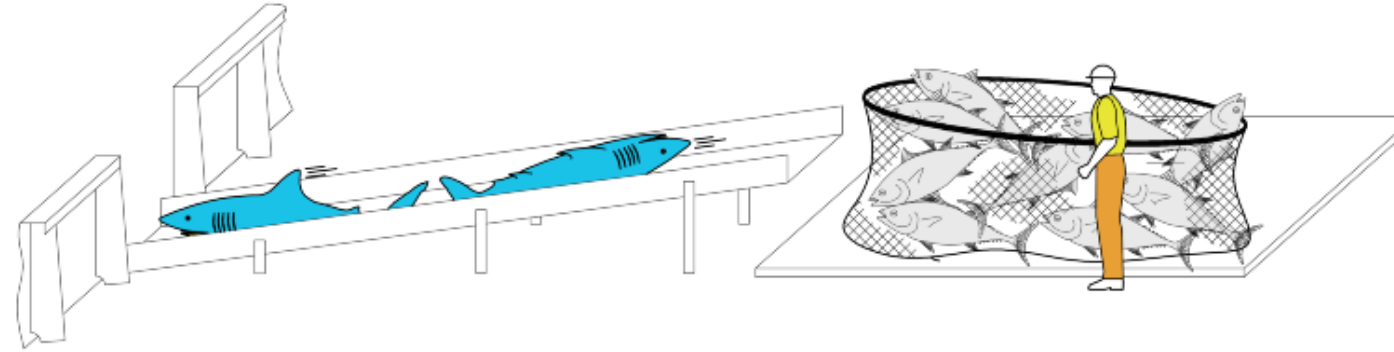
Manual/cargo net release time average 6 minutes and requires some handling

AZTI grid – 1-2 minutes and safe, no manual handling, brailing operation still goes on



PS COMPANY AVERAGE MANTA RELEASE TIMES

BRAILER BYCATCH RELEASE RAMP



Ramp from brailer to water: improved crew safety & prevents bad handling

HOPPER+RELEASE RAMP

STOP
DOOR

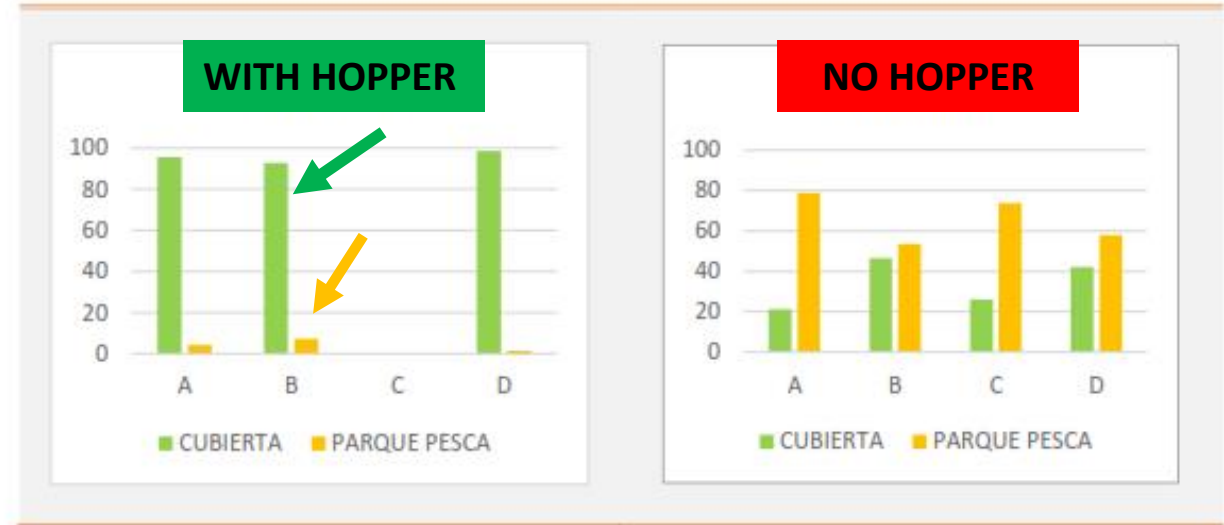


Figura 46. Porcentaje de tiburones liberados en cubierta y parque de pesca en cada atunero (A-D) cuando salabardea con y sin hopper)

No hopper and best practices still 50-80% sharks go lower deck

HOPPER with stop door 90-98% sharks released from top deck

Now with RAMP safer and faster release (no holding by gills, pulling with ropes, etc.)

SUMMARY

- Despite several years of “Codes of Good Practices” across oceans results are substandard.
- Poor release statistics are partly due to the risk of releasing these species and lack, up to recently, of safe and adequate release devices.
- Devices should be “customized” to particular vessels and fishers’ needs through trials and improved where possible with fishers’ feedback.
- Research cruises in PS using tagging will evaluate tool efficiency for survival rates. Cooperation with scientists in other groups will accelerate reaching joint conservation objectives.
- Adoption of best available devices (sorting grids, velcros, hoppers with ramps, etc.) is vital to ensure best handling practices for sharks and mobulids are truly implemented and objectives of sustainable MSC eco-certified fisheries are achieved.