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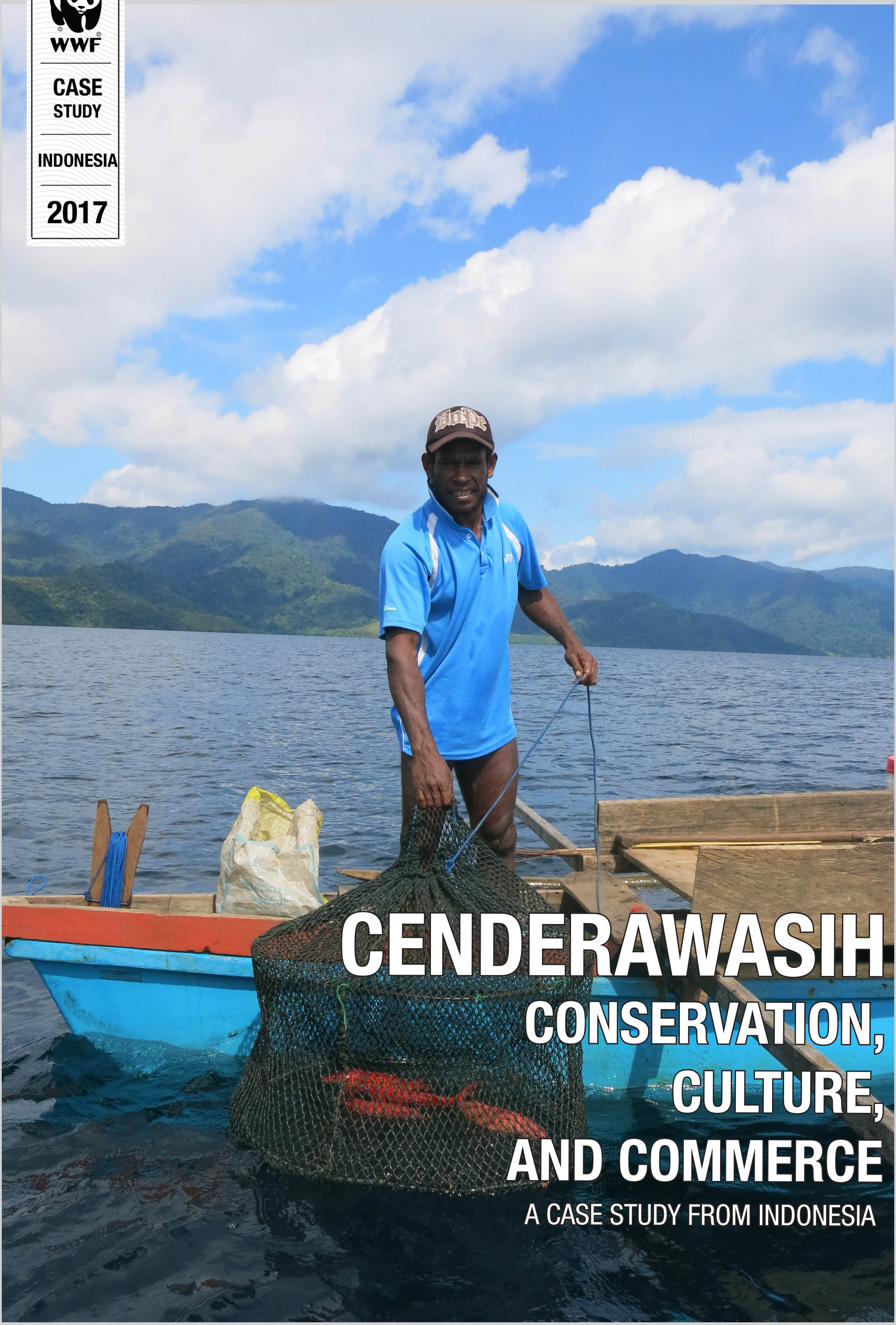

CENDERAWASIH CONSERVATION, CULTURE, AND COMMERCE

A CASE STUDY FROM INDONESIA

Front Cover:
Trap fishing in Cenderawasih Bay, Papua, Indonesia

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Our Vision:

Conservation of Indonesia biodiversity for the well- being of present and future generations.

