

# **Trialing shark bycatch release devices on board purse seiners in the Pacific Ocean to enhance shark survival**

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- Tropical tuna fisheries catch 5.2 million tonnes annually (2023).
- Sharks are vulnerable due to slow growth, late maturity, low fecundity.
- Shark bycatch in tuna purse seine fisheries can risk shark populations sustainability.
- Shark best handling and release protocols were developed over 10 years ago (Poisson et al., 2012) and have not been updated until recently (Hutchinson et al., 2024; Murua et al., 2024).

- Evaluate best handling and release practices with a shark release ramp.
- Quantify post-release survival using tagging, vitality index, lactate levels.
- Conduct skipper training workshops to promote best practices.
- Update safe-handling and release Best Practices for vulnerable fauna bycaught in tropical tuna purse seine fisheries

# Shark Release Ramp

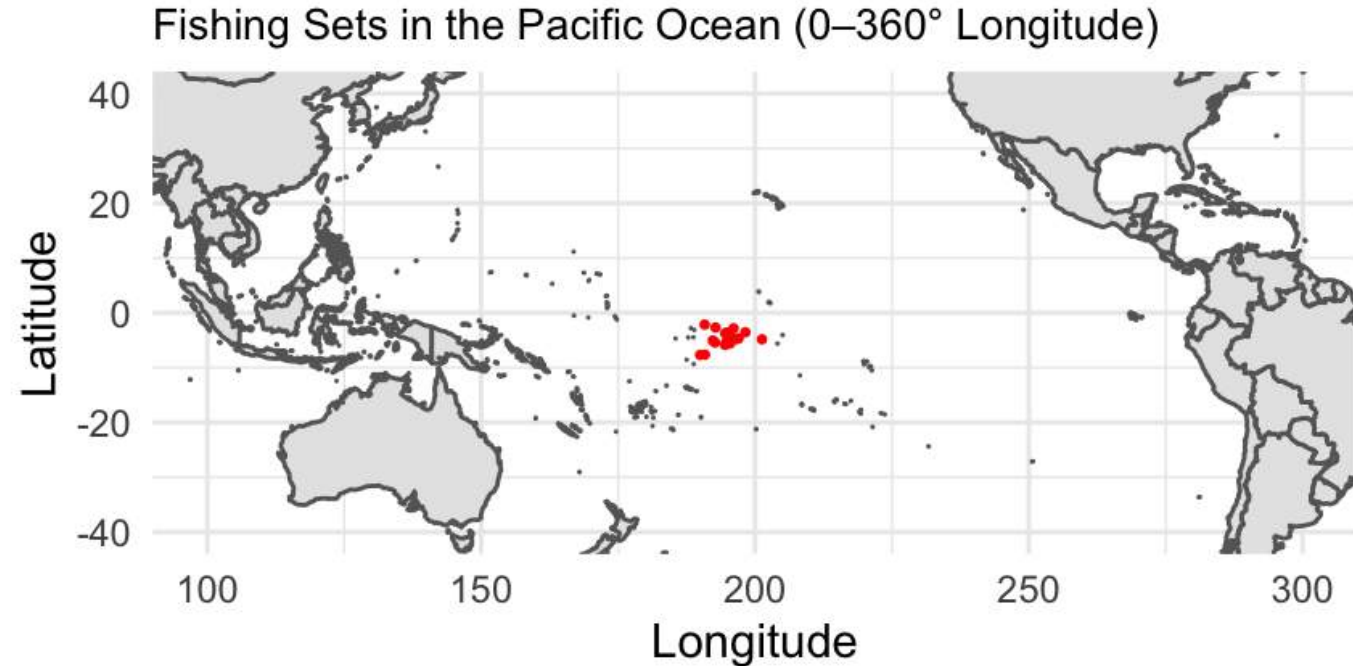
- Ramp made of marine-grade aluminum,
- 8.6 m. in length, 0.55 m. in width, and a maximum height of 1 m. near the hopper
- Not permanently affixed to the hopper, connects the hopper to sea, facilitating rapid, low-stress releases of sharks
- Detachable, water hose keeps the surface wet, easy installation/removal
- Affordable between \$2000 - \$6500



