

MONITORING STAKEHOLDER PERCEPTIONS TO
IMPROVE MPA MANAGEMENT EFFECTIVENESS IN
INDONESIA— ROUND 3



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Monitoring Community Perception towards Marine Protected Areas in Indonesia, Phase III

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1. INTRODUCTION

The Nature Conservancy's Indonesia Marine Program (TNC-IMP) has established marine conservation programs across a range of extremely bio-diverse areas in Indonesia, from Southeast Sulawesi, to East Kalimantan, Flores, Western Papua, and the largest Savu Sea Marine National Park in East Nusa Tenggara Province. In these areas, TNC works with local fishing communities as well as government agencies to stop the deterioration of marine ecosystems caused by over-fishing, destructive fishing, and various other threats. The establishment of 'marine protected areas' (MPAs) has been identified as a key mechanism globally in managing marine resources, conserving marine biodiversity, enabling reef resilience against the potentially devastating forces of climate change, and enabling sustainable fisheries production.

In Indonesia, MPAs are a relatively new concept, and therefore many coastal people in remote areas are still unfamiliar with this management tool. However, coastal people may have an excellent understanding on the status of natural resources, and they may have concerns about the way these resources are used. Gauging the perceptions of local communities to the establishment of MPAs and associated conservation efforts can provide extremely valuable information for MPA managers to focus their efforts, to tap into an effective local framework for on-site governance, address concerns that may arise within communities and better assess appropriate mechanisms for adaptive management, communications and awareness raising. To assess trends in community perceptions of resource status, resource use and MPA management, TNC-IMP is therefore conducting an on-going, cyclical perception monitoring program.

While TNC-IMP has implemented three times perception monitoring survey in all sites, in this period the Savu Sea project has also implemented the survey for the first time which served as baseline socio-economic data. Partners in the Papua Bird's Head Seascape, WWF-Indonesia and Conservation International Indonesia (CI), have also adopted TNC-IMP's Perception Monitoring protocol for surveys in Cenderawasih Bay National Park, Abun Marine Protected Area, MPAs in Raja Ampat, and Kaimana Marine Protected Area. It is expected by having the same protocol a complete picture of community perception in Bird's Head Seascape (BHS) can be captured for better adaptive MPA management.

1.1 The phases of perception monitoring

The first perception monitoring (Phase I) was undertaken in 2005.¹ Phase II implemented in 2007², and Phase III implemented in 2009-2010. The results of the three phases are presented here, highlighting information related to household and individual responses toward Marine Protected Area (MPA) establishment and management, and trends occurring in communities living inside and in surrounding areas of MPAs for adaptive management. Priorities for community outreach program will be identified based on information captured from the survey.

1.2 Objectives of the perception monitoring program

The objectives of the perception monitoring program are twofold:

- a) To describe trends in community's attitudes and perceptions of resource status, resource use, environmental and/or park regulations, and stakeholder organizations
- b) To acquaint managers with attitudes, perceptions and behaviors of the communities residing near and interacting with these resources. Managers will use this information to inform adaptive management and to measure the success of stakeholder consultation mechanisms and awareness programs

1.3 Description of study areas

Four conservation sites in Indonesia where TNC-IMP is active were selected for surveying (Figure 1). These are:

- Komodo National Park (KNP) of East Nusa Tenggara,
- Wakatobi National Park (WNP) of Southeast Sulawesi,
- Berau Marine Conservation Area of East Kalimantan,
- Raja Ampat district of West Papua, which covers Kofiau-Boo MPA and South East Misool MPA.

¹ See associated report: Halim, A. & Mous, P. (2006) Community Perceptions of Marine Protected Area Management in Indonesia: A report to NOAA, Award no. NA04NOS4630288

² See associated report: Widodo, H., et al. (2009) Community Perception of Marine Protected Areas Phase II : A report to NOAA Project Award NA08NOS4630335



Figure 1. Map of TNC Sites in Indonesia

These sites exhibit different types of conservation status ranging from newly established marine protected areas under the local government (Berau and Raja Ampat), to existing national parks (Komodo and Wakatobi).

The four study areas differ not only in ecological and socio-economic characteristics, but also in management frameworks. KNP and WNP are officially gazetted areas, managed by the Ministry of Forestry. In contrast, the Berau MCA and Raja Ampat Network of MPAs were declared by the respective district governments, who have the responsibility and authority for managing the area.

Savu Sea Marine National Park (MNP), the largest MPA in Indonesia and the Coral Triangle (an area known to have the highest diversity of coral species in the world), was declared during World Ocean Conference in Manado in May 2009. The area covers approximately 3.5 million hectares. Differing from other locations, the Savu Sea MNP establishment was initiated by East Nusa Tenggara provincial government and supported by the Ministry of Fisheries and Marine Affairs.

1.3.1 Komodo National Park

Komodo National Park was gazetted in 1980 to conserve the unique Komodo dragon *Varanus komodoensis* and its habitat. It is located adjacent to the western tip of the Indonesian Island of Flores. In 1986, the park was designated a World Heritage Site and a Man and Biosphere Reserve by UNESCO (United Nations Educational, Scientific and Cultural Organization). The Park encompasses more than 120,000 hectares of land and sea. The marine component of the park harbors one of the world's richest marine environments that includes more than 1,000 species of fish, 260 species of reef-building corals, and 70 species of sponges, as well as dolphins, whales, manta rays and sea turtles (Pet & Yeager 2000). In 1995, the Ministry of Forestry's Directorate-General for Forest Protection and Nature Conservation invited TNC to assist its subsidiary, the Komodo National Park Authority, with conservation management of the Park's coastal and marine ecosystems. Since that time, TNC, together with the Park authority and local communities, has worked to protect the Park's diverse ecosystems from destructive fishing practices and over-exploitation, activities which have severely damaged the park's coral reefs and fish populations in the past. The Komodo National Park project is TNC's longest running marine project in Indonesia. A number of on-site conservation lessons learned over the period 1996 to 2005 are currently being applied at TNC's other marine sites including Wakatobi, Berau and Raja Ampat. The successful abatement of blast fishing inside the Park in the early 2000s (which resulted in the dramatic drop of blast fishing within the Park) has become a textbook example of conservation success.

1.3.2 Wakatobi National Park

Wakatobi (an acronym for the four main islands of Wangi-Wangi, Kaledupa, Tomia, and Binongko, also known as the Tukang Besi Islands) is an archipelago that lies off the southeastern tip of the Indonesian island of Sulawesi. In terms of diversity of marine life, geographic scale, and reef condition, it ranks as one of the highest priorities for marine conservation in Indonesia. It is also a centerpiece for a network of mutually-replenishing MPAs situated along the southeastern coast of Sulawesi.

Destructive fishing and over-fishing pose significant threats to Wakatobi's reef communities and to the livelihood of people who depend on these reefs. In 1996, the government of Indonesia declared the islands and the waters surrounding them as a protected area that covers a total of 1.39 million hectares. The objective of this MPA is to protect coastal and marine ecosystems to

ensure that these ecosystems will continue to provide fisheries services into the future. TNC and WWF-Indonesia have been collaborating closely to assist the Park authority to improve its management strategies.

In late 2006, working together with TNC-WWF Joint Program and communities, Wakatobi National Park authority revised its zoning plan based on series of community consultative activities. Approval and issuance of the new zoning plan (and approved activities related to each zone) took place in 2007 and was signed by the Director General for Forest Protection and Nature Conservation and the Regent of Wakatobi District.

1.3.3 Berau Marine Conservation Area, Berau District

Situated in the global epicenter of coral reef diversity, the reefs of the Berau MCA (including the Derawan Islands) are extremely diverse and unique because of the influence of the Berau River on the coastal waters. This area features green turtle nesting beaches that are among the most significant in Southeast Asia, unique saltwater lakes with endemic jellyfish species, and aggregation sites of manta rays. However, the marine resources of the Derawan Islands are presently threatened by unsustainable fishing practices, notably fishing with explosives and poison, over-fishing, and illegal turtle egg collection and adult turtle hunting. To protect these unique islands, TNC and WWF-Indonesia are partnering with provincial and district governments, national and local NGOs, Yayasan Kehati (Keanekaragaman Hayati) and Bestari, as well as communities, to establish a co-managed marine protected area (MPA) that was launched in 2005. This conservation partnership helps to build the capacity of the local government and communities to effectively manage the protected area and the marine resources upon which coastal livelihoods depend.

1.3.4 Raja Ampat Network of MPAs, Raja Ampat District

The Raja Ampat Islands encompass over 4 million hectares of land and sea off the northwestern tip of Papua and form the global epicenter of coral reef diversity. It is estimated that this area harbors over 75 percent of the world's known coral species. A total of 488 scleractinian corals were identified during TNC's Rapid Ecological Assessment in 2002, compared to that of 445 species in North Sulawesi, 379 species in Milne Bay and 347 in Kimbe Bay, PNG (Donnelly et al. 2003). These areas also harbor one of the world's richest coral reef fish faunas; the area has at least 1074 species and is only surpassed in its fish diversity by Milne Bay Province, PNG (1109

species) and Maumere Bay, Flores, Indonesia (1,111 species) (Donnelly et. al. 2003). Overall, reefs in Raja Ampat are in very good health. Reefs do not appear to have suffered from the serious detrimental bleaching events that caused extensive mortality to other reefs in the region in 1998. However, blast and poison fishing, as well as the overexploitation of larger carnivores (sharks and groupers), are still common. In addition, the unrestricted access to and unregulated use of resources by migrant populations leaves residents feeling powerless and disenfranchised. In turn, they often overexploit the remaining resources. TNC started its field presence in the Raja Ampat Islands in 2003 after the head of Raja Ampat district issued a letter inviting the organization to help manage the district's marine resources.

Through Head of District Raja Ampat decree, in 2006 the Raja Ampat Network of MPAs was established, consisting of seven MPAs. The establishment was supported by local communities and officiated by traditional local law in each area.

1.3.5. Savu Sea Marine National Park

The Savu Sea lies in the heart of the Lesser Sunda ecoregion, and is a major migratory corridor for 18 species of cetaceans, including the rare blue and sperm whale species. TNC has been invited by the Indonesian Ministry of Marine Affairs and Fisheries to assist with the design and implementation of a network of interconnected MPAs in the Savu Sea, encompassing an area of 3.5 million hectares, the largest MPA in Indonesia and the Coral Triangle. The Savu Sea Marine National Park was launched at the World Ocean Conference in May in Manado, which also included the Coral Triangle Initiative Summit that was attended by the Heads of State of the six Coral Triangle countries.

The provincial government of East Nusa Tenggara is also looking to use the MPA as the foundation for the province's economic development through sustainable fisheries and marine-based tourism, international shipping passage, scientific and learning activities, transboundary cooperation and coastal zone management. The two interconnected MPAs in the Savu Sea will be integrated within the province's spatial plan that will help ensure sustainable use of marine and coastal resources.

2. SURVEY METHODOLOGY

A general monitoring protocol was developed for TNC-IMP's perception monitoring program in 2005 (see Appendix 1). The two primary components of this protocol are the recommended methodology and questionnaires. Methodology includes selection criteria for target villages, respondents and independent interviewers. There are two types of questionnaires: a questionnaire for the household and a questionnaire for the individual (see Appendix 2). Using this general monitoring protocol more specific site individual questionnaires for the four study areas were developed, adapting the overall protocol to enable site teams to address issues specific to that site and accommodate the different stages of conservation programs at each site. For example, a number of questions asked of individual respondents in Komodo National Park – a site where TNC-IMP has had a presence since 1995 – are not applicable for respondents in Raja Ampat, a site in which TNC-IMP only had a more recent presence, and where the MPAs are relatively newly established.

For the most part, the survey methodology at each conservation site mirrored that laid out in the general protocol. The primary difference between the general protocol and the specific protocols concerns the number of villages that were targeted for interviews. Accordingly, the number of interviewers (who are independent and are not affiliated with TNC-IMP or its partners) was adjusted to correspond with the number of target villages. The site-based household questionnaires remained the same as those in the general protocol and only the individual respondent questionnaires were adjusted for use at specific sites.



Figure 2. Collecting questionnaires in Misool (Photo: Raja Ampat Outreach/TNC)

3. RESULTS AND DISCUSSION

3.1 Household Characteristic

3.1.1 Main Housing Material

In the phase III survey, most houses in all survey sites are permanent, as indicated by the floor and wall material which is largely composed of wood. This condition is not much different with the situation of house material in phase I and phase II. While majority of houses in all sites have firm material for flooring, some houses in Raja Ampat has dirt floors. Interestingly, in Wakatobi more permanent houses were made from cement/brick material-not floating house. Compared to survey in phase I, majority of houses in Wakatobi were using bamboo.

Table 1. Phase III household material in four study sites

Household material		Komodo		Berau		Wakatobi		Raja Ampat	
		Count	%	Count	%	Count	%	Count	%
Floor	Dirt/soil	6	2.22	0	0.00	0	0.00	13	3.56
	Bamboo	31	11.48	1	0.30	39	13.98	0	0.00
	Wood	195	72.22	251	76.06	82	29.39	177	48.49
	Cement/brick	30	11.11	46	13.94	156	55.91	153	41.92
	Ceramic/granite	3	1.11	32	9.70	1	0.36	22	6.03
	Others	5	1.85	0	0.00	1	0.36	0	0.00
Wall	No wall	0	0.00	0	0.00	0	0.00	0	0.00
	Bamboo	59	21.85	1	0.30	39	13.98	2	0.55
	Wood	149	55.19	286	86.67	82	29.39	233	63.84
	Cement/brick	23	8.52	43	13.03	156	55.91	128	35.07
	Ceramic/granite	0	0.00	0	0.00	1	0.36	2	0.55
	Others	39	14.44	0	0.00	1	0.36	0	0.00

Comparing household material in all of study sites with survey implemented in the first survey, it is found that the number of permanent house is significantly increased on average by 20%. This might happen due to better income (welfare) of households living in study areas and more permanent (stable??) livelihoods available in the area.