"*Ekosistem dan keanekaragaman hayati Indonesia terjaga dan dikelola secara berkelanjutan dan merata, untuk kesejahteraan generasi sekarang dan yang akan datang.*"

Our Mission:

is to conserve biodiversity and reducing human impact through:

- Promoting strong conservation ethics, awareness and actions in Indonesia society.
- Facilitating multi-stakeholders efforts to preserve biodiversity & ecological processes on ecoregional scale.
- Advocating for policies, law and law enforcement that support conservation.
- Promoting conservation for the well-being of people, through sustainable use of natural resources.

CONTENT

A coastal girl of Yapen District in Cenderawasih Bay, Papua, Indonesia

CENDERAWASIH

Conservation, Culture, and Commerce

A case study from Indonesia

This case study is part of a series exploring the lessons learned and experiences of WWF-supported initiatives across the Coral Triangle region. The series aims to communicate the key issues, challenges and solutions-based approaches undertaken in field projects to fellow practitioners, program and policy staff, personnel of managed and/or protected areas, partners, and donors.

The goal of these case studies is to help create a stronger understanding of the issues surrounding sustainable fisheries and marine resource management, and to promote further learning and sharing of experiences.

For further information about WWF-Indonesia's work in Cenderawasih, please contact:
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The park is host to exceptional coral biodiversity

THE PARADISE BAY

The stunning Cenderawasih Bay National Park is internationally renowned for its spectacular diving and beautiful scenery. Named after the 'Bird of Paradise' (Cenderawasih), the park is located on the eastern side of the famous Bird's Head Peninsula in the Coral Triangle (the global center of marine biodiversity). The park covers an area of 14,535 square kilometers – larger than the entire area of the Bahamas.

Recognized as a protected area since 1990, Cenderawasih officially became Indonesia's largest marine national park in 2002[1] and is host to a vast diversity of marine life, including the vulnerable dugong[2], sperm whale[3], and sun fish[4]. The area also provides nesting habitat for green turtles[5] and critically endangered hawksbill turtles, as well as feeding areas for leatherback and olive ridley turtles. Nearly 1,000 fish species and 500 coral species have been identified in the park (14 of which were previously unknown to science), with some reef areas boasting up to 66% live hard coral coverage.

1 Originally gazetted as a Marine Nature Reserve, under SK Menteri Kehutanan no. 58/Kpts-II/1990, then becoming a National Park in 1993 under Surat Pernyataan No 448/Kpts-II/1993, and finally becoming Teluk Cenderawasih National Park in 2002, under Surat Keputusan Menteri Kehutanan No 8009/Kpts-II/2002.

2 Species: *Dugong dugon*. Status: Vulnerable (IUCN red list).

3 Species: *Physeter catodon*. Status: Vulnerable (IUCN red list).

4 Species: *Mola mola*. Status: Vulnerable (IUCN red list).

5 Green turtle (*Chelonia mydas*), status: Endangered. Hawksbill turtle (*Eretmochelys imbricate*), status: Critically Endangered. The Leatherback turtle (*Dermochelys coriacea*), status: Vulnerable. Olive Ridley turtle (*Lepidochelys olivacea*), status: Vulnerable (IUCN red list).

Situated between the Indonesian provinces of Papua and West Papua – covering the regions of Manokwari, Teluk Wondama, Nabire, Waropen and Yapen – the uniquely isolated location of Cenderawasih Bay has enabled an exceptionally high level of marine biodiversity.

However, the area is perhaps most famous for the majestic and regularly sighted whale sharks[6] that frequent the bay and are a leading attraction for up to 5,000 domestic and international visitors to the park each year.

The Cenderawasih area is also home to 50 villages, 18 of which are within the National Park, with a combined total of approximately 6,000 people. These communities rely heavily on the marine environment for their sustenance. With the bay teeming with life, including important food fish such as grouper and snapper, the sea of Cenderawasih provides fertile fishing grounds for these communities, who have long depended upon this resource for their livelihoods and survival. In addition to this, fisheries from the region are estimated to contribute ± 123 billion IDR[7] to the Indonesian economy annually.

