GLOBAL Ocean Refuge SYSTEM

EVALUATION REPORT

Misool Private Marine Reserve

Location: Raja Ampat, West Papua, Indonesia

Global Ocean Refuge Status: Nominated (2018), Evaluated (2018)

MPAtlas.org ID: 5388

Manager(s): Misool Foundation (*Yayasan Misool Baseftin*), Misool Resort

Figure 1: *The Raja Ampat Islands, an Indonesian archipelago off the northwest tip of Bird's Head Peninsula in West Papua. The Raja Ampat Islands encompass more than 40,000 km² of land and sea and over 1500 small islands, the four main ones are Misool, Salawati, Batanta and Waigeo. Raja Ampat Regency is a new regency which separated from Sorong Regency in 2004 (Source: Misool, 2017).*

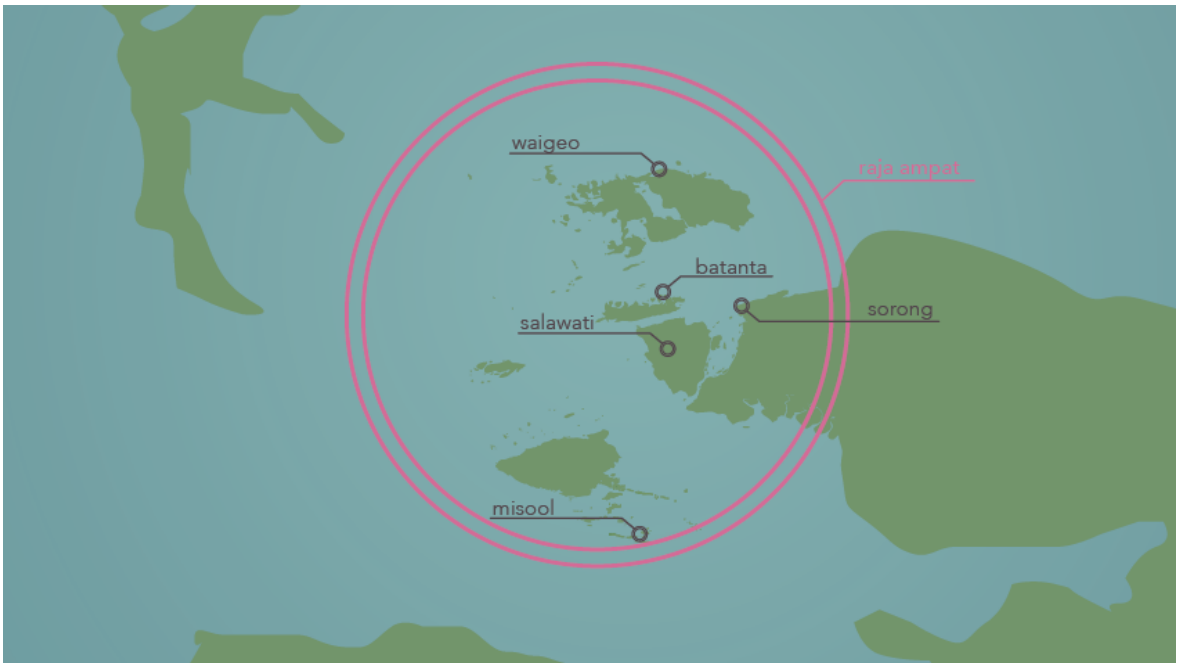

Figure 2: *The Raja Ampat Shark and Manta Sanctuary. In October 2010, the Misool team was part of a group of organizations that successfully petitioned the regional government to protect sharks and rays across the entire 40,000 km² of Raja Ampat (Source: Misool Foundation, 2018).*

Figure 3: *The Misool Marine Reserve includes three areas: the Misool No-Take Zone, the Daram No-Take Zones, and the Traditional Use Zone that is identified as a restricted gear corridor zone on the map (Source: Misool Foundation, 2018).*

1.1 Eligibility Criteria: Biodiversity Value (must satisfy at least one)

a. Includes area of high species richness or endemism within the context of the biogeographic region.

