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# **PROTECT WILDLIFE ANNUAL REPORT I**

**July 2016 - June 2017**

**OCTOBER 2017**

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The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



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# PREFACE

The United States Agency for International Development (USAID), through its Mission to the Philippines, has contracted DAI Global, LLC (DAI) as the implementing partner for the Protect Wildlife activity under Contract No. AID-492-TO-16-00002. The effective date of the contract is June 17, 2016 to December 11, 2020. DAI partners with four organizations—Orient Integrated Development Consultants, Inc.; Rare, Inc.; Conservation International Foundation; and Tanggol Kalikasan, Inc.—in implementing the activity.

In lieu of the fourth quarterly report, DAI's Contract requires the submission of Annual Reports to USAID within 30 days from the close of each year. This Annual Report includes clearly distinguishable discussions of the accomplishments for the fourth quarter and summary of accomplishment for the entire year. The report articulates progress towards deliverables, outputs, and outcomes. The Annual Report also provides the following:

- Situational background information concerning Protect Wildlife's objectives;
- Description of progress against planned accomplishments in the Year 1 Work Plan and any deviations;
- Problems and challenges and how these may affect the Year 2 Work Plan;
- Progress in coordination with the host government, other donors, USAID-funded projects, and stakeholders including civil society, private sector and other development partners; and
- Planned activities for the first quarter of Year 2.

The Protect Wildlife Annual Report 1 covers the period of July 1, 2016 to June 30, 2017. It consists of five sections. The first section provides an overview of the activity and operating environment. The following section presents a summary of fourth quarter accomplishments, implementation progress and challenges encountered in Year 1. The overview discusses the overall progress based on contract deliverables, outputs and outcomes in the context of Protect Wildlife's Theory of Change; and status of targets and accomplishments in the fourth quarter and Year 1 including deviations from targets.

The third section provides detailed updates of implementation progress in Manila, Palawan and Zamboanga City-Tawi-Tawi for Contract Line Item No. (CLIN) 0001, which is comprised of Sub-CLINs for each of the activity's Strategic Approaches: Improve attitudes and behavior toward biodiversity and its conservation in target areas; Intensify private and public sector involvement in conserving and financing biodiversity initiatives; Improve biodiversity conservation competencies of local government units and civil society organizations that include on-site land and resource management units; Enhance capacities of universities to advance biodiversity conservation education, research, monitoring and innovation; and Enhance competencies of national and local government agencies in enforcing biodiversity conservation-related laws and policies. There are no activities yet under CLIN 002.

The fourth section addresses activity operations and management in Year 1. The next section outlines planned activities for July to September 2017, which are the initial activities for the Year 2 work plan. The sixth section addresses issues, challenges and lessons learned from Year 1 implementation, and the final section is on past and projected expenditures.

This report's annexes include reports of assessments conducted prior to implementation of key activities in Protect Wildlife sites. These include assessments and analyses of costs and revenues of potential partners in payment for environmental services (PES) development, livelihood and conservation financing opportunities, research capacity of universities and colleges, environmental law violations and gender roles and responsibilities in different communities.

The Year 2 Work Plan will build on the initial list, suggestions and recommendations from regional stakeholders' consultations, and interactions with Department of Environment and Natural Resources (DENR) central offices—primarily the Biodiversity Management Bureau (BMB), Forest Management Bureau (FMB), and Foreign-Assisted and Special Projects Service (FASPS), Department of Agriculture- Bureau of Fisheries and Aquatic Resources (DA-BFAR), civil society organizations (CSOs), the National Commission on Indigenous Peoples (NCIP), and enforcement law agencies, among others.



# ABBREVIATIONS

ADSDPP	Ancestral Domain Sustainable Development and Protection Plan
AdZU	Ateneo de Zamboanga University
ARMM	Autonomous Region in Muslim Mindanao
BCC	behavior change communication
BOC	Bureau of Customs
BPRWSA	Brooke’s Point Waterworks System
BPWS	Brooke’s Point Waterworks System
C4C	Campaigning for Conservation
CENRO	Community/City Environment and Natural Resources Office
CFLET	Composite Fisheries Law Enforcement Team
CHED	Commission on Higher Education
CLIN	Contract Line Item Number
CLUP	Comprehensive Land Use Plan
COP	Chief of Party
CSO	civil society organization
DA-BFAR	Department of Agriculture-Bureau of Fisheries and Aquatic Resources
DAI	DAI Global, LLC
DAO	DENR Administrative Order
DBM	Department of Budget and Management
DENR	Department of Environment and Natural Resources
DENR-BMB	DENR Biodiversity Management Bureau
DENR-FASPS	DENR Foreign-Assisted and Special Projects Service
DENR-FMB	DENR Forest Management Bureau
DILG	Department of Interior and Local Government
DOI PBC3	Department of the Interior Partnership for Biodiversity Conservation Phase 3
DOJ	Department of Justice
DOST	Department of Science and Technology
ECAN	Environmentally Critical Areas Network
ECLOF	Ecumenical Church Loan Fund
ECOFISH	Ecosystems Improved for Sustainable Fisheries
EG	Economic Growth
ELAC	Environmental Legal Assistance Center
EMMP	Environmental Mitigation Monitoring Plan
FLUP	Forest Land Use Plan
GDA	Global Development Alliance
GIS	Geographic Information System
GPH	Government of the Philippines
IP	indigenous peoples
IUCN	International Union for Conservation of Nature
IUU	illegal, unreported and unregulated

KAP	knowledge, attitudes and practices
KFI	Katala Foundation, Inc.
LGU	local government unit
LOI	letter of interest
LOP	life of project
LRMU	land and resource management unit
LWR	Lutheran World Relief
M&E	monitoring and evaluation
MEL	monitoring, evaluation, and learning
MFO	Municipal Fisheries Ordinance
MI	Measuring Impact
MinDA	Mindanao Development Authority
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPA	marine protected area
MSU-TCTO	Mindanao State University-Tawi-Tawi College of Technology and Oceanography
NALECC-SCENR	National Law Enforcement Coordinating Committee Sub-Committee on Environment and Natural Resources
NCIP	National Commission on Indigenous Peoples
NIPAS	National Integrated Protected Areas System
NOAA	National Oceanic and Atmospheric Administration
OCENR	Office of the City Environment and Natural Resources
PASU	Protected Area Supervisor
PBSAP	Philippine Biodiversity Strategy and Action Plan
PCAARRD	Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
PCG	Philippine Coast Guard
PCSD	Palawan Council for Sustainable Development
PCSDS	Palawan Council for Sustainable Development Staff
PENRO	Provincial Environment and Natural Resources Office
PES	payment for environmental services
PNP	Philippine National Police
PA	protected area
PPA	Philippine Ports Authority
PPP	public-private partnership
PSU	Palawan State University
RAECTF	Regional Anti-Environmental Crime Task Force
RDE	research, development and extension
SA	Strategic Approach
SURGE	Strengthening Urban Resilience for Growth with Equity
TRAC	Tawi-Tawi Regional Agricultural College
UdZ	Universidad de Zamboanga
USAID	United States Agency for International Development
US DOI	United States Department of Interior
USG	United States Government

WEO	wildlife enforcement officer
WMSU	Western Mindanao State University
WPU	Western Philippines University
ZCAWTF	Zamboanga City Anti-Wildlife Trafficking Task Force
ZCWD	Zamboanga City Water District
ZSCMST	Zamboanga State College on Marine Science and Technology



# I OVERVIEW OF PROTECT WILDLIFE ACTIVITY

As a megadiverse country, the Philippines is said to be the “center of the center” of nearshore marine diversity, including corals and reef fishes. It is home to about 1,100 terrestrial vertebrates and 5 percent of the world’s flora, a significant proportion of which is endemic. Poaching, wildlife trafficking, land conversion for agriculture and settlements, illegal, unregulated and unreported harvesting, destructive mining and quarrying are threatening the country’s rich bounty of biodiversity assets. Local stakeholders are failing to address these threats due to a lack of awareness about the value of biodiversity and the ecosystem goods and services they provide; inadequate financial support to manage wildlife habitats and regulate land and resource uses in highly diverse areas; and the economic incentives that drive ecosystem degradation and wildlife crime.

In view of the challenges in conserving biodiversity in the Philippines, the United States Government designed and launched the USAID/Philippines Protect Wildlife Activity, a five-year program to support initiatives that will help align conservation policy with on-the-ground wildlife management actions and law enforcement. The activity aims to help reduce threats to biodiversity, reduce poaching and use of illegally harvested wildlife and wildlife products, and improve ecosystem goods and services for human well-being. It will also link wildlife habitat management and law enforcement with local, regional and national development processes.

Protect Wildlife fits within the USAID Biodiversity Policy (USAID 2014) that *“builds upon the Agency’s long history of conserving a global biological heritage for current and future generations and reflects a deep understanding of the role that healthy natural systems play in achieving the Agency’s human-development goals”*. The activity is the first USAID/Philippines initiative to combat wildlife trafficking and directly implement the US Government’s newly signed Eliminate, Neutralize and Disrupt Wildlife Trafficking Act of 2016. Protect Wildlife supports the Philippines’ current policies and programs on biodiversity conservation and reduction of wildlife trafficking under the National Integrated Protected Areas System (NIPAS) Act and the Wildlife Resources Conservation and Protection Act.

Protect Wildlife seeks to improve local capacities; incentivize communities and local government units (LGUs); leverage financing support; and deepen knowledge, attitudes and behaviors for the effective management, regulation and enforcement of wildlife habitats in relation to other appropriate land and resource uses in biologically significant areas in Palawan, Zamboanga City, Tawi-Tawi and two additional sites (to be named in Year 2 in consultation with USAID and DENR). Protect Wildlife will also address wildlife trafficking outside habitats, especially in transshipment points such as ports, markets and other transaction hotspots.

Protect Wildlife has five strategic approaches (SAs), and the activity’s targets for each, are shown below:

**Strategic Approach 1:** Improve attitudes and behavior toward biodiversity and its conservation in target areas

Life-of-Project (LOP) Targets:

- 100 people trained to lead behavior change campaigns
- 25 behavior change campaigns implemented
- 300,000 people reached by behavior change campaigns

**Strategic Approach 2:** Intensify private and public sector involvement in conserving and financing biodiversity initiatives.

LOP Targets:

- US\$500,000 revenues generated from the sale of ecosystem services in targeted sites
- 100 payments for ecosystem services (PES) or tourism initiatives
- US\$5 million in Global Development Alliance (GDA) investments in Protect Wildlife anti-poaching and trafficking efforts

**Strategic Approach 3:** Improve biodiversity conservation competencies of local government units and civil society organizations that include on-site land and resource management units.

LOP Targets:

- 200 LGU staff trained in participatory planning for integrated conservation and development
- 2,500 community members trained in planning and implementation of integrated conservation and development
- 200 LGU staff trained, certified and formally deputized as Wildlife Enforcement Officers (WEOs) by government agencies

**Strategic Approach 4:** Enhance capacities of universities to advance biodiversity conservation education, research, monitoring and innovation.