6 Species: *Rhincodon typus*. Status: Endangered (IUCN red list)
7 Bawole et al., 2016

Paradise in Peril

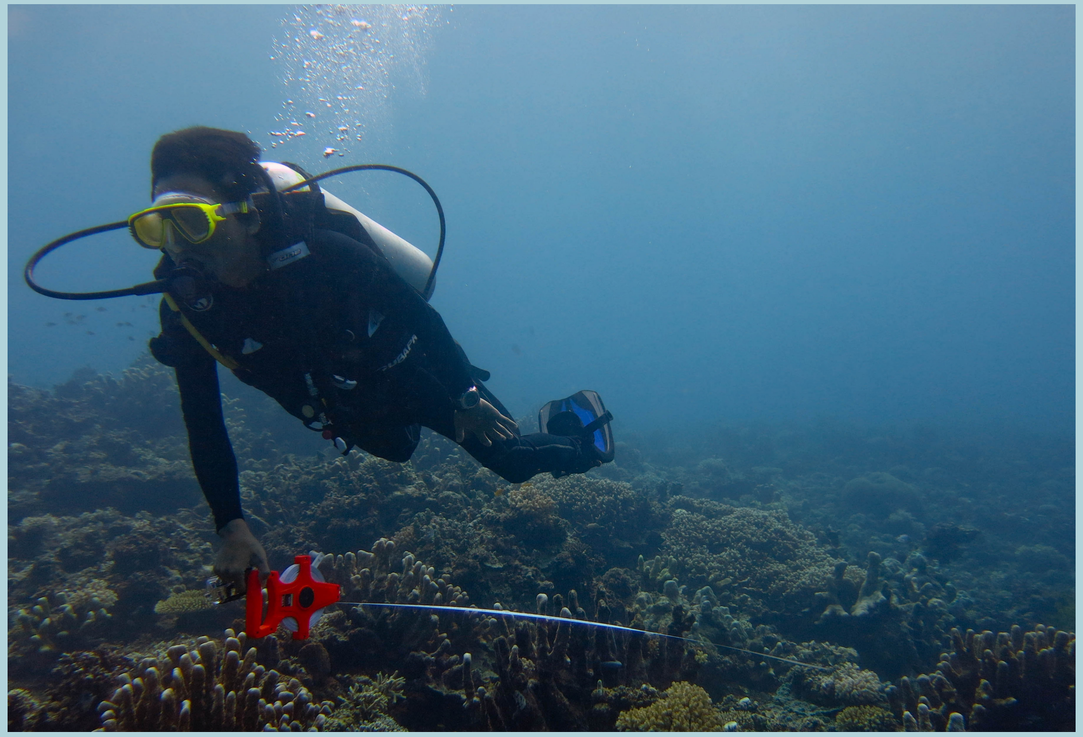
However, this marine haven has been subject to an increasing array of threats since its establishment more than 20 years ago. Fishers from communities within the park and from nearby Nabire and South Manokwari (Ransiki) have used destructive fishing techniques in the bay, including dynamiting, compressor fishing, and the use of cyanide.

Such techniques have a devastating impact on the reef environment. Coral colonies can be blasted to rubble in mere moments, or poisoned and weakened more slowly over time.

Whilst the park has long had designated marine zones within which there are various limitations on activities permitted, the sheer vastness of the area has made monitoring and surveillance of these zones extraordinarily challenging. This has led to the area being largely open access in real terms. As a result, the region has suffered extensive overfishing, with catches being hauled from the ocean faster than they can be replenished.

Such activities threaten the ecological viability of the area, which in turn threatens not only the local communities' livelihoods, but also their foundational ability for subsistence living.

Even with these challenges, the area has remained a beacon for marine tourism. However, visitor arrivals have in themselves added a further pressure on the system. With a lack of tourism infrastructure, unregulated tourism development has been expanding rapidly in recent years, with limited benefits being conferred to local communities.



A BOTTOM-UP SOLUTION

Faced with these challenges to sustainable fisheries management, food security, and biodiversity conservation, an approach was needed that effectively engaged, involved, and enabled local communities to become more proactive stewards of the marine environment. To this end, WWF-Indonesia has worked alongside the National Park Authority (TNTC[1]) to undertake extensive awareness raising, educational activities, and training in order to generate greater understanding of the importance of sustainable management and to create motivation for custodianship. WWF-Indonesia has also undertaken extensive exploration into traditional cultural management practices amongst the communities living within the National Park, with the aim of developing collaborative management systems to ensure sustainable coastal and marine resource use of the bay.