Misool harbors one of the richest coral reefs within the highly biodiverse Coral Triangle.[1] As declared by Dr. Mark Erdmann (Vice President of Conservation International's Asia-Pacific Marine Programs) in May 2017: "There is greater biodiversity – that is to say, a larger number and greater diversity of fish, coral, and mollusks – on Misool's reefs than anywhere on earth."[2] It is home to endemic marine species: the bamboo shark (*Hemiscyllium freycineti*), Nursalim's flasher wrasse (*Parachellinus nursalim*), Jamal's dottyback (*Manonichthys jamali*), Bird's Head jawfish (*Stalix sp.*) and Misool cardinalfish (*Apogonichthyoides sp.*).[3] In the last two years various new species were discovered in Raja Ampat, including five new species and one new genus of recent miliolid foraminifera and the *Pseudochromis stellatus*, a new species of dottyback.[4,5] The no-take zones of the Misool Private Marine Reserve – Daram and Misool – had some of the highest concentrations of reef fish biomass among 5 marine protected areas in Raja Ampat (West Papua, Indonesia) surveyed in 2013.[6] Sites in Daram, Misool and one other MPA in the region had approximately double the biomass of sites in the other MPAs surveyed.

b. Includes demonstrated historic or predicted ecological refugia.

c. Includes rare, unique, or representative ecosystems.

The Misool Private Marine Reserve contains coral reef ecosystems representative of the Coral Triangle region which is named for its staggering number of corals (approximately 600 different species of reef-building coral alone).[7] Additionally, Misool is home to a series of mangrove "islands" that provide sanctuary for many juvenile and adult animals as well as for a variety of corals.[8]

d. Includes area important for threatened species (including those identified by the IUCN Red List or national legislation), keystone species, or foundational species. Important areas include migration pathways and breeding, nursery, feeding, or assembly areas.

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[1] Lantang, R. and Syakir, M. (2009) *Monitoring report on uses of marine resources in South East Misool, Raja Ampat, Indonesia 2007 to 2008*, p. 8.
[2] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 1.
[3] Erdmann, M. and Allen, G. (2011) *Endemic Marine Species of the Bird's Head Seascape*, pp. 2-3.
[4] Gill, A., et al. (2017) *Pseudochromis stellatus*, a new species of dottyback from Indonesia (Teleostei: Pseudochromidae). *Zootaxa* 4338:333–340.
[5] Förderer, M. and Langer, M. (2016) Five new species and one new genus of recent miliolid foraminifera from Raja Ampat (West Papua, Indonesia). *PeerJ* 4:1-20.
[6] Allen, M. (2013) *A rapid reef fish biomass survey of sites in the Raja Ampat Marine Protected Area Network in January-February 2013*, p. 1.
[7] WWF (2018) Coral Triangle. *World Wildlife Fund*. Retrieved April 2018 from https://www.worldwildlife.org/places/coral-triangle.
[8] Spalink, H. and Bingham, K. (2013) Raja Ampat's Blue Water Mangroves. *Dive Photo Guide*. Retrieved April 2018 from http://www.divephotoguide.com/underwater-photography-travel/article/raja-ampat-blue-water-mangroves/.

The Bird's Head Seascape region in West Papua, which includes the Raja Ampat archipelago, has been classified as "the epicenter of marine biodiversity in the world" that harbors high concentrations of marine species including iconic species such as whale sharks (E/IUCN[9]).[10] Scientists believe that the Seascape's Islands function as an incubator or "species factory" which partially seeds the entire Coral Triangle thanks to the significant larvae-bearing oceanic currents that transverse the region.[11]

Additionally, a Manta Ray aggregation site where two species of mantas (*Manta birostris,* VU/IUCN[12], and *Manta alfredi,* VU/IUCN[13]) can be observed interacting, is within the Misool Private Marine Reserve. The beaches around Misool are popular nesting sites for both hawksbill (*Eretmochelys imbricate*, CE/IUCN[14]) and green sea turtles (*Chelonia mydas*, E/IUCN[15]).[16] In October 2010, the Misool team, along with a group of non-profit partners, successfully petitioned the regional government to protect sharks and rays across the entire 40,000 km^2 of Raja Ampat which adds another level of protection to the Misool Private Marine Reserve (see Figure 2).[17]

e. Qualifying Designations

Mission Blue Hope Spot (2017).[18]

1.2 Eligibility Criteria: Effective Management & Compliance (must satisfy all)

a. The MPA is designated by a legitimate and functional government representing the interests of civil society, and the MPA's implementation meets the IUCN standards for recognizing indigenous peoples' rights.