LOP Targets:

- 25 university-supported research initiatives implemented at Protect Wildlife sites
- 10 universities developing conservation curricula with support from Protect Wildlife

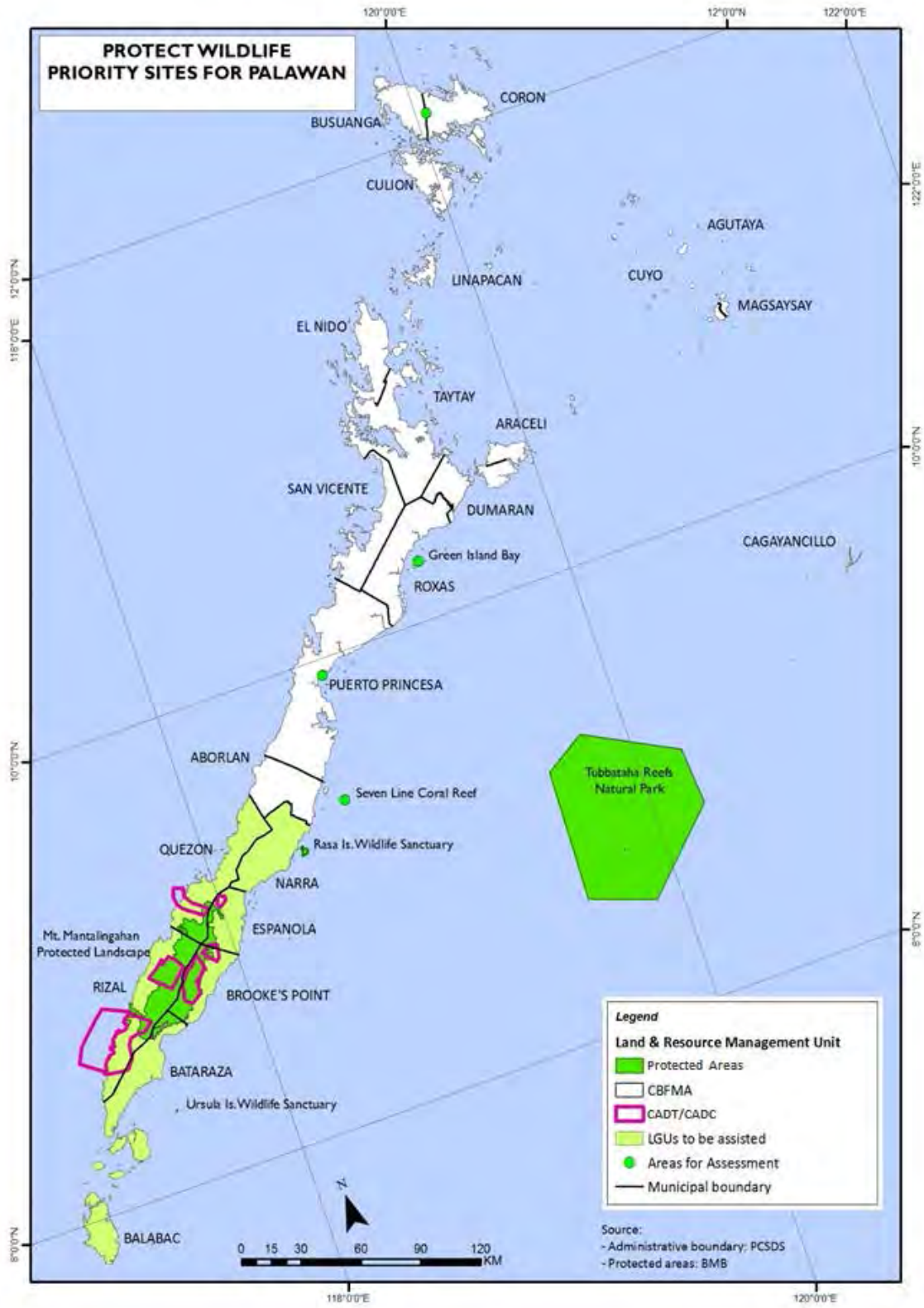
**Strategic Approach 5:** Enhance competencies of national and local government agencies in enforcing biodiversity conservation-related laws and policies.

LOP Targets:

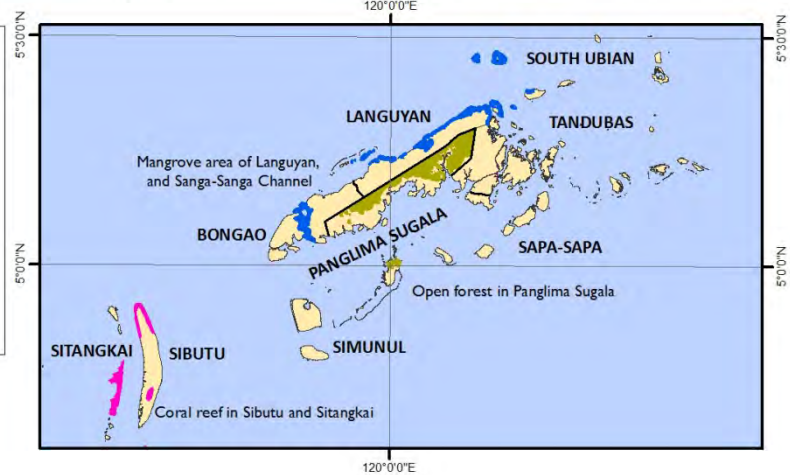
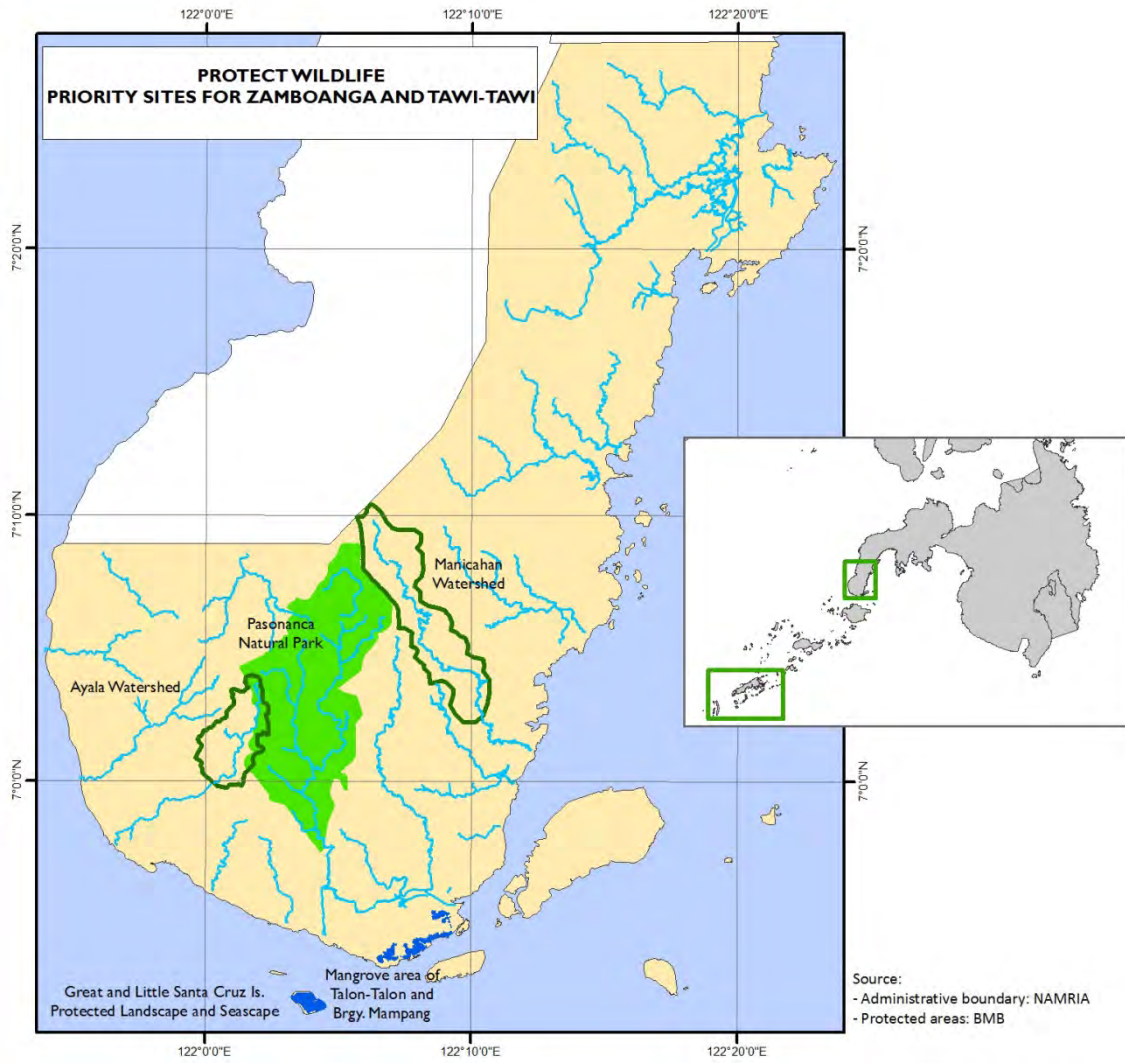
- 1,000 government staff trained in combating wildlife and environmental crime
- 50 new or revised laws and regulations adopted to combat wildlife crimes
- 1,000 confiscations, seizures and arrests resulting from capacity building provided by Protect Wildlife

In Year 1, Protect Wildlife's geographic scope includes threatened wildlife habitats in terrestrial and marine and coastal areas in Palawan, such as the Mount Mantalingahan Protected Landscape, Tubbataha Reefs Natural Park, Rasa Island Wildlife Sanctuary, Ursula Island Game Refuge and Bird Sanctuary, and mangroves and marine protected areas (MPAs) in southern Palawan; and in Zamboanga City and Tawi-Tawi, such as the Pasonanca Natural Park, Great and Little Santa Cruz Islands Protected Landscape and Seascape, several watersheds, mangroves, MPAs and turtle nesting sites (see Figures 1 and 2). The Department of Environment and Natural Resources (DENR) and USAID will identify up to two additional sites for Year 2 activities.

**FIGURE I: PRIORITY SITES FOR PALAWAN**



**FIGURE 2: PRIORITY SITES FOR ZAMBOANGA CITY AND TAWI-TAWI**





Advisors and specialists based in the Manila office lead Protect Wildlife’s work with national-level agencies and provide technical guidance and implementation support to teams in Puerto Princesa City, Palawan and Zamboanga City who lead activities in the sites. Protect Wildlife’s principal counterpart is the DENR’s Biodiversity Management Bureau (BMB); the team also coordinate planning and activities with the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR) and the National Commission on Indigenous Peoples (NCIP), especially with their field offices. At the local level, Protect Wildlife works directly with the DENR Regional Offices, Provincial Environment and Natural Resources Offices (PENROs) and provincial, city and municipal LGUs, as well as the local offices of national government agencies entrusted with natural resources management. In addition, in Palawan, Protect Wildlife coordinates with the Palawan Council for Sustainable Development Staff (PCSDS). At various levels, Protect Wildlife works with non-government and civil society organizations (CSOs), universities and colleges, and land and resource managers, such as ancestral domain and tenure holders, and fisherfolk and coastal community organizations.

# 2 ACCOMPLISHMENTS, PROGRESS, ISSUES AND CHALLENGES IN YEAR 1

## 2.1 HIGHLIGHTS OF ACCOMPLISHMENTS

In Year 1, the Protect Wildlife team focused efforts on establishing an organizational structure; procuring services, office spaces, and goods for implementation; finalizing the activity’s Theory of Change; developing the Year 1 Work Plan; preparing other plans for gender mainstreaming, monitoring, evaluation and learning (MEL), and communication; and, importantly, establishing working relationships with national and local government partners. Efforts on the latter included establishment of implementation arrangements with DENR, PCSDS, DENR ARMM, NCIP, LGUs, universities and colleges, and CSOs. This section will briefly discuss these key processes and their resulting Year 1 outputs, which laid the foundation for successful implementation and progress towards contract deliverables and outputs.

