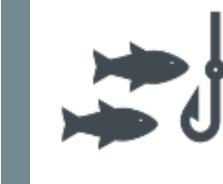
MARINE PROTECTED AREAS FOR SHARKS AND RAYS IN MOZAMBIQUE

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BACKGROUND

Why sharks and rays?



Since the 1970s, shark and ray populations have declined by 71% globally due to overfishing, habitat destruction, and the detrimental shark-fin trade.

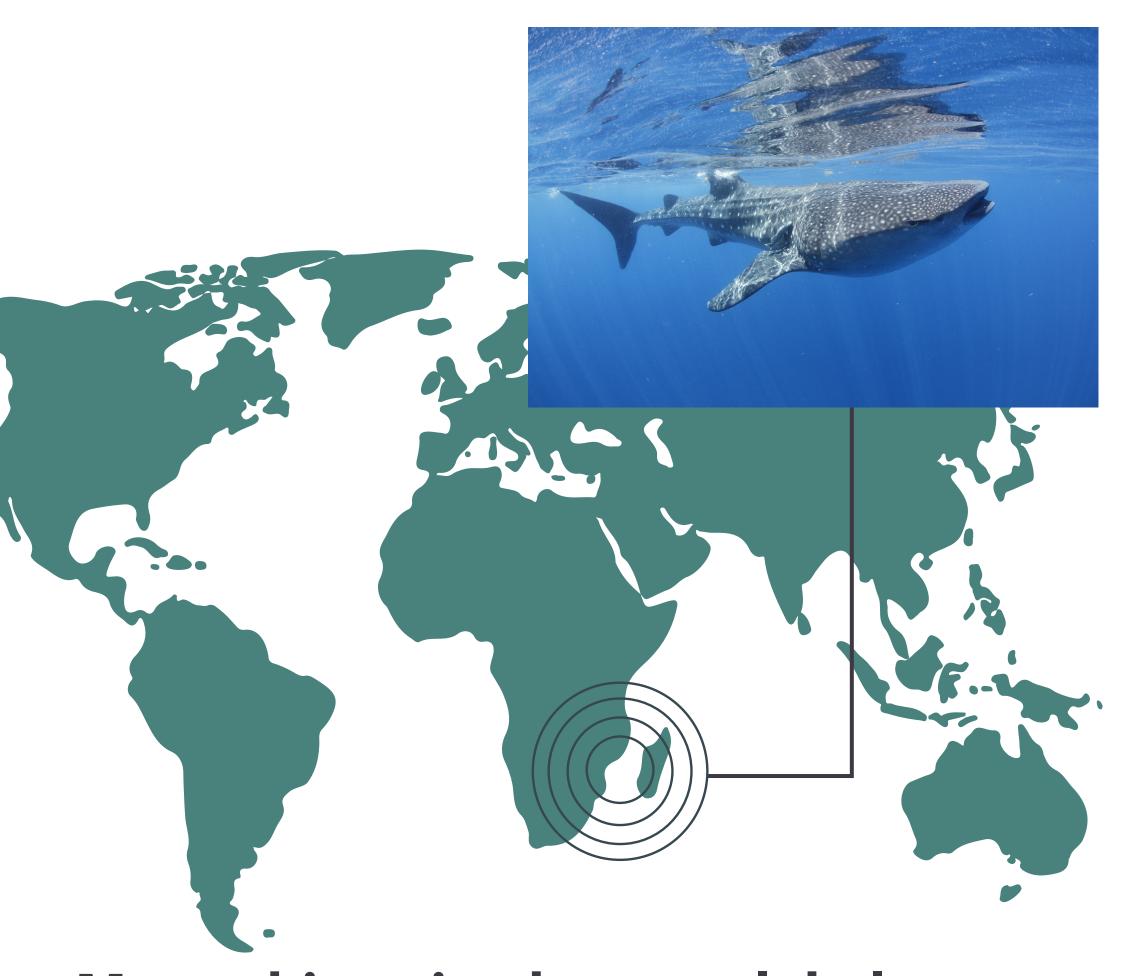


The rapid population decline of these top predators could have far-reaching consequences on the health of marine ecosystems.