Additional Consideration: Community-based MPAs
If a community-based MPA is long-standing and appears to be durable and permanent, the GLORES Science Council may consider it eligible for a GLORES Award without government designation.

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[9] Pierce, S.J. and Norman, B. (2016) *Rhincodon typus*. *The IUCN Red List of Threatened Species*. Retrieved May 2018 from http://www.iucnredlist.org/details/19488/0.
[10] Conservation International (2017) Bird's Head Seascape. *Conservation International*. Retrieved May 2018 from https://www.conservation.org/where/Pages/Birds-Head-Seascape-coral-triangle-papua-indonesia.aspx.
[11] Erdmann, M. and Allen, G. (2011) *Endemic Marine Species of the Bird's Head Seascape*, p. 1.
[12] Marshall, A., et al. (2011) *Manta birostris*. *The IUCN Red List of Threatened Species*. Retrieved May 2018 from http://www.iucnredlist.org/details/198921/0.
[13] Marshall, A., et al. (2011) *Manta alfredi*. *The IUCN Red List of Threatened Species*. Retrieved May 2018 from http://www.iucnredlist.org/details/195459/0.
[14] Mortimer, J.A and Donnelly, M. (2008) *Eretmochelys imbricata*. *The IUCN Red List of Threatened Species*. Retrieved April 2018 from http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T8005A12881238.en.
[15] Seminoff, J.A. (2004) *Chelonia mydas*. *The IUCN Red List of Threatened Species.* Retrieved April 2018 from http://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en.
[16] Misool Foundation (2018) *GLORES Nomination*, p. 2.
[17] Misool Foundation (2017) Raja Ampat Shark and Manta Sanctuary. *Misool Foundation.* Retrieved April 2018 from https://www.misoolfoundation.org/raja-ampat-shark-and-manta-sanctuary/.
[18] Mission Blue (2017) What do you get when passion and private enterprise collide? A story of love, hope and the world's richest reefs. *Mission Blue.* Retrieved April 2018 from https://mission-blue.org/2017/09/what-do-you-get-when-passion-and-private-enterprise-collide-a-story-of-love-hope-and-the-worlds-richest-reefs/.

In 2005, Marit and Andrew Miners and the local community created a partnership to privately fund and manage the marine reserve, laying the ground work for a collaborative lease agreement with the recognition of the District Government – the Marine and Fisheries Department in Raja Ampat and Bupati of Raja Ampat (Regency level).[19,20] Miners, along with a group of friends and conservationists, began building a resort on the island of Batbitim which is located within the marine reserve. The aim of this enterprise was to provide a funding vehicle for conservation work to protect the marine reserve.

In 2008, Misool Resort opened to guests and the team began working with the Raja Ampat government to establish clear regulations and requirements for ecotourism development and operations within the region. The aim was to promote sustainable tourism while protecting Raja Ampat's ecosystems.[21] All visitors to Raja Ampat, which lies within the West Papua province of the Republic of Indonesia (a Republic with a presidential system), must pay an annual tourism visitor's fee as stipulated by Raja Ampat Law.[22] However, the Misool Private Marine Reserve does not receive any financial contributions from this scheme and the Ranger Patrol Unit is privately funded by contributions from Misool Resort, industry partners and private donors.[23]

b. The MPA is designated to enhance the biodiversity value of the site.

Misool's conservation efforts have averted ecological and economic collapse in Southern Raja Ampat, which was at risk of losing one of its most valuable assets – the reefs.[24] There is a positive trend in the numbers of "iconic" fishes, such as the Coral trout and the Napoleon Wrasse, that have been intensively fished in the past.[25] This means that "over the past decade, the Misool Private Marine Reserve effectively transformed the region from the ground zero for destructive fishing practices into a sanctuary for marine life, including manta rays, baby sharks, and other species."[23]

c. The MPA designation is permanent or is effective for at least 25 years.

