

Progress in addressing key research to inform Mobulid ray conservation in the Pacific Ocean

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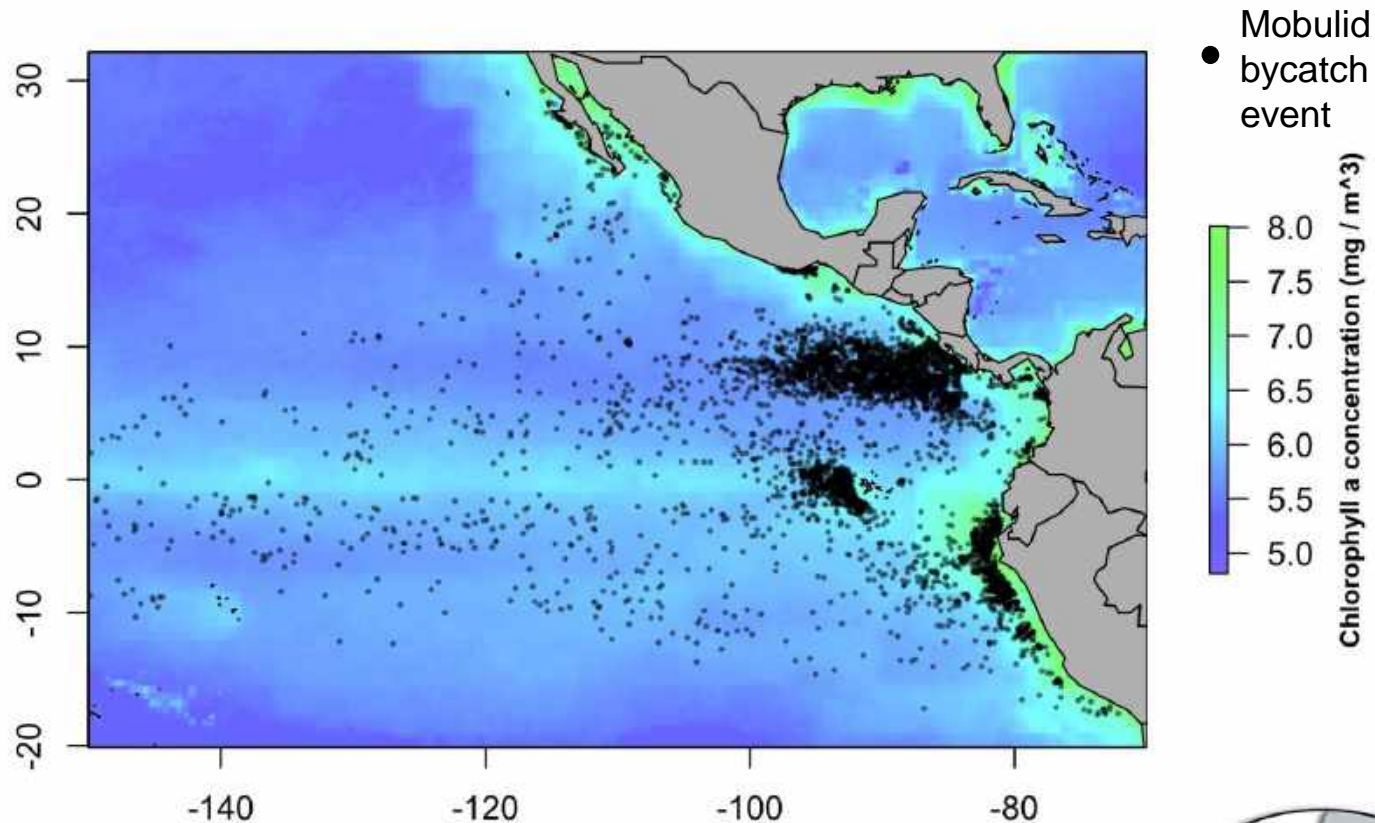
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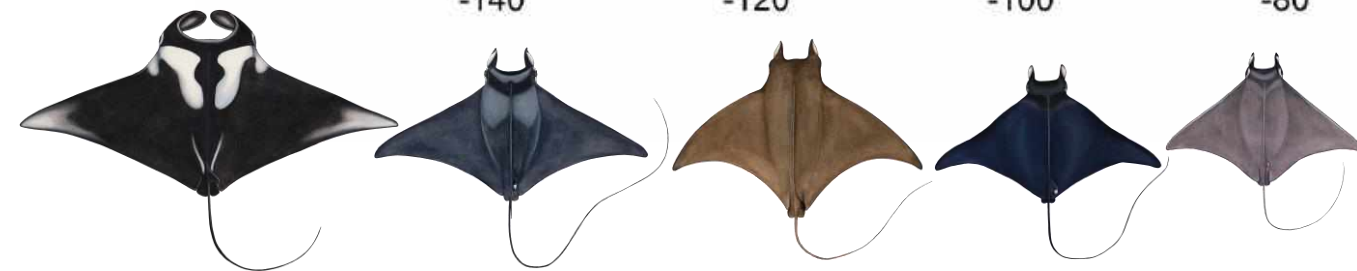
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>3,000 mobulids caught annually by tuna purse seiners in Eastern Pacific