3.1.2 Basic Housing Facilities

Electricity has become an important facility in every house. In all of study sites, on average more than 70% of houses have electricity. In fact, every house (100%) in Wakatobi has electricity which is a significant increase of 41% from phase I survey.

While electricity became the most important thing, respondents in all study sites did not see having running water in every household as an important facility. Majority of households have electricity either from electricity generator or common electricity, and interestingly in Wakatobi every household has electricity facility in the house. Households in all study sites still rely on dug well or creek for daily fresh water needs.

Television is a trending topic for gathering information. Over time, the number of households having a television is increasing significantly from 30% on average to 70%. Berau has the highest percentage of household having television. In contrast, it is found that only few houses (less than 30%) have radio.

In-house facilities	Komodo		Berau		Wakatobi		Raja Ampat	
	% Yes	N	% Yes	N	% Yes	N	% Yes	N
Running water	29.63	270	23.64	330	22.22	279	8.22	365
Electricity	78.15	270	89.09	330	100.00	221	67.12	365
Radio	22.30	269	13.03	330	13.26	279	34.52	365
Television	60.00	270	78.18	330	53.05	279	43.84	365

3.1.3 Basic Vehicle

Basic vehicle owned by households in Raja Ampat is canoe (73.35%). A canoe is defined as a paddled-propelled vessel, with or without outrigger. Fishermen using canoe will only go out for maximum one fishing day and the coverage will only be limited to surrounding area of their origin village. Fishermen in Raja Ampat are mostly subsistence fishers who only fish for daily

food and sell the catch at local market; as it is shown on household survey that 73.35% of respondents own canoe. One out of two household in Wakatobi own canoe for carrying out economic activities.

For people living in coastal area, bicycle is not a common vehicle in supporting economic activities. On the other hand, in Raja Ampat almost 3 out of 5 households own bicycle. This is due to the narrow and undeveloped roads in some villages, hence bicycle is considered as an easy and inexpensive vehicle for travelling between neighboring villages.

Very small number of households in all of study sites have cars and yet motorcycle is still not a popular mode of transportation. Considering all study sites are coastal villages in which the road connecting places are mostly narrow and bumpy, reaching neighboring areas will be much efficient by using public marine transportation. Not only that, the distance from the center of economic activities to the villages – where ferry transportation reaching these areas are rare – have made transporting vehicles a big issue.

Vehicles to support economic activities	Komodo		Berau		Wakatobi		Raja Ampat	
	% Yes	N	% Yes	N	% Yes	N	% Yes	N
Canoe	39.26	270	39.02	328	53.76	279	73.35	364
Motor boat	31.85	270	51.83	328	29.03	279	2.75	364
Bicycle	9.26	270	17.33	329	21.51	279	65.66	364
Motorcycle	15.93	270	38.91	329	29.03	279	3.30	364
Car/truck	1.48	270	3.04	329	3.58	279	0.55	364

3.1.4 Main occupations within household

Majority of household respondents in all of study sites have more than one economic activity. Fishing is the most common activity found in all of the areas. Wakatobi has the most variety of economic activities amongst the sites, in which one household may conduct seaweed farming, traditional fishing, farming, and sailing (labor at transportation boat or shipping boat). In Komodo fishing and trading are the most common economic activities; opening a kiosk selling souvenirs or basic needs, and trading marine products both as collector and seller. Households in

Raja Ampat are mainly relying on farming, fishing, and working as employee at pearl farming industry.

3.2 Socio-demographic characteristics of individual respondents

3.2.1. Gender

Male and female respondents were selected and interviewed in every site with average composition 50% male and 50% female individual respondents. This aims to get information on marine resources and its usage, benefit, and involvement in marine conservation effort happening on site by both gender.

A total of 3,382 respondents from Komodo, Wakatobi, Berau, Raja Ampat and Savu Sea were interviewed in the third phase of perception monitoring. Wakatobi showed the only marked skewing of male and female respondents the same pattern with phase I and II, with the first survey capturing more male respondents whilst in the second and third survey it appeared that female respondents were more ready to participate in the interview and/or they were more commonly found in the home during the interview period.



Figure 3. Respondent's Profile - Gender

3.2.2. Occupation

The team developed '18 occupational categories' that were used in this survey period. These categories were selected based on a list of known individual economic activities in all the project

sites. The team divided fishing activities into two categories: destructive and non-destructive fishing. Destructive fishing includes cyanide fishing, blast fishing, trawl fishing, etc, while non-destructive fishing includes hand-line fishing, gill-net fishing, spear fishing, etc. (see Appendix 3). During the interview process respondents were asked to name their occupational activity based on this listing.

On average 64.21% of the total respondents surveyed in Phase III in all sites have jobs for the last six months. Of those who worked for the last six months in Komodo, Berau, and Savu Sea were mostly involved in non-destructive fishing activities; while for Wakatobi respondents were mostly involved in non-destructive fishing activities (26.44%) and farming (25.08%).

Table 2. Respondent Having Occupation for the Last 6 Months

	Komodo		Berau		Wakatobi		Raja Ampat		Savu Sea	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	341	56.09	292	55.30	300	62.37	397	64.98	865	82.30
No	267	43.91	236	44.70	181	37.63	214	35.02	186	17.70
Total	608	100	528	100	481	100	611	100	1051	100

Table 3. Occupation Profile Phase I-III

Main Occupation	Wakatobi						Berau						Raja Ampat						Komodo					
	w1		w2		w3		B1		B2		B3		R1		R2		R3		k1		k2		k3	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Destructive fishing	9	1.70	8	2.53	2	0.68	5	30.00	0	0.00	4	1.37	0	0.00	0	0.00	0	0.00	56	12.40	14	2.71	0	0
Non-destructive fishing	11	2.10	83	26.27	78	26.44	116	30.00	25	22.30	151	51.89	45	7.50	48	14.20	83	20.65	168	37.30	0	0	182	53.4
Marine life farming	3	0.60	54	17.09	31	10.51	37	7.10	4	3.57	10	3.44	0	0.00	0	0.00	0	0.00	9	2.00	2	0.38	0	0
Marine product trading	10	1.90	13	4.11	10	3.39	5	1.00	2	1.79	3	1.03	0	0.00	0	0.00	3	0.75	12	2.70	6	1.16	31	9.09
Non-marine product trading	5	22.20	19	6.01	15	5.08	19	3.60	23	20.50	25	8.59	12	2.00	17	5.01	23	5.72	33	7.30	3	0.58	34	9.97
Farming	116	22.20	87	27.53	74	25.08	149	28.50	13	11.60	15	5.15	315	52.60	169	49.90	142	35.32	39	8.70	4	0.76	21	6.16
Government employee	5	1.00	10	3.15	19	6.44	10	1.90	1	0.89	29	9.97	13	2.20	8	2.36	26	6.47	12	2.70	1	0.19	7	2.05
Non-government employee	19	3.60	3	0.95	7	2.37	18	3.40	0	0.00	16	5.50	79	13.20	65	19.20	61	15.17	5	1.10	0	0	6	1.76
Business people	18	3.40	1	0.32	7	2.37	3	0.60	0	0.00	5	1.72	3	0.50	6	1.77	0	0.00	11	2.40	0	0	12	3.52
Home industry	37	7.10	4	1.27	1	0.34	11	2.10	7	6.25	9	3.09	12	2.00	16	4.72	20	4.98	15	3.30	0	0	17	4.99
Illegal mining	0	0.00	0	0.00	3	1.02	6	1.20	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	5	0.95	0	0
Labor	3	0.60	7	2.22	22	7.46	9	1.70	18	16.10	13	4.47	3	0.50	3	0.88	6	1.49	6	1.30	0	0	11	3.23
Livestock farming	1	0.20	1	0.32	2	0.68	1	0.20	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	6	1.30	0	0	1	0.29
Migrant worker	149	28.50	13	4.11	0	0.00	1	0.20	1	0.89	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0	1	0.29
Service	1	0.20	12	3.80	23	7.80	3	0.60	16	13.80	10	3.44	0	0.00	0	0.00	38	9.45	2	0.40	0	0	17	4.99
Village clerk	6	1.20	0	0.00	1	0.34	0	0.00	2	1.78	1	0.34	0	0.00	3	0.88	0	0.00	0	0.00	0	0	1	0.29
Student	9	1.70	0	0.00	0	0.00	9	1.70	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	6	1.30	481	93.2	0	0

3.2.2 Education

Understanding that most of TNC-IMP sites are located in remote areas, it is important to know the education profile of general communities and stakeholders to be able to design an effective outreach and constituency building strategy. In the third phase of perception monitoring, majority on average 63.50% of total individual respondents in all sites only reached elementary school. Comparing the composition of respondents' education proportion, Wakatobi has the highest percentage of respondents (22.84%) who went to junior high school and Komodo has the highest percentage of respondents (16.15%) who went to high school. It is found that all share the same education composition of respondents gone to elementary school, junior, high school, and above high school. Response from Savu Sea, the newest site which implemented the survey for the first time, showed the same education composition.

Following the surveys undertaken in Phase I (2005) and Phase II (2007), the outreach and education team at TNC-IMP adapted their programs to target their site audiences appropriately based on an assumption of elementary school level education. The results of this 2009 survey confirm that this targeting continues to be relevant to this day, and suggests a good level of efficacy in the approach criteria of the outreach programs.

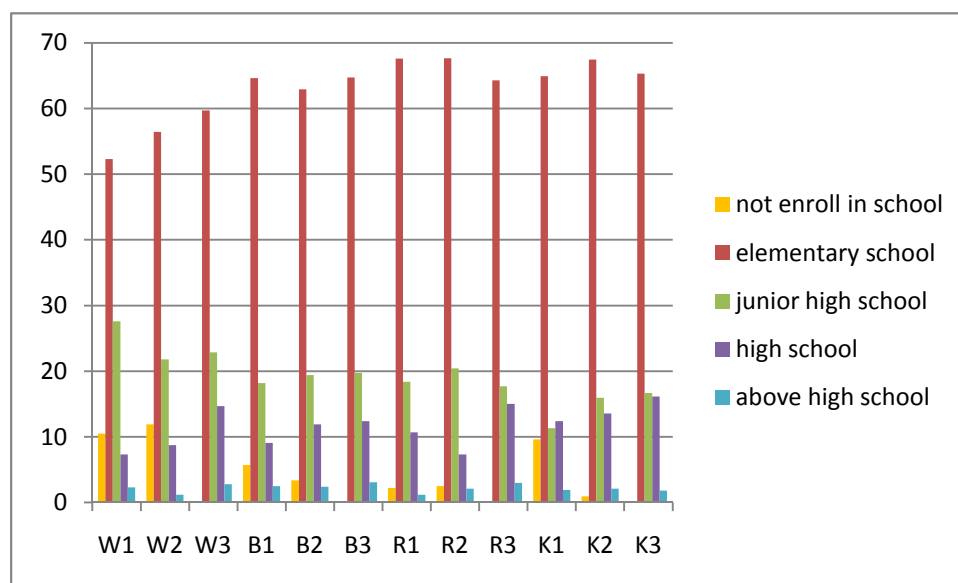


Figure 4. Education Profile Phase I, II, III

Although most respondents only attended elementary school (6 years basic education), literacy in all of study sites showed quite high percentage, 77.12% on average respondents were able to read magazine or newspaper easily.

3.3 Support to development of Marine Protected Areas

Marine Protected Area is defined as *any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment* (Resolution 17.38 of the IUCN General Assembly, 1988, reaffirmed in Resolution 19.46 (1994).

To test whether communities living in all sites are aware of and comprehend the consequences of managing a marine protected area for sustaining fisheries resources, respondents were asked about the idea of demarcating certain marine areas which refers to protecting part or the entire enclosed marine environment.

3.3.1 Survey question: “Do you believe it is a good idea to demarcate some coastal areas to be zones (or areas) where the natural environment and the marine life can be protected and preserved?”

Survey result showed that majority respondents – 72.67% in Komodo stated indifference to demarcating certain area. Meanwhile some of respondents in Berau (56.98%), Wakatobi (40.88%), and Savu Sea (62%) stated that it is good idea for demarcating area in which species and marine environment can be protected. Of those sites, respondents in Savu Sea showed the highest percentage of those supporting the idea of demarcating marine environment for protection purpose.

