

Survival rate of silky sharks (*C. falciformis*) caught incidentally onboard French tropical tuna purse seiners

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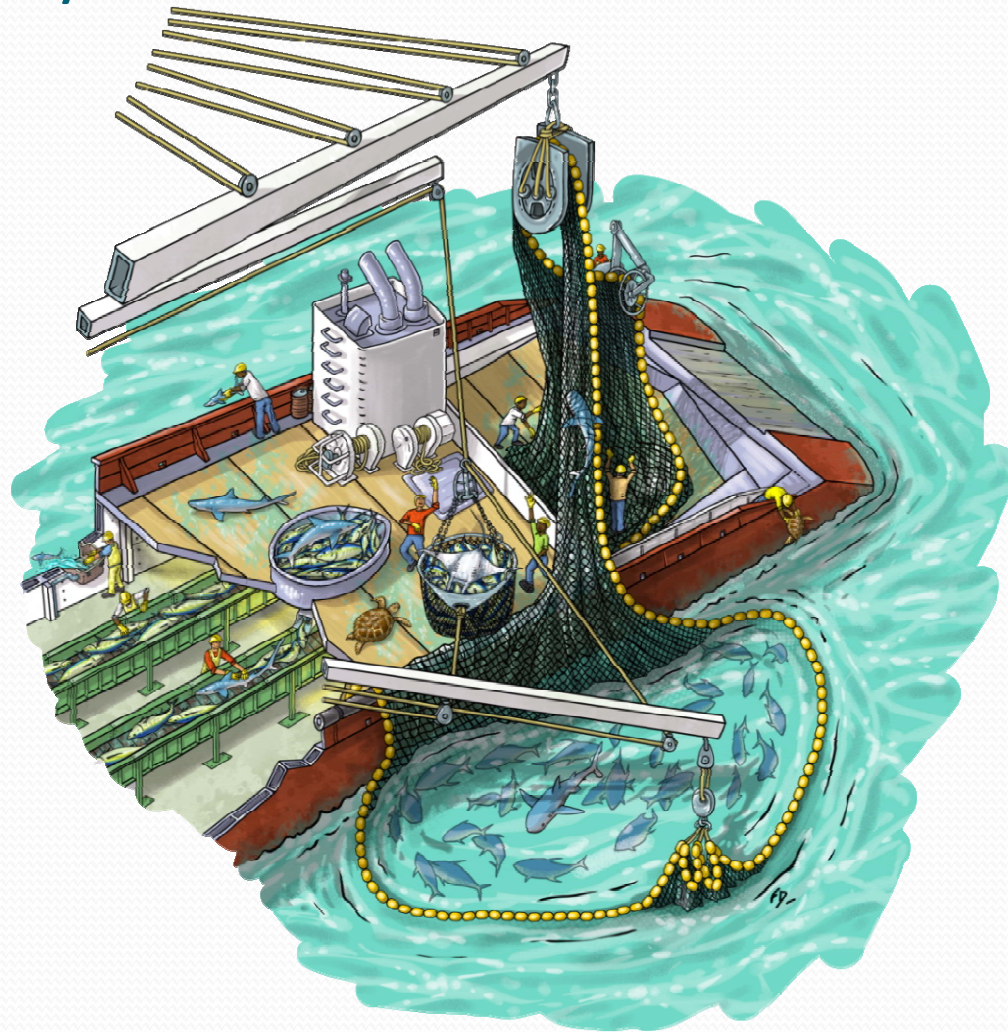
Mitigating impacts of fishing on pelagic ecosystems:
Towards ecosystem-based management of tuna fisheries



Montpellier, 15-18 October 2012



Is catch-and-release onboard tropical purse seiners a viable management tool to reduce the post-release mortality of silky sharks?