In 2005, and extending to 2044, the first lease from the Raja Ampat Regency was signed which included the island where the Misool Resort was built as well as eight other islands along with the 430 km^2 of surrounding sea. In 2010, and extending to 2025, the second lease was signed adding an extra 380 km^2 to the private marine reserve which encompassed the nearby Daram Islands. A lease extension, for an additional 30 years, is expected for 2018.[26]

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[19] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 2.
[20] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 31 May 2018.
[21] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 7.
[22] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 8.
[23] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 5 July 2018.
[24] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 1.
[25] Allen, M. (2013) *A rapid reef fish biomass survey of sites in the Raja Ampat Marine Protected Area Network in January-February 2013*, p. 1.
[26] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 3.

d. A management plan, updated within the last 15 years, sets measurable conservation targets, identifies and prioritizes significant threats to biodiversity and addresses those threats with planned activities. The resources and capacity to implement the management plan are identified and secured.

The entire management plan is reviewed approximately every three years and updated regularly.[27] Tourism management is currently the main focus of Misool Private Marine Reserve since a recent carrying capacity study showed that tourism overload negatively affects the reef system. Tourism regulations are enforced by the Ranger Patrol with the assistance of the team at Misool Resort. Regulations include limiting boat operators to one per dive site (operators are scheduled at dive sites by request which is managed by the Misool Resort dive center team via radio), and to add regulations featured in the study.[28,29] In April 2017, Misool Reserve won the Tourism for Tomorrow Award in the Environment category which aims to globally recognize best practice in sustainable tourism within the industry.[30]

The Reserve's dramatic increase biomass has not gone unnoticed by poachers from around the Indonesian archipelago.[31] To address increasing pressure from poachers, a full-time salaried 15-person unit of local rangers maintains vigilance 24 hours a day, between 4 Ranger Stations and using 5 dedicated patrol boats. The team also employs radar surveillance and unmanned aerial vehicle patrols, and they work directly with the marine police and army who have jurisdiction to impound vessels that fish inside the Misool Private Marine Reserve.[32,33] Occasionally, the reserve experiences issues with repeat offenders from the communities who are violating the no-fishing ban. The Misool Rangers address this through ongoing educational outreach, and relationship-building. The rangers are best-placed to work with the community since their status offers a unique way to address these problems.[34]

In 2015, a regular ferry service connecting the main port city of Sorong with Misool was introduced which dramatically increased the vectors for transporting both legal and illegal wildlife. Within the 24-hour period directly preceding ferry departures from the Misool area, the patrol is on high alert in order to prevent any illegal poaching inside the No-Take Zone.[35]

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[27] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 8.
[28] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 5.
[29] Misool Foundation (2018) *GLORES Nomination*, p. 4.
[30] World Travel & Tourism Council (2017) Winners and Finalists 2017. *World Travel & Tourism Council.* Retrieved April 2018 from https://www.wttc.org/tourism-for-tomorrow-awards/winners-and-finalists-2018/winners-and-finalists-2017/.
[31] Misool Foundation. (2018) *GLORES Nomination*, p. 3
[32] Misool Foundation (2018) *GLORES Nomination*, p. 3.
[33] Misool (2017) Misool. *Misool's Quarterly Newsletter*. Retrieved April 2018 from https://mailchi.mp/misoolecoresort/misool-newsletter-win-a-free-trip-and-meet-team-misool.
[34] Misool Foundation (2018) *GLORES Nomination*, p. 4.
[35] Misool Foundation (2018) *GLORES Nomination*, p. 4.

Misool Foundation has implemented a number of collateral projects that contribute towards the stability and long-term sustainability of the reserve. For instance, a community-based recycling project was launched in 2011 in order to prevent ocean-bound plastic from the surrounding communities from entering the sea.[36]

The average annual budget for operating the Misool Ranger Patrol is US $250,000 per year which is spent on ranger salaries and benefits, training rangers, fuel and operational costs, lease payment and construction of Visitors Centre and Research Facilities.[37]

e. Regular monitoring of habitat and/or wildlife is conducted to measure progress with respect to conservation targets. A report of monitoring data is required at each GLORES audit after designation. Any negative biological trends identified through monitoring must be addressed in management plans. Progress toward identifying threats and addressing them must be documented.