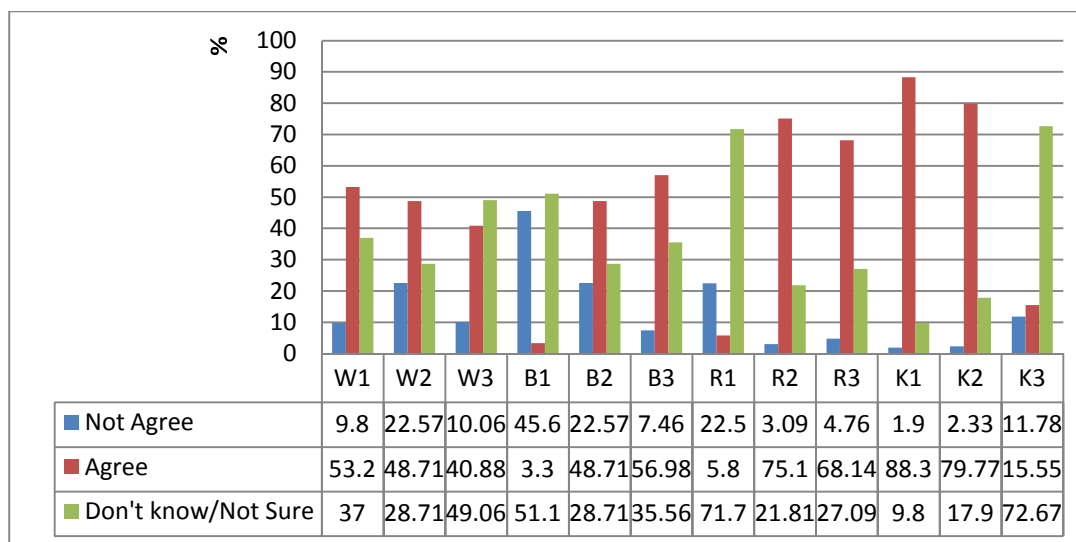


Figure 5. Perception on Demarcating Area for Protecting Marine Species and Habitat

Although the idea of demarcating marine areas was not perceived as a popular idea (still a large percentage of respondents indicate indifference or unsure), on average 85.25% respondents from all sites said there will be benefit from the demarcated area. Very few respondents said there will be no impact in demarcating marine area. It seems that respondents were hesitant to the word of protection, limitation, demarcation in which the words are closely related to MPA term. Indeed, respondents understood that if the area is demarcated, then they will get the benefit for sustainable fisheries in the future. One notable fact is although Savu Sea is considerably a new MPA and limited outreach activities implemented in the area, 87.87% of respondents in Savu Sea perceived that demarcating marine area for protecting and preserving marine resources and ecosystem is a good idea and it will bring benefit for people living in the area.

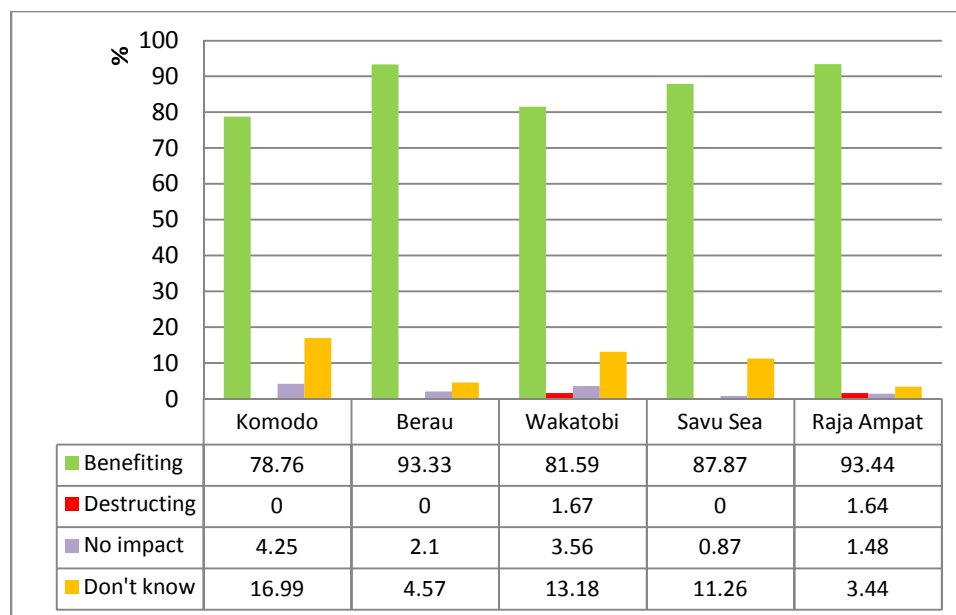


Figure 6. Perception on Benefit of Demarcating Marine Area

3.3.2 Survey question: “Have you heard the term ‘Marine Protected Area?’”

Marine Protected Areas (MPAs) is a generic term and can be translated into a national park, marine reserve, and locally managed marine area. TNC-IMP works in two national parks, one national marine park, and three district marine protected areas. Komodo’s exposure to various outreach-awareness activities has started since 1999, and the park was established in 1991. Survey result showed that 58.40% respondents were still not familiar with the term. In Wakatobi 57.20% of total respondents stated they have heard the term marine national park, 30% stated never heard, and very few 12.11% did not know the term. In Berau, almost the same composition of respondents stated ever heard and never heard of the MPA term. Savu Sea is considered as the youngest site, where the Park was established in 2009. Survey showed that 57.64% respondents were not familiar with the term Savu Sea National Marine Park. But still, many respondents (34.27%) have heard of the expression.

Table 4. Familiarity with MPA Term and Perceived Regulation on Fishing at MPA - Phase III

Familiarity MPA expression - Phase III

	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	158	25.77	239	45.27	274	57.20	390	34.27	360	64.40
No	358	58.4	237	44.89	147	30.69	656	57.64	136	24.33
Don't know	97	15.82	52	9.85	58	12.11	92	8.08	63	11.27
	613	100	528	100	479	100	1138	100	559	100

Perceived fishing regulation in MPA-Phase III

	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Prohibited at all	27	10.71	49	19.07	18	10.91	136	26.82	157	32.51
Prohibited at certain areas	151	59.92	108	42.02	128	77.58	240	47.34	251	51.97
Not prohibited at all	62	24.60	54	21.01	6	3.64	79	15.58	6	1.24
Don't know	12	4.76	46	17.90	13	7.88	52	10.26	69	14.29
	252	100	257	100	165	100	507	100	483	100

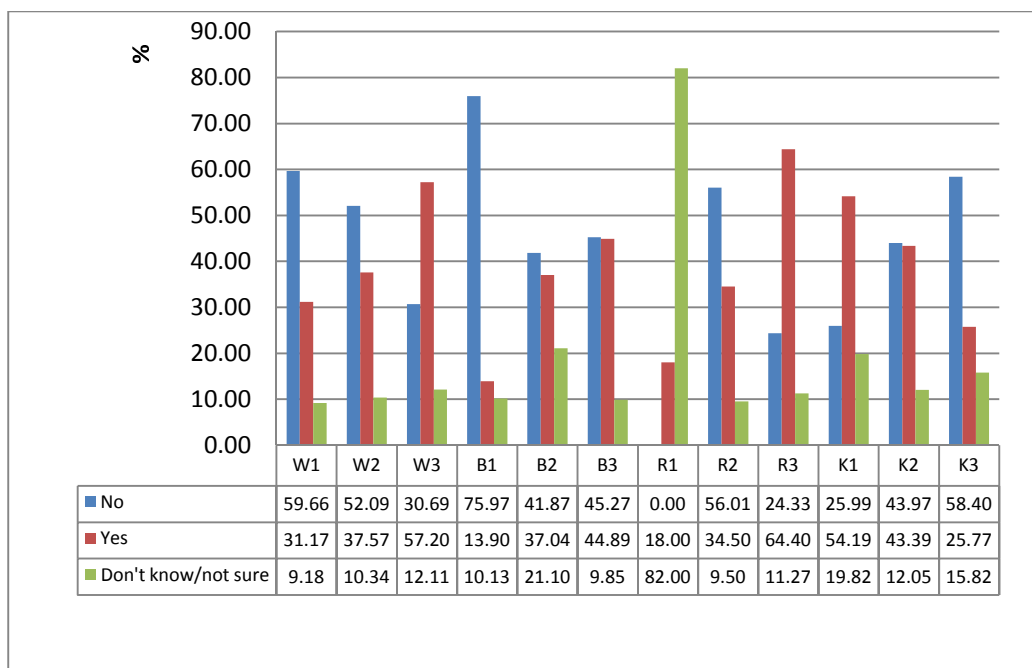


Figure 7. Awareness on MPA terms Phase I-III

In order to better understand the respondent's response towards MPA terms and the implication of living within an MPA on their daily lives, it is necessary to compare data gathered from the first, second and third surveys. From all of the study sites, Wakatobi, Berau, and Raja Ampat showed steady increase in people who were familiar with the MPA terms whether it was a Marine Protected Area, Marine Reserve, or a National Park. Amongst all, Raja Ampat showed the highest increased percentage over other sites; from the first survey to third survey 46.40% increase percentage occurred. For the last two years Raja Ampat team has intensively worked with various stakeholders in Misool and Kofiau in establishing the zoning systems of the two MPAs. Various activities have been implemented including training for village community organizers, series of meetings with several clan member to assign zoning and set up 11 *sasi* (traditional natural resources management system), and developing local content curricula for elementary school in joint cooperation with ILMMA network, Education Affairs Officers, and teachers in each school. The exception occurred in Komodo, where there is a significant decrease from the first, second, and the third surveys. This might be a result of weak law enforcement in Komodo National Park which may lead to confusion within the communities in terms of the Park's status and the regulations that are applicable to people living in and around the Park.

3.3.3 Survey question: “Do you think fishing in a Marine Protected Area is prohibited?”

In response to this question respondents were given four possible answers:

- Yes, fishing in an MPA is completely prohibited
- Fishing in MPAs is prohibited in certain specified zones
- Fishing in MPAs is not prohibited at all
- Don't know / not sure

Therefore this question was particularly assessing the level of knowledge of existing ‘zoning’ (or plans for zoning) in each of the MPAs.

Related to consequences on establishing MPAs which require assigning certain areas for no-take areas, respondents were being asked about fishing in MPAs. The majority of respondents in all sites perceived that fishing is prohibited only at certain assigned areas. In Komodo 59.92% of total respondents said so, 42.02% respondents in Berau said fishing is prohibited at certain areas, and 47.34% of total respondents in Savu Sea have the same answer. Comparing the result to previous surveys, respondents in Komodo National Park showed noteworthy change in terms of zoning knowledge. Gradual increase percentage of approximately 27% arose from the first to second and second to third survey. Although some respondents were not aware of the MPA term, of those who had knowledge on the term were aware that fishing at MPA is allowed at certain zones assigned. From all of the sites, the highest percentage (77.58%) of respondent perceived fishing is prohibited at certain areas in MPA occurred in Wakatobi. Again this would suggest as a result of intensive community meetings, trainings to local leaders and community members on MPA management and governance led by village facilitators and fishermen groups in each island.

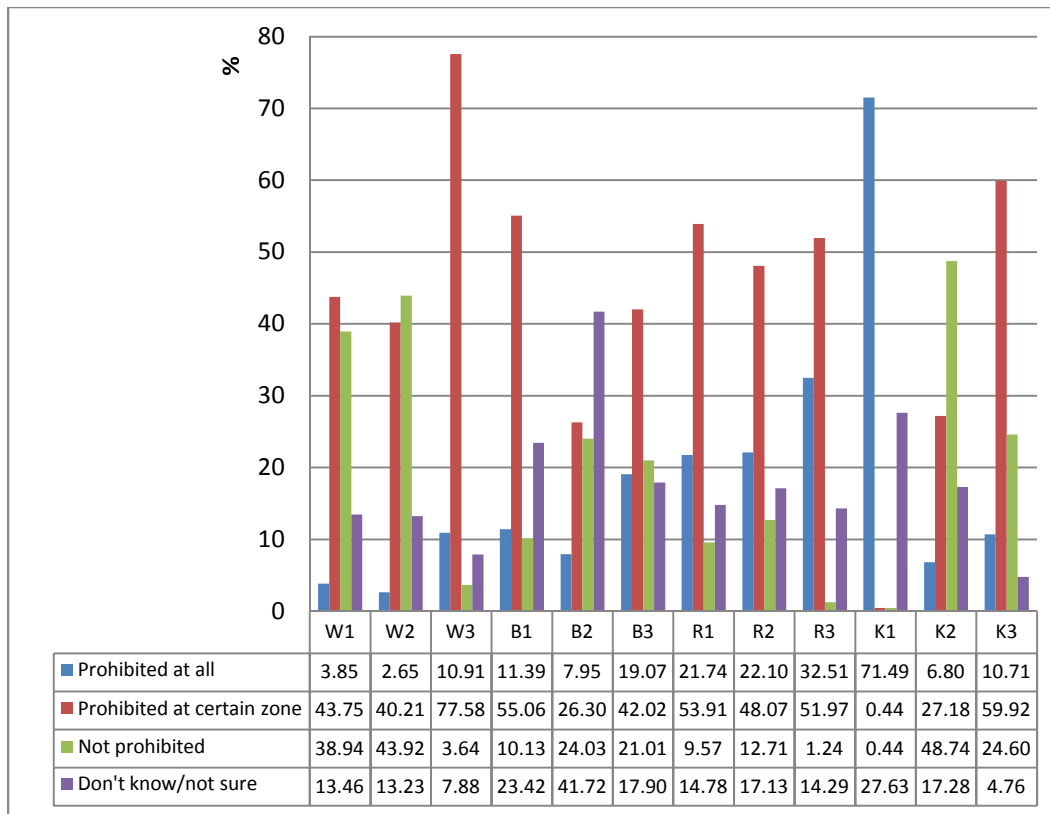
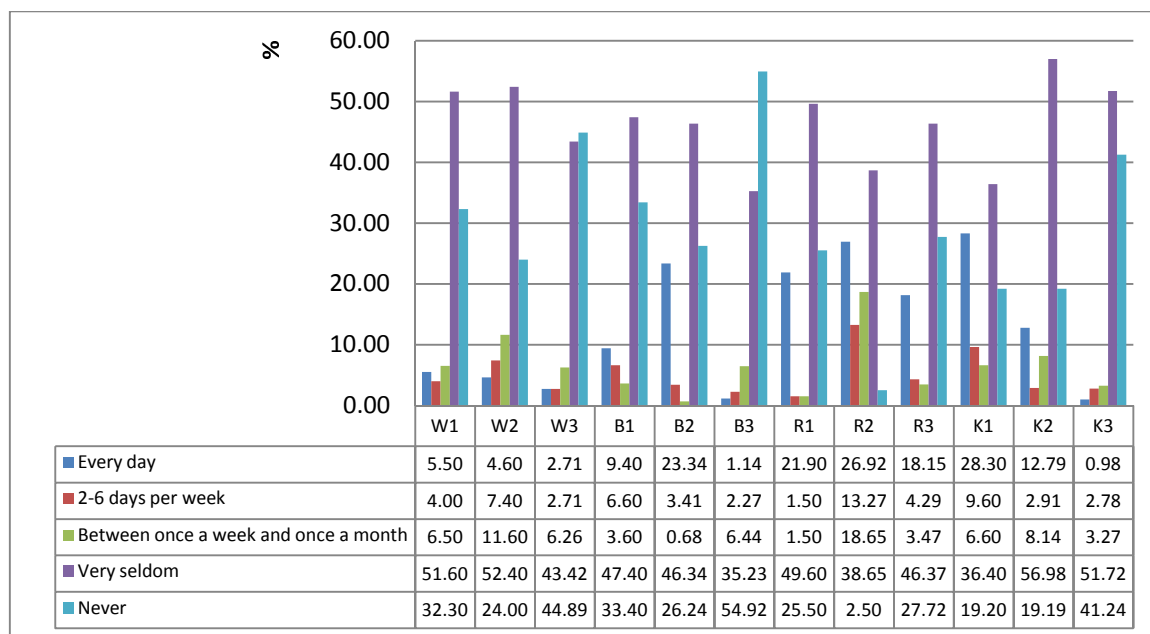