- Poor species identification and catch reporting
- Observed population declines but no stock assessments
- Improving port-release mortality likely to improve status
(Griffiths & Lezama-Ochoa, 2021)



Primary barriers to rapid + safe release

- Large, slippery animals sit on deck longer >> leads to crushing and asphyxiation
- Manual release for large animals can lead to eye and lobe damage



 **Study purse seine – mobulid interactions and population structure**

 **Design and test sorting grid for mobulids and evaluate post-release mortality with satellite tags**

 **Train fishers and observers to identify and sample mobulid rays and educate crew on best safe-handling and release practices**

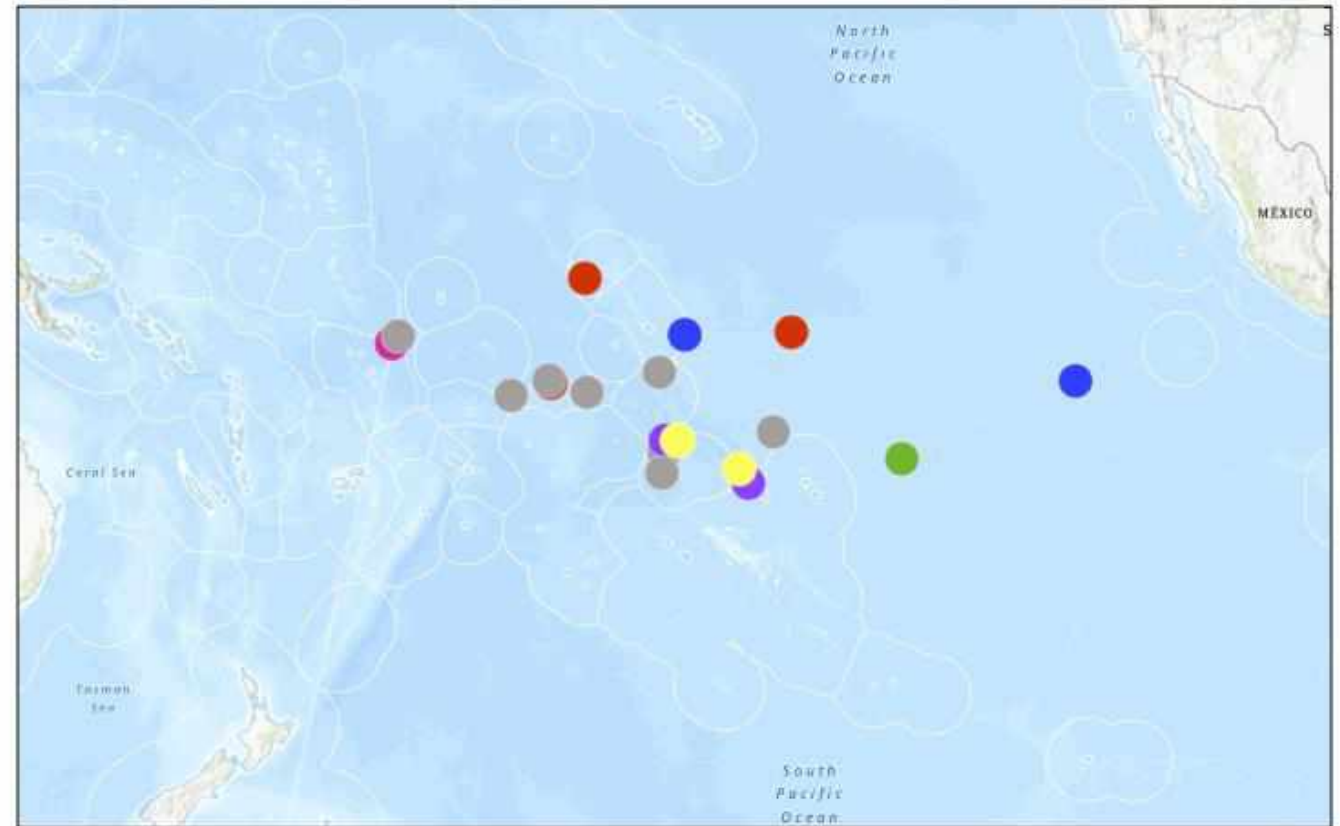
 **Outreach to fishers, scientists and managers**