In 2007 Mark Allen of Murdoch University in Australia conducted a fish biomass survey. This survey was repeated in 2013 and showed that fish biomass had increased by 250% on average, and as much as 600% on some sites. In April 2018, Dr. Mark Erdmann performed a fish count and he is now expected to return in May 2019. There are plans to monitor and evaluate Misool's biodiversity and habitat, including updating the fish biomass study, the shark count study and the 2016 Autonomous Reef Monitoring Structures (ARMS) study. The later method samples biodiversity by measuring reef life through the assessment of distribution, abundance, and community structure of invertebrates.[38]

Established in 2011, the Misool Manta Project collects population and behavioral data on oceanic mantas (*Manta birostris*) and reef mantas (*Manta alfredi*) and provides education to both Misool visitors and local community members. There is ongoing manta identification and satellite tagging efforts which improve scientific knowledge of both resident and migratory populations of mantas. The project's photographic database has identified nearly 800 individual animals. The Manta Project provides robust population data to the government, NGOs, communities and conservationists. These data were used to advise the government on protection policy which resulted in a nationwide ban on manta hunting in 2014.[39]

f. The MPA garners high regulation compliance rate. Evidence of adequate resources and capacity (including budget and staff) for enforcement is required.

The incidence of illegal fishing between 2010 and 2013 decreased by 86% and by 2017 the steadfast work of the rangers meant that the number of confiscated illegal boats that year was the same as in all the previous years combined.[40]

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[36] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 5.
[37] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 6.
[38] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 7.
[39] Misool Foundation (2017) Misool Manta Project. *Misool Foundation*. Retrieved May 2018 from https://www.misoolfoundation.org/misool-manta-project/.
[40] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 6.

A study comparing Misool Private Marine Reserve and the government's MPA (which limits commercial fishing) demonstrated that the number of sharks and reef-fishery targeted species found in the Misool's No-Take Zone was significantly higher than the number found in the government MPA.[41] Fish biomass within the Misool Private Marine Reserve increased an average of 250% between 2007 and 2013.[42] Oceanic manta sightings have also increased 25-fold between 2010 and 2016.[43] These positive biological outcomes are the result of high compliance rates within Misool Private Marine Reserve.

The average annual budget for operating the Misool Ranger Patrol is US $250,000 per year which is spent on ranger salaries and benefits, training rangers, fuel and operational costs, lease payment and construction of Visitors Centre and Research Facilities. There was a fivefold increase in the amount of money injected into the local economy solely via Rangers' salaries (plus added income from their role in Bank Sampah) between 2013 ($20,000) and 2016 ($102,000), plus a 60% increase from 2016 to 2017 ($162,000). The Misool Private Marine Reserve has helped create over 200 jobs in partnership with the private island resort and Misool Foundation.[44]

Interviews with shark fishers after the shark sanctuary was established revealed that the majority of fishers (88%) knew that sharks are protected in Raja Ampat, but most were unsure about the purpose of the sanctuary. Not many fishers thought that the agencies implementing fishing bans understood their livelihood needs. Shark fishers adapted to the loss of former fishing grounds by shifting effort to other locations or diversifying their livelihoods, including illegal petrol transport.[45]

The park's managers characterize enforcement of regulations in the park to be somewhat inconsistent, however they also state that this situation is slowly changing. Managers are working closely with Raja Ampat Marine Police to encourage them to enforce the Raja Ampat government regulations. They are also involving local stakeholders in dialogue with governing bodies to better communicate existing regulations.[46]

2.1 GLORES Award Status Criteria: Regulations Scores 1-3 = Platinum, 3-4 = Gold, 4-5 = Silver

Classification and scoring (1-8) of zones based on fishing gear, bottom exploitation, aquaculture, and boating.