### 2.1.1 PROCESSES

1. Adopted a “one project” approach in developing and managing the activity’s Theory of Change and Work Plan, and defining tasks and responsibilities to be shared by the SA and field site teams. Each organization that forms part of the Protect Wildlife team—DAI Global, LLC; Tanggol Kalikasan; Rare, Inc.; Orient Integrated Development Consultants, Inc.; and Conservation International—recruited and engaged their advisors and staff, who are all based in one Protect Wildlife office in Manila and in each of the field sites (Zamboanga City and Puerto Princesa City). DAI recruited all operations staff—finance, administrative, logistics, and other support staff—and set up a semi-centralized financial, human resources, and logistics management to ensure efficiency and good governance practices. Each SA team, in close collaboration with the site teams, counterparts, and partners prepare their quarterly operations plans for implementation. At the end of Year 1, the activity had a total of 46 staff: 27 technical and 19 administrative and finance staff.
2. Upon completion of the Theory of Change, the team designed initial field activities for each core site (Palawan and Zamboanga City-Tawi-Tawi) and worked with DENR to organize consultations and implementation partnerships with local stakeholders. Discussions focused on Protect Wildlife objectives, targets, strategies, limitations and the activity’s menu of technical assistance and capacity building support available to partners. Through consultations, Protect Wildlife secured 44 Letters of Interest (LOIs) (in partnership) from organizations in Palawan (13), Zamboanga City (13), and Tawi-Tawi (18). The organizations included LGUs (20), Department of Agriculture (DA) of the Autonomous Region in Muslim Mindanao (ARMM), PCSDS, Tubbataha Management Office, Zamboanga City Water District, universities and colleges (8), and CSOs (12).
3. Resource persons from the USAID/Washington-supported Measuring Impact activity trained the Protect Wildlife team in the preparation of the activity’s Theory of Change as a guide for the development of Year 1 Work Plan and the MEL Plan.
4. DENR and USAID launched Protect Wildlife with national and local partners on March 6, 2017 in conjunction with the World Wildlife Day. The launch triggered the localization of implementation arrangements and protocols in Palawan, Zamboanga City and Tawi-Tawi.

5. Together with partners, the SA and site teams conducted biophysical, legal, institutional, capacity, wildlife crime enforcement, security, and financial assessments in target conservation areas. Findings were used to inform design of Theory of Change-based interventions and field activities that would:
  - add value to completed and ongoing conservation activities of partners in each target site,
  - produce both conservation and inclusive growth outcomes for beneficiaries,
  - strengthen the enabling environment for biodiversity conservation and combating wildlife crime, and
  - offer capacity-building opportunities that will position local officials to add and create value to future conservation and development initiatives.
  
6. Protect Wildlife operationalized this approach through the following field activities:
  - Campaigning for Conservation (C4C) training that participants apply through creation of their own behavior change communication (BCC) campaigns to address community-identified threats and desired behavior changes. Protect Wildlife piloted the training in the Mount Mantalingahan Protected Landscape with 26 participants from local LGUs, DENR and CSOs.
  
  - Establishment of a microcredit and enterprise development scheme to support biodiversity-friendly livelihood opportunities and reduce incentives that drive wildlife and environmental crime. USAID/Protect Wildlife and Lutheran World Relief (LWR) entered into a memorandum of understanding (MOU) that outlines shared responsibilities and commitments to establish, capitalize and implement the microcredit and enterprise development scheme. Protect Wildlife is in the process of designing the microcredit and enterprise development program, which will offer collateral-free working capital and enterprise loans, and capacity building support to entrepreneurs and groups from marginalized communities in and near conservation areas. Financing will target community or household initiatives that will serve as an alternative to poaching, illegal logging, illegal, unreported and unregulated (IUU) fishing and other enterprises that are harmful to biodiversity and wildlife.
  
  - Revising existing forest land use planning (FLUP) modules to support local officials' efforts to formulate or revise land use plans that define high-priority conservation areas and areas at risk to illegal environmental or wildlife activities. Using a strengthened module on geospatial analysis, Protect Wildlife is improving DENR, NCIP, and LGU land use planning decisions by broadening the planning perspective to a landscape-seascape level, and putting emphasis on comparing policy-designated land uses of public lands with actual land use practices. The team is improving the current FLUP modules to enjoin DENR and NCIP field units, LGUs, tenure and domain holders in accepting accountability for ensuring compliance with land use policy within their respective areas of management responsibilities.
  
  - Supporting six universities and colleges in Palawan, Zamboanga City and Tawi-Tawi in developing conservation-oriented research, development and extension (RDE) programs. Protect Wildlife encourages universities to focus their RDE strategy on biodiversity conservation issues and hone their RDE initiatives to develop innovative, conservation-oriented, inclusive growth-aligned and client-responsive RDE programs based on their and their location's comparative advantages.
  
  - Strengthening environmental and wildlife law enforcement on-site (i.e., in conservation areas, habitat, and wildlife sanctuaries) and in transshipment points, which requires a holistic understanding of the forces that contribute to poaching, trafficking, and effective apprehension and prosecution of guilty parties. Protect Wildlife assistance aims to establish functioning

environmental law enforcement systems for on- and off-site application and replication. In Year 1, Protect Wildlife focused efforts on developing training modules to strengthen capacity of current enforcement officials and to expand the number of trained enforcement officers in target sites. Modules are designed to guide law enforcement bodies through strengthening of policies and protocols; budgeting and logistics planning; development and maintenance of information sharing networks and partnerships; and processes for mapping changes in markets, seasonality, and external factors.

## 2.1.2 DELIVERABLES AND OUTPUTS

In Table 1, Protect Wildlife shows the status of contract deliverables and outputs as of June 30, 2017 and provides brief narratives of the progress in achieving the targets. Overall, the deliverables and outputs of SA 3 and SA 5 are on track.

Under SA 1, the team was only able to implement one C4C training and a BCC campaign in southern Palawan. Time and issues related to security and coordination have delayed activities in Zamboanga City and Tawi-Tawi. Protect Wildlife's focus on working with local universities to define the direction and overall strategy for its RDE support and to identify an appropriate engagement mechanism for state-funded universities has resulted in some delay in progress against Year 1 targets.

**TABLE 1: CONTRACT DELIVERABLES: 4TH QUARTER AND YEAR 1 ACCOMPLISHMENTS (as of June 30, 2017)**

INDICATORS		TARGETS		ACCOMPLISHMENTS		NARRATIVE PROGRESS
		LOP	YEAR 1	4TH QUARTER	YEAR 1	
<b>SA 1</b>						
1.1	People trained to lead behavior change campaigns	100	30	24 Male: 6 Female: 18	24 Male: 6 Female: 18	<ul style="list-style-type: none"> <li>Participants of the first training held in Brooke's Point, Palawan on April 18 to 28, 2017.</li> </ul>
1.2	Behavior change campaigns implemented	25	5	1	1	<ul style="list-style-type: none"> <li>C4C participants developed a mini behavior change communication (BCC) campaign for Brooke's Point, launched on April 28, 2017. Four other Mount Mantalingahan Protected Landscape LGUs and Katala Foundation have started developing their own campaigns.</li> </ul>
1.3	People reached by behavior change campaigns	300,000	4,000	1,870	1,870	<ul style="list-style-type: none"> <li>The BCC campaign reached its audience through billboards mounted on strategic locations in an IP community, campaign song broadcasts, and posters displayed during FLUP community mapping and consultations. The figure would have been higher if data on radio ownership and listenership in rural barangays are available.</li> </ul>

INDICATORS		TARGETS		ACCOMPLISHMENTS		NARRATIVE PROGRESS
		LOP	YEAR I	4TH QUARTER	YEAR I	
<b>SA 2</b>						
2.1	Revenue generated from the sale of ecosystem services in target sites	US\$500,000	US\$10,000	US \$4,354	US \$4,354	<ul style="list-style-type: none"> <li>Brooke's Point LGU collects PHP 1 per cubic meter of water consumed from its water users as payment for environmental services (PES). Total revenue collected as of June 2017 is US\$1,600 (PHP 80,042).</li> <li>The Rural Waterworks and Sanitation Association in Brooke's Point sets aside P1 per cu m of water sold to households as PES. Total collections for February to May 2017 amounts to US\$2,754 (PHP 137,695). The fund is earmarked to fund watershed management.</li> </ul>
2.2	Payment for ecosystem services (PES) or tourism initiatives supported in target sites	100	10	5	5	<ul style="list-style-type: none"> <li>Three PES schemes are supported in Palawan: <ul style="list-style-type: none"> <li>a. Brooke's Point water system managed by the LGU. The LGU has started to develop financial management guidelines for plowback of revenues to watershed management per its LGU PES ordinance.</li> <li>b. Brooke's Point Rural Waterworks and Sanitation Association (BPRVSA). Members of this cooperative approved a resolution to collect PES from water users to be used exclusively for watershed management.</li> <li>c. Sofronio Española water system managed by the LGU. A PES ordinance is on second reading by the local legislative body.</li> </ul> </li> <li>In Zamboanga City, the PES initiatives are: <ul style="list-style-type: none"> <li>a. Water system managed by the Zamboanga City Water District (ZCWD). Cost and</li> </ul> </li> </ul>

INDICATORS	TARGETS		ACCOMPLISHMENTS		NARRATIVE PROGRESS	
	LOP	YEAR I	4TH QUARTER	YEAR I		
					<p>revenue analysis was initiated to establish annual investment of ZCWD in the protection of the Pasonanca Natural Park. Its agreement with the DENR/protected area management board will be revisited upon completion of the updated protected area management plan.</p> <p>b. Tourism in Santa Cruz Islands. The preparation of a business plan for tourism has been initiated to support the decision of protected area management to upgrade its fees and earmark collection for conservation activities.</p>	
2.3	Global Development Alliance (GDA) investments in Protect Wildlife anti-poaching and trafficking efforts	US\$5 million	US\$0.05 million	US\$0.10 million	US\$0.10 million	<ul style="list-style-type: none"> <li>The MOU between USAID and the Lutheran World Relief (LWR) was signed in April 2015. Moving forward, a joint LWR-Protect Wildlife team did an assessment of agriculture commodities and livelihood opportunities in Mount Mantalingahan Protected Landscape LGUs and of financial services providers operating in Palawan.</li> </ul>
<b>SA 3</b>						
3.1	LGU staff trained in participatory planning for integrated conservation and development	200	20	30 Male: 24 Female: 10	30 Male: 24 Female: 10	<ul style="list-style-type: none"> <li>In Palawan, 28 LGU staff consistently attended the training modules on FLUP and protected area management planning. The training resulted in a recommendation by the TWG to the protected area management board to decide on the zoning of the Mount Mantalingahan Protected Landscape.</li> <li>In Zamboanga City, two LGU staff consistently attended the training modules on FLUP and protected area management planning, which resulted in</li> </ul>

