CASE STUDY

Misool Marine Reserve: successfully linking ecotourism with conservation

"There is greater biodiversity—that is to say, a larger number and greater diversity of fish, coral, and mollusks—on these reefs than anywhere on earth. A single football field-sized patch of Misool's reefs has nearly five times the number of coral species as the entire Caribbean Sea."

-Dr. Mark Erdmann, marine biologist, coral reef ecologist, and Vice President of Conservation International's Asia-Pacific marine programs

Fish swim among the coral, a snapshot of the reserve's rich biodiversity

Credit: Tobias Zimmer

Background Information

The Misool Marine Reserve protects a complex and extremely biodiverse coral reef system in South Raja Ampat, Indonesia. Raja Ampat is an epicentre of marine biodiversity, with 1,632 described species of fish. The reserve is home to a number of rare species such as the Raja Ampat Walking Shark (*Hemiscyllium freycineti*), Napoleon Wrasse (*Cheilinus undulates*), Giant clams (*Tridacna squamosal),* Oceanic manta rays (*Manta birostris),* endemic flasher wrasse (*Paracheilinus nursalim),* and the *Hippocampus bargibanti*, *Hippocampus pontohi*, and *Hippocampus denise* species of pygmy seahorses, including the very rare red variation of *Hippocampus denise* seen exclusively in Raja Ampat.

The reserve is jointly managed by Misool Foundation and Misool Resort. Misool Resort is a private island resort that uses ecotourism revenue to generate a large proportion of the funding for the reserve. Marit and Andrew Miners founded the project in 2005 by forging a powerful partnership with the local landowners and communities.

The Misool Marine Reserve presents an interesting conservation case as it is a marine protected area managed not by a government, but rather by a private tourism operator and its non-profit sister organisation. The partnership has resulted in the protection of a dynamic ocean ecosystem, with measurable results. On the site of a former shark finning camp, Misool Resort demonstrates the key role that the private sector can play in not only protecting, but regenerating natural areas that were previously impacted by anthropogenic degradation.

A view of Misool Resort*, Credit: Shawn Heinrichs*

At nearly twice the size of Singapore, the reserve covers 300,000 acres, including many uninhabited forested islands. The reserve is divided into 2 No-Take Zones (NTZs)—Daram and Batbitim—linked by a blue water corridor, which is a government mandated Marine Protected Area zoned exclusively for traditional use. In addition to coral reef ecosystems, the Misool Marine Reserve also protects coastal mangrove forests that act as essential nursery grounds for juvenile reef fish and provide ecosystem services in the form of shoreline stabilization, erosion control, and as an important carbon sink.

Misool Resort was built entirely out of reclaimed tropical hardwoods and opened its doors in 2008. Misool Foundation was later established in 2011 to formalize its conservation work. The foundation manages a portfolio of projects, including the Misool Marine Reserve, the Misool Manta Project, the Savu Sea Alliance, community education programmes, and the Misool Community Recycling Programme. The two organisations share a joint belief that sustainable tourism and community-based conservation are mutually beneficial. Together, they seek to demonstrate that sustainable tourism can provide a better life than logging, mining, or overfishing.

Approach & Delivery

In 2005, after discovering an active shark-finning camp on the small island of Batbitim, work began on establishing the Misool Marine Reserve. A unique lease agreement was forged with the local community, which enabled the creation of the NTZs. The resort was conceived of as a funding vehicle for the conservation work that urgently needed to be done.

All marine extraction is prohibited within the NTZs, including small scale artisanal fishing and the collection of turtle eggs. Not only does this prevent overfishing and marine plastic pollution associated with the fishing industry (ex. lines and netting), it prevents destructive and illegal fishing practices, such as reef bombing and cyanide fishing, and protects keystone species, such as sharks, from exploitation by illegal wildlife traders.