# Lighter and foldable ramp

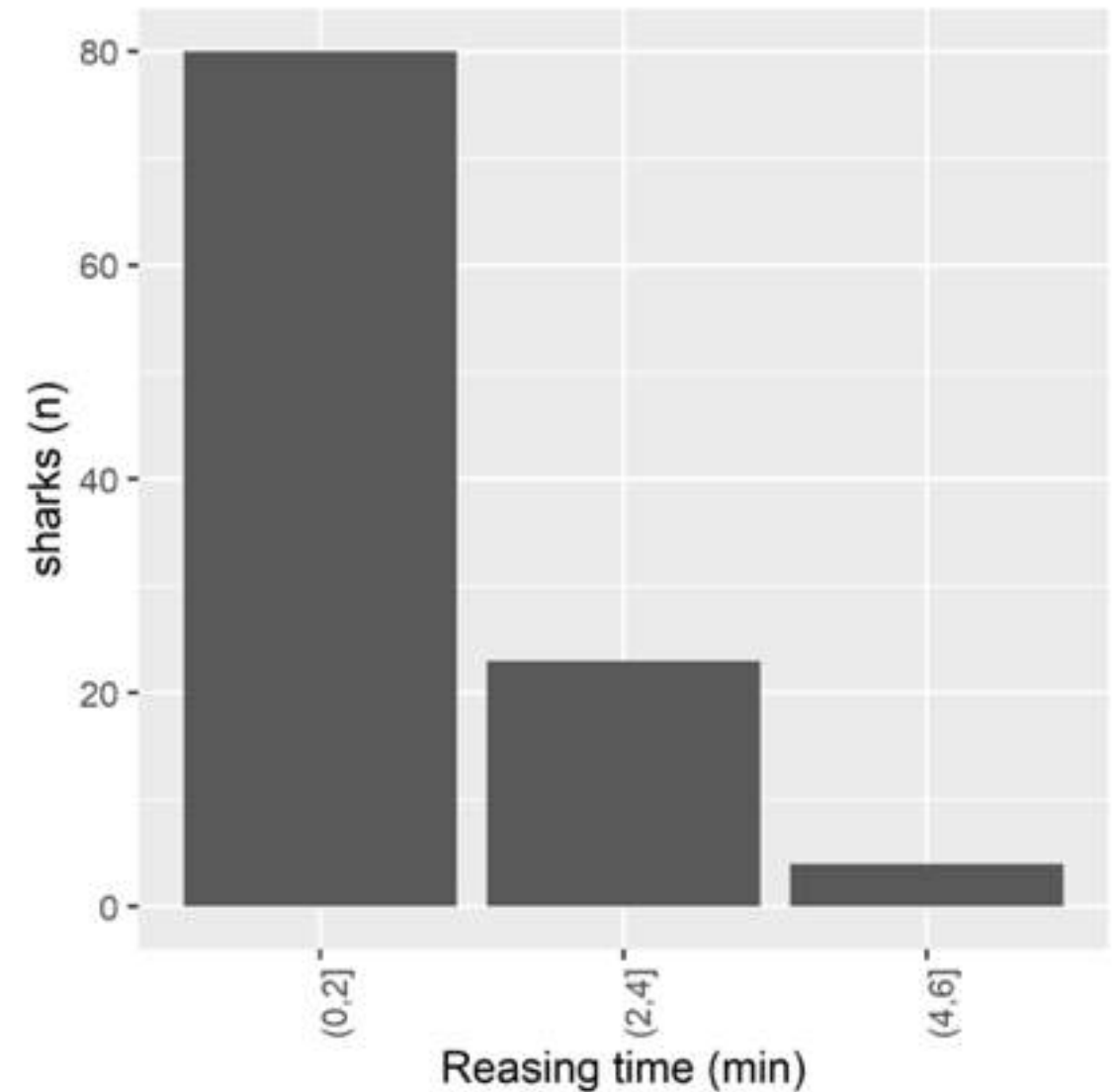


- Trip aboard Cape Ferrat, 28 December 2024 – 30 January 2025
- 17 FAD sets
- 134 sharks caught: 122 silky, 11 oceanic white-tip, 1 hammerhead.
- Data collection
  - Shark, brail #, brail position, release mode, time of release, vitality/condition index, fate after release.
  - Blood samples, lactate
  - 4 satellite tags (normal behaviour > 10 days after release considered survival).