INDICATORS	TARGETS		ACCOMPLISHMENTS		NARRATIVE PROGRESS	
	LOP	YEAR I	4TH QUARTER	YEAR I		
					the definition of the zones and management prescriptions for the Pasonanca Natural Park and Santa Cruz Islands.	
3.2	Community members trained in planning and implementation of integrated conservation and development	2,500	100	101 Male: 79 Female: 22	101 Male: 79 Female: 22	<ul style="list-style-type: none"> <li>101 community members were trained in Palawan (76 persons) and Zamboanga City (25 persons).</li> <li>The training modules enabled participation of community members in the validation of policy-designated land uses within PAs/forestlands and definition of protected area zones and management prescriptions</li> </ul>
3.3	LGU staff trained, certified and formally deputized as Wildlife Enforcement Officers (WEOs) by government agencies	200	10	9 Male: 9	9 Male: 9	<ul style="list-style-type: none"> <li>The DENR Regional Office 9 deputized nine LGU staff of Zamboanga City as WEOs. There are 30 more LGU staffs in Zamboanga City ready for deputation.</li> <li>In Palawan, 25 trained LGU WEOs met the requirements for deputation and are awaiting their deputation documents. Eight trained LGU WEOs need to complete deputation requirements.</li> </ul>
3.4	Community members trained and certified as WEOs by government agencies	500	30	7 Male: 7	7 Male: 7	<ul style="list-style-type: none"> <li>DENR RO 9 deputized seven community members as WEOs. Zamboanga City has 17 more community members for WEO deputation.</li> <li>In Palawan, 15 trained community members are awaiting their deputation documents.</li> </ul>
<b>SA 4</b>						
4.1	University-supported research initiatives implemented in target sites	25	4	1	1	<ul style="list-style-type: none"> <li>Protect Wildlife has engaged Western Philippines University (WPU) – College of Fisheries and Aquatic Resources in Palawan for the conduct of research on sea cucumber (sandfish) ranching. A scoping study identified potential areas for sourcing broodstock, and pilot trials.</li> <li>Two other research</li> </ul>

INDICATORS	TARGETS		ACCOMPLISHMENTS		NARRATIVE PROGRESS	
	LOP	YEAR I	4TH QUARTER	YEAR I		
					projects (on almaciga resin and tongkat ali) with WPU are ready for implementation.	
4.2	Universities developing conservation curricula with support from Protect Wildlife	10	2	0	0	<ul style="list-style-type: none"> <li>Three universities in Palawan (Western Philippines University) and Zamboanga City (Universidad de Zamboanga and Western Mindanao State University) formally requested assistance in curriculum development. Protect Wildlife has yet to define with them the scope of the initiative.</li> </ul>
<b>SA 5</b>						
5.1	Government staff trained in combating wildlife and environmental crime	1,000	100	81	161 Male: 132 Female: 29	<ul style="list-style-type: none"> <li>The staff trained are mainly from DENR, BFAR, Department of Justice (DOJ), Philippine Ports Authority (PPA), Bureau of Customs (BoC), the Philippine National Police Maritime Group (PNP-MG), PCSDS, Provincial Government of Palawan and Zamboanga City.</li> </ul>
5.2	New or revised laws and regulations adopted to combat wildlife crimes	50	5	3	3	<ul style="list-style-type: none"> <li>The draft Municipal Fisheries Ordinance of Rizal, Palawan was submitted to the Committee on Agriculture for review.</li> <li>For Zamboanga City, the draft City Fisheries Ordinance and Resolution for the formal creation of a City Fisheries and Development Office were submitted to the Agriculture and Fisheries Committee of the City Development Council for review and Council approval.</li> <li>The latest draft of Enforcement Protocols for the Zamboanga City Anti-Wildlife Trafficking Task Force is still under review by member agencies; not part of reported accomplishments.</li> </ul>
5.3	Confiscations, seizures and arrests	1,000	50	38	42	<ul style="list-style-type: none"> <li>The PCSDS enforcement team based in Puerto Princesa City, Mount</li> </ul>



INDICATORS	TARGETS		ACCOMPLISHMENTS		NARRATIVE PROGRESS
	LOP	YEAR I	4TH QUARTER	YEAR I	
resulting from capacity-building provided by Protect Wildlife					<p>Mantalingahan Protected Landscape and Taytay, who were trained and mentored by Protect Wildlife, reported for the quarter 29 confiscations, apprehensions and cases filed.</p> <ul style="list-style-type: none"> <li>Other reported confiscations and apprehensions for the quarter came from DENR RO 9 (2); Zamboanga City Fisheries Law Enforcement Team (CFLET) (3) and the participants of the training of trainers (TOT) 6 held in General Santos City (4).</li> </ul>

As shown in Tables 2 and 3, Protect Wildlife contributes to five USAID Economic Growth outcomes and two USAID Economic Growth outputs. Several of the indicators are based on the outputs and deliverables shown in Table 1.

**TABLE 2: PROTECT WILDLIFE CONTRIBUTIONS TO USAID ECONOMIC GROWTH OUTCOMES BY END OF YEAR I (June 30, 2017)**

INDICATORS	TARGETS		ACCOMPLISHMENTS BY END OF YEAR I	REMARKS	
	LOP	YEAR I			
<b>OUTCOMES</b>					
EG.10.2-2	Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance	500,000	50,000	141,296	<p>Consists of the areas of the following PAs where participatory planning was implemented resulting in zoning recommendations:</p> <ul style="list-style-type: none"> <li>Mount Mantalingahan Protected Landscape: 120,457 ha</li> <li>Pasonanca Natural Park: 17,414 ha</li> <li>Great and Little Santa Cruz Islands Protected Landscape and Seascape: 3,425 ha</li> </ul>
EG.10.2-3	Number of people with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation as a result of USG assistance	100,000	-	-	No target for this year

INDICATORS		TARGETS		ACCOMPLISHMENTS BY END OF YEAR I	REMARKS
		LOP	YEAR I		
EG.10.2-6	Number of people that apply improved conservation law enforcement practices as a result of USG assistance	1,200	50	171	<p>Consist mainly of trained PCSDS, DENR staff and LGU and community WEOs who continue to be actively involved in enforcement in Protect Wildlife sites:</p> <ul style="list-style-type: none"> <li>• 82 WEOs and DENR enforcers in Mount Mantalingahan range LGUs in Palawan</li> <li>• 41 PCSDS and Bantay Palawan Task Force members</li> <li>• 48 members of Wildlife Traffic Monitoring Units and Wildlife Enforcement Officers in Region 9</li> </ul>
EG.10.3-4	Amount of investment mobilized (in US\$) for sustainable landscapes, natural resource management and biodiversity conservation as supported by USG assistance	US\$5.0 million	-	US\$ 104,299	<p>Amount of investment mobilized as counterpart of partners in capacity building activities on sustainable landscapes, natural resource management and biodiversity conservation:</p> <ul style="list-style-type: none"> <li>• US\$29,029.00 from LGUs, communities, DENR, PCSDS and national government agencies for forest land use planning (FLUP) and protected area planning and management training</li> <li>• US\$75,273.00 from LGUs, DENR, PCSDS and other national agencies for law enforcement training</li> </ul>
EG.13-6	Greenhouse gas (GHG) emissions, estimated in metric tons of CO2 equivalent reduced, sequestered, or avoided through sustainable landscape activities supported by USG assistance	703,930	-	-	No target for this year

**TABLE 3: PROTECT WILDLIFE CONTRIBUTIONS TO USAID ECONOMIC GROWTH OUTPUTS BY END OF YEAR 1 (June 30, 2017)**

INDICATORS	TARGETS		ACCOMPLISHMENTS BY END OF YEAR 1	REMARKS	
	LOP	YEAR 1			
<b>OUTPUTS</b>					
EG.10.2-4	Number of people trained in sustainable natural resources management and/or biodiversity conservation as a result of USG assistance	4,500	240	427	Consists of the following: <ul style="list-style-type: none"> <li>• 24 trained on C4C</li> <li>• 30 LGU staffs trained on participatory protected area management planning</li> <li>• 101 community members trained on participatory protected area management planning</li> <li>• 111 LGU and community members trained as WEOs</li> <li>• 161 Government staff trained in combatting wildlife and environmental crime</li> </ul>
EG.10.2-5	Number of laws, policies, or regulations that address biodiversity conservation and/or other environmental themes officially proposed, adopted, or implemented as a result of USG assistance	50	5	4	Includes draft municipal/city fisheries ordinances and resolution (3), and a draft ordinance on PES.

## 2.2 PROTECT WILDLIFE ACTIVITIES' LINKS TO THEORY OF CHANGE AND LEARNING QUESTIONS

In Year 1, Protect Wildlife developed a Theory of Change-consistent work plan. The team also used the Theory of Change to develop the activity's MEL plan. After a year of implementation, the team proposed to realign Year 1 Theory of Change assumptions, actions and sub-actions, sequencing of activities, processes and target outputs to better demonstrate the co-dependence of results among SAs.

Following the Campaigning for Conservation (C4C) activity in southern Palawan, Protect Wildlife and activity stakeholders identified community behaviors towards protecting, managing, and regulating habitats of wildlife species as a core focal area, as opposed to our original assumption, which was loosely targeted to reducing poaching and trafficking of species. To effect behavior change, the activity must ensure that tenure and zoning are clearly established and enforceable (SA 3) and that livelihood incentives (SA 2) and enforcement disincentives (SA 5) in place to reinforce behavior change messaging. Because of this co-dependence, SA 1 activities needed to be realigned and linked to setting the enabling conditions under the aforementioned SAs.

In Year 1, the SA 2 Theory of Change assumed that it could directly promote intensification and generation of more funds from public and private sectors and environment and natural resources (ENR)-linked

enterprises without first coming to agreement among local stakeholders and governance about allowed and disallowed land uses and resource uses per land use (SA 3). The agreements on land uses and resource uses position Protect Wildlife to make targeted decisions on how and where public and private financing can be more strategically invested, and what type of ENR-linked enterprises are viable in each target area.

As demonstrated above, the SA 3 Theory of Change provides the crucial link to other SAs. Land use agreements and zoning both set the foundation for activities across the other components, and depend on other component activities (behavior change, enforcement, research, investment and livelihood support) to sustain the resource management system.

The strategy for SA 4 also shifted based on findings from consultations with regional stakeholders. To support sustainable biodiversity conservation, the activity is striving to help regional universities and colleges to link short-, medium- and long-term RDE programs directly to the conservation and development needs of a region, province, city/municipality, and specific conservation sites. RDEs will help define priority research, curriculum development for both formal and informal courses, extension activities, organizing scientific fora, publication and networking. The activity will assist universities and colleges direct their RDEs in conservation or thematic areas where they have the comparative advantage and which are within their mandates and reach.

The SA 5 Theory of Change emphasizes that training activities insufficient for improving enforcement capacities. The team modified its approach by adopting a more holistic and comprehensive technical assistance program that extends beyond training. This means putting in place local, provincial, regional and national wildlife enforcement systems (with people trained on the right skills and knowledge), policies, networks, databases, monitoring and evaluation systems, budgets and logistics needed to achieve meaningful impact on wildlife and environmental crime enforcement. On-site wildlife enforcement systems are critical, especially in national protected areas, wildlife reservations, no-take zones in municipal waters and locally legitimized conservation areas. Putting in place effective coordination mechanisms, protocols and reporting systems, joint apprehension efforts, agreements, and support of national government agencies and private sector groups are crucial for off-site enforcement capacities.

The onset of Year 2 is an opportune time to assess the activity's operating environment, emerging trends, patterns, lessons and constraints in the light of the expected Theory of Change results and the learning questions (LQs) identified for each SA. A reflection on the Theory of Change and LQs based on Year 1 accomplishments—processes initiated and outputs or deliverables achieved—will be helpful as the team designs its Year 2 work plan.