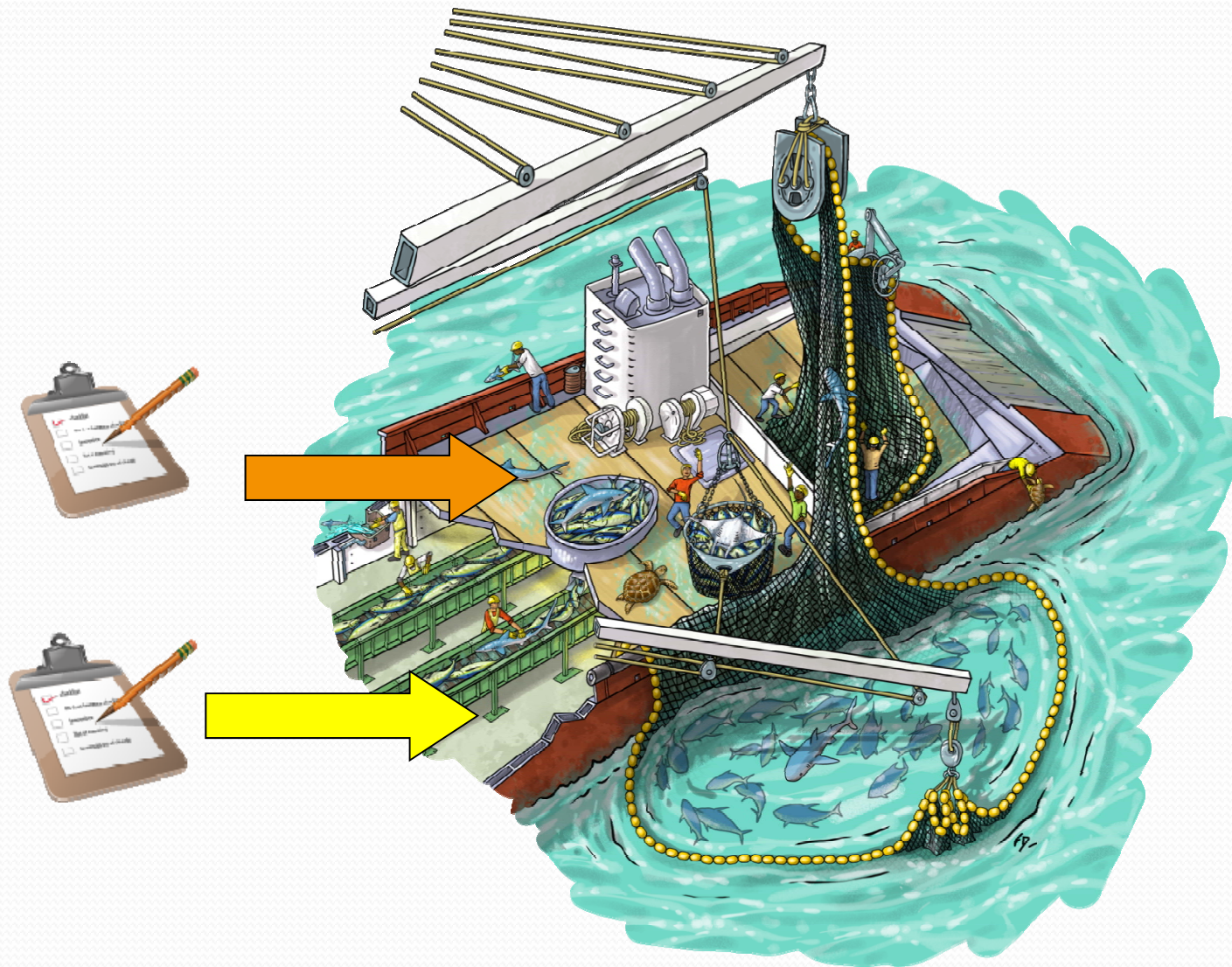


Objective

- Calculate the percentage of silky sharks that could survive (from the total caught)
- Estimate the proportion of dead sharks *versus* alive
- Assess the survival rate of individual released,

Immediate mortality(step 1)

Number of sharks and their conditions in the upper deck and in the lower deck (size,gender)