1 Taman Nasional Teluk Cenderawasih (Cenderawasih Bay National Park)

"

"The arrival of Gurano Bintang opens students' and communities' understanding about our natural resources. Through this, our people can help safeguard our common secure future."

ANDRIS ROJOKO
Government officer, Yeretuar District

Left: The park is host to exceptional coral biodiversity

Abovet & Right: WWF-Indonesia team on the Gurano Bintang educational boat

Above: Gurano Bintang (whale shark) WWF-Indonesia's education boat

Right: Students learning on the Gurano Bintang education boat

Awareness, Education, and Motivation

A wide range of educational and awareness-raising activities have been conducted with the communities in Cenderawasih Bay to date. These activities aimed to encourage and facilitate fishers and wider community members' engagement in monitoring their marine environment, and to help them understand both the impacts that destructive fishing has on their resource base and the implications such impact has on their future livelihoods.

WWF-Indonesia has also worked to generate awareness about the challenge of open access resource use – where unregulated and unmanaged fishing leads to over-exploitation, which in turn leads to reduced catches and can ultimately lead to fisheries collapsing.

To support educational activities, WWF launched the 'Gurano Bintang' education ship in 2012. This vessel is named after the local term for whale shark, and since its launch it has sailed the bay, stopping at each community in turn, to provide fun, interactive. and inspiring educational activities for both adults and children in the villages. The ship is equipped with a library, multimedia tools and an array of educational resources, and the hull is decorated with marine pictures that are the result of children's drawing competitions.

The crew of the Gurano Bintang were originally a mix of environmental educationalists and sailors. However, as they traversed the seas between the communities in the bay, the crew sometimes observed destructive and illegal fishing taking place. Therefore, they added a surveillance crew to the team to effectively engage and counter illegal fishers they met along the way and provide monitoring services to complement the park's patrols.

In addition to this, the crew were quick to see the lack of health care in many of these extremely remote communities, and learned of the challenges for health workers and medical providers to reach the communities. Therefore, the crew also engaged medical practitioners and doctors on the voyages to support health checks, administer medical support, and to re-stock village pharmacies with critical medicines and materials.

"[Gurano Bintang] shares important knowledge not learned in school, such as knowledge on marine life, and how to ensure the sea continues providing food for people in the villages."

LENORA RUMAWI
Elementary School Principal,
Ora Et Labora YPK, Yaur village

Establishing Traditional Marine Management Areas

Building on the emerging awareness and motivation for environmental stewardship being generated in the villages, WWF-Indonesia also began working with the communities to identify and establish a series of traditional marine management areas. The aim was to establish these areas based on traditional customary marine ownership and historical tribal access rights. These areas could then be managed to limit access and fisheries extraction levels, both vital components of sustainable fishery management.

Such an approach provides traditional fishers from local communities privileged access to their key fishing areas and limits access for outsider fishing fleets that could otherwise create devastating levels of over-exploitation and cause marine resources to be lost to the very communities that depend upon them. Known as a rights-based management approach (RBM), the establishment of traditional marine management areas enables local resource users to maximally benefit from an area, at the same time as conferring a degree of management responsibilities over that area to ensure it is utilized sustainably.

To this end, a series of meetings and workshops were held with local communities, fishers, and district government agencies; and a local university (UNIPA) was engaged to undertake a detailed sociocultural study. This study helped determine the legal and historical rights to natural resources within the park's boundaries and identified traditional management mechanisms existing within communities in the park. This work was complemented by extensive participatory mapping exercises that helped identify key fishing locations, existing patterns of tribal rights in the water, and the spatial distribution of key natural and culturally important resources.

> **"Sawora does not prohibit all fisheries activities for long-term, but only for a while, until the place has recovered."**
>
> **REGENT OF SAWORA**

Through this consultative research it was found that a range of village council-led traditional management mechanisms already existed within communities that could be applied to marine management. Systems existed that could be utilized to enable regulating spatial access to fishing areas, and village-level governance could also determine the range of fishable species permitted. Traditional systems were in place that could be utilized to manage the issuing of quotas for harvesting, and the limiting of gear types permissible in an area.

Open air fish drying using sun and wind

Traditional leaders could even influence the setting of prices for market sales of different species and the establishing of penalties that could be handed to violators of the agreed actions.