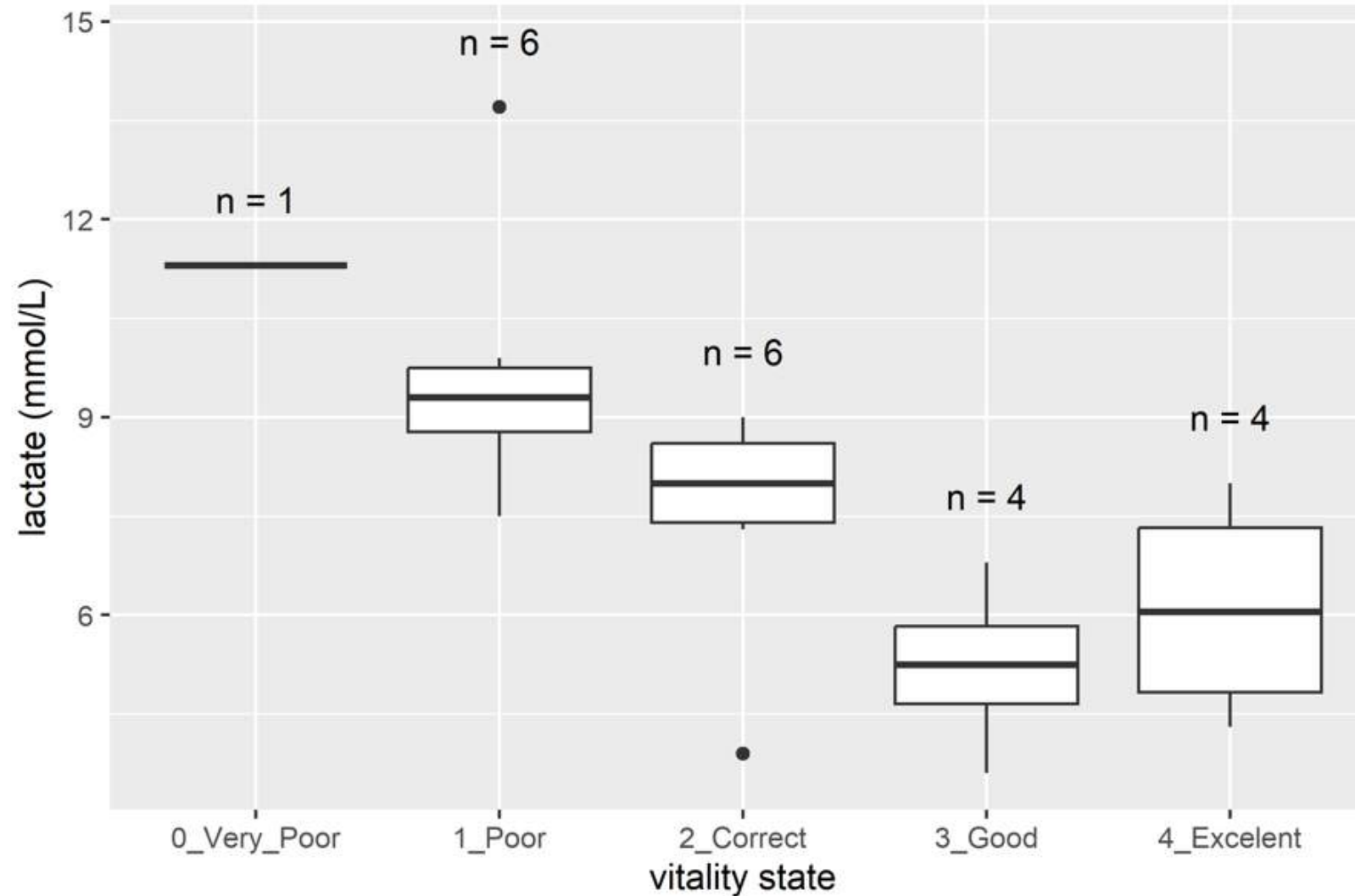
# Results: Key Findings

- **98.5%** sharks released via ramp, mostly within **2 min.**
- **47%** (n= 63) showed poor/very poor condition at release, considered **mortality**.
- 49% for silky shark (n=59 of 120)
- 27% for oceanic white-tip shark (n=3 of 11)



# Results: Key Findings

Blood lactate levels correlated with vitality.