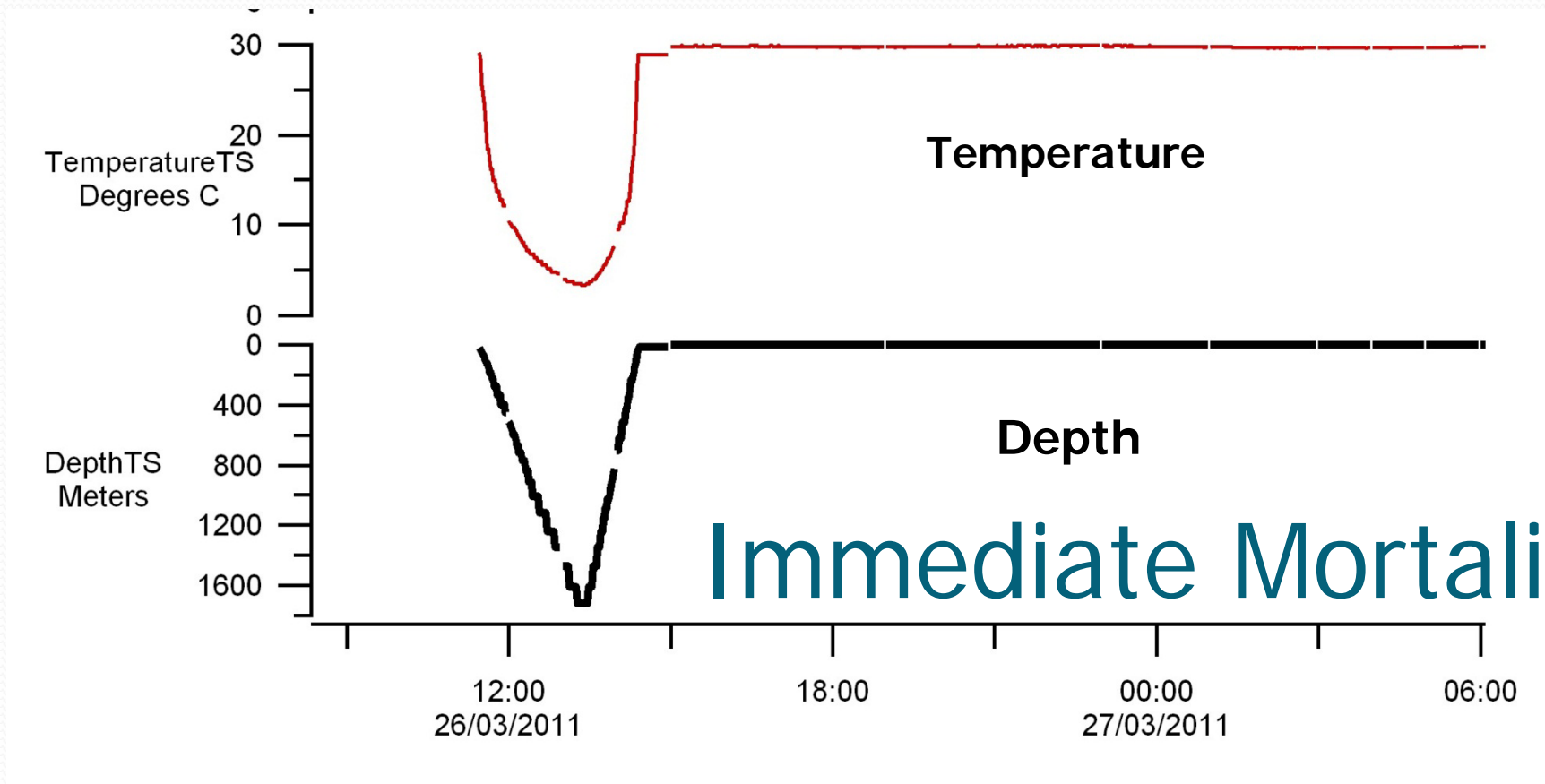


Survival of released sharks

Tagging area

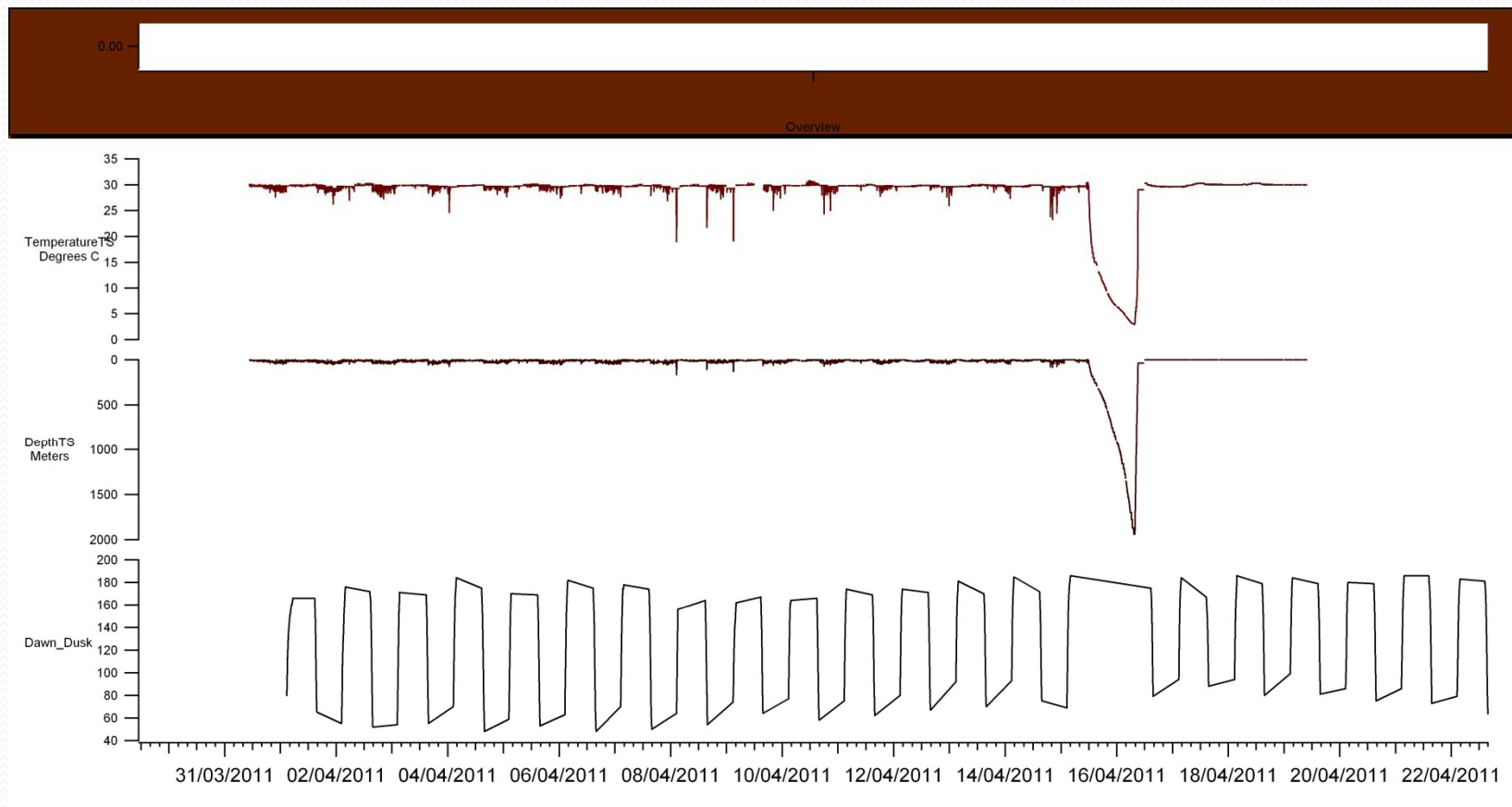


Vertical profiles miniPats

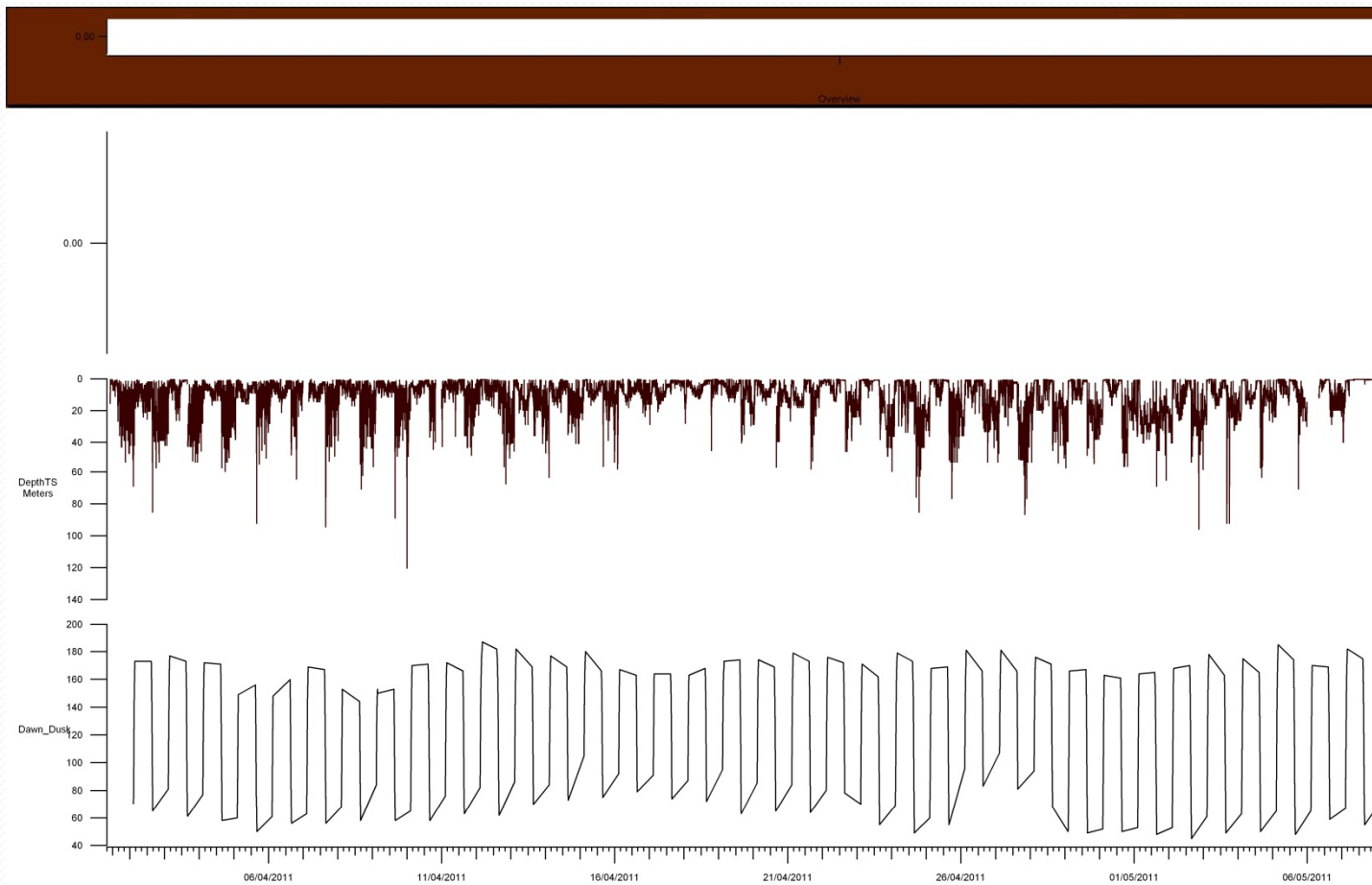


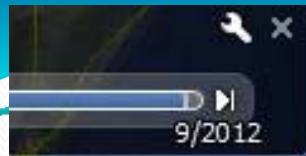