Preliminary results

Objective 1: Purse seine-mobulid interactions

- 29 mobulid captures documented by participating vessels
- Mean size of sets with mobulids = ~ 63 tons
- Four mobulid pairs captured in same set



Mobulid captures

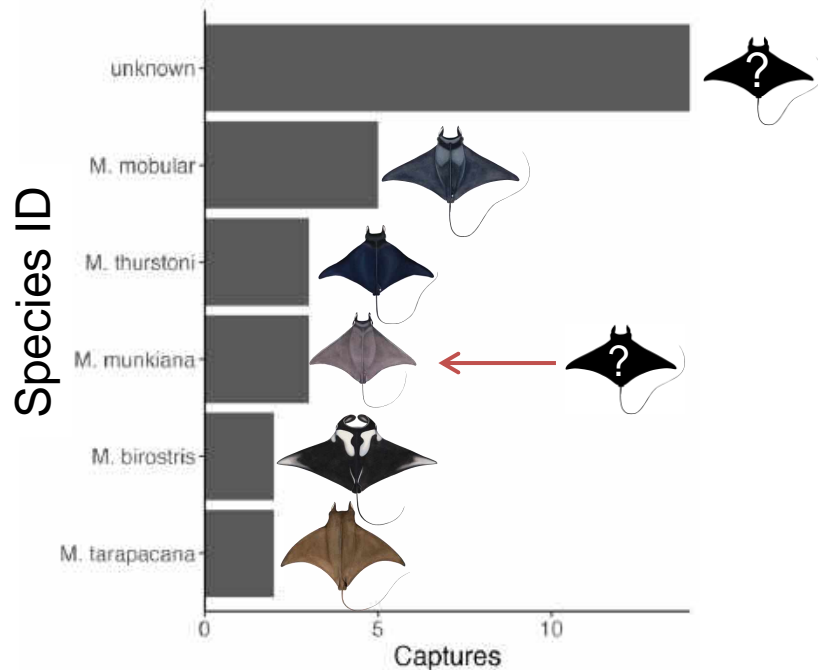
M. mobular	M. thurstoni	M. tarapacana	unknown
M. munkiana	M. birostris	Dasyatidae	



Preliminary results

Objective 1: Purse seine-mobulid interactions

- 11 samples collected, combined w/ 61 mobulid samples collected by Ecuadorian fleet in collaboration with IATTC and TUNACONS
- Misidentification of mobulid species likely occurring
 - *M. munkiana* documented outside its coastal distribution



- RAD library and sequencing successful, bioinformatics in progress
- Mobulids will be assigned based on population structure identified by Cronin et al (*in revision*)