[41] Jaiteh, V., et al. (2016) Higher Abundance of Marine Predators and Changes in Fishers' behavior following spatial protection within the world's biggest shark fishery. *Frontiers in Marine Science* 3:1-15.
[42] Allen, M. (2013) *A rapid reef fish biomass survey of sites in the Raja Ampat Marine Protected Area Network in January-February 2013*, p. 12.
[43] National Geographic (2017) Misool bluewater shark baitball: A sign of conservation success in Raja Ampat, Indonesia. *National Geographic.* Retrieved April 2018 from https://blog.nationalgeographic.org/2017/04/25/misool-bluewater-shark-baitball-a-sign-of-conservation-success-in-raja-ampat-indonesia/.
[44] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 6.
[45] Jaiteh, V., et al. (2016) Higher Abundance of Marine Predators and Changes in Fishers' behavior following spatial protection within the world's biggest shark fishery. *Frontiers in Marine Science* 3:1-15.
[46] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 31 May 2018.

Additional consideration: Buffer zones – zones of reduced human impact surrounding core no-take protected areas – enhance the conservation value of core no-take areas. An MPA that includes a large (>100 km2) no-take zone (Zone regulation score 1-3) surrounded by a buffer zone with a score 3-5 may be considered for a GLORES Platinum Award.

In both No-Take Zones of the Misool Private Marine Reserve – Misool and Daram – nearly all types of extraction, including all forms of fishing, shark finning, gill-netting, long-lining, and turtle egg collection, are prohibited. However, during the *Buka Sasi* event, a practice indigenous to Papua and neighboring Moluku which occurs every two years for two weeks' time, local people are allowed to free dive for two types of marine gastropod – *Trochus* snail and Giant Green Turban snail (*Turbo marmoratus*) – while all other No-Take Zone regulations remain in effect. To alleviate the pressure from collection and to create alternative industries for communities in the vicinity, a mariculture cooperative is being developed in the village of Djabatan.[47]

Sasi is a customary rights system is a set of traditional practices and laws that control the exploitation of natural resources throughout much of eastern Indonesia. The rules address which marine species can be harvested, the type of fishing gear, and the time and location of harvests. Studies of *sasi* in Indonesia have showed that villages with *sasi* are more productive at managing marine resources than those with no *sasi*, suggesting that the occurrence of *sasi* is positively correlated with the potential for development of modern marine management strategies. *Sasi* is also an important community-building event that, aside from the economic value, reconfirms kinship associations and longstanding traditions. Therefore, because of the evident benefits to society, embodiment of principles underlying modern fisheries management, and its potential to conserve marine species and habitats, *sasi* may provide an important mechanism to support conservation.[48]

The Traditional Use Zone is a deep-water zone (>80m), far from any villages and with no islands, reefs or mangroves. Inside this zone, the following types of fishing (some of which are not appropriate for a deep water environment) are allowed: fishing with hook and line; spearfishing and hand capture. Although there are no moorings in the area, aquaculture using floating net cages is also permitted.[49] Anchoring is only permitted in 60m+ water and 200m from any island.[50]

Note: there are concerns regarding whether *sasi* is sustainable. Critics suggest that Western and indigenous concepts of nature are too different to be woven together into a coherent conservation strategy and question whether *sasi* is worth carrying forward. The sustainability of *sasi* in the region is limited by lack of enforcement capacity, poaching by outsiders who do not follow local traditional regulations, and decline of traditional practices and authorities.

[47] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 4.
[48] McLeod, E., et al. (2009) Sasi and Marine Conservation in Raja Ampat, Indonesia. *Coastal Management* 37:656-676.
[49] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 31 May 2018.
[50] Misool Foundation (2018) *Marine Reserve Code of Conduct.*

If *sasi* is not sustainable, then the value of building it into developing conservation strategies is questionable.[51] On the other hand, the inclusion of *sasi* in the creation of the Misool MPA has facilitated its implementation process and it is a demonstration of Misool's effort to respect local traditions and involve the local communities in the management of this protected area.

The overall regulations score for Misool Private Marine Reserve is 2.67.