Millions of people around the globe depend on the ecosystem services that these important marine predators provide.



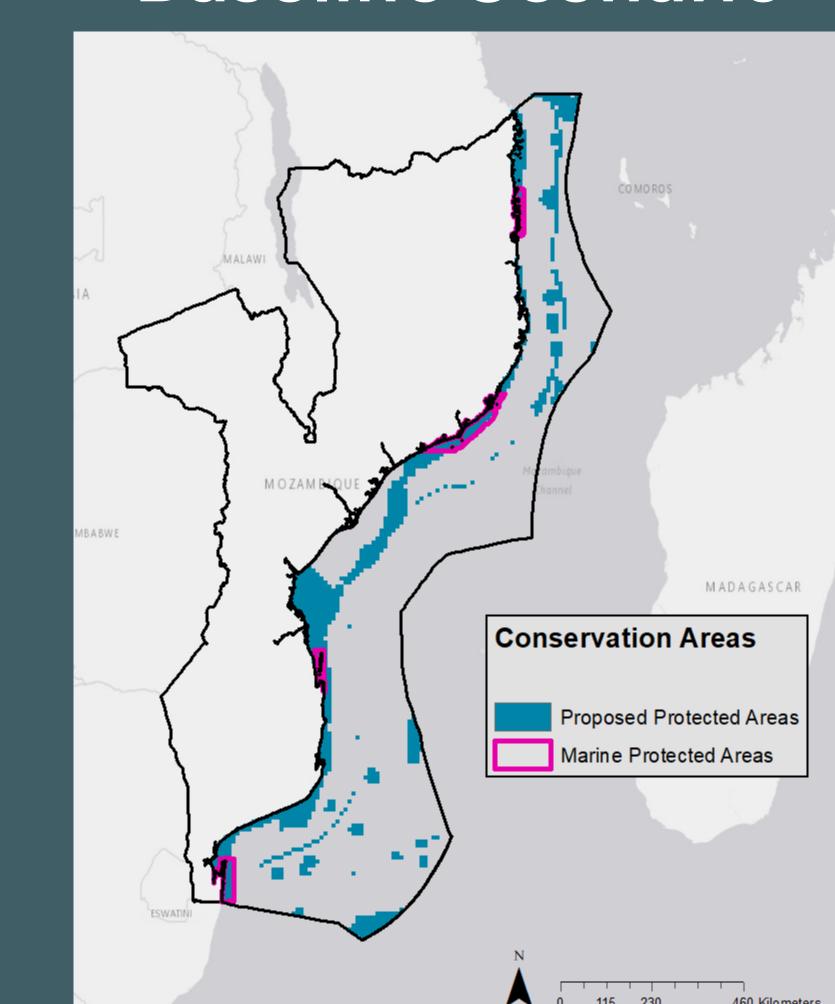


Mozambique is a known global hotspot for shark and ray species richness, endemism, and evolutionary distinctiveness, with approximately 145 different species. However, small-scale fisheries and industrial fleets impose extensive fishing pressure on sharks and rays throughout the region and these important species are in need of greater protections within Mozambique. The government is currently working with our client, Wildlife Conservation Society (WCS), to improve the management of sharks and rays throughout the region.