Figure 8. Perceived knowledge on fishing in MPA Phase I-III

3.4 Source of Information

Respondents in all four sites rarely read newspapers; even more, most of them have never read a newspaper or magazine. Radio is also not a popular source of information. Currently, television is the most popular media in all sites where the majority of respondents (more than 50%) watch television every day.

Since the majority of respondents did not read newspapers and did not listen to the radio, this fact is impacting respondents' answer on environment news spreading around the area. Majority respondents in Komodo, Berau, Wakatobi, and Savu Sea never heard or read brochures/booklets on environmental news. Respondents were also not common to talk about environmental news with family members, except in Berau and Wakatobi.



3.5 Attitude towards the coastal and marine environment

When respondents were asked about the current environmental problems that commonly occurred in most coastal area, more than 60% on average perceived coastal destruction, seawater contamination from sewage and pollution and less fish in the sea as big problems for them. Respondents in Berau, Wakatobi, and Savu Sea perceived outside fishers (non-local fishers) who steal fish from their area as big environmental problem (more than 60%). When they were asked about marine/coastal areas being leased to outsider, respondents in Wakatobi and Savu Sea perceived it as big problem (more than 70%). Survey showed that traditional management and coastal development have been perceived as minor environment problems, furthermore respondents in Berau do not know (indecisive) about whether coastal development is one of the environment problems.

3.5.1 Knowledge on coral reef and mangrove and perceptions of coral reef and mangrove health

Respondents were also asked about three statements related to coral reef function, relationship with sustainable livelihood, and coral reef fisheries management. In Raja Ampat, Komodo, Berau, Wakatobi, and Savu Sea majority of respondents, more than

80%, agreed that coral reef is important for storm protection and the presence of coral reef will ensure sustainable livelihood. While for coral reef fisheries management, respondents in Raja Ampat, Savu Sea, Wakatobi, Berau, and Komodo (respectively 89.67%, 88.07%, 77.50%, 68.37%, and 66.56%) agreed to statement on coral reef fisheries management. The data showed that respondents' knowledge and awareness on the function of coral reef is already widely known and comprehended well by communities living in all of the sites mentioned.

Respondents in Raja Ampat and Wakatobi showed higher percentages on the perception that the condition of coral reefs in their area are in good condition (70.98% and 66.88%), meanwhile in Komodo and Berau respondents mostly said coral reef in their area are in bad condition or they did not know what was the current coral reef condition. This information matches with respondents' response to a question which required respondents to compare current coral reef conditions to 10 years ago. Respondents in Komodo and Berau in majority stated that they did not know the comparison. However, the answer from Wakatobi and Savu Sea respondents were not significantly different about coral reef condition. This might be happening due to (1) difficulty in comparing conditions on certain time frame, (2) lack of information on coral reef condition in the past time, (3) respondents perception on indicator of good coral reef might be varied, and/or (4) there is not enough information on coral reef health indicator provided.

Table 5. Knowledge on coral reef and perception on coral reef condition Phase III

Agree to statement related to coral reef function and management										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
CR storm protection	506	82.54	384	68.94	391	81.46	986	85.89	554	90.82
CR sustainable livelihood	514	83.85	383	72.54	409	85.21	1013	88.24	571	93.61
CR fishrs shld managed	408	66.56	361	68.37	372	77.5	1011	88.07	547	89.67

Perceived current coral reef condition										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Good	76	12.4	170	37.61	321	66.88	584	50.92	433	70.98
Bad	238	38.83	143	31.64	78	16.25	321	27.99	139	22.79
Don't know	299	48.78	139	30.75	81	16.88	242	21.1	37	6.07
No coral reef									1	0.16

Perceived previous coral reef condition										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Better	42	6.86	168	33.53	190	39.58	371	32.35	299	49.02
Remain the same	29	4.74	64	12.77	122	25.42	205	17.87	148	24.26
Worse	226	36.93	94	18.76	99	20.63	286	24.93	106	17.38
Don't know	315	51.47	175	34.93	69	14.38	285	24.85	57	9.34

To test whether respondents have knowledge on the importance of mangrove, statement on a mangrove function as storm protection was given. Majority of respondents, on average more than 80% respondents in all sites answered correctly that mangrove serves as storm protection. Respondents were also asked to assess current mangrove condition and comparing it with 10 years ago. Some of the respondents in Komodo, Berau, Wakatobi, and Savu Sea perceived mangrove in their area is currently in good condition, while majority of respondents in Raja Ampat (77.87%) perceived coral reefs in around their village are in good condition. An interesting fact occurred in Komodo in which 31.70% of total respondents said they did not know about the condition of the mangroves.

When respondents were asked to compare current mangrove condition to its condition 10 years ago, in Komodo very few perceived mangrove condition is better, yet 39.05% stated they did not know the comparison. Almost the same thing occurred with Savu Sea respondents of which 34.19% stated they did not know about current mangrove condition as compared to 10 years ago. Berau respondents 39.42% perceived mangrove condition currently remained the same. Meanwhile, of those respondents in Wakatobi who answered current mangrove status, 38.39% perceived that current mangrove condition is better than 10 years ago.

Table 6. Knowledge on mangrove and mangrove condition perceived in phase III

Perceived current mangrove condition										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Good	243	39.71	258	48.96	225	46.88	501	44.14	475	77.87
Bad	133	21.73	112	21.25	39	8.13	207	18.24	103	16.89
Don't know	194	31.7	32	6.07	38	7.92	137	12.07	19	3.11
No mangrove	42	6.86	125	23.72	178	37.08	290	25.55	13	2.13

Perceived previous mangrove condition										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Better	44	7.19	143	34.79	119	38.39	298	26.26	291	48.74
Remain the same	180	29.41	162	39.42	86	27.74	262	23.08	203	34.00
Worse	149	24.35	62	15.09	61	19.68	187	16.48	63	10.55
Don't know	239	39.05	44	10.71	44	14.19	388	34.19	40	6.70

3.5.2 Perceptions of environmental threats and problems

Among the eleven-recorded common environmental problems occurring in coastal areas, respondents in Komodo, Berau, Wakatobi, Raja Ampat, and Savu Sea perceived bomb fishing as the main environmental problem in their area. It is important to note that in

Komodo and Wakatobi National Parks, where these Parks have marine patrol systems, yet bomb fishing is still occurring in these areas. Cyanide fishing was perceived as the second main environmental problem (19.26%) occurring in Wakatobi National Park. A large number of respondents said that there is no major environmental problem in survey area. Yet, respondents in Komodo and Berau, 37.68% and 25.76%, showed their hesitance to give response on main environmental problem in their area.

Taking into account lessons from the first and second perception monitoring surveys on the ambiguity of respondent's answer on major environmental problems whether respondents believed this question to relate to 'threats they were aware of' (conceptually), or 'actual problems that they were witnessing regularly', revised questionnaire has been made. Protocol stated clearly that enumerators would question respondents on actual environmental problems occurring in respondent's village and emphasize on only the actual problem.

Table 7. Major Environmental Problem Occurred - Phase III

Perceived problem occurred in environment	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Overfishing	44	7.18	33	6.25	18	3.69	20	1.52	27	4.46
Bomb fishing	133	21.7	100	18.94	144	29.51	236	17.89	179	29.54
Cyanide fishing	16	2.61	10	1.89	94	19.26	49	3.71	45	7.43
Trap fishing	0	0	0	0	7	1.43	2	0.15	7	1.16
Mangrove cutting	4	0.65	2	0.38	2	0.41	37	2.81	3	0.50
Coral mining	1	0.16	3	0.57	27	5.53	81	6.14	9	1.49
Water contamination	25	4.08	0	0	2	0.41	29	2.2	6	0.99
Deforestation	0	0	4	0.76	2	0.41	5	0.38	0	0
Land erosion	1	0.16	5	0.95	2	0.41	42	3.18	2	0.33
Invasive species	0	0	0	0	0	0	0	0	0	0
High population	1	0.16	0	0	2	0.41	0	0	0	0
Others	44	7.18	60	11.36	22	4.51	136	10.31	69	11.39
No major problem	113	18.43	175	33.14	93	19.06	519	39.35	161	26.57
Don't know	231	37.68	136	25.76	73	14.96	163	12.36	98	16.17
Total	613	100	528	100	488	100	1319	100	606	100

Compared to the first and second perception monitoring in all of study sites, respondents identified bomb fishing, overfishing, cyanide fishing, and poison fishing as major threat to marine environment. Outside fishers, fishermen from neighboring area, considered as one major problem in Komodo National Park. This information gave insight that in all of study sites, destructive fishing is still actively occurring. Joint effort from enforcement agency and government agencies in term of outreach and awareness will be necessary to do in ensuring MPA governs well.

3.6 Identifying the ‘creators’ and ‘solvers’ of these environmental problems

The majority of respondents in Komodo and Berau perceived fishermen as problem creator (46.86% and 52.34%), while respondents in Savu Sea (31.67%), Wakatobi (25.08%), and Raja Ampat (23.81%) mostly perceived villagers as problem creator. From this information, it can be seen that respondents were aware that most environmental problems were created by themselves.

To tackle environmental problems that occur in their area, respondents in Komodo perceived head of district (21.25%), head of village (20.51%), and enforcer (16.85%) as the most qualified to tackle major environmental problems. Respondents in Berau 37.61% of total, perceived national government as the most qualified to tackle the problem. In Wakatobi, beside villagers perceived as problem creator, respondents were believe that villagers are the one who are most qualified to tackle the problem (25.45%), followed by national government (22.29%). They also perceived enforcer or park authority (16.56%) as one of the most qualified one. Respondents in Savu Sea perceived head of village as the most popular qualified one (28.34%) to tackle environmental problem. In Raja Ampat where traditional natural resources management system is still in place, respondents believed that Head of Village (34.20%) and Enforcer (23.19%) are the ones who are qualified to tackle major environmental problems relating to bomb fishing and cyanide fishing.

When respondents were asked who was the most responsible person to tackle major environmental problem occurred in their village, respondents in Komodo believed they were the head of district (17.50%), head of village (21.07%), and the villagers themselves (13.12%). This is interesting since Komodo is a National Park in which the National Park Authority (a.k.a. central/national government) is the one who has stake in managing the area, enforcer is not the most popular one to tackle environment problem. While in Berau, respondents trusted more national governments (39.06%). Respondents in Wakatobi National Park were mostly aware that

their area is one MPA under national government authority. Responses from them were reflecting their trust to national government (22.86%), head of village (21.59%), and enforcer (20.95%) to take responsibility tackling environmental problem. Notable fact from Raja Ampat survey; respondents perceived head of districts (19.21%) and national government (18.72%) as the ones who had responsibility to solve destructive fishing occurring in their area. Respondents in Savu perceived national government (28.93%), head of village (25.06%), and villagers (16.17%) as three most responsible ones to tackle environmental problems.