No-Take Zones (Misool and Daram): 810 km^2
Zone Score: 2
Number of fishing gear types allowed: 0
Fishing gear impact score: 0
Bottom exploitation & aquaculture index: 0
Anchoring & boating index: 1

Traditional Use Zone (linking corridor): 410 km^2
Zone Score: 4
Number of fishing gear types allowed: 3
Fishing gear impact score: 5
Bottom exploitation & aquaculture index: 1
Anchoring & boating index: -

2.2 GLORES Award Status Criteria: Site Design and Management
3 Attributes = Platinum, 2 Attributes = Gold, 1 Attribute = Silver

a. Size: MPA ≥ 100 km^2 or explicitly designed as part of a network of MPAs to support population connectivity

The Misool Private Marine Reserve includes two No-Take Zones (NTZs) – the Misool NTZ (430km^2) and the Daram Islands NTZ (380 km^2). These two NTZs combined, plus the gear-restricted corridor, form the Misool Private Marine Reserve which protects an area of a 1220 km^2.[52]

b. Isolation: Ecological or other protected area buffers surround protected ecosystem(s)

The coral reefs and mangroves protected in Misool Private Marine Reserve are largely isolated by deep water areas. In 2007, the Raja Ampat government created an MPA that not only surrounds the Misool Private Marine Reserve but also overlaps in some parts.[53]

c. Age: Protections in the site, comparable to the current protections, are ≥ 10 years old

The Misool No-Take Zone (430 km^2) is 13 years old (implemented in 2005). The Daram No-Take Zone (380 km^2) is 8 years old (implemented in 2010). The restricted gear

[51] McLeod, E., et al. (2009) Sasi and Marine Conservation in Raja Ampat, Indonesia. *Coastal Management* 37:656-676.
[52] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, p. 3.
[53] Misool Foundation (2018) *Misool Private Marine Reserve Management Plan*, pp. 2, 8.

corridor (410 km^2) was designated as a conservation area in 2007, and classified as a Traditional Use Zone (called *SubZona Pemanfaatan Tradisional Masyarakat* in Indonesian) in 2012. The Nature Conservancy (TNC) created a zonation plan together with the local community, which was ratified in 2012. TNC worked with the Misool managers to design recommendations for the zoning of the Traditional Use Zone.[54]

d. Community engagement: There is a formal process to engage the local community in the implementation or ongoing management of the MPA.

The marine reserve is privately operated and funding is received through various channels, including donations, contributions from Misool Resort, grant allocation from international foundations such as MacArthur Foundation and donations from live aboard partners. The reserve is managed by Misool Foundation in collaboration with the local community. Misool's agreement with the local community includes an adjustment in the no-take zone rules for the *sasi* – a tradition widely practiced around coastal Papua and Moluku. In addition, as mentioned above, patrolling of the reserve is conducted by 15 local rangers.

Formal and informal meetings with tribal leaders and the local government departments are held in order to maintain their engagement and collaborative work with the Misool Private Marine Reserve. The Ranger Patrol team acts as the Misool Foundation ambassadors and representatives at the majority of these meetings.[55]

The relationship with the local community is constantly evolving to reflect the needs of the villagers. The Misool Foundation has supported various social initiatives according to the priorities voiced during these meetings, including building a kindergarten, creating Fishing Aggregation Devices outside the NTZs, and sponsoring three dedicated English teachers.[56]

3.1 GLORES Network Priorities: Ecosystem Representation

Misool Private Marine Reserve protects tropical coral reef and mangrove ecosystems representative of those found in the Coral Triangle.

Coral reefs are protected by one other Global Ocean Refuge in the Coral Triangle, Tubbataha Reefs Natural Park (Platinum award, 2017). Mangroves are not yet represented by any other Global Ocean Refuge in the region.

3.2 GLORES Network Priorities: Ecological Spatial Connectivity

Because the Global Ocean Refuge System is only in its second year, there is only one other Global Ocean Refuge in the region with which to consider the ecological spatial

[54] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 31 May 2018.
[55] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 31 May 2018.
[56] Joanna Marlow, Marketing and Communications Officer, Misool Private Marine Reserve, personal communication, 31 May 2018.

connectivity contribution of Misool Private Marine Reserve. Tubbataha Reefs Natural Park protects coral reefs in the Coral Triangle, but it is roughly 1600 km (over 3 seas) away and does not present ecological connectivity opportunities with the coral reefs protected by Misool Private Marine Reserve.