RESULTS

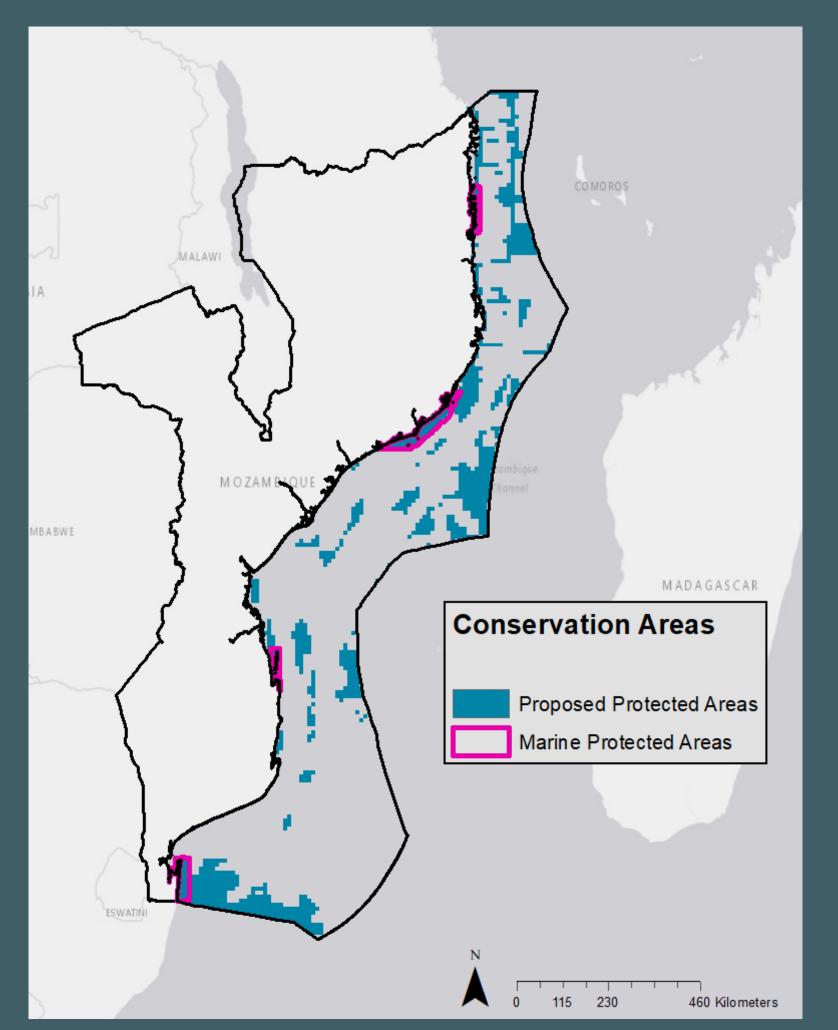
The proposed networks of MPAs identify critical areas to protect for the most at-risk sharks and rays in Mozambique, based on their distributions and critical habitats. These recommended network designs are based on a range of scenarios that sought to prioritize different stakeholders and conservation priorities.