Misool Ranger, *Credit: Shawn Heinrichs*

Meanwhile, the Misool Ranger Patrol enforces the NTZs with patrols from their basecamp at the resort and three satellite ranger stations. Some of the rangers are former fishermen who now earn more by protecting the reserve and educating their communities about the important of marine conservation. They work alongside the marine police who have the power to make arrests and seize vessels. Misool Resort funds a proportion of the ranger patrol while the remainder is funded by grants from international foundations and private donors. In 2019, the rangers conducted 383 patrols with an average of 3.05 hours patrol time, per person, per day.

Going beyond, in October 2010, Misool Resort—in partnership with the NGO Shark Savers—successfully petitioned the Raja Ampat Regency to develop a decree, which was ratified by the regional parliament in 2012, banning all commercial and artisanal fishing of sharks and rays in the entirety of Raja Ampat's 17 million acres (70,000 sq km). The resulting Raja Ampat Shark and Manta Sanctuary affords an additional layer of protection to the elasmobranchs within the Misool Marine Reserve, but also extends protection for those that swim beyond the reserve's boundaries.

In addition to enforcement measures, both organisations provide options for alternative livelihoods. Together Misool Resort and Misool Foundation employ approximately 250 staff, 96% of whom are Indonesian. These salaries support an estimated 1,000 people from the local communities. In addition, Misool Foundation established two sustainable livelihood cooperatives in the Misool area and on Solor Island in East Indonesia. These cooperatives provide training in sustainable fishing techniques and assist with developing skills in business and financial management. Meanwhile, the reserve's management plan is periodically reviewed and updated to ensure optimum performance.

Through this approach, the Misool team has demonstrated a number of best practices in conservation including: establishing a marine protected area, expanding protection outside the boundaries of the protected area, involving the local community, positively impacting the local economy, working with the government, collaborating with other conservation groups, adapting to change, mitigating the potential negative consequences of ecotourism, implementing innovative waste management solutions, conducting research and monitoring, and educating others.

> "Joining a prestigious group of ten marine protected areas (MPAs), that comprise the Blue Parks Network, the Misool Marine Reserve meets the highest science-based standards for biodiversity protection and best practices for management and enforcement."
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> *-Misool Foundation Annual Report 2018*

Benefits and Outcomes

By all accounts, the Misool Marine Reserve has been very effective in rejuvenating its marine life. This in contrast to some protected areas around the globe where key species have continued to decline in the absence of enforcement or compounded by other factors. Prior to protection, the reserve area's marine ecosystem suffered from heavy exploitation, both by the local community and fishermen from farther afield. The rebound in biomass, in turn, makes the resort more attractive to high-end tourists, feeding a reinforcing cycle of exponential impact.

Misool Reserve's impressive biomass, *Credit: Shawn Heinrichs*

A comparison study by Mark Allen, an expert from Murdoch University, showed that in a 6 year period, fish biomass at several key sites increased by 250% on average, with recovery surpassing 600% in some key sites. Another study conducted by Vanessa Jaiteh in 2012 (the year that hunting was banned in the Raja Ampat Shark and Manta Sanctuary) determined that there were 25 times more sharks inside the reserve than directly outside it. Similarly, between 2010 and 2016, manta sightings increased 25 times.

In addition, the Savu Sea Alliance Program in Solor, East Indonesia, has realized a 84% reduction in targeted manta hunting between 2015 and 2019 at a site previously infamous for manta hunting. Misool's Rangers provided protection for turtle nests, guarding 20 nests and assisting with the release of 427 hatchlings in 2019. This is important as only an estimated 1 in 1,000 hatchlings will live to adulthood. However, the benefits of Misool Resort's activities are not limited to wildlife.

In one of the most remote regions on earth, the resort and foundation have created 250 jobs while also building a kindergarten in the village of Fafanlap on Misool Island with the support of Seacology, a prominent non-profit famous for its mangrove restoration activities in Sri Lanka. Additionally, they employ seven local teachers in the villages of Yellu and Djabatan. Meanwhile, 145 people have pledged to stop illegal fishing and join their alternative livelihood collectives.

As such, through its outcomes, the partnership between Misool Resort, Misool Foundation and the local communities has effectively integrated the three dimensions of sustainable development—the environmental, economic, and social—and seen growth across all of these dimensions.

Information

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