Table 8. Perceived Environmental Problem Creator and Solver Phase III

Site		Villagers	Visitors	Head of district	Head of village	National gov	Private business	Fishermen	Enforcer	NGO	Others	Don't know
Komodo	C	17.10	0.00	2.97	2.60	0.74	0.00	46.84	3.35	0.00	16.73	9.67
	Q	6.96	0.00	21.25	20.51	9.16	0.00	0.73	16.85	1.83	14.65	8.06
	R	13.12	0.00	17.50	21.07	8.35	0.00	1.39	11.53	2.39	5.96	18.69
Berau	C	6.81	0.00	0.43	0.43	0.43	0.43	52.34	0.00	0.00	23.40	15.74
	Q	11.11	0.00	5.98	6.41	37.61	0.00	0.43	0.43	1.28	23.08	13.68
	R	12.02	0.00	6.01	4.72	39.06	0.00	0.43	0.43	2.15	22.75	12.45
Wakatobi	C	25.08	0.95	0.63	1.59	1.59	15.56	18.41	4.44	0.00	3.81	27.94
	Q	24.52	0.64	2.55	13.38	22.29	1.91	1.59	16.56	0.32	0.96	15.29
	R	14.29	0.00	2.86	21.59	22.86	0.00	1.59	20.95	0.63	0.95	14.29
Savu Sea	C	31.67	0.00	2.04	4.98	7.69	1.13	25.57	0.00	0.00	8.37	18.55
	Q	9.52	0.23	7.26	28.34	14.74	0.00	2.04	13.15	0.00	3.85	20.86
	R	16.17	0.23	5.01	25.06	28.93	0.23	2.73	2.73	0.00	1.37	17.54
Raja Ampat	C	23.81	0.30	11.90	4.76	0.30	1.79	4.46	3.57	1.79	44.35	2.98
	Q	8.70	0.00	16.52	34.20	0.58	0.00	0.00	23.19	2.90	6.67	7.25
	R	9.85	0.00	19.21	17.24	18.72	0.00	0.00	24.88	0.99	3.69	6.16

*C = creator, Q = qualified to tackle, R = responsible to tackle

Table 9. Perceived follow up action of environment problem actor

Follow up action	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Very likely	96	19.09	72	31.17	172	54.95	213	48.41	255	71.43
Somewhat likely	162	32.21	66	28.57	37	11.82	51	11.59	33	9.24
Unlikely	14	2.78	14	6.06	4	1.28	21	4.77	20	5.60
Don't know	231	45.92	79	34.2	100	31.95	155	35.23	49	13.73
Total	503	100	231	100	313	100	440	100	357	100

When respondents were asked on their perception whether the most responsible one will take follow-up action, the data showed indecisive answer. It seems like respondents were not so sure whether the most responsible one will take action to solve major environment problem. Only majority respondents in Raja Ampat (80.67%) Wakatobi (66.77%) and Savu Sea (60%) showed certain confidence to national government and head of village to take follow up action.

3.7 Occurrence of punishment related to violation and awareness of the regulations (national/traditional, MPA and sector specific)

To check whether punishment of marine environment violation occurred in all sites, respondents were interviewed on occurrence of various types of punishment. Exception for Savu Sea, the questions were asked whether respondents will accept if certain punishments were put in place.

Respondents in all study sites were also given several fishing gears and activities in order to check their knowledge on general fisheries rules. Majority respondents in Raja Ampat, Komodo, Berau, Wakatobi, and Savu Sea showed good understanding that hook and line, gill net, and spear are friendly fishing gears to marine environment and they were mostly aware that it is not prohibited to use these gear. Meanwhile for traps, respondents in Komodo showed indecisive answer. Majority respondents in Berau (84.28%), Wakatobi (91.23%), and Savu Sea (71.95%) perceived that it is allowed to use traps. It seems that respondents in those three areas were not quite aware that traps might harm coral reef ecosystems, thus destroying fisheries resources. Trawls are perceived as prohibited fishing gears by majority respondents in Raja Ampat (80.30%), Komodo (68.14%), Berau (68.18%), Wakatobi (68.89%), and Savu Sea (77.87%).

Respondents in Komodo, Berau, and Wakatobi perceived that seine nets and bombs are prohibited to use, with the exception in Savu Sea respondents where the majority (79.18%) still perceived the use of seine nets were not prohibited. For cyanide fishing, majority respondents in all sites perceived that this is not allowed.

Some respondents in Komodo, Berau, Wakatobi, and Savu Sea perceived hookah compressor as prohibited to use, thus there are still big number of respondents who did were not fully aware of the regulation on hookah compressor especially in Savu Sea and Berau.

Regarding the use of traditional poison, majority respondents in Raja Ampat (91.11%), Savu Sea (83.19%), Wakatobi (81.84%), and Berau (71.97%) perceived that it is not allowed. However, interesting fact occurred in Komodo in which 42.16% perceived it is allowed to use traditional poison, and 21.08% said they did not know about the rule.

Reef gleaning is a fishing activity to collect sea shells or sea cucumbers on the reefs during low tide. In doing so, usually fishers use crowbars or steel to glean the reef and collect shells. The majority of respondents in Wakatobi (82.67%) and Savu Sea (70.03%) perceived this activity as prohibited – not allowed. While in Komodo and Berau, half of the total respondents or more at each site perceived the activity as not prohibited or showed indecisive answer.

The majority of respondents in Berau (90.32%), Wakatobi (79.75%), and Savu Sea (72.30%) were aware that capturing turtles and turtle eggs were not allowed. There is still a large number of respondents in Komodo (36.11%) who were not really aware on rules and regulations related to species (turtle and shark). In term of capturing sharks (especially for its fins), respondents in all sites were not really sure whether it is prohibited or not by law. Respondents in Savu Sea 53.75% and Raja Ampat 51.32% perceived that it is allowed to capture shark; the percentage is the highest compared to other sites, followed by 49.24% of respondents in Berau perceived so.

Respondents in Komodo (68.46%), Wakatobi (72.65%), and Savu Sea (82.67%) perceived reef mining as a prohibited activity. Respondents in Berau mostly still perceive that reef mining is not prohibited or indecisive. Sand mining is perceived to be allowed mostly by respondents in Komodo (62.91%), Berau (54.17%), and Wakatobi (57.41%). Only majority respondents in Savu Sea (69.60%) perceived it as not allowed.

From data shown below, it can be seen that written warning, fine, confiscation of catch, confiscation of gear and boat, and jail punishment have mostly occurred in Berau. Respondents in Savu Sea mostly accepted the types of punishment such as written warning, fine, confiscation of catch, gear, and boat. They were, however, hesitant about confiscation of house and jail for violating marine environment regulation.

Table 10. Occurrence on various punishments at respondent's village

Perceived punishment happens in village - Written warning										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	35	5.76	490	93.33	197	41.13	940	82.24	441	72.65
Not occurred	422	69.41	19	3.62	106	22.13	78	6.82	89	14.66
Don't know	151	24.84	16	3.05	176	36.74	125	10.94	77	12.69
	608	100	525	100	479	100	1143	100	607	100

Perceived punishment happens in village - Fine										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	81	13.24	366	69.58	168	35.07	705	61.68	420	69.31
Not occurred	349	57.03	129	24.52	157	32.78	283	24.76	85	14.03
Don't know	182	29.74	31	5.89	154	32.15	155	13.56	101	16.67
	612	100	526	100	479	100	1143	100	606	100

Perceived punishment happens in village - Confiscation of catch										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	128	20.92	385	73.19	169	35.28	773	67.57	455	74.96
Not occurred	333	54.41	105	19.96	152	31.73	220	19.23	85	14.00
Don't know	151	24.67	36	6.84	158	32.99	151	13.2	67	11.04
	612	100	526	100	479	100	1144	100	607	100

Perceived punishment happens in village - Confiscation of gear										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	100	16.34	358	68.06	162	33.82	575	50.26	427	70.35
Not occurred	366	59.8	132	25.1	156	32.57	430	37.59	114	18.78
Don't know	146	23.86	36	6.84	161	33.61	139	12.15	66	10.87
	612	100	526	100	479	100	1144	100	607	100

Perceived punishment happens in village - Confiscation of boat										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	76	12.42	300	57.03	127	26.51	510	44.58	370	60.96
Not occurred	397	64.87	184	34.98	181	37.79	506	44.23	160	26.36
Don't know	139	22.71	42	7.98	171	35.7	128	11.19	77	12.69
	612	100	526	100	479	100	1144	100	607	100

Perceived punishment happens in village - Confiscation of house										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	12	1.96	66	12.52	38	7.93	233	20.37	66	10.87
Not occurred	459	75	415	78.75	280	58.46	786	68.71	409	67.38
Don't know	141	23.04	46	8.73	161	33.61	125	10.93	132	21.75
	612	100	527	100	479	100	1144	100	607	100

Perceived punishment happens in village - Jail										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Occurred	218	35.62	390	74	174	36.33	672	58.84	282	46.46
Not occurred	266	43.46	97	18.41	152	31.73	336	29.42	225	37.07
Don't know	128	20.92	40	7.59	153	31.94	134	11.73	100	16.47
	612	100	527	100	479	100	1142	100	607	100

Respondents were also asked whether people in their area were aware of environmental regulations and whether they obey the rules. Data on the table below showed that respondents in all sites were not fully aware whether many people in their area were aware of the existence of environmental regulations, thus this impacting their answer that very few people obey the rules. In examining the results of this particular section of the survey it is again clear that there may be some ambiguity in the results. Depending on whether the interviewee is themselves aware of the regulations will ultimately affect whether or not they feel their friends and colleagues in the village are likewise aware of them. And if the wording of the question is presented in an assumed fashion (that the interviewee is aware of the regulations) this may prove influential in the interviewee's response. Considering this caveat, the results are varied.

Some of the communities living in coastal areas depend on collecting mollusks during low tide for their livelihood. Some of the species are not prohibited to collect such as sea cucumber, oyster, and sea urchin. But the way the species are collected usually involve gleaning reefs which is considered as harming the coral reef ecosystems. The majority of respondents in all sites except Wakatobi were aware that collecting sea cucumber is not prohibited. Meanwhile, it is interesting to find that majority respondents in Berau, Wakatobi, and Savu Sea perceived collecting giant clam (*Tridacna* sp.) as allowed. According to Government Regulation No.

19/1999, giant clam is listed as endangered species and it is prohibited to collect the species. Giant clam is also listed as vulnerable species on the 2004 IUCN red list of threatened species.

Aside from testing the respondents' knowledge on various fishing gears and fishing activities, respondents were also asked about regulation enforcement in their area. From the table below, it can be summed up that majority of respondents in all of study sites were not aware that there were environmental regulations in place for protecting and preserving marine biodiversity. It is logical to know the corresponding answer to perception on obedience, that only few people in the community obey the rules and in general respondents did not know about the status of their community's obedience towards environmental regulations.

Table 11. Awareness and obedience toward environmental regulations

Perceived awareness on environmental regulation										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Many	117	19.12	147	28.05	110	22.96	255	23.27	278	45.65
Few	158	25.82	179	34.16	259	54.07	478	43.61	209	34.32
Don't know	337	55.07	198	37.79	110	22.96	363	33.12	122	20.03
	612	100	524	100	479	100	1096	100	609	100

Perceived obedience on environmental regulation										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Many	73	11.95	66	12.57	125	26.15	217	18.94	212	35.04
Few	192	31.42	227	43.24	223	46.65	487	42.5	246	40.66
Don't know	346	56.63	232	44.19	130	27.2	442	38.57	147	24.30
	611	100	525	100	478	100	1146	100	605	100

3.8 Exposures to environmental groups and activities

There are conservation groups or NGOs established and working in each TNC site. The groups were formed as a medium for local communities to meet-discuss-organize-actively involved in various marine conservation activities. Unfortunately, it seems the majority of respondents in each site has never heard about existing environmental groups. This relates to respondents'

answer that few respondents have ever participated in environmental-related activities except for Raja Ampat, in which 68.09% of total respondents were familiar with environmental groups and participated in the group activity. Thus, respondents who were familiar with the group and have participated in group activities perceived that the presence of environmental groups is beneficial to channel communities' aspiration on marine environment conservation in Savu Sea (89%), Raja Ampat (80.29%), Wakatobi (68.45%), and Berau (61.36%).

Table 12. Familiarity to environmental group, participation, and perceived benefit

Ever heard environment group										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	54	8.87	90	17.05	172	35.91	326	31.71	296	49.17
No	472	77.5	319	60.42	182	38	690	67.12	220	36.54
Don't know	83	13.63	119	22.54	125	26.1	12	1.17	86	14.29
	609	100	528	100	479	100	1028	100	602	100

Ever participated in environment-related activities										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	45	43.27	35	39.33	68	40.48	158	48.32	192	68.09
No	58	55.77	54	60.67	97	57.74	168	51.38	89	31.56
Don't know	1	0.96	0	0	3	1.79	1	0.31	1	0.35
	104	100	89	100	168	100	327	100	282	100

Perceived benefit from the presence of environmental group										
	Komodo		Berau		Wakatobi		Savu Sea		Raja Ampat	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	48	47.52	54	61.36	115	68.45	267	89	224	80.29
No	3	2.97	9	10.23	9	5.36	2	0.67	16	5.73
Don't know	50	49.5	25	28.41	44	26.19	31	10.33	39	13.98
	101	100	88	100	168	100	300	100	279	100

4. CONCLUSIONS and RECOMMENDATIONS

The results from the 2005, 2007, and 2009 surveys are extremely useful in gauging attitudes and perceptions of community members; sourcing areas where misinformation may be prevalent and identifying areas where outreach, awareness and capacity building work need to be focused in both the immediate and long-term future.