Baseline Scenario



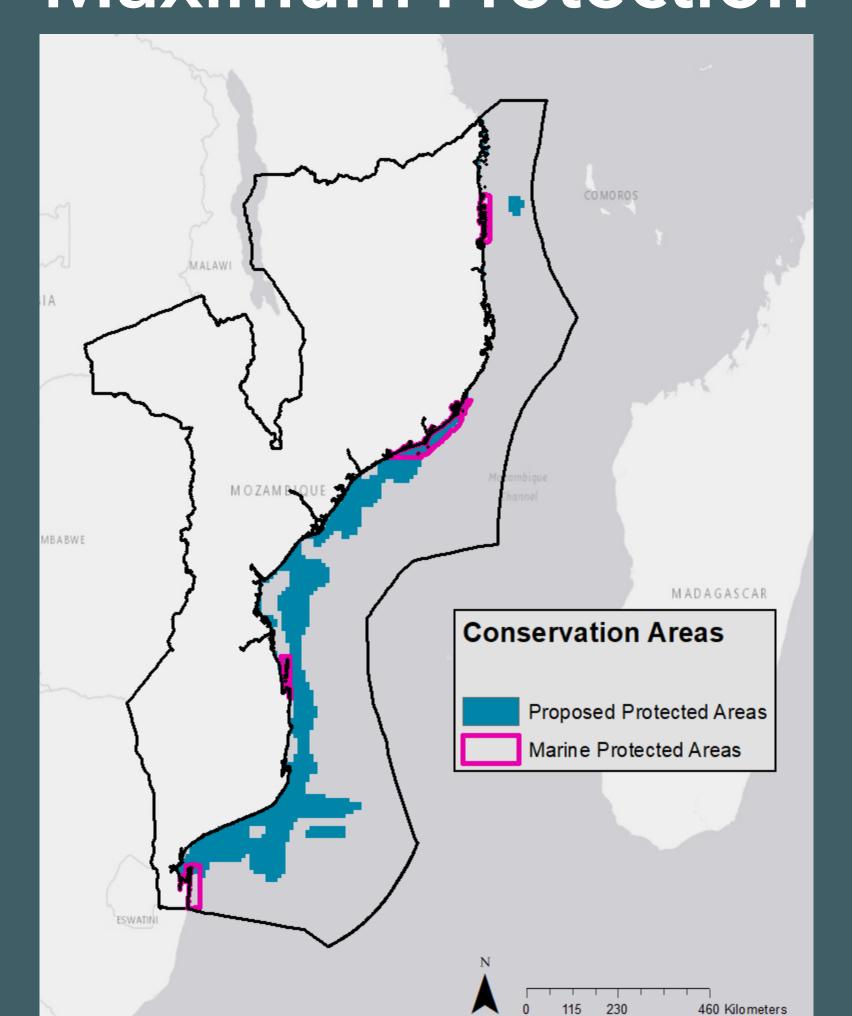
A network of MPAs that protects important areas for sharks and rays based on the probability of their distribution and location of suitable habitats without any consideration of stakeholders or fishing pressure.

Minimize Conflict



A network of MPAs that protects the important areas for sharks and rays that do not overlap with areas of high fishing pressure, thus keeping the best fishing grounds open and minimizing the impacts these MPAs would have on fishers.

Maximum Protection



A network of MPAs that protect the important areas and also priortize areas where fishing pressure is highest. Given that fishing is the greatest threat to sharks and rays, this scenario would provie the maximum conservation benefits.

IMPACTS

Well-designed MPAs, with carefully planned objectives, buy-in from local communities, and strong enforcement, can play a key role in conserving sharks and rays around the globe.

This project will help improve marine conservation in Mozambique by contributing to WCS's ongoing efforts to design an expanded MPA network and a National Plan of Action for sharks and rays.

As additional or finer resolution data becomes available it can easily be incorporated into the reproducible model for more precise and nuanced analysis.

Our model will contribute to a larger conservation effort to develop a multi-national MPA network in Tanzania, Kenya, Madagascar, and South Africa.

OBJECTIVES

Ensure the long-term persistence of sharks and rays in Mozambique through an expanded network of marine protected areas. To achieve this goal, we used a systematic spatial priortization to identify priority areas to protect for the most at risk shark and ray species.



APPROACH



Identify the most at-risk species, critical habitats, and aggregation sites

- 16 sharks and 11 rays that are the most in need of improved management
- 5 critical habitats including cora reefs, mangroves, seagrass, seamounts, and knolls
- 3 known aggregation sites



Determine threats and stakeholders

- Sharks and rays are caught intentionally or as bycatch in all fisheries in Mozambique
- Over 9.5 million pounds of sharks were reported harvested in Mozambique in 2018, with many more million pounds likely unreported



Create a spatial prioritization model to systematically rank priority areas

- Used species range maps and critical habitat data as conservation features and set representation targets for each
- Created 5 different fishing pressure layers to explore how reserve design changed depending on which fisheries were included and whether the goal was to avoid conflict with fishers or target areas with high fishing pressure



ACKNOWLEDGEMENTS

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Visit our project website at: https://www.future4fins.com/