# 3 ACTIVITY IMPLEMENTATION PROGRESS

## 3.1 MANILA

The Protect Wildlife Manila team continued to direct technical planning and implementation, serving as “thought leaders” in their respective areas of expertise by offering guidance and leadership to field teams in identifying and pursuing opportunities for partnership, and advocacy and policy development in conserving biodiversity. Highlights of Manila-driven technical activities in the fourth quarter, and for all of Year 1, are presented below by SA.

### 3.1.1 STRATEGIC APPROACH 1: IMPROVE ATTITUDES AND BEHAVIOR TOWARD BIODIVERSITY AND ITS CONSERVATION IN TARGET AREAS

#### 4th Quarter Highlights

1. Held consultations with Campaigning for Conservation (C4C) participants in southern Palawan to provide advice on mini-BCC implementation and help advance participants’ work to develop proposals for funding to support their campaigns.
2. Analyzed qualitative data from the baseline Knowledge, Attitudes and Practices (KAP) survey in southern Palawan and applied findings to design and launch a complementary quantitative survey. Protect Wildlife will analyze KAP results and apply findings through design of Year 2 activities.
3. Explored options for the design and implementation of a qualitative KAP study in Zamboanga City and select Tawi-Tawi sites. Options include the use of local short-term technical consultants (STTAs) or universities and colleges to apply the questionnaire and analysis tools developed under the KAP-Palawan pilot.

#### Year 1 Highlights

1. Designed and led the first C4C activity in the Philippines with 24 participants. The 10-day training was held in the municipality of Brooke’s Point, which also served as the case study site. C4C participants customized and launched a full BCC campaign for the context of Brooke’s Point’s conservation goals for their area inside Mount Mantalingahan Protected Landscape.
2. Led bidding, award, and negotiations with research agency KANTAR TNS and implemented the KAP survey in southern Palawan. Both the qualitative and quantitative components of the study were carried out; final analysis is expected early in Year 2.

### 3.1.2 STRATEGIC APPROACH 2: INTENSIFY PRIVATE AND PUBLIC SECTOR INVOLVEMENT IN CONSERVING AND FINANCING BIODIVERSITY INITIATIVES

#### 4th Quarter Highlights

1. Initiated the development of a cost-based resource valuation models to determine baseline rates for discussing appropriate PES rates that may be charged to users of ecosystem services: model for the

watershed/sub-watersheds of local water utilities and water users in Brooke's Point; and a model for the Santa Cruz Seascape-Landscape Protected Area in Zamboanga City as the main attraction of the LGU-managed ecotourism enterprise. Protect Wildlife used validated land use data to develop the cost-based resource valuation model for the watershed. Using standard costs/ha, the land use data were translated into investment requirements that are needed to protect, develop, restore, and manage the watershed/sub-watersheds that serve as the source of various ecosystem services. Currently, the ENR-linked enterprises only use water as the ecosystems service from the watershed. The cost-based resource valuation model has resulted into baseline estimate of cost/ha for the total protection, restoration, development, and management of the watershed over a 10-year period but broken down into annual targets. For the attraction-based ecotourism enterprise, the cost-based resource valuation provided baseline estimate of the total cost/visitor in protecting, restoring, securing and managing Santa Cruz Islands.

As a parallel effort to the development of the cost-based resource valuation models, the team continued to refine the cost and return analysis models of existing local water utility enterprises in Brooke's Point and the LGU-run ecotourism enterprise in Sta. Cruz Seascape-Landscape Protected Area. Using available financial statements and other cost and return data and inputs from focus group discussion, the two models (one for water-based enterprise and one for natural attraction-based ecotourism enterprise) generated baseline unit costs (cost per cubic meter of water, cost per visitor for ecotourism) in managing the water- and attraction-based enterprises. The estimates of unit costs for the two ENR-linked enterprises considered both the "with and without the inclusion of existing PES charges or related charges" as reflected in the enterprises' financial records.

The team started to compare and analyze the initial unit cost estimates from the cost-based resource valuation and the cost-and-return analysis of the ENR-linked enterprises to determine and recommend appropriate PES rates, enhancement of current practices, and efficiency improvement of the enterprises to improve profitability.

2. Executed the USAID-LWR MOU. This agreement opens opportunities for establishing a fiduciary fund and enterprise development scheme to support biodiversity-friendly livelihoods and community enterprise development in southern Palawan. A joint team LWR and Protect Wildlife team rolled out the action plan with site visits and field consultations in southern Palawan. Consultations were designed to identify target communities and beneficiaries, potential livelihood-enterprises, and local microfinance institutions. The assessment report is in Annex A.
3. In collaboration with the SA 5, SA 3 and SA 4 teams, continued exploring opportunities for partnership with the private sector to develop software applications that will strengthen on-site enforcement and management of wildlife habitats. Held discussions on the potential to engage the maker community to develop and apply sound detectors to detect IUU fishing; drones for determining and monitoring land uses in protected areas; and tools for the rapid estimation of net water surplus.

## **Year I Highlights**

1. Formulated an overall approach, or roadmap, to supporting LGU and CSO efforts to establish payment for ecosystem services schemes for environment- and natural resources- related enterprises. The PES roadmap includes assistance in:
  - resource valuation,
  - cost and revenue analysis of current and proposed enterprises to determine baseline viability,
  - formulation or review of PES-related legitimizing instruments,

- establishing mechanisms to ensure that PES revenues are properly managed and re-invested for conservation and livelihood support for communities,
  - PES rate determination and negotiation to include the cost contribution for managing the source of the ecosystem services, and
  - strengthening policy coverage and business operations.
2. Continuing assistance to five water- and ecotourism-based enterprises—all of which depend on ecosystems services from the activity’s target conservation areas— in developing their PES schemes. The entities are:
    1. Brooke’s Point LGU, which operates the municipality’s waterworks system;
    2. BPRWSA, which manages a rural water system for a number of barangays in Brooke’s Point;
    3. Sofronio Española LGU, which also manages its water system;
    4. Zamboanga City Local Water District; and
    5. Zamboanga City, which manages tourism in Santa Cruz Islands.

Protect Wildlife provided technical assistance for preparing cost and revenue analysis of the operations of the LGU and BPRWSA-managed water systems in Brooke’s Point and the Zamboanga City Water District, and of the Santa Cruz Islands ecotourism enterprise. The analysis was used to determine the viability of these enterprises and the potential to generate new financing (i.e., payment for environmental services) for the management and protection of their watersheds and ecotourism area. The financial analyses report is in Annex B.

3. The USAID-LWR MOU will help fill ‘access to credit’ gaps by financing marginalized communities’ working capital needs to reduce households’ dependence on destructive swidden farming and harvesting wildlife in protected areas. The joint LWR and Protect Wildlife team identified Ecumenical Church Loan Fund (ECLOF) Philippines as preferred partner microfinance institution to establish the fiduciary fund for credit. Protect Wildlife will target initial assistance to communities in Brooke’s Point, Bataraza and Sofronio Española LGUs.

### **3.1.3 STRATEGIC APPROACH 3: IMPROVE BIODIVERSITY CONSERVATION COMPETENCIES OF LGUS AND CSOS THAT INCLUDE ON-SITE LAND AND RESOURCE MANAGEMENT UNITS**

#### **4th Quarter Highlights**

1. Co-sponsored the DENR-BMB-led First National Biodiversity Congress: Upwelling of Lessons, Sustaining Community Benefits in the Conservation of Landscapes and Seascapes. The COP and Gender Specialist served as case presenters for the sessions on New Insights in Landscape Conservation and Women’s Participation in Biodiversity Conservation, respectively. Other members of the team facilitated the session on Emerging Lessons in Establishing Production Landscapes and Seascapes Through Community-Based Biodiversity Conservation Projects and Special Problems in Community-based Environmental Law Enforcement.
2. Developed the protected area zoning review process and criteria, and facilitated Technical Working Group (TWG) work to issue recommendations on zoning and zone adjustments in Pasonanca Natural Park, Great and Little Santa Cruz Islands Protected Landscape and Seascape, and Mount Mantalingahan Protected Landscape. Protect Wildlife also supported TWG efforts to develop management standards and prescriptions for different zones and sub-zones, including disallowed uses. TWGs representing each protected area issued resolutions (see Annex C) as follows:
  - TWG resolution for Santa Cruz Islands recommending new land use categories and zones and the corresponding allowed and disallowed land and resource uses.

- TWG resolution for Pasonanca Natural Park recommending zoning adjustments on previously defined core and buffer zones.
  - TWG resolution for the Mount Mantalingahan Protected Landscape recommending to the protected area management board a review of zoning to clearly define protection, conservation, and production areas. The resolution also recommends allowed and disallowed activities within the zones of the Mount Mantalingahan range.
3. Conducted a field assessment of Busuanga Island to identify possible expansion areas in the Calamianes area of Palawan for inclusion in the Year 2 work plan. Protect Wildlife led site visits and consultations with stakeholders of the 40,000-hectare Busuanga Pasture Reserve, Calauit Island and coastal habitats in Busuanga and Coron municipalities.
  4. Conducted initial consultations with DENR Region 12, protected area management staff, provincial and municipal LGUs, universities and colleges, and other stakeholders to assess their interest and willingness to participate in Protect Wildlife implementation in the region, and to draw out issues and opportunities related to biodiversity conservation, habitat management and combating wildlife trafficking.

## Year I Highlights

1. Facilitated the creation of the following TWGs for protected area management planning and forest land use planning activities:
  - TWGs for the updating of the management and ecotourism plans of Pasonanca Natural Park and Santa Cruz Islands, respectively,
  - TWG for Zamboanga City FLUP preparation,
  - TWG for Mount Mantalingahan Protected Landscape management plan revisions, and
  - TWGs for Mount Mantalingahan range LGUs' FLUP preparation.
2. Forest Land Use Planning (FLUP) TWGs are comprised of LGU technical staff from across the municipal, city, provincial and national government levels, civil society organizations (CSOs), academia and the private sector. Primary TWG members from the government include representatives from: the Municipal Environment and Natural Resources Office, Planning and Development Office, and Agriculture Office; the City Environment and Natural Resources Office (CENRO); the Provincial Environment and Natural Resources Office (PENRO); and DENR. Protected area planning TWGs are comprised of protected area management board members.

Developed training modules for forest land use planning and protected area management planning that give emphasis to biodiversity conservation particularly of areas that are at risk to illegal environmental or wildlife harvesting activities. The team used the FLUP modules and training guides that were produced, tested and improved in previous conservation projects in the Philippines. The protected area management planning modules were developed from planning guidelines and technical bulletins issued by the BMB. Both planning processes are participatory and adopt a strengthened module on geospatial analysis to improve land use and zoning decisions of LGUs and protected area management boards.