Time –(Depth/ temperature) Profiles

Tag jettisoned after 15 days delayed mortality



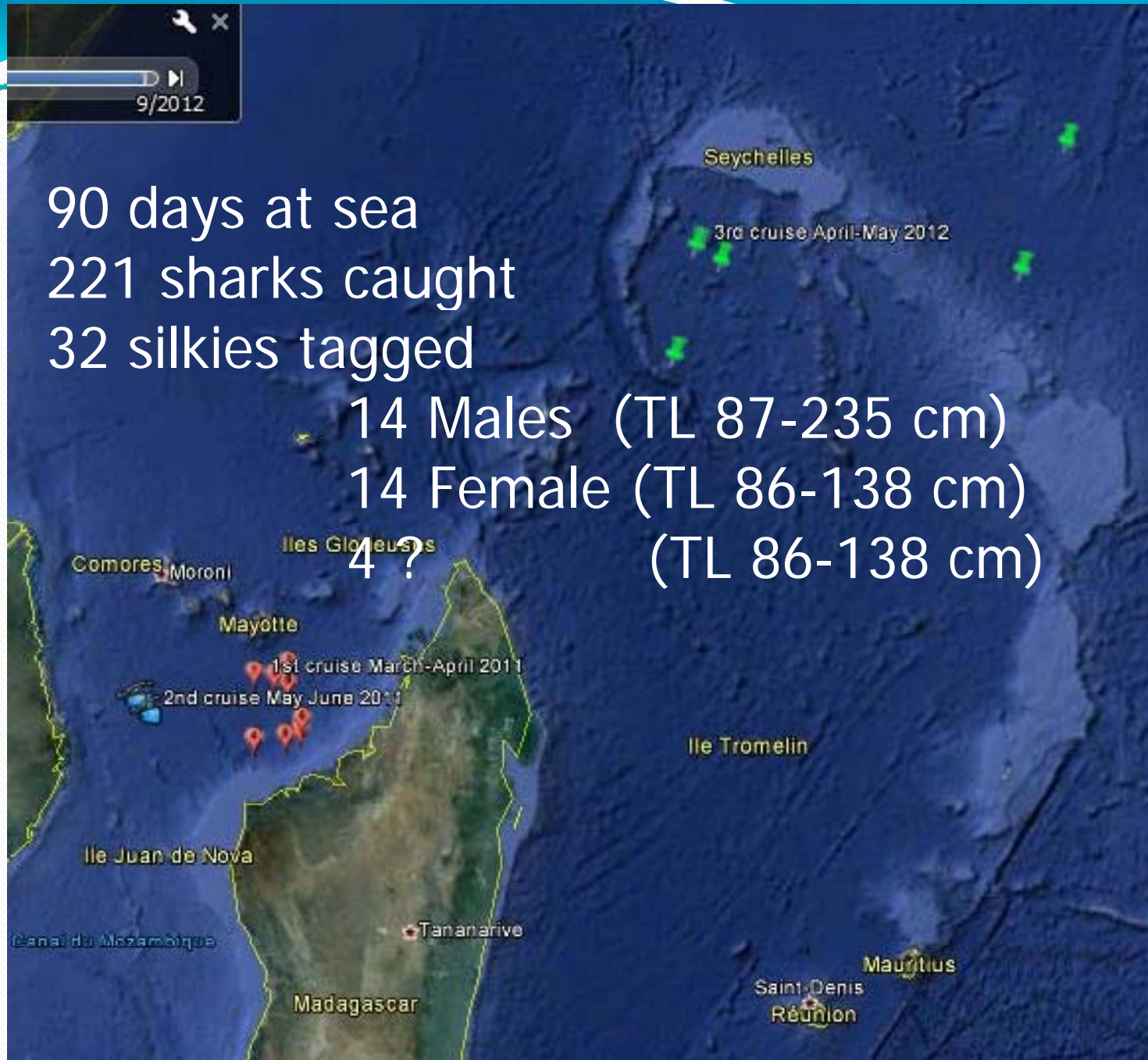
Surviving sharks





90 days at sea
221 sharks caught
32 silkies tagged

14 Males (TL 87-235 cm)
14 Female (TL 86-138 cm)
4 ? (TL 86-138 cm)



Conditions faced by the sharks

- Fishes are exposed to detrimental conditions
 - (1) physical contacts with other fish in the bunt;
 - (2) the rough “harvesting process” (storage in the scoopnet);
 - (3) storage outside water (lack of oxygen, gravity , exposure to the sun)
 - (4) traumatic handling practices (storage on the deck and/or towing/lifting up).



Fishing process

Brailing (From the bunt to the deck)



- Diam: 2.9 m; Weight: 450 kg
- Capacity: 3 to 5 t (fish size)
- Very quick procedure 2-3 mm