Armed with this knowledge, WWF-Indonesia and Teluk Cenderawasih National Park authority worked to utilize and develop these informal traditional management approaches, whilst at the same time vertically aligning them for formal government recognition.

The traditional marine management areas identified for each community include zones for fishing as well as areas for seasonal (temporary) closures and, in some sites, permanent no-take zones to protect particularly important spawning areas for some fish species.

Through considerable research, planning, design, and advocacy, these areas first became recognized at the village level through customary decrees. Following this, wider partners were engaged alongside the village leaders to draft more formal fishing rights regulations at the village level[1]. This resulted in draft regulations known as RENPERKAMS. These were then reviewed by tribal leaders, religious figures, educational heads, community leaders, and other village officials for endorsement. Following this, the RANPERKAMS were reviewed by the Sub-District and District Heads (Bupati) and officially approved under official Head of Village (Kepala Desa) authority[1]. This resulted in legally recognized agreements (PERKAMS) for four villages: Yomakan and Isenebuai (in the sub-district of Rumperpon) and Yomber and Syeiwar (in the sub-district of Roswar).

Each of these regulations identifies and outlines:

- the communities' tribal waters and fishing ground(s)
- where and when fishers can and cannot fish
- the fishing gear that is allowed in the area and the gear that is strictly prohibited
- the target species for fishing and species that are prohibited from being caught
- a fixed cross-community selling price for the fish, to promote equitable trading and benefit streaming
- sanctions and penalties associated with violating any components of the regulation.

> **"Since WWF programs came into our village, we could see a gradual change, with people stopping to use dynamite for fishing. Personally, I have stopped using dynamite, because I realize that I must protect the sea for our future generations".**
>
> **FISHERMEN,**
> **Yomaken Village**

Local fisherman in Cenderawasih Bay

In addition to this, across all of these communities, destructive fishing practices have been completely prohibited, including: dynamite fishing, cyanide fishing, compressor fishing, and the use of liftnets, handspikes, and trawls.

Outsider fishers (from areas outside the community) are not permitted to fish in the designated traditional marine management areas, but do still have access to the wider areas that fall under customary stewardship. However, fishing in these community waters now requires first gaining personal permission from the relevant village leader and paying a fee of 500,000 IDR (~$35 USD[2]) to support the costs of community patrols.

The achievements in these four communities have been followed closely by other communities in the Cenderawasih Bay, and to date, eight more villages have initiated the processes to formalize traditional fishing areas and associated regulations for their communities.

1 Under the authority of law (UU) no. 6 of 2014, article 26, paragraph 2d, 3b, article 69, paragraph 3.
2 March 2017 rate equivalent.

Handline fishing in Cenderawasih Bay

Catch Agreements

Beyond the development of traditional marine management areas, WWF-Indonesia has also worked with communities in Cenderawasih National Park to introduce the concept of 'total allowable catch' (TAC) as a means to further reduce overfishing.

TAC is a catch limit set for a particular fishery, generally for a fixed period of time (a year or a season) and usually expressed in tonnes of live fish captured (or in terms of numbers of fish, depending on the species). Calculating TAC involves exploring a wide range of ecological and fish catch data as well as analysis of levels of fishing effort, gear types, and seasonal fluctuations. It is a fisheries management approach that has been increasingly promoted by the government of Indonesia in recent years[1].

Whilst TAC is an entirely new concept for most of the fishing communities in Cenderawasih Bay, discussions around the topic early on in the initiative met with considerable interest; and it was felt to be a mechanism worthy of further exploration, particularly with regards to mackerel (*Rastrelliger)* and scad (*Decapterus*), fisheries that are heavily exploited in the bay, as well as grouper (*Serranidae*) and snapper (*Lutjanidae*), fisheries that are closer to shore.

To that end, research and data collection commenced in 2016, focusing on the small pelagic fisheries (mackerel and scads) in the pilot areas of Sombokoro village and Yop island. The work was supported by seven university students and three professors from the University of Papua (UNIPA) and the data collected included: fishery production data, catch and effort data, fishing gear, and boat numbers in water.

This led to a series of recommendations for TAC in these areas that are now in the process of being reviewed with pilot communities, park authority, tribal leaders, and wider associated stakeholders. Catch agreements are anticipated to be developed at the ground level in addition to existing village regulations. These agreements will then be processed vertically within government systems to achieve formalization and support the wider targets of the government of Indonesia towards achieving sustainable fisheries[2].