Survey results have shown the positive impacts of outreach and awareness/education program at all sites. The majority of respondents in all of study sites showed better knowledge on MPA and core message for having no take areas, which is the most critical concept. Perception on MPA as a restricted area is still quiet an issue. Demarcation term on MPA concept is still an issue. Some respondents did not show their support to demarcation but they show positive support on some more positive messaging. Awareness on general environmental regulations among respondents was showing an increase in percentage from the first and second surveys, especially on destructive fishing practices occurring in their area.

However, this survey also highlights key issues that need to be addressed at each of the sites. This is a key part of **site adaptive management**, and shows the effective use of monitoring and evaluation techniques in guiding and directing conservation implementation mechanisms on-the-ground. It is therefore recommended that the results be reviewed with all TNC-IMP (and partner) staff at the planned ‘Staff Development Week’ training event (scheduled for January 10) at which time the results can be built into each sites FY11 workplans.

4.1 Komodo

- Although significant increase at approximately 25% on no-take-areas (NTAs), awareness on this issue still needs greater work.
- Knowledge on coral reef in general and coral reef condition need to be checked with biophysical monitoring team to ensure that community perception towards the condition of marine ecosystems conforms with the real condition.
- Law enforcement in the Park should be implemented as stated on the procedure to avoid misconception within communities.
- More awareness and education is required regarding the relevant park and fisheries regulations that have an effect on the lives of people living within the park.

4.2 Wakatobi

- There is a giant leaping (63% increase) of respondents' awareness on NTAs in Wakatobi National Park. As such more support needs to be generated for the enforcement agencies active in the Park, and more follow through needs to be communicated with the communities to better elucidate the activities of the enforcement agencies and the manner in which their work is that of a 'solver' of problems.

4.3 Raja Ampat

- More support needs to be generated for the NGOs active in the MPAs, and more follow through needs to be communicated with the communities to better elucidate the activities of the NGOs and the manner in which their work is intended as that of a 'solver' (not 'creator') of problems.
- Awareness on threatened marine species should be communicated to communities. Conservation education program might take the role to increase community awareness and knowledge on the role of specific species in marine ecosystem.
- Destructive fishing is still occurring and yet, some respondents showed good knowledge on rules and regulation. Enforcement in the MPAs should be further promoted.

4.4 Berau

- More support needs to be generated for the enforcement agencies active in the MPA, and more follow through needs to be communicated with the communities to better elucidate the activities of the enforcement agencies and the manner in which their work is that of a 'solver' of problems.
- Awareness of NTAs needs far greater work, and there needs to be greater understanding of the prohibition regulations surrounding fishing activities in NTAs.
- Awareness on threatened marine species, especially sea turtle, needs better focus. Despite the current situation in Berau, sea turtles are endangered species and habitat management is critical.

Phase III perception monitoring has adopted the recommendations that came from Phase II survey based on discussions with the site Outreach Teams during the Perception Monitoring workshop held on April 1-3, 2010. In order to obtain a deeper understanding on community perception on MPA establishment and management, there is a need to consider survey alterations for Phase IV:

- Measure socio-economic and governance aspects through a more thorough survey or focus group discussion.
- Develop and refine socio-economic and governance survey.
- Apply trend analysis over time and separate two categories of MPAs (National Park and Marine Reserves).

Based on the experience of conducting three rounds of perception monitoring in Komodo, Wakatobi, Berau and Raja Ampat, there are a number of important lessons that TNC-IMP has learned, as well as a number of issues that need to be considered in the implementation of perception monitoring within the overall context of adaptive and effective management of MPAs. First is the issue of how often do these surveys need to be conducted. The first two surveys were conducted within 1-1.5 years of one another, while the third was 3-3.5 years thereafter. Taking into consideration the dynamics and challenges of implementing conservation on the ground, it may have been more realistic to have conducted the surveys in, for example, every three or four years. This is based on the assumption that in three years of conservation intervention and intensive outreach and education efforts, there will be a higher community participation in various conservation activities as well as more significant increase or changes in awareness and knowledge within the communities. Further analysis will need to be taken to verify how often these surveys are most effectively conducted.

The second issue is on who will continue to monitor these changes in perceptions and more importantly in behavior. As an international NGO, TNC's role at sites will change over time, and it is expected that local partners will be taking the lead in many of the endeavors and interventions that TNC has conducted. Surveys such as this need resources, both financial and capable manpower, that conservation sites where TNC works in may not necessarily have, thus it is important that these resources are developed within the MPA management system. Over the past two years, TNC-IMP collaborated with the Indonesian Ministries of Fisheries and Marine Affairs and Forestry and other international and local NGOs in developing a "Guide for Improving Marine Protected Area Management Effectiveness in Indonesia" to be used by MPA managers/management authority bodies in determining adaptive and improvement measures. Perception monitoring is one of the key monitoring activities included in the Guide to gauge the stakeholders' support for and engagement in the management of marine resources, and as such will be embedded in the overall effective MPA management system.

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Appendix 1. General Protocol

Introduction

As an integral part of its comprehensive monitoring program, The Nature Conservancy – Coral Triangle Center (TNC-CTC) will develop and implement a system to monitor the perception of stakeholders on resource status, resource use, and resource management at its four marine conservation sites in Indonesia, i.e.: Komodo, Wakatobi, Derawan and Raja Ampat. This program is essential to evaluate stakeholders' perception on the efficiency of MPA management, improve adaptive MPA management by incorporating stakeholder needs, and improve local outreach programs by providing feedback on trends in local perceptions.

In April 1-3, 2009, TNC- CTC held a perception monitoring workshop in Bali which attended by TNC-CTC Outreach Coordinators from 6 sites and Bird's Head project partners (CI Indonesia and WWF Indonesia). The workshop outputs were improved standard monitoring protocol produced, site's questionnaires reviewed and improved, socioeconomic aspect added to existing protocol.

This general monitoring protocol is developed and improved during the workshop. It will serve as an umbrella for TNC-CTC to develop its site-specific perception monitoring protocols and for partners to align their similar monitoring programs in the above four mentioned site.

1. Purpose of this protocol

The purpose of this protocol is to provide guidance for planning and implementation of perception monitoring at each of the four TNC-CTC marine conservation sites in Indonesia: Komodo, Wakatobi, Derawan and Raja Ampat. Perception monitoring will focus on the state, use, and management of marine resources.

2. Objectives for perception monitoring

The objectives of this program are two folds:

- a) A monitoring tool that will produce a number of basic quantifiable indicators on community's attitudes e.g.: on rules and regulations, and perceptions e.g.: on resource

- use conditions that will make it possible to (a) observe trends overtime and (b) assess what impact the management interventions e.g.: outreach and awareness programs and law enforcement, may have on those attitudes and perceptions.
- b) A formative research that will allow MPA managers to become better acquainted with attitudes, perceptions and behaviors in the communities residing in and interacting with MPAs. This research program will:
- a) produce qualitative and quantitative data portraying the community's awareness, attitudes and behaviors concerning the environment in general and MPAs where they live, in particular;
 - b) identify cultural and socioeconomic factors that may either obstruct or facilitate the adoption of more environmentally responsible practices;
 - c) become a source of information to ascertain the types of management interventions that are more likely to have a noticeable impact on people's attitudes and behaviors. This program will also provide baseline information to monitor trends in the communities' perceptions on management effectiveness and the state of natural resources for the duration of the program intervention. This information is needed to: (1) improve awareness programs; (2) inform adaptive management; (3) measure of management / awareness program effectiveness.

3. Monitoring sites

All four TNC-CTC's marine conservation sites (Komodo, East Nusa Tenggara Province; Raja Ampat, Papua Province; Wakatobi, Southeast Sulawesi Province; and Derawan Islands, East Kalimantan Province) will subject to the monitoring process.

4. Methodology

The methodology of study will bring together standard monitoring procedures as described in Bunce and Pomeroy's *Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia* (SocMon SEA). In addition, a senior research advisor from Johns Hopkins' Center for Communication Programs in Indonesia will provide his/her expertise to support the technical aspects of program implementation.

5. General procedures for respondent selection

Data gathering for these studies will be conducted in three mutually complementary stages i.e.: secondary data analysis (qualitative study) and household surveys (quantitative study).

Procedures in data collection are as follow:

- a) Secondary data analysis.
 - i) Ten villages at each site will be purposively selected. Major criteria for selection are villages with: (a) majority of their communities exploiting marine resources in their surrounding areas for daily consumption and/or income generation, (b) large portions of their communities have been subjected to TNC-CTC and its partners' management interventions through community awareness and development programs.
 - ii) Each field site will compile and organize all information currently available regarding demographics, community infrastructure, social organization, environmental regulations, etc. in the communities under study. Outreach and/or Monitoring Coordinator will provide demographic data by conducting mini censuses to list all households in the 10 villages under study.
 - iii) Based on the above information the MPA management team will prepare brief descriptions that will serve as an overall review of the sites' current situation and as background information to develop the protocols for site-based in-depths, household and individual surveys.
- b) Household and individual surveys
 - i) At least 30 households per village -from a total of 10 villages- amounting for 300 households per site will be selected for interview. Households will be randomly selected based on the list of household in the village under study provided by TNC-CTC field team.
 - ii) All members of household age between 15 to 59 years old are eligible for interview. This is the age span in which individuals are more likely to be economically active and involved in their communities' social and economic life. Household members are defined as if the persons are living permanently and share the same kitchen in the household. One man and one woman will be randomly selected from the list of

eligible persons in the household for individual interviews. Tables of random selection for men and women have been prepared by technical team of MPA management team in appendix 2. Interviewers will not be allowed to replace the selected individual by another household member.

6. General procedures for interviewer selection

- a) Interviewer will be selected from independent persons who are not currently working as staff, contractor, and consultant of TNC-CTC and its partners in the field site under study.
- b) Approximately 4 to 10 interviewers will be hired. Each interview team will have males and females. The number of interviewers may vary across sites, depending on the need and resources.
- c) It is preferable that the selected interviewers hold an undergraduate degree (S1) or at least graduated from senior high school or equal.
- d) It is preferable that interviewers are familiar with community under study.

7. General procedures for interview process

- a) Interviewers at each site will be trained for 4 to 5 days to implement the survey program according to site-based monitoring protocol.
- b) A team of independent interviewers will interview the selected informants, following the general and site-based interviewing protocols that will be prepared jointly by the TNC-CTC technical staffs.
- c) In the case of the absence of persons in the household, the interviewers should make 3 times attempts to obtain data on that household. If these attempts failed, then interviewers should ignore it and replace it with the next qualified households.
- d) In the case of the absence of selected individual respondent in the household, the interviewers should make 3 times attempt to interview him/her. If these attempts failed, then interviewers should ignore it and replace it with other qualified individuals. If interviewers are only able to interview one out of the two qualified selected persons in a household, then interviewers should still keep the data and report it in his brief notes to field coordinator.

- e) If there are only one man and one woman in the household then interviewers will directly interview them.
- f) The technical team of MPA management team will randomly select additional 10 households and add them to the list of respondent in each selected village as reserve in a case where attempts have been made and still household members are not available.
- g) In the case of crisis or natural disaster happening in selected target sites in which survey could not be done, interview should draft letter of statement officiated by TNC-CTC site Outreach Coordinator.
- h) The interviewers' team should consist of four to seven interviewers with comparable levels of experience in qualitative data gathering and analysis. Having a small team with comparable level of skill is important to ensure that collection and interpretation of data are done consistently.
- i) The independence of interviewers is important because respondents that perceive interviewers as committed to TNC or the MPA management team may be subject to what is known as courtesy bias. This means that they may be reluctant to express unfavorable opinions or may express a more favorable opinion that they really have.
- j) It is equally important that interviewers feel free to report objectively and without constraints, even if they come across some unflattering results.
- k) Site-based interviewing guidelines will be developed based on this general guideline and pre-tested before being used in the field.
- l) As soon as field survey completed, interviewer should report and present his/her finding and achievement to TNC-CTC site perception monitoring coordinator and it's partners.
- m) Perception monitoring program will be implemented in 2009. The survey will then be iterated in the next two years. The next follow-up survey will be decided later after 2009 iteration. This decision will be based upon programmatic rather than technical questions. As a general principle, if the MPA management team believes the intervention is having a noticeable impact over a short period of time, the follow up study should be planned for 24 or 36 months after the 2009 iteration.

8. Questionnaire design

- a) Two types of site-based questionnaires will be developed: (a) questionnaires for household survey, (b) questionnaires for individual survey.
- b) Household questionnaires will be developed to capture the characteristics of community under study. Household demographic indicators offered in the SocMon manual (Table 4.2: Household interview indicators) will be included within the questionnaires. Refer to appendix 4 for household questionnaires.
- c) Individual questionnaire will be developed to capture the respondents' knowledge, attitudes and behaviors on resources status and governance. Questionnaires for males will be slightly different from females. Attitudes and perceptions indicators offered in the SocMon manual (Table 4.2: Household interview indicators) will be specifically included within the questionnaires. Refer to appendix 5 and 6 for individual males and females questionnaires.
- d) Attitudes and perceptions will be measured with Likert-type questions. Respondents will be asked to score their opinions in scales from 1 to 3 and will be asked to express if they are agree, undecided, disagree with certain statements.