Following the formation of TWGs (see bullet 1), Protect Wildlife guides their members through training modules that complements skill-building in data analysis, geographic information system and spatial analysis, and land use policy and zoning regulation. Training modules developed in Year 1, presented below and in more detail in Annex D, are flexible and can be applied for both FLUP and protected area management planning:



- a. **Module 1: FLUP/Protected Area TWG Orientation and Action Planning.** The first module of the training addresses members' roles and responsibilities and reviews principles and practices of the integrated ecosystems management (landscape) approach to conservation-oriented land use planning in public lands (forest lands, national parks/protected areas, agricultural lands, mineral lands)<sup>1</sup>.
- b. **Module 2: Data Gathering and Field Validation of Land Uses.** This three-part training module focuses on training TWG members in GIS for FLUP/protected area planning; gathering relevant planning data and using GIS to map policy-designated land uses within public lands; and executing participatory mapping exercises in communities throughout the jurisdiction to validate actual land use. The validated land use map provides the basis for zoning the area into protection and production or multiple use areas and for determining allowed and prohibited use of land and natural resources in these zones. Annex E includes the list of maps and spatial analysis done in this module.
- c. **Module 3: Review of Zoning and Land and Resource Uses in the Protected Area.** Through this two-part module, Protect Wildlife guides the TWG through the process of comparing policy-designated land use maps with field-validated land use maps; and reconciling differences by agreeing on revised land use categories and zones and sub-zones and allowed land and resources uses. Once complete, zoning and land and resource use recommendations are presented to stakeholder communities. The team facilitates consensus building and guides the TWG through the process of submitting their recommendations to the protected area management board.

Protect Wildlife's technical staff from Manila collaborated with field staff in Palawan and Zamboanga City to train 30 LGU staff and 101 community members and initiate the preparation of the management plans of Mount Mantalingahan Protected Landscape, Pasonanca Natural Park and Santa Cruz Islands.

3. Collaborated with DENR, PCSDS and the Environmental Legal Assistance Center (ELAC) to organize a training program to equip trainees from target LGUs and communities on core capacities required to serve as Wildlife Enforcement Officers (WEOs). The enforcement specialists of Protect Wildlife served as key resource persons.
4. Contributed to placing more than 140,000 hectares (ha) of biologically significant areas in Zamboanga City and southern Palawan under improved natural resource management through management planning and zoning actions that were informed by local site assessments and stakeholder participation (see bullet 2). This nearly tripled the Year 1 target of 50,000 ha. The breakdown per protected area is presented below:
  - Mount Mantalingahan Protected Landscape: 120,457 ha
  - Pasonanca Natural Park: 17,414 ha
  - Santa Cruz Islands: 3,425 ha

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<sup>1</sup> These are the types of public domains/lands defined under the Philippines 1987 Constitution. A combination of these public lands/domains maybe found in each municipality. Agricultural lands may be alienated for titling and private use. Forest lands may include mangroves, foreshore, and riparian areas if these are not part of the national parks. Ancestral domains may be located and could overlap in any type of the public lands. The land uses in public lands/domains are under the responsibility of DENR, NCIP, LGU, and DA/BFAR (those covered by fishpond lease agreements). LGUs may re-classify alienable and disposable areas (A&D) as allowed by the Local Government Code in their respective areas as part of the comprehensive land use planning (CLUP) processes.

### **3.1.4 STRATEGIC APPROACH 4: ENHANCE CAPACITIES OF UNIVERSITIES TO ADVANCE BIODIVERSITY CONSERVATION EDUCATION, RESEARCH, MONITORING AND INNOVATION**

#### **4th Quarter Highlights**

1. Continued collaboration with Palawan and Zamboanga City-Tawi-Tawi universities and colleges on the development of their conservation-oriented RDE agendas.
2. Drafted and submitted an MOU to USAID for approval. The MOU is written to establish cooperation between the USAID/Protect Wildlife and individual universities and colleges in RDE and curriculum development.
3. Presented to the DENR-FMB Director issues related to almaciga resin harvesting and proposed FMB policy support to promote sustainable management and utilization of almaciga, a protected species and a major source of livelihood of upland indigenous communities.

#### **Year I Highlights**

1. Analyzed partner universities and colleges' research strengths to determine overlapping focal areas in biodiversity conservation and wildlife protection with Protect Wildlife. Individual schools were evaluated along six areas: fields of specialization of faculty involved in research, research facilities, linkages and networks, relevant research publications and fund sources for research. Western Philippines University (WPU)'s College of Agriculture, Forestry and Environmental Sciences and College of Fisheries and Aquatic Sciences have capacity to implement terrestrial and marine environment research, respectively. Likewise, Protect Wildlife analyzed Zamboanga City-Tawi-Tawi partner schools' research capacity and identified target research areas based on their respective fields of expertise. See Annex F for assessments of selected universities and colleges.
2. Supported six universities' efforts to prepare RDE programs that are aligned to technical areas that are of economic, social and environmental relevance to the universities' geographic area. Protect Wildlife is coordinating with the schools to further refine their draft RDE agendas.
3. Developed the scope, design and logistical requirements of three research studies for joint implementation with WPU:
  - State of the Art Study on the Utilization of Almaciga Resources in Southern Palawan and the Development of an Action Program for its sustainable management.
  - State of the Art on the Tongkat Ali in Southern Palawan and the Development of an Action Research Program for its sustainable utilization, development, and conservation.
  - Sea Cucumber Pilot Sea Ranching and Research in Southern Palawan.

Protect Wildlife engaged an Aquaculture Specialist to provide technical direction and guidance to the sea cucumber research team.

4. Maintained coordination links with the DOST, Commission on Higher Education (CHED), Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), University of the Philippines in Los Baños and other organizations which may be engaged to provide research grants and other support to complement the research activities of Protect Wildlife.

### 3.1.5 STRATEGIC APPROACH 5: ENHANCE COMPETENCIES OF NATIONAL AND LOCAL GOVERNMENT AGENCIES IN ENFORCING BIODIVERSITY CONSERVATION-RELATED LAWS AND POLICIES

#### 4th Quarter Highlights

1. Together with partners, participated in the monthly Wildlife Law Enforcement Action Plan consultations conducted by the DENR-BMB.
2. Provided technical and financial assistance for a DENR-BMB-led Training of Trainers on the Application of the Wildlife Law Enforcement Manual of Operations in General Santos City. There were 73 participants from the DENR Enforcement Division, Philippine National Police Regional Maritime and Special Operations Units, BFAR, PCSDS, and the General Santos City local government. Protect Wildlife supported Palawan, Zamboanga City and Tawi-Tawi WEOs' participation, as well as other participants from wildlife trafficking hotspots such as Southwestern Luzon, Central Visayas, and Zamboanga Peninsula.
3. Facilitated consultations between DENR and Freeland regarding possible development of a customized and DENR-managed version of the WildScan app. Protect Wildlife will provide inputs on how data management can be refined for the exclusive use of BMB to address wildlife trafficking in the Philippines.
4. Continued to collaborate with BMB and other partners such as the Partnership for Biodiversity Conservation Phase 3 (PBC 3) in the development of the following long-term training and consultation designs to improve wildlife law enforcement at the investigation and prosecution stages:
  - **National consultation on ecosystem valuation in support of environmental law enforcement.** This will bring together technical staff of various environmental law enforcement agencies to determine a wildlife resources valuation methodology to be used in prosecution of crimes involving wildlife trafficking. In Year 2, Protect Wildlife will continue work to identify the most appropriate mechanism or system to quantify the impact of the wildlife crime offense, and apply as a basis for the imposition of fines as part of the civil aspect of a criminal case for wildlife trafficking.
  - **Wildlife crime scene forensics course.** This is being developed with the University of the Philippines Institute of Biology, and PBC 3 for training select enforcers nationwide on how to preserve a wildlife crime scene and collect, document, tag, preserve and transmit evidence following the rules governing chain of custody.
  - **Wildlife identification course.** The UP Institute of Biology is also developing this course, which will provide wildlife law enforcers with a phyla-based program to identify commonly traded wildlife species that have been seized from traffickers. The course will be rolled out in Years 2 and 3. Protect Wildlife will target DENR Regional Enforcement Division staff for participation.
  - **Wildlife crime investigators course.** Protect Wildlife initiated talks with PNP's School for Investigation and Detection Division regarding development of an Environmental Crime Investigation Course for DENR enforcers. This training will improve the capabilities of DENR wildlife law enforcers to conduct interrogations, build cases and profiles against traffickers.
5. Completed draft of the Guidebook/Module for Resource Persons on the Prosecution of Environmental Cases. The guidebook is undergoing further review by resource persons from the Department of Justice (DOJ), a Protect Wildlife partner in training prosecutors who are assigned to green courts in various parts of the county.

## **Year I Highlights**

1. Collaborated with DENR-BMB to train 161 national government staff in combatting wildlife and environmental crime. Protect Wildlife provided financial and technical resources to DENR-BMB for the co- design and -facilitation of national-level wildlife law enforcement and prosecution training programs.
2. Supported BMB in facilitating the first Wildlife Law Enforcement Summit and National Stakeholders' Consultation Workshop on the Wildlife Law Enforcement Action Plan. The consultations identified priority policies for review, drafting or enhancement. Protect Wildlife has been assisting BMB efforts to craft the Wildlife Law Enforcement Action Plan and draft policies.
3. Completed participatory assessment of wildlife law violations, trafficking trends and local enforcement capabilities in Palawan (mainland and Calamianes Group of Islands), Zamboanga City and Tawi-Tawi (see reports in Annex G). These assessments generated information on wildlife resources and uses, common violations and actors, wildlife trade routes, and gaps in policies, capacities and logistics. Protect Wildlife will apply findings to inform enforcement capability building programs in each site.

### **3.1.6 CROSSCUTTING COMPONENTS**

#### **Gender Analysis**

##### **4th Quarter Highlights**

1. Presented findings of gender analysis of Mount Mantalingahan range ancestral domain communities and Zamboanga City mangrove and fishing communities at the First National Biodiversity Congress. The presentation highlighted women's participation in biodiversity conservation.
2. Trained PCSDS, DENR and CSOs' gender focal persons on the Harmonized Gender and Development Guidelines and gender responsive biodiversity conservation planning.

## **Year I Highlights**

1. Completed the Gender Plan for Year 1.
2. Completed gender analysis of select communities in the Mount Mantalingahan range, Santa Cruz Islands, Zamboanga City mangrove areas and Tawi-Tawi coastal barangays. The findings, which highlight barriers to participation of men and women to development and conservation programs, are summarized in Annex H.
3. Promoted the mainstreaming of gender into SA activities. Advised SA leads on the use of the following approaches for their work planning and activity design: gender sensitive messaging and gender-fair language in communications campaigns; inclusion of sex-disaggregated data in socio-economic profiles; gender role analysis; gender considerations for wildlife crime enforcement; and gender considerations for trainee and participant selection for enforcement activities.

### **Monitoring, Evaluation and Learning**

#### **4th Quarter Highlights**

1. Revised the MEL Plan to incorporate USAID comments and suggestions on the definitions of the indicators (output and outcome), and the methods for data collection, analysis and reporting detailed

in Performance Indicator Reference Sheets. Protect Wildlife also included the Environmental Mitigation and Monitoring Plan (EMMP) and the relevant indicators in the Philippine Biodiversity Strategic Action Plan (PBSAP) for 2015-2028 in the MEL that was submitted on April 4, 2017. The MEL Plan was further revised to include USAID's EG.13-6 outcome indicator: Greenhouse gas emissions, estimated in metric tons of CO2 equivalent reduced, sequestered, or avoided through sustainable landscape activities supported by USG assistance.

## **Year 1 Highlights**

1. Developed the Year 1 Work Plan and M&E modules in the Technical and Administrative Management Information System (TAMIS) of DAI. The information system tracks all Protect Wildlife activities and associated staff travel and activity budgets, and provides consolidated information preparation of M&E reports. The system enables each staff to plan and record activities that directly contribute to specific outputs and outcomes. Reports, publications, and documents produced or gathered from partners related to specific activities implemented (activity designs, attendance sheets, evaluations and training reports) are stored in the TAMIS database.
2. Submitted weekly reports and monthly calendars to USAID. The progress of the activity in achieving target outputs and outcomes is tracked and summarized quarterly.
3. Reported information on training activities as prescribed by ADS 253 – Participant Training and Exchanges for Capacity Development. Training data are uploaded quarterly through the USAID TraiNet Database.
4. Provided DENR-BMB and DENR-FASPO with Protect Wildlife quarterly progress reports.