1 Supported through UU 31/ 2004 & UU 45/ 2009, Article 7, paragraph (1) – C.
2 The government of Indonesia is promoting an Ecosystem-based Approach to Fisheries Management (EAFM), incorporating catch agreements in all eleven of the nations' Fishery Management Areas (Wilayah Pengelolaan Perikanan – WPP).

FOR THE FUTURE OF FISHERS & THEIR FAMILIES: YOMAKAN VILLAGE

Yomaken village is located on Rumberpon Island within Cenderawasih Bay. Blessed by beautiful beaches and surrounded by crystal clear waters, the island is flanked by stunning coral reef beds.

From the start of the initiative, the fishers in Yomaken village expressed considerable interest and engagement in the drive for sustainability, and the area was identified as a key pilot site for trial efforts. The fishers from Yomakan predominantly catch groupers and associated reef fish in their home reef areas.

The work undertaken to date with this community has been multi-faceted. In addition to establishing village agreements for two traditional management areas, an agreement was also established with a private sector fish trading company (UD Pulau Mas) for Yomakan fishers to provide a consistent supply of sustainably caught fish utilizing hook and line gears that meet a minimum hook size standard (to avoid the capture of juvenile species).

This village has also undertaken coral transplantation efforts to restore and rehabilitate areas of reef that had been previously damaged by dynamite fishing and became the first village in Cenderawasih Bay to establish a dedicated fishermen's group, known as 'Tapapai'.

Fishermen group meeting in Yomakan village

A local fisherman showing the target species of Yomakan village

Tapapai Group

This group of fishermen have been lead advocates for the traditional management areas from the start of the initiative, and through their work, Yomakan became the first village to have a clear work plan for managing their areas. In addition to this, the group are now already working to promote incorporating TAC plans into their fishing agreements. This will include TAC arrangements for the grouper fisheries, which have been found to be in good condition through the research conducted and remain under-exploited.

To support this group, WWF-Indonesia has provided considerable training and mentoring over the years. This has included training in scuba diving, ecological survey techniques, reef fish data collection, fishery productivity and catch/ effort data collection, coral transplantation training, and resource use monitoring (RUM).

These capacity-building efforts have been supported by the presence of a WWF-Indonesia mentor being based in the community 50% of the time (living with one of the fishermen's families). Through this semi-permanent placement, intensive engagement enabled Tapapai group members to benefit from real-time support for issues as they arose; learning essential responsive management skills, problem-solving techniques, and communication competencies.
Through this support, Tapapai also became the first group to independently undertake biophysical monitoring of their traditional areas. The group now independently implement quarterly monitoring activities to document fish catch levels, assess fish biomass within their areas, and examine coral reef growth in the rehabilitated sites where corals have been transplanted. Mentoring continues to be provided and WWF-Indonesia are provisionally continuing monthly monitoring activities in these same areas, to complement the work of Tapapai and to ensure data collected is of high quality and appropriately robust to support management efforts.

Tapapai also became the first group to participate in joint patrol and surveillance activities in collaboration with WWF-Indonesia staff, with a trial activity in 2016. This enabled Tapapai members to learn the process for maintaining fisheries logbooks and handling communications with errant fishers who may be contravening the local regulations. Further training and support is anticipated in

Syabes Village, Teluk Wondama, West Papua

this area in the future. Given the lack of official law-enforcement presence on these patrols, further trials are anticipated to seek safe and legally appropriate mechanisms for handling challenging scenarios these patrols might face in the future (such as encountering destructive fishers with explosives or other weaponry on board their vessels).

In 2016, this group also began construction of a Fisheries and Tourism Post in their village, to be used for land-based surveillance and observation. This post will have a dedicated visitor information center and will also serve as an office to store and assess data collected from patrols and monitoring activities.
The group are keen to engage with tourists visiting the area and are eager to broaden their livelihood opportunities through ecotourism. They are also dedicated to minimizing any negative impacts visitors to the area may cause. To that end, the group are planning to establish a permanent mooring buoy in their community waters for liveaboards and other tourist vessels, so they can tie up and avoid anchoring in (and potentially damaging) the area. The group will also manage the collection and coordination of visitor fees (see section IV) through the visitor information center (in development).