9. Data management and analysis

- a) The data will be entered in excel format. This format is included in the appendix 5 and 6.
- b) Once data entry is completed, TNC-CTC should run data editing programs, produce frequency distributions and cross tabulations to ensure that data are free of inconsistencies and meets the required quality standards. For example, the question that has responses ranging from 1 to 6 will only have frequency distribution ranging from 1 to 6. If it comes out from 8 to 9 then the data entered is error and need to be corrected.
- c) TNC-CTC staff will corroborate the quality of data set prior to receiving it from TNC-CTC sites.

- d) Internal consistency (reliability) of responses from Likert-type questions within individual questionnaires will be confirmed with Chronback's alpha coefficients. This statistics indicates the degree to which individual items group together to form combined scale index.

10. Report preparation

- a) Two core reports will be prepared. One will be more technical, detailed in the explanation of the methodology and oriented to a technical and academic audience. The other will focus on the more relevant findings and their programmatic implications, and will be oriented on stakeholders and policy makers who may have little or no understanding of statistical analysis.
- b) These reports will be prepared by TNC-CTC. MPA management team and other interested parties will review and comment on the report.
- c) Site report will be developed by site team. After final completion, site report should be reported back to communities and local partners through selected outreach method.

Appendix 2. Questionnaire on Household and Individual Characteristic

TNC-CTC PERCEPTION MONITORING QUESTIONNAIRE
HOUSEHOLD QUESTIONNAIRE 2009
 HOUSEHOLD IDENTIFICATION

1	PROVINCE _____				
2	TNC-CTC SITE _____				
3	VILLAGE _____				
4	NAME OF HEAD OF HOUSEHOLD _____				
5	ADDRESS _____				
6	HOUSEHOLD NUMBER _____				
7	INTERVIEW DATE _____	DATE	MONTH	YEAR	2 0 0 9
8	INTERVIEWERS NAME AND CODE N° _____				
9	INTERVIEW RESULT (SEE BELOW)				

KODE HASIL WAWANCARA

Questionnaire completed	01	Partially completed	03
Not at home at the time	02	Dwelling not found	06
Long-term absence	05	Dwelling not occupied	07
Refusal	04	Other _____	08
		(please mention)	

HOUSEHOLD CHARACTERISTIC

NO	QUESTION	ANSWER	SKIP
H1	Record the main material of the Floor without asking CIRCLE ONLY ONE ANSWER IF THERE IS MORE THAN ONE MATERIAL, RECORD THE MATERIAL THAT COVERS THE LARGEST SURFACE OF THE FLOOR	Dirt/earth 1 Bamboo 2 Wood 3 Brick/concrete 4 Tile/ceramic/granite 5 Others, (specify)_____ 6	
H2	Record the main material of the Floor without asking CIRCLE ONLY ONE ANSWER IF THERE IS MORE THAN ONE MATERIAL, RECORD THE MATERIAL THAT COVERS THE LARGEST SURFACE OF THE FLOOR	Dirt/earth 1 Bamboo 2 Wood 3 Brick/concrete 4 Tile/ceramic/granite 5 Others, (specify)_____ 6	
H3	In your house, do you have material listed below which works? CIRCLE ALL ANSWER GIVEN A. Running water inside the house B. Electricity C. A radio D. A TV set	Yes (1) No (2) 1 2 1 2 1 2 1 2	
H4	Does any member in this house have: CIRCLE ALL ANSWER GIVEN A. A row boat B. A bicycle C. A motor boat D. A motorcycle E. A car or truck	Yes (1) No (2) 1 2 1 2 1 2 1 2 1 2	
H5	What are the main activities of the members of this household? WRITE ALL ANSWERS GIVEN BY RESPONDENT ON COLUMN PROVIDED	_____ _____ _____	

HOUSEHOLD LISTING FOR MEN

	11	12	13	14	15						
	NAME	RELATIONSHIP	AGE	ELIGIBILITY	ELIGIBLE PERSONS ORDER NUMBER						
	Please tell me the name of the head of household and the name of the men who live in this household. I need only the name of the men who usually live here, not the name of those who are here visiting or staying for only a few days.	What's (NAME)'s relationship to the head of household? SEE CODES	How old is (NAME)?	CHECK IF THE PERSON IS 15 TO 59 YEARS OLD							
01	_____	<table border="1"><tr><td>0</td><td>1</td></tr></table>	0	1	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
0	1										
IF HEAD OF HOUSEHOLD IS A WOMAN, WRITE HER NAME IN Q 21 -01 AND LEAVE THE LINE ABOVE BLANK											
02	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
03	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
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14	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
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RELATIONSHIP CODES

Head of household	01	Father	04	Domestic help	07
Spouse of head of household	02	Father in law	05	Unrelated household member	08
Son, stepchild, and son in law	03	Other relatives	06	Other	09

TABLE OF RANDOM NUMBERS FOR MEN'S INDIVIDUAL INTERVIEWS

Eligible person order number	Last digit in the household number (see identifier record, n° 6)									
	0	1	2	3	4	5	6	7	8	9
2	1	1	1	1	1	2	2	2	1	1
3	2	2	3	2	3	2	1	1	3	1
4	3	4	3	3	1	3	2	4	4	2
5	2	2	4	2	3	3	3	5	4	5
6	5	4	2	6	2	3	4	1	4	3
7	6	1	6	2	6	3	5	4	3	6
8	3	7	8	4	1	2	5	2	7	2

HOUSEHOLD LISTING FOR WOMEN

	16	17	18	19	20						
	NAME	RELATIONSHIP	AGE	ELIGIBILITY	ELIGIBLE PERSONS ORDER NUMBER						
	Please tell me the name of the head of household and the name of the women who live in this household. I need only the name of the men who usually live here, not the name of those who are here visiting or staying for only a few days.	What's (NAME)'s relationship to the head of household? SEE CODES	How old is (NAME)?	CHECK IF THE PERSON IS 15 TO 59 YEARS OLD							
01	_____	<table border="1"><tr><td>0</td><td>1</td></tr></table>	0	1	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
0	1										
IF HEAD OF HOUSEHOLD IS A MAN WRITE LEAVE THE LINE ABOVE BLANK											
02	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
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04	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
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12	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
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14	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
15	_____	<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	

FAMILY RELATION CODE

Head of household	01	Mother	04	Domestic help	07
Spouse of head of household	02	Mother in law	05	Unrelated household member	08
Daughter, stepchild, daughter in law	03	Other relatives	06	Other	09

TABLE OF RANDOM TABLE FOR FEMALE

Eligible person order number	Last digit in the household number (see identifier record, n° 6)									
	0	0	0	0	0	0	0	0	0	0
2	2	1	1	1	1	2	1	2	1	1
3	3	3	2	2	3	2	1	3	1	1
4	4	3	3	3	2	2	3	2	3	3
5	3	1	2	3	3	4	4	4	3	2
6	6	4	4	4	3	5	2	3	2	3
7	3	3	6	7	6	3	1	5	3	2
8	7	7	8	8	7	3	7	6	1	7

Questionnaires for individual survey

TNC-CTC PERCEPTION MONITORING QUESTIONNAIRE

INDIVIDUAL QUESTIONNAIRE 2009

IDENTIFICATION

1	PROVINCE _____			
2	TNC-CTC SITE _____			
3	VILLAGE _____			
4	NAME OF HEAD OF HOUSEHOLD _____			
5	ADDRESS _____ _____			
6	HOUSEHOLD NUMBER _____			
7	INTERVIEW DATE _____			
		DATE	MONTH	YEAR
8	RESPONDENT'S NAME AND LINE N° _____			
9	INTERVIEWER'S NAME AND CODE N° _____			

This questionnaire consists of 5 parts:

1. Respondents' Background Information
2. Attitudes with Regard to the Environment
3. Awareness of Environmental Protection Regulation
4. Exposure to Information
5. Participation in Stakeholder Organizations

SECTION 1: RESPONDENT'S BACKGROUND INFORMATION

NO	QUESTIONS	ANSWERS	SKIP
101	Respondent's sex	Male 1 Female 2	
102	How old are you?	Age.....	
103	What is your ethnicity?	
104	What is your religion?	
105	What is your current marital status? CIRCLE ONLY ONE ANSWER	Single 1 Married 2 Separated/divorced/widow 3	
106	Were you born in this village or were you born elsewhere	Born in this village 1 Born elsewhere 2	←109
107	How long have you lived in this village? CIRCLE ONLY ONE ANSWER	Less than 1 year 1	

		1 to 3 years	2	
		3 to 5 years	3	
		More than 5 years	4	
108	Where did you live before you came to live here?	Province	<input type="text"/>	<input type="text"/>
		District	<input type="text"/>	<input type="text"/>
		Village	<input type="text"/>	<input type="text"/>
		Born outside Indonesia	98	
109	Have you ever attended school?	Yes	1	
		No	2	☛112
110	What is the highest level of school you have attended: primary, junior high, senior high or more than senior high CIRCLE ONLY ONE ANSWER	Primary	1	
		Junior high	2	
		Senior high	3	
		More than senior high	4	
111	What is the grade/year you completed that level?	Grade/year	<input type="text"/>	
112	Can you read and understand a letter or a newsletter easily, with difficult or not at all? CIRCLE ONLY ONE ANSWER	Easy	1	
		Difficult	2	
		Not understand at all	3	
113	Did you have a job or did you work for income-generating activity for the last 6 month?	Yes	1	
		No	2	☛117
114	What is your main occupation? That is what do you do for a living?	_____		

		Saat ini tidak bekerja	98	
115	In addition to your main occupation, do you have other income-generating activities?	Yes	1	☛116
		No	2	☛117
116	What other income-generating activities do you have? WRITE DOWN ALL THE RESPONDENT' MENTION	_____		

117	What's the reason why you are not working now?	Unemployed/looking for work	1	
		Sickness/dissability	2	
		Too old to work	3	
		It is not the season for him to work	4	
		Somebody else provides for him	5	
		Other, specify	6	

SECTION 2: ATTITUDE WITH REGARD TO ENVIRONMENT

NO	QUESTION	ANSWER	SKIP
201	Now I would like to read a list of problems that some communities like yours face in Indonesia. Please tell me if in the case of your village these represent major problems, minor problems or no problem at all.	Major problem (1) Minor problem (2) Not a problem (3)	

	CIRCLE ALL RESPONDENT ANSWER	Don't know (8)	
	A. The coastal areas are being destroyed	1 2 3 8	
	B. The sea water is being contaminated by waste	1 2 3 8	
	C. There is less fish and marine life than it used to	1 2 3 8	
	D. Outside fisher came and took out our fish	1 2 3 8	
	E. Traditional resource use management left abandon	1 2 3 8	
	F. Such marine area rented to others (NOTES FOR ENUMERATOR)	1 2 3 8	
	G. Coastal development	1 2 3 8	
201	Now I will read you some statements related to Coral Reefs. Again, please tell me if you agree, you are undecided, you disagree with these statements CIRCLE THE RESPONDENT ANSWER	Agree (1) Disagree (2) Don't know (8)	
	A. The reefs are important for protecting beaches and coastal villages from storm waves	1 2 8	
	B. Protecting the coral reefs today will sustain the livelihood of future generations in my village	1 2 8	
	C. Fishing around coral reefs should be regulated to allow fish and coral to grow	1 2 8	
202	How would you rate the conditions of coral reefs near your village: very good, good, bad or very bad? CIRCLE ONLY ONE ANSWER	Good 1 Bad 2 Don't know/not sure 8	
203	Do you think the condition of coral reefs will be better, remain the same, or bad than they were 10 years ago? CIRCLE ONLY ONE ANSWER	Better 1 Remain the same 2 Worse 3 Don't know/not sure 8	
204	Now I will read you some statements related to mangrove. Tell me whether the statement true or false. CIRCLE RESPONDENT ANSWER Mangroves are important for protecting beaches and coastal villages from storm waves.	True (1) False (2) Don't know/not sure (8) 1 2 8	
205	How would you rate the conditions of mangroves near your village: very good, good, bad or very bad? CIRCLE ONLY ONE ANSWER	Good 1 Bad 2 No mangroves in my village 3 Don't know/not sure 8	
206	Do you think the condition of mangroves will be better, remain the same, or bad than they were 10 years ago? CIRCLE ONLY ONE ANSWER	Better 1 Remain the same 2 Worse 3 Don't know/not sure 8	
207	Do you believe it is a good idea to demarcate some coastal areas where the surroundings and the marine life can be protected and preserved?	Yes 1 No 2	◀208 ◀209

	CIRCLE ONLY ONE ANSWER	Don't know/not sure	8	210
208	Why do you think it is a good idea? WRITE DOWN RESPONDENT RESPONSE IN FEW WORDS			
209	Why do you think it is not a good idea? WRITE DOWN RESPONDENT RESPONSE IN FEW WORDS			
211	I will read you some statements please tell me if you agree, you are undecided, you disagree with these statements. Some of these statements are contradictory, and keep in mind that there are no right or wrong choices. We only want to know your opinion. CIRCLE ONLY ONE ANSWER A. The coral reefs around my village don't need special protection B. The mangroves around my village don't need special protection C. Most people in my village don't care about protecting the environment G. People who worry about protecting the sea and coastal areas care more about fish than they care about people H. I as an individual can do many things to protect marine environment including coastal resources around my village I. Working collaboratively, the people in my village can do many things to protect the marine environment including coastal resources J. People who destroy the natural environment should be punished K. People who capture protected species should be punished L. Damaging our coastal environment now will make our lives more difficult in the future	Agree (1) Disagree (2) Don't know/not sure (8) 1 2 8 1 2 8 1 2 8 1 2 8 1 2 8 1 2 8 1 2 8 1 2 8		
210	Thinking about the future, do you think that such protected areas would be beneficial, detrimental or would not make a difference to your family and your village? CIRCLE ONLY ONE ANSWER	Beneficial Detrimental Would not make a difference Don't know/not sure	1 2 3 8	
213	What do you think are the main environmental problems are happening in the shores and the sea around your village (please mention village name) DO NOT READ THE ANSWER OPTIONS MORE THAN ONE ANSWER ALLOWS	Overfishing / diminishing fish stocks Fishing with explosives Fishing with cyanide Fishing with fish trap (bubu) Mangrove cutting Coral mining	1 2 3 4 5 6	