## **Mapping and Spatial Analysis**

### **4th Quarter Highlights**

1. Generated protected area maps on policy-designated and other land uses. Mapping products were informed by field validation.
2. Provided ongoing guidance to site-based GIS staff on the field validation of land uses in protected areas and forestlands and the consolidation of the validated maps for spatial analysis.
3. Provided mapping support to the LGU-managed water system resource valuation study, and the assessment of new and expansions sites within Palawan and in Region 12 for Year 2. Mapped and delineated terrestrial and marine conservation areas and important habitats for Tawi-Tawi.

## **Year 1 Highlights**

1. Developed spatial analysis workflows to be used in FLUP formulation (based on an existing FLUP mapping guidebook) and protected area management planning (as prescribed in DENR technical bulletins). Protect Wildlife harmonized the spatial analysis process with Housing and Land Use Regulatory Board guidelines. The workflows position LGUs and CENROs to ingrate FLUP into CLUPs.
2. Supported site-based GIS staff efforts to generate policy-designated land use maps at a landscape scale, and to develop thematic maps to be used by TWGs for updating protected area management plans and developing FLUPs.
3. Developed and led training to improve capacities of LGU and DENR partners in Palawan and Zamboanga City on the use of GIS and spatial analysis in protected area management and forest land

use planning. Spatial data information management and map visualization were also covered by the GIS training.

## **Communications**

### **4th Quarter Highlights**

1. Supported the DENR-BMB's first National Biodiversity Congress. More than 500 conservation leaders and practitioners from national government agencies, local governments units, civil society, academia, the private sector and indigenous communities from across the Philippines gathered at the Congress to exchange insights and best practices.

### **Year 1 Highlights**

1. Developed the overall theme, program and media plan for the Protect Wildlife activity launch in Manila. U.S. Ambassador to the Philippines Sung Kim and former DENR Secretary Regina Paz Lopez graced the launch and underscored the activity's support for improving biodiversity conservation in the Philippines. The event's theme, "Connected to the Wild," highlighted Protect Wildlife's holistic and integrated approach to conservation, and the value of partnerships among USAID, national and local governments, communities and various sectors in implementing the activity. National broadsheets and online news sites, including GMA News Online, ABS-CBN Online, Philippine Daily Inquirer and Manila Bulletin, among others covered the event. With a working budget of PhP150,000 (US\$3,000) for media and PR services for the launch event, the estimated total earned media value (combined from both advertisement and PR values of newspaper, online news, TV and radio pickups) for the Protect Wildlife launch amounted to PHP 7.9 million (US\$158,000)—a 52-fold return on investment.
2. Completed the Branding, Marking and Communication plans for the activity.
3. Submitted weekly photo stories, highlights and updates to USAID Philippines, most of which were published in their Manila Environment Office weekly email newsletter and used as content for their social media channels.

## **3.2 PALAWAN**

Consistent with the Year 1 Work Plan, the Protect Wildlife team continued to facilitate activities across all SAs in the province. In partnership with Palawan PENRO and PCSDS, the site team worked with 13 organizations that have expressed interest and willingness to jointly plan and implement activities in target conservation areas. Protect Wildlife established a satellite office in Brooke's Point CENRO with two staff to organize and coordinate technical assistance activities in southern Palawan, especially among the five LGUs that cover the Mount Mantalingahan range. LWR also assigned a technical staff to the Brooke's Point satellite office to help coordinate the planning and implementation of community livelihoods and enterprises under the LWR-USAID MOU. The site team continues to work with the SA teams to identify and pursue opportunities and needs in providing technical assistance and support for activity implementation.

### **3.2.1 STRATEGIC APPROACH I: IMPROVE ATTITUDES AND BEHAVIOR TOWARD BIODIVERSITY AND ITS CONSERVATION IN TARGET AREAS**

#### **4th Quarter Highlights**

1. The KAP survey in Southern Palawan reached the final stages of data collection.
2. Brooke's Point continued the C4C campaign song broadcast during its regular radio show.

## Year I Highlights

1. Protect Wildlife implemented the first C4C training in Brooke's Point with 24 participants from the following organizations:
  - Quezon, Rizal, Sofronio Española, Brooke's Point, and Bataraza municipalities (13);
  - PCSDS, DENR-BMB, and CENRO (seven);
  - The Tubbataha Reefs Management Office (one); and
  - Katala Foundation and Augustinian Missionaries Indigenous People Mission (three).
2. The participants launched a customized behaviour change campaign (BCC) in Brooke's Point that featured a campaign song, billboard, puppet show production (script, puppets and puppet theatre), poster, sermon sheet, radio drama and community discussion board.

Other LGU participants indicated their intent to complete and submit their mini BCC campaign proposals for possible launching later in the year.

3. Brooke's Point BCC campaign materials achieved a reach<sup>2</sup>—the total number of people or households exposed, at least once, to advertising or campaign material—of 1,870 persons as of June 30, 2017. Protect Wildlife used the following approach to estimate reach:
  - Billboard placed in Barangay Imulnod at a footbridge used by indigenous people:
    - Period of exposure: April 28 to June 30, 2017
    - Estimated number of pedestrians (Palawan tribe from Imulnod): 1,418 (60 percent of barangay population)
    - Illumination factor of 12 hours: 0.67
    - Estimated load factor (number of people crossing the footbridge at a time): 2
    - Daily Effective Circulation<sup>3</sup> for one billboard face only: 950
  - Campaign song broadcast on the radio during the block time radio show of the Brooke's Point LGU:
    - Period of exposure: April 28-June 30, 2017
    - Frequency of exposure: Saturdays 9-10 am (LGU radio show on Radio Mo Network)
    - Reach of radio show: 380 individuals

The figure is based on available data for listening habits in two barangays in Brooke's Point. The number reached by the campaign song could be potentially higher if data on the listenership of the remaining 16 barangays were available.

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<sup>2</sup> Measuring reach for rural campaigns require certain assumptions where data is absent. In the case of Brooke's Point, where average daily foot traffic is not available, the reach for billboard views will have to be calculated using known data paired with assigned weights for variables used in standard out-of-home (OOH) media effectivity calculators. SA 1 will still be using Daily Effective Circulation (DEC), defined as the average number of Adults (18 years+) passing and potentially exposed to an advertising display each day, as opposed to the industry standard of Eye on Impressions (EOI) or Traffic Audit Bureau Out-of-Home Ratings (TAB Out-of-Home Ratings). In the case of Brooke's Point, the DEC is subject to an Illumination Factor of twelve hours only (6:00 AM to 6:00 PM) as the billboard is not illuminated to allow for visibility in the evenings. Radio reach will be estimated based on available data on radio listenership. To date, there is no existing data on radio ownership and/or listenership for smaller municipalities such as Brooke's Point, according to the Philippine Information Agency (PIA) and Kapisanan ng mga Brodkaster ng Pilipinas (KBP). Standard media reach measures such as Gross Rating Points (GRPs) or Target Audience GRPs (TRPs) are not applicable since show ratings are not customarily measured in local/rural stations and shows.

<sup>3</sup> Daily Effective Circulation = Estimated number of pedestrians \* Illumination factor of 12 hours (67 percent) \* Estimated load factor / 2 (or how many billboard faces there are)

- Posters displayed during FLUP community consultations held by LGU FLUP TWG and Protect Wildlife:
  - Period of exposure: April 28-June 30, 2017
  - Frequency of exposure: 36 barangay workshops; 15 persons per workshop
  - Total reach for poster material: 540 unique views.
- 4. KANTAR TNS initiated the KAP in select Southern Palawan LGU barangays. The survey team invited 58 respondents from these barangays for the focus group discussions.
- 5. Provided guidance to PCSDS in developing a province-wide communications plan based on the agency's mandate, plans, and targets.

### **3.2.2 STRATEGIC APPROACH 2: INTENSIFY PRIVATE AND PUBLIC SECTOR INVOLVEMENT IN CONSERVING AND FINANCING BIODIVERSITY INITIATIVES**

#### **4th Quarter Highlights**

1. Assisted the Brooke's Point PES TWG to prepare financial management guidelines for ring-fencing Brooke's Point Waterworks System (BPWS) and the PES fund generated through a special levy of PHP 1 per m<sup>3</sup> of water used. The Brooke's Point LGU adopted the ring-fencing approach to establish separate records of financial transactions for the waterworks system. The LGU will thus be able to generate accurate and updated information on the operational and financial performance of the water system (an economic enterprise of the LGU). The guidelines will ensure that usage or disbursement of the PES Fund will be in accordance with PES scheme objectives to protect, rehabilitate and manage the watershed.
2. Held discussions with Sofronio Española and Rizal LGUs on establishing PES schemes for their respective water systems. The team started the collection of financial data for the analysis of their waterworks operations. Sofronio Española LGU agreed to formulate a local ordinance establishing a PES scheme. The ordinance was under review by the local legislative council as of the end of June 2017.
3. The joint LWR-Protect Wildlife assessment of financial service providers focused on five microfinance institutions, three local banks and a cooperative that are operating in southern Palawan. The team consulted with Municipal Agriculturists, and had discussions with both producers and buyers to identify the top commodities in Brooke's Point, Bataraza and Sofronio Española that had potential to expand production and processing. Cassava and banana were identified as the top short-term crops for microfinancing. Protect Wildlife and LWR will do a feasibility analysis on these crops in Year 2.

#### **Year I Highlights**

1. Completed the cost and return analyses of the current operations of the Brooke's Point waterworks system and BPRWSA. The financial analysis provided the baseline for various cost and revenue parameters and established the adequacy of the current water pricing scheme for recovering the cost of operations and the costs required to protect, rehabilitate and manage their watersheds. Results of the analyses have been presented to Brooke's Point LGU and BPRWSA. Financial analysis findings will be used to advance operations planning and help partners to appropriately target investment decisions to enhance the viability and sustainability of the water enterprises. The financial analyses, together with the cost-based resource valuation study, will provide the LGU and BPRWSA a complete and sound basis for setting water tariffs and PES rates.



2. Negotiated and finalized the USAID and LWR partnership to support biodiversity-friendly livelihoods and enterprises of coastal and upland communities in southern Palawan. The activity expects that in Palawan, where 60 percent of the population live below the poverty line, strengthened community livelihoods and enterprises will reduce poaching of wildlife especially among IPs, upland farmers, and coastal communities who do not have access to collateralized loans to improve production or move into more profitable value chain activities.