Kima Womens Group

WWF-Indonesia also helped establish a women's group in the village to complement the Tapapai fishermens group and to further support local livelihoods and promote wider sustainable fishing activities in Yomakan. This group is called 'Ira' and comprises women 'bameti' fishers. Bameti is a practice of gleaning shellfish and other marine species from the beach and from shallow waters at low tides, an activity which is predominantly undertaken by women throughout Cenderawasih Bay.

The Ira group is focused on protecting and enhancing clam (kima) stocks, as these are important commercial species locally. They are doing this through the establishment of a Kima garden – an area where they place clams together in close proximity to one another and where any gleaning or extraction are prohibited in order to promote increased reproduction rates and consequential re-stocking of neighboring areas.

Current trials are focusing on Kima species that are less consumed locally, with the aim of successful trials leading to the garden including wider Kima species in the future.

TOURISM SUPPORTS PAYMENTS FOR ECOSYSTEM SERVICES

Sometimes referred to as the 'Galapagos of Indonesia's Reefs', Cenderawasih Bay not only provides vital fishery resources for local communities, it also boasts a spectacular marine environment for scuba divers and snorkelers and is an area rich in history, with numerous facets that appeal to the more adventurous traveler.

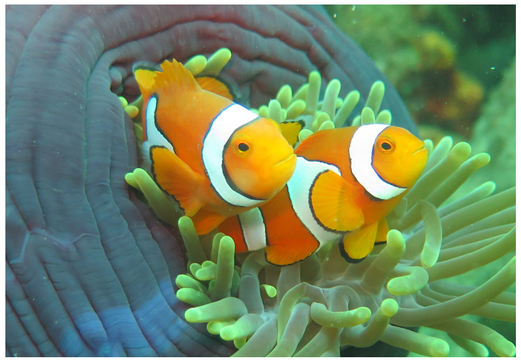
The many battles that occurred in this Bay between Allied forces and the Japanese during WWII provide fascinating tales for the historically inclined and have left the area littered with diveable wrecks of aircrafts and ships. The geological isolation of the area through evolutionary history has also led to an abundance of unique and endemic species, both in water and on land.

Visitors to the Bay can enjoy the hot thermal springs, waterfalls, and caves with ancient remains on Mioswaar island. They can visit the historic church in Yende village, which houses a bible dating from 1898. Aside from the ever-present whale watching tours and popular diving sites to see whale sharks, intrepid visitors can also explore the underwater cave of Tanjung Mangguar, that reaches a depth of 100 feet.

Such a commerce base offers the potential to provide entrepreneurial and livelihood opportunities to the local communities within the Park. WWF-Indonesia conducted training and workshops with community members to introduce the concepts of ecotourism and explore mechanisms to promote benefit-streaming opportunities for local communities.

As a part of this work, WWF-Indonesia supported a series of studies into whale shark-related tourism activities. Implemented by students from the University of Papua, University Padjadjaran, University of Diponegoro, University Gadjah Mada and the Bogor Agricultural University, a range of data was collected and assessed. This included explorations into tourism activities conducted, sensitivity to ecological considerations, levels of sustainability, benefit dispersal, and tourism satisfaction levels. The results of this study contributed to the development of a whale shark tourism code of conduct, as well as a tourism management plan (in development) for the park. This plan includes a proposed payment scheme whereby tourists participating in whale shark tours contribute a small fee that is divided between: (a) the proximal communities where the tourism attraction is based; (b) the 'bagan' (floating platform) fishermen, for the Puri fish that congregate around the platforms and attract the whale sharks; (c) the park authority who monitor and protect whale sharks in the area; and (d) the Nabire District, in the form of taxation.

In addition to this, WWF-Indonesia facilitated a Regent Decree that supports a one-door payment policy for whale shark tourism, so that payments are clear and fair for all parties. This payment system includes requirements for visitors entering traditional marine management areas to contribute to the relevant village fund of that area to support sustainable management. Such a fee is considered a 'payment for ecosystem services' (PES). This is defined as the provision of payments to environmental resource owners/ managers; in exchange, those owners/ managers maintain and protect those environmental resources. Through this, there is recognition of these ecological systems having both an explicit value (in terms of the goods and services they provide – such as food, coastal protection, etc.) and an implicit value (in terms of aesthetic beauty).