		Water contamination 7 Deforestation of surrounding areas 8 Soil erosion in surrounding areas 9 Invasion of foreign species 10 Overpopulation / too many people living in the area 11 Other problems (specify)_____ 12 There are no major environmental problems 13 Don't know / not sure 98	• 218 • 218
214	In your opinion, who is the creator of these problems? DO NOT READ ANSWERS OPTIONS, ONLY ONE ANSWER ALLOWED IF THE RESPONDENT CITES MORE THAN ONE ASK OF WHICH ONE WHO IS <u>THE MAIN CREATOR</u> (REFER THIS QUESTION TO QUESTION RELATED TO ENVIRONMENTAL PROBLEM)	People in the village 1 Visitor/tourist 2 The Bupati/head of district 3 Village leader 4 National government 5 Private businesses 6 Fishermen 7 National Park Authority 8 Non-government organization 9 Other, specify_____ 10 Don't know/not sure 98	
215	In your opinion, Who do you think the most qualified people to fix these problems? DO NOT READ ANSWER OPTIONS, ONLY ONE ANSWER ALLOWED IF THE RESPONDENT CITES MORE THAN ONE ASK OF WHICH ONE WHO HAS THE <u>MOST</u> QUALIFIED	People in the village 1 Visitor/tourist 2 The Bupati/head of district 3 Village leader 4 National government 5 Private businesses 6 Fishermen 7 National Park Authority 8 Non-government organization 9 Other, specify_____ 10 Don't know/not sure 98	
216	In your opinion, who has the main responsibility to solve these problems? DO NOT READ ANSWER OPTIONS, ONLY ONE ANSWER ALLOWED IF THE RESPONDENT CITES MORE THAN ONE ASK OF WHICH ONE WHO HAS THE <u>MAIN</u> RESPONSIBILITY	People in the village 1 Visitor/tourist 2 The Bupati/head of district 3 Village leader 4 National government 5 Private businesses 6 Fishermen 7 National Park Authority 8	

		Non-government organization	9	
		Other, specify_____	10	
		Don't know/not sure	98	
217	In your opinion, do you think it is very likely, somewhat likely or unlikely that those who have main responsibility will do anything to improve the environment in the future? CIRCLE ONLY ONE ANSWER	Very likely	1	☛ 300
		Somewhat likely	2	☛ 300
		Unlikely	3	☛ 218
		Don't know/not sure	8	☛ 300
218	In your opinion, why those responsible will unlikely improve the environment in the future? WRITE DOWN RESPONDENT RESPONSE IN FEW WORDS	_____		

SECTION 3: AWARENESS OF ENVIRONMENTAL PROTECTION

NO	QUESTION	ANSWER	SKIP
301	Have you ever heard of the expression <i>marine protected areas</i> ? CIRCLE ONLY ONE ANSWER	Yes	1 ☛ 303
		No	2 ☛ 302
		Don't know/not sure	8 ☛ 302
302	Have you heard of areas where people are regulated to fish, capture animals or extract seaweed so that the environment can be preserved? CIRCLE ONLY ONE ANSWER	Yes	1 ☛ 303
		No	2 ☛ 306
		Don't know/not sure	8 ☛ 306
303	In your opinion what are marine protected areas? DO NOT READ ANSWER OPTIONS, CIRCLE ONLY ONE ANSWER	Areas where the sea and coast are protected by law	1
		Areas where fishing/harvesting/capturing animals is regulated	2
		Other, specify	8

304	In your opinion is it prohibited to fish at certain areas in these marine protected areas (MPA)? CIRCLE ONLY ONE ANSWER	Prohibited at all areas in MPA	1
		Prohibited at certain areas in MPA	2
		Not prohibited at all	3
		Don't know/not sure	8
305	Is your village in MPA? CIRCLE ONLY ONE ANSWER	Yes	1
		No	2
		Don't know/not sure	8
306	Now I will read a ways of fishing that people in your village and other communities like yours use. Please tell me if fishing techniques are allowed or not allowed. In Indonesia	Allowed (1)	
		Not allowed (2)	
		Don't know/not sure (8)	

	<p>CIRCLE RESPONDENT ANSWER, ALLOWED = LEGAL AND NOT ALLOWED = ILLEGAL.</p> <p>A. Hook and line</p> <p>B. Fish trap (Bubu)</p> <p>C. Trawling</p> <p>D. Gill and net</p> <p>E. Seine net</p> <p>F. Fishing with explosives (Dynamite / C4)</p> <p>G. Fishing with cyanide</p> <p>H. Hookah compressor</p> <p>I. Spear</p> <p>J. Tuba/bore/traditional poison</p>	<p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p>	
307	<p>Now I read a list of activities. Please tell me if these activities are allowed or not allowed in the parks.</p> <p>CIRCLE RESPONDENT'S ANSWERS</p> <p>A. Reef gleaning</p> <p>B. Capturing or hunting turtles</p> <p>C. Shark fishing</p> <p>D. Coral mining</p> <p>E. Sand mining</p> <p>F. Capturing crabs</p> <p>G. Swimming or scuba diving</p> <p>H. Extracting wood from mangrove</p> <p>I. Playing on the beach</p> <p>J. Fishing sea cucumber</p> <p>K. Gathering giant clams</p>	<p>Allowed (1)</p> <p>Not allowed (2)</p> <p>Don't know/not sure (8)</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p>	
308	<p>Please tell me if a person may face the following penalties for breaking the parks' rules:</p> <p>CIRCLE RESPONDENT'S ANSWER</p> <p>A. Written warning</p> <p>B. Fine in rupiah</p> <p>C. Confiscation of catch</p> <p>D. Confiscation of fishing gear</p> <p>E. Confiscation of boat</p> <p>F. Confiscation of house</p> <p>G. Prison</p>	<p>Will face (1)</p> <p>Will not face (2)</p> <p>Don't know/not sure (8)</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p> <p>1 2 8</p>	
309	<p>Do you think that in your village most of the people or few of the people know what the park rules and regulations are?</p> <p>CIRCLE ONLY ONE ANSWER</p>	<p>Most of people know 1</p> <p>Few of people know 2</p> <p>Don't know/not sure 8</p>	
310	<p>Do you think that in your village most of the people or few of the people</p>	<p>Most of people follow rules 1</p>	

	follow the park rules and regulations are? CIRCLE ONLY ONE ANSWER	Few of people follow rules Don't know/not sure	2 8	
--	--	---	--------	--

SECTION 4: EXPOSURE TO INFORMATION

NO	QUESTION	ANSWER	SKIP
401	What are your MAIN sources of information? WRITE DOWN ALL RESPONDENT'S ANSWER, MAIN = THE MOST FREQUENT AND MOST TRUSTED	a. Media, specify..... b. Non-media, specify.....	
402	How often do you read a newspaper or a magazine? CIRCLE ONLY ONE ANSWER	Everyday 1 One to six days a week 2 Between once a week to once a month 3 Very seldom 4 Never 5	
403	How often do you listen to the radio? CIRCLE ONLY ONE ANSWER	Everyday 1 One to six days a week 2 Between once a week to once a month 3 Very seldom 4 Never 5	
404	How often do you watch television? CIRCLE ONLY ONE ANSWER	Everyday 1 One to six days a week 2 Between once a week to once a month 3 Very seldom 4 Never 5	
405	Have you heard any radio programs or messages discussing environmental problems in the marine or coastal areas during the last 6 month? CIRCLE ONLY ONE ANSWER	Yes 1 No 2 Don't know/not sure 8	
406	What kind of program or messages have you ever heard? WRITE DOWN RESPONDENT'S ANSWER IN FEW WORDS	_____ _____ _____	
407	Approximately how many times have you heard such messages during the last 12 months? WRITE DOWN RESPONDENT'S ANSWER	Number of times Don't know/not sure 98	
408	Who is your source of information related to marine environment? WRITE DOWN RESPONDENT'S ANSWER MORE THAN ONE ANSWER ALLOWED	Friends 1 Family 2 Religious leader/adat leader 3 Government officer 4 Non-government officer 5	

		Other, specify_____	6	
		Don't know/not sure	8	
409	Have you talked to friends or relatives about environmental problems affecting your village during the last 6 months? CIRCLE ONLY ONE ANSWER	Yes	1	
		No	2	
		Don't know/not sure	8	
410	Have you read any brochures (from TNC/CI/WWF/PNK) discussing environmental problems in the marine or coastal areas during the last 6 months? CIRCLE ONLY ONE ANSWER	Yes	1	
		No	2	
		Don't know/not sure	8	

SECTION 5: PARTICIPATION IN STAKEHOLDER ORGANIZATIONS

NO	QUESTION	ANSWER	SKIP
501	Have you ever heard about the presence of environmental stakeholder organization/group/club in your village during the last 6 months? CIRCLE ONLY ONE ANSWER	Yes 1 No 2 Don't know/not sure 8	☛ 502 ☛ 511 ☛ 511
502	Please specify name of organization/group/club! WRITE DOWN RESPONDENT'S ANSWER IN COLUMN PROVIDED	_____ _____	
503	Have you ever participated in the organization/group/club for the last 6 months? CIRCLE ONLY ONE ANSWER	Yes 1 No 2 Don't know/not sure 8	☛ 504 ☛ 507 ☛ 508
504	What kind of activities have you ever participated? WRITE DOWN RESPONDENT'S ANSWER IN COLUMN PROVIDED	_____ _____	
505	Approximately how many times have you participated in such activities during the last 6 months?	Number of times <input type="text"/> <input type="text"/> Don't know/not sure 98	
506	From whom/which do you know about the activities? WRITE DOWN RESPONDENT'S ANSWER IN COLUMN PROVIDED	_____ _____	☛ 508
507	Why did not you ever participated in the organization/group/club? CIRCLE ALL RESPONDENT'S ANSWER, MORE THAN ONE ANSWER ALLOWED	Not interested 1 No spare time 2 No one tells me 3 Not well accepted by the group 4 Not the group member 5 I'm not well represented by the group 6 Other, specify_____ 7	
508	Do you think that this organization is beneficial to accommodate your concerns in marine and coastal environmental management in your	Yes 1	☛ 509 ☛ 510

	village? CIRCLE ONLY ONE ANSWER	No Don't know/not sure	2 8	511
509	Why do you think this organization is beneficial? WRITE DOWN RESPONDENT'S ANSWER IN FEW WORDS			
510	Why do you think this organization is NOT beneficial? WRITE DOWN RESPONDENT'S ANSWER IN FEW WORDS			
511	What kind of environmental activities do you expect to be involved in the next 2 years? WRITE DOWN RESPONDENT'S ANSWER IN FEW WORDS NOTE FOR ENUMERATOR: THIS QUESTION IS NOT A PROMISE FOR COMMUNITY/RESPONDENT			

Appendix 3. Occupation categorization

No	Category	Activities
1	Non destructive fisher	Dragnet/seine
		Line fishing
		Lift net
		Long line
		Beach seine
		Spear fishing
2	Destructive fisher	Reef gleaning
		Using compressor
		Long line (specifically Komodo)
		Trap
		Bomb fishing
		Poison fishing
		Cyanide fishing
		Trawl
		Mini trawl
3	Marine product farmer	sea cucumber, fish, pearl, seaweed, abalone, lobster farming
		sea farmer
4	Farmer	farmer
5	Migrant	Working outside origin area
6	Livestock farmer	Chicken
		Goat/sheep/buffalo
		Dog
7	Seafood trader	Selling and/or buying fish product from sea or estuarine
		Cuttlefish/shrimp/crocodile/turtle's eggs seller

8	Non-seafood trader	Primary foods
		Cake seller
		Retailer
		Warung/kios
		Debt collector
9	Home industry	Handcrafter
		Weaving clothes
		Carver
		Meat balls/cracker/shredded fish producer
		Blacksmith
		Mebeler
		Cake maker
		Chain saw operator
		Sago collector
		Grass weaver
		Boat craftsman
10	Employees	Pearl farm employees
		Cooperative employee
		Private sector employee
		Fishing boat crews
11	Labor	Builder
		Carpenter
12	Government employees	Civil servant
		Police and army
		Teachers
		Interns
		Legislative member
13	Hunter	
14	Illegal miner	Coral miner

		Sand miner
		Mangrove logger
15	Village leader	
16	Students	
17	Service	Motorcycle taxi
		Boat renter
		Masseuse
		shaman
		Repairing car
		Driver
		Barber
		Tailor
		Coconut tree climber
18	Business people	Licensed business trader
		Licensed travel agent
		Entrepreneur
19	Not Working	not working
		housewife