Preliminary results

Objective 2: Design and test sorting grids

- Surveys, calls conducted with fishers to inform and adapt grid designs



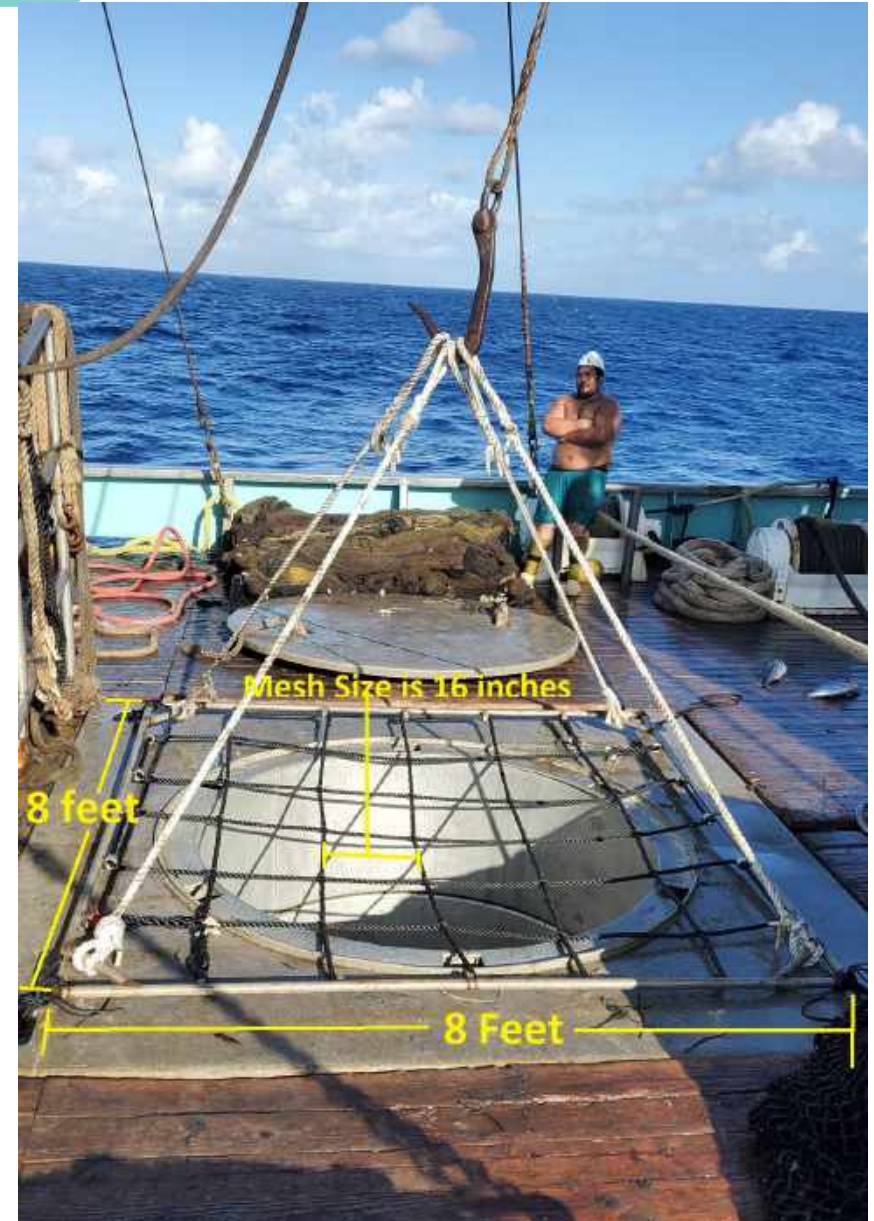
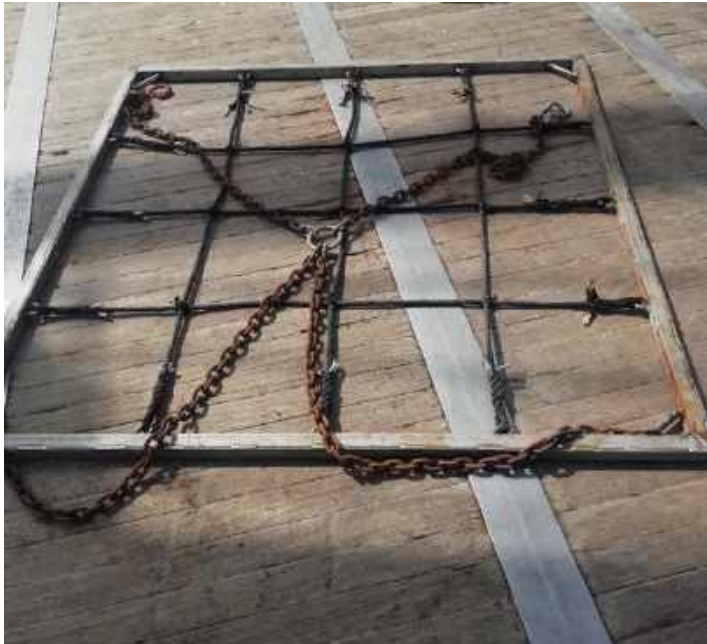
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Preliminary results

Objective 2: Design and test sorting grids

- Sorting grids were constructed for each of the 12 US purse seine vessels
- Design varied based on vessel specifications