The PES provision in the village agreements will enable the communities in the bay to receive village fund income that is directly related to (and reliant upon) their marine and cultural resources remaining viable, productive, and attractive to visitors; it also provides a further incentive for community-driven proactive sustainable management of the area.

Left: Whale shark (*Rhincodon typus*) with diver

Above: Clown fish (*Amphiprion ocellaris*) in Cenderawasih Bay

Right: A community member with traditional headband

KEY CHALLENGES & LESSONS LEARNED

Managing access to fishing areas and promoting sustainable fisheries management is inherently challenging. Numerous stakeholders and layers of administrative agencies need to be involved in the process. The juxtaposition between traditional customary rights and formal regulatory frameworks requires considerable navigation, and changes to government policy can have trickle-down impacts on achievements on the ground.

Midway through this initiative in Cenderawasih, central government policy was changed in Indonesia such that marine natural resource management responsibilities became the purview of provincial governments rather than district government agencies (though some responsibilities remain with districts). Therefore, whilst at the time of writing the sub-district agreements for the traditional management areas are awaiting signing and endorsement by the Wondama regent, further efforts will be required beyond this to ensure the agreements are recognized and supported at the provincial level.

This emphasizes the importance of vertically aligning bottom-up processes with top-down legislative requirements, and of ensuring efforts align with prevailing government policy at all times to make sure systems can remain robust into the future.

Throughout this initiative, lessons have been learned and processes adapted along the way to ensure best practice approaches have been tailored to each local context. For example, the approaches used to design and develop traditional management areas varied widely between communities. For some villages, concerns were centered around preventing destructive fishing practices, like dynamiting and compressor fishing; whilst in other villages, conflict over fishing grounds and the issuing of permits were the prevailing areas of concern. Thus, designs and local regulatory frameworks had to be adapted to address the issues most relevant to the community concerned.

Likewise, in conveying conservation messages, some communities responded well to science-based arguments, whilst for others it was essential to contextualize findings within the local cultural context in order to gain understanding and buy-in.

The work in Cenderawasih Bay also revealed that the relatively low levels of formal education that predominate in the communities were not a hindrance to members being trained in highly skilled areas, such as basic ecological surveying, reef fish data collection, and resource use monitoring. Indeed, the abilities conferred through these trainings have enabled the communities to be effectively equipped to manage their resources.

Beyond the communities, tourism operators were also engaged to support the development of sustainable visitor management systems. And whilst key outputs of this were successful (such as the code of conduct restricting numbers of snorkelers with the whale sharks, etc.), compliance with these systems remains challenging. Further efforts are therefore required to ensure operators fully appreciate the importance of, and commit to, these sustainability principles.

Ultimately conjoining traditional, customary management practices into more formal regulatory frameworks, and enabling entrepreneurial livelihood opportunities to be conjoined with safeguarding principles, are proving to be crucial elements of sustainable fisheries management for Cenderawasih Bay.

The harmonizing of conservation, culture, and commerce is essential if conservation practitioners are going to navigate the complexities of on-ground challenges being experienced by fishing communities and find practicable, long-term solutions for protecting and preserving oceans and marine resources for future generations.

Left: Educating the younger generations on sustainable coastal ecosystem management

Above: Fishers in the tranquil Cenderawasih Bay

PARTNERS

Teluk Cenderawasih National Park is a National Park under the Ministry of Environment and Forestry managed under Taman Nasional Teluk Cenderawasih (National Park Authority), supported by WWF-Indonesia. Key partners involved in this initiative include: the Wondama and Nabire District Government office for Fisheries; Environment; Culture, Tourism, Youth and Sport; the Province Government office for Marine Affairs and Fisheries of Papua Barat; the district Marine Police; Village Councils; the Community Empowerment and Village Administration Council; the Institute of Research, Assessment and Development of Legal Aid; the Stationary Lift-Net Fishermen's Association; the Indonesian Navy; the Regional Development Planning Agency; the Industrial and Cooperative Agency; the Protestant Church, Education and Learning of Wondama and Nabire Districts; Community Culture Institutions of Wondama and Nabire Districts; and the University of Papua.

Hawksbill turtle (*Eretmochelys imbricata*), 20 meters underwater in the coral reefs of Kepulauan Auri island. Cenderawasih Bay Marine Reserve, West Papua, Indonesia

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