- Good ability to manipulate with precision
- 40 tonnes
11 brailing operations

25mm

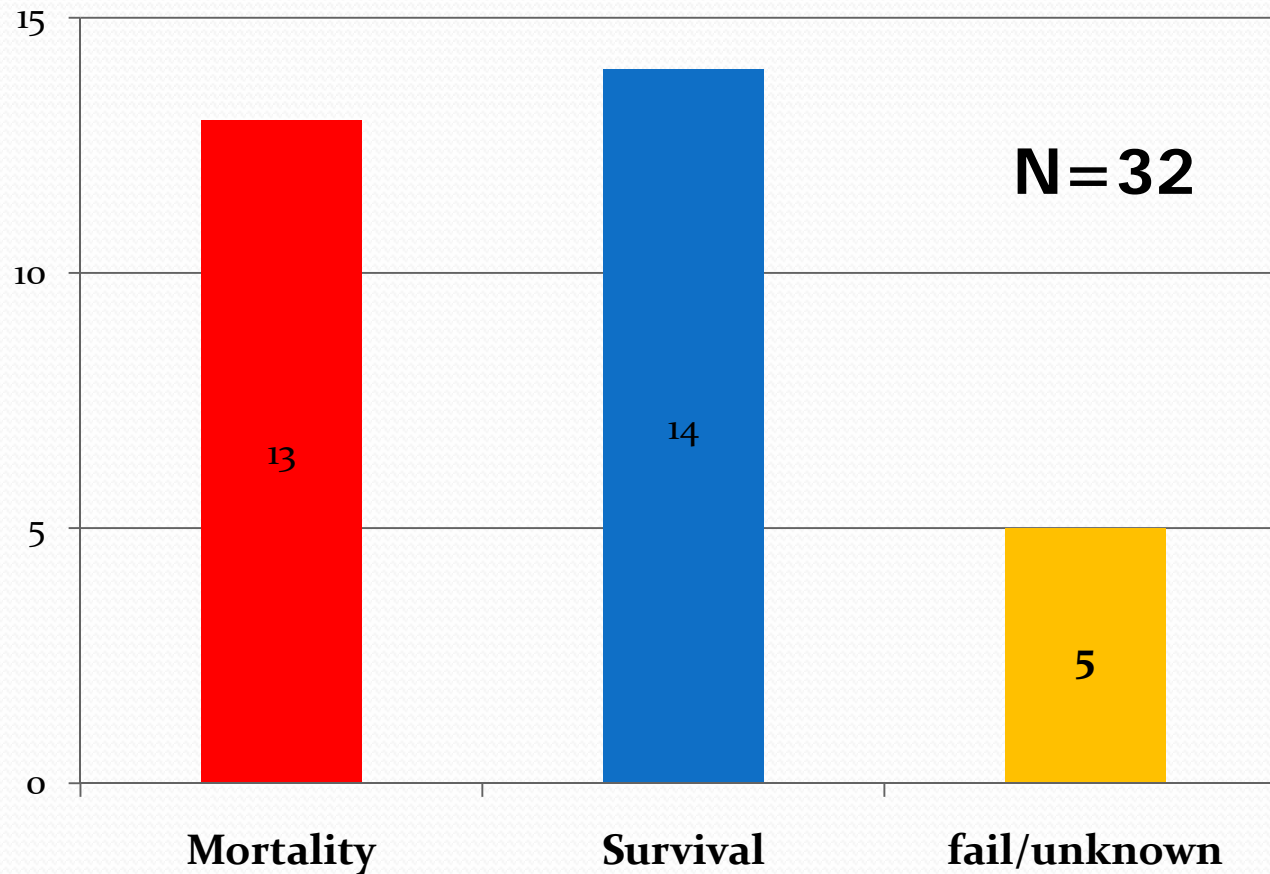
Assessing the sharks condition

- Active on the deck
- Strong muscle contractions
- Movements of the gills,
- Eyes



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- The majority of sharks were sampled
in the **lower deck** (73%)
 - The length of the silky were significantly **higher**
in the **upper deck** (vs lower deck)
 - The mortality rates were **higher**
in the **lower deck** (vs upper deck),

Survival rate



Main results ...Total mortality of 81 – 91%

Conclusion

- the good practices of discarding sharks must be promoted, as this could save approximately 10-20% of sharks.
- complementary practices should be utilized in order to have a significant reduction of the fishery-induced mortality of this species.
- Along the different steps of the fishing process : Focus on solutions before sharks are brought onboard



Acknowledgements

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THANKS FOR YOUR ATTENTION

Current study

- 135 sharks caught
- 73% dead on lower deck/33% upper deck
- Immediate mortality: 62%
- 50% survival of released sharks
- Total mortality of 81%
- 86 sharks caught
- 74% dead on deck
- Total mortality of 82 – 91%

Conditions faced by the sharks



Current study

- 86 sharks caught
- 74% dead on deck
- 10 tagged with PDT (4 dead)
- 12 silky sharks tagged with miniPATs
 - 4 immediate mortality (66 % survival)
- Total mortality of 82 – 91%



Conclusion

- Promote best handling practices (save 10 – 20%)
- Focus on solutions before sharks are brought onboard in future.