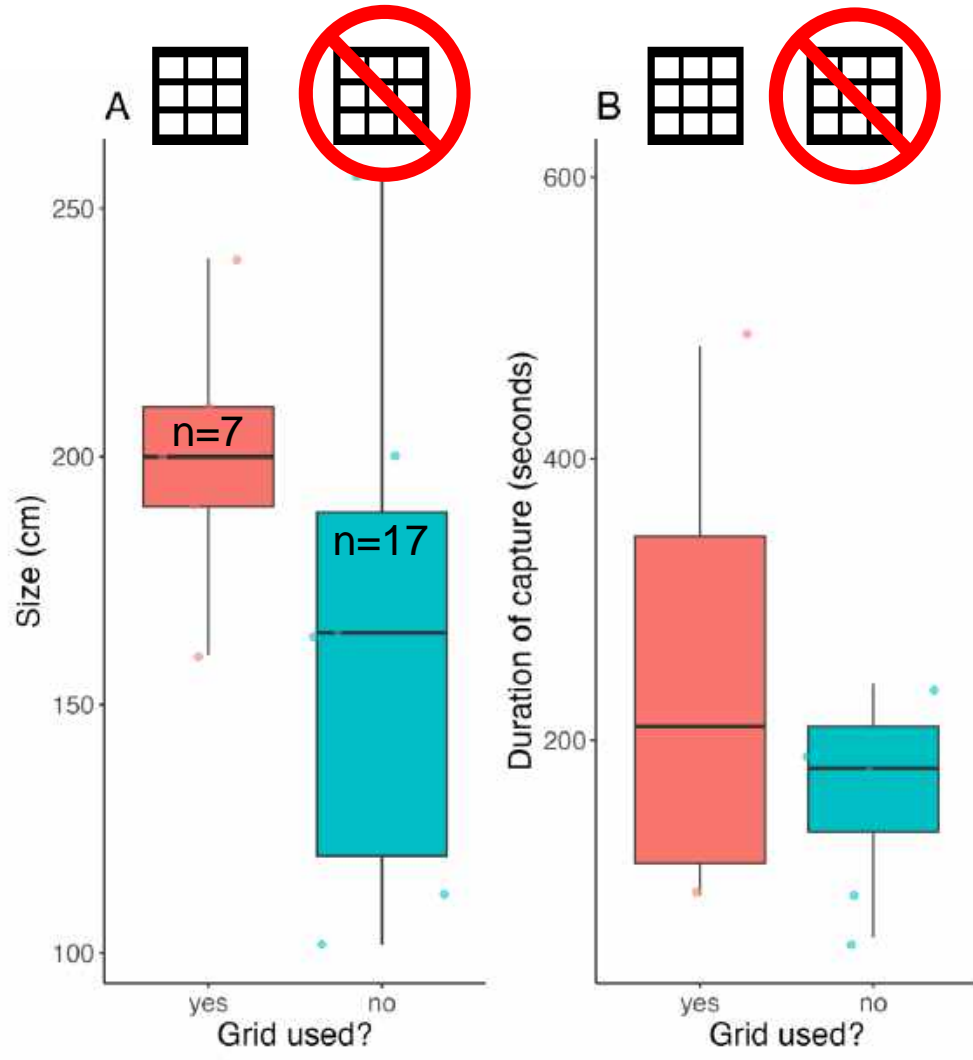




Preliminary results

Objective 2: Design and test sorting grids

- Sorting grids were most common method (n=7)
 - followed by stretcher (n=4) and manual release (n=4)
- Sorting grids used for larger animals (mean DW = 200 cm)
 - manual release for smaller animals (mean DW = 162 cm)
- Mean duration of capture using sorting grid (4:07 minutes) was similar to other methods (4:11 minutes)



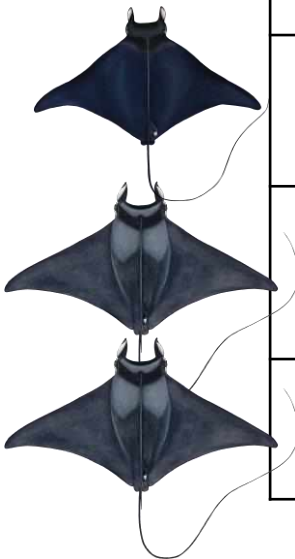


Preliminary results

Objective 2: Design and test sorting grids

- Tag battery malfunctions and rarity of capture severely limit sample size

Species	Release method	Condition on release	Fate
<i>M. thurstoni</i>	manual	good (“active and energetic”)	mortality
<i>M. thurstoni</i>	manual	poor (“sank with little movement”)	mortality
<i>M. mobular</i>	stretcher	good	survival



 Preliminary results
Objective 3: Fisher training and education

Fisher training in port



Vessels: Cape Breton, Evalina da Rosa, Cape May, Pacific Princess, Sea Encounter, Friesland, Cape Cod, Cape Finisterre, Capt Vicent Gann, Daniela, Cape Elizabeth, Cape Ferrat, Andrea 1



Preliminary results

Objective 3: Fisher training and education



Biologist onboard purse seiner



Fishers sampling



Educational materials



- ✓ US fleet easily adopted + adapted sorting grids
- ✓ Grid release time **comparable to manual release**, despite larger animals
- ✓ **Interaction rate is low**, tagging difficult
- ✓ **Education and training to all US fleet vessels**, online, onboard and in port
- ✓ Next: Genetic analyses and continued testing of sorting grid use

Thank you!



Pacific Islands Regional Office



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