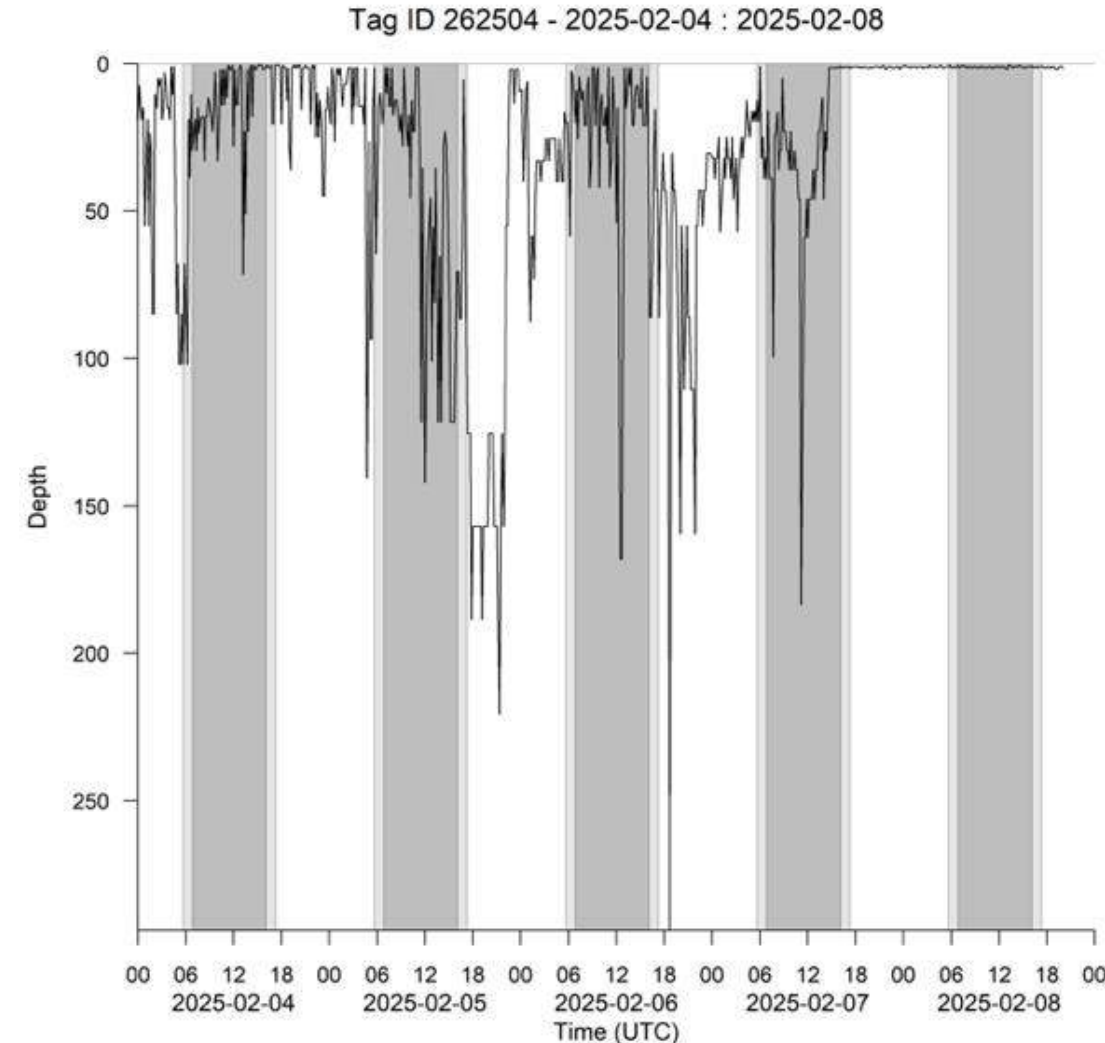


# Ramp operation



# Tagging & Survival

- 4 sharks tagged: 3 Silky shark and 1 White-tip
- 3 silky showed survival signs (7–32 days, premature detachments) and OCS still providing data after 4.5 months
- Normal vertical movement patterns indicate likely survival: shallow depth distributions, typically remaining above 150 m and spending considerable time at < 50 m
- Small sample size limits generalizability.



# Workshops & Training

- Held in Pago Pago, American Samoa and Madeira, Portugal
- Focused on BRDs, safe release, and biodegradable FADs: four U.S. PS vessels were visited.
- Strong fishers' interest in adopting the ramp system with a hopper.
- All have a mobulid sorting grid.



- The cost of the ramp (USD 2,000 - 7,000) is considered affordable for most PS fleets.
- The ramp enabled rapid and safe releases (98.5% of sharks released < 2 minutes), minimizing air exposure and handling stress, both of which affect survival.
- The onboard observer and fishers reported that the ramp did not interfere with other deck operations (e.g., brailing), and fish loading times remained unaffected.
- Skipper and train-the-trainer workshops represent an effective strategy for scaling best practices across fleets, an essential component for the sustainability of vulnerable shark species.
- . A ramp system with a hopper improved operational efficiency, enhanced crew safety, and increased shark survival. It represents a cost-effective mitigation measure.

A large school of bluefin tuna swimming in deep blue water. The fish are sleek, silver-blue with yellowish-orange fins, and are moving in a coordinated pattern. A semi-transparent teal banner is overlaid on the lower half of the image.

# Q & A