### **3.2.3 STRATEGIC APPROACH 3: IMPROVE BIODIVERSITY CONSERVATION COMPETENCIES OF LGUS AND CSOs THAT INCLUDE ON-SITE LAND AND RESOURCE MANAGEMENT UNITS**

#### **4th Quarter Highlights**

1. The Mount Mantalingahan Protected Landscape TWG issued a resolution recommending that the protected area management board review zones based on the outcome of the Protect Wildlife-led land and resource uses validation exercise. Protect Wildlife’s validation exercise found that current land use is not compliant with Environmentally Critical Areas Network zoning. The board’s decision on the final broad land use categories consistent with the Environmentally Critical Areas Network and the allowed and disallowed land and resource uses in each category may result in the modification of the Mount Mantalingahan range zoning plan.
2. Prepared a draft proposal on the Tubbataha Management Office staffing pattern for review and approval by the management board of Tubbataha Reefs Natural Park. The proposed staffing pattern is consistent with Department of Budget Management (DBM) and DENR practices and standards. The board accepted the proposal with minor comments and revisions. This proposed measure will support the institutional sustainability of the Tubbataha Management Office. If approved by DENR and DBM, more funds will be available for the protection and management of Tubbataha Reefs; the current allocation for personnel services from the income of the protected area will be retained and added to its operations budget. The proposed measure would also establish a permanent staffing presence with entitlements to personal benefits.
3. Facilitated a protected area planning orientation for the management teams of Mount Mantalingahan Protected Landscape, Rasa Island Bird Sanctuary and Ursula Island Game Refuge and Bird Sanctuary. The orientation focused on the protected area planning process and implementation arrangements that emphasize sustainable financing and incentives to communities and LGUs. Individual protected area management teams prepared recommendations to strengthen management, governance, and regulation of land and resource uses within the protected areas.

#### **Year I Highlights**

1. Implemented Protect Wildlife’s participatory planning for integrated conservation and development training program in Palawan for the Mount Mantalingahan Protected Landscape management plan TWG, and government, CSO, private sector and community stakeholders from the following LGUs: Sofronio Española, Brooke’s Point, Bataraza, Quezon and Rizal. The team successfully trained 28 LGU officials and 76 community stakeholders and facilitated production of the Mount Mantalingahan Protected Landscape Management Plan and Sofronio Española, Brooke’s Point, Bataraza, Quezon and Rizal LGUs’ FLUPs for endorsement.

The activity defined LGU officials as “successfully trained” if they attended three or more sub-modules of the FLUP/Protected Area TWG Orientation and Action Planning, Data Gathering, Field Validation and Data Preparation, and/or Review of Zoning and Land and Resource Uses in the Protected Area trainings; and community officials as “successfully trained” if they attended Module

3B/Training of Community Members on Integrated Conservation and Development and a minimum of one FLUP or protected area field validation activity.

2. Facilitated review of Mount Mantalingahan Protected Landscape management zoning. With Protect Wildlife support, the TWG and key community members completed validation of land and resource uses in barangays within the Mount Mantalingahan range boundaries. The validation demonstrated the extent of land within the Environmentally Critical Areas Network core zone or strict protection zone that has been converted or are under threat of conversion to agriculture. The field validation also revealed challenges in regulating, enforcing, and determining the community's role and accountability in land use conversion and harvesting of wildlife flora and fauna species. The TWG resolution elevated the review of Mount Mantalingahan range zones to the protected area management board level.
3. With the Environmental Legal Assistance Center (ELAC) and the PCSDS, Protect Wildlife trained and assisted 27 LGU staff and community members from the five Mount Mantalingahan range municipalities in meeting qualifications as Wildlife Enforcement Officers (WEOs). Following completion of documentation, the trainees will be deputized as WEOs by the Palawan Council for Sustainable Development (PCSD).

### **3.2.4 STRATEGIC APPROACH 4: ENHANCE CAPACITIES OF UNIVERSITIES TO ADVANCE BIODIVERSITY CONSERVATION EDUCATION, RESEARCH, MONITORING AND INNOVATION**

#### **4th Quarter Highlights**

1. Received Palawan State University (PSU)'s intent to partner with Protect Wildlife. The newly designated PSU President welcomed Protect Wildlife's offer for partnership in developing a conservation-oriented RDE agenda.
2. Convened a round table discussion among key local stakeholders to identify immediate measures (policies and regulations, research, extension, incentives) to expand nascent tongkat ali production as a source of income of IP communities. See Annex I for activity documentation. The discussions resulted in efforts to:
  - Develop a stronger base of research on tongkat ali including distribution, indigenous uses, gaps in information in production, chemical properties, processing, and markets,
  - Clarify collection and permitting policies on tongkat ali regarding its extraction and utilization,
  - Recommend to the Department of Science and Technology (DOST) the inclusion of tongkat ali in their Tuklas Lunas program and test it as a cure for malaria, and
  - Prepare the state of the art and RDE program on medicinal plants starting with tongkat ali in the Mount Mantalingahan range.
3. Organized a workshop on the almaciga resin industry in southern Palawan to validate information on almaciga resin and to develop a technical assistance plan to strengthen management and conservation of the natural stand, regulate resin tapping through permitting processes, and support resin tapping-based livelihoods of IPs. Recommended actions from the workshop (see Annex J) include:
  - Streamline the permitting process to reduce processing time,
  - Make tappers aware of grading standards of almaciga resin as basis for pricing,
  - Train tappers on proper tapping procedures,
  - Assess the health status of tapped trees with the intent to establish a monitoring system on tapping and on the health of tapped trees,
  - Explore stronger role of LGUs in supporting the permit holders of almaciga tapping in their respective areas,

- Initiate almaciga planting throughout Palawan, and
  - Identify the direct and indirect benefits of almaciga tapping to different social groups, men and women, and buyers and processors.
4. Studied the role of women in utilizing minor forest products, particularly almaciga tapping and tongkat ali harvesting. Among the findings are: women in the Taburi in Rizal collect and pot tongkat ali wildlings for replanting in areas where tongkat ali plants are being harvested. There are also women who are also engaged in in almaciga resin tapping. Protect Wildlife will include these female tappers in the training on improved tapping methods that will be provided as a result of the research.
  5. Initiated partnership with the Western Philippines University College of Fisheries and Aquatic Sciences on a sea cucumber sea ranching pilot study in southern Palawan. The initial assessment identified Rasa Island in Narra as suitable for sea ranching of sea cucumber and Barangay Salvacion in Puerto Princesa as source of broodstock (see Annex K for scoping report). The team will continue to advance this partnership in Year 2.

## Year I Highlights

1. Assessed the research capacity of WPU and PSU, which revealed that both universities have the experience and staff to pursue a conservation-based RDE agenda for Palawan’s highly diverse ecosystems. They have existing programs on extension and communication, research result dissemination, and sharing and networking with local, national, and international research organizations. Protect Wildlife will support efforts to better align their RDE agendas to regional and provincial priority development needs and to the province’s comparative advantages.
2. Undertook initial stakeholder consultations, site assessments and literature review on the three identified research activities: tongkat ali as a medicinal plant, almaciga resin as a community livelihood and sea cucumber sea ranching. Protect Wildlife led discussions with the concerned WPU staff on the scope of the research activities, the logistical arrangements for the implementation of the studies and future dissemination or publication of research results.
3. Based on consultations and meetings with universities, identified two major focal areas for curriculum development: education and criminology. PSU issued a request for Protect Wildlife to support development of their education curriculum—with an expanded focus on biodiversity conservation and wildlife flora and fauna—in order to position future educators to better educate students on local environmental resources and concerns. Protect Wildlife will work with WPU to integrate environmental laws and wildlife crime enforcement into relevant criminology courses.

### **3.2.5 STRATEGIC APPROACH 5: ENHANCE COMPETENCIES OF NATIONAL AND LOCAL GOVERNMENT AGENCIES IN ENFORCING BIODIVERSITY CONSERVATION-RELATED LAWS AND POLICIES**

#### **4th Quarter Highlights**

1. Conducted the participatory assessment of wildlife law enforcement for the Calamianes islands in Coron. The results of the violations assessments and the presentation to the enforcement agencies highlighted the need for capacity building, coordination, networking, and increased resources (staff and budget) for enforcement. Protect Wildlife’s technical assistance on enforcement in Year 2 will cover the Calamianes islands.

2. Provided enforcement coaching for PCSDS' northern and southern Palawan quick response teams focused on the development of case profiles for suspected wildlife traffickers. Mock enforcement field exercises were held in Northern Palawan.
3. Supported Rizal LGU partners' efforts to develop a municipal fisheries ordinance. The Committee on Agriculture Chair for the Municipality of Rizal will review the draft ordinance in Year 2.

## Year 1 Highlights

1. Developed a partnership with PCSDS designed to help them transition their approach from reactive to proactive enforcement under the Wildlife Act, with focus on setting a long-term strategy to build a locally managed and intelligence-driven approach to wildlife law enforcement in the province. Using quantifiable metrics, the team works with the PCSDS to improve its case profiling, investigative skills, and enforcement operations planning against organized wildlife trafficking groups. The team is helping PCSDS draft its enforcement protocols.
2. Completed the participatory assessment of:
  - a. Wildlife law violations and trafficking trends in mainland Palawan and in the Calamianes Group of Islands, and
  - b. Enforcement capabilities of Palawan-based enforcement organizations, including PCSDS, Bantay Palawan, LGUs and national enforcement agencies.

These assessments provided opportunities for Protect Wildlife to conduct targeted, site-specific capacity building interventions on enforcement that include staff training, policy support, tools and systems development, and management of budgets and incentives.

3. Apart from a province-wide approach, the team worked at the local levels to broaden wildlife law enforcement. Protect Wildlife collaborated with PCSDS and ELAC to train WEOs from Mount Mantalingahan range communities and LGUs. The activity will continue to mentor the enforcement officers in monitoring wildlife harvesting in the protected area.

## 3.3 ZAMBOANGA CITY-TAWI-TAWI

In Zamboanga City and Tawi-Tawi, Protect Wildlife works with DENR Region 9, Zamboanga City, Tawi-Tawi municipal LGUs, and DENR-ARMM. The activity team has established a satellite office in Bongao, Tawi-Tawi with two technical staff. The field team, with technical support from the SA teams, coordinates training and other capability building activities, maintains relationships with partners, and coordinates activities with other USAID and donor-funded projects. In Zamboanga City, the activity focuses on land use and conservation planning and legitimization and on establishing mechanisms to strengthen wildlife trafficking enforcement. In Tawi-Tawi, the site sub-team has focused on improving wildlife law enforcement capacities and facilitating partnerships between five municipal LGUs on shared conservation priorities for coastal and marine resources and watersheds.

### 3.3.1 STRATEGIC APPROACH I: IMPROVE ATTITUDES AND BEHAVIOR TOWARD BIODIVERSITY AND ITS CONSERVATION IN TARGET AREAS

#### 4th Quarter Highlights

1. Initiated planning for a training on behaviour change communications with DENR and Zamboanga City including selection criteria for participants.

## Year I Highlights

1. Completed initial planning for the training on behaviour change communication scheduled for the first quarter of Year 2.

### **3.3.2 STRATEGIC APPROACH 2: INTENSIFY PRIVATE AND PUBLIC SECTOR INVOLVEMENT IN CONSERVING AND FINANCING BIODIVERSITY INITIATIVES**

#### **4th Quarter Highlights**

1. Conducted discussions with the Mampang Seaweeds Planters Association in Barangay Mampang, Zamboanga City regarding their seaweed farming and other aquasilviculture activities, and mangrove nursery, which is used by the association to support mangrove replanting activities in the area. Protect Wildlife is exploring opportunities to support seaweed planters in Year 2, particularly in this barangay where the community has been involved in mangrove rehabilitation with DENR and City support.
2. Advanced PES work with the Santa Cruz Islands protected area management unit and Zamboanga City LGU. Protect Wildlife presented its analysis of the ecotourism-related operations in the island. The protected area management unit indicated plans to revise their tourism fees in the light of new guidelines provided by the BMB. Protect Wildlife will support efforts to develop a business plan for the Santa Cruz Islands, which will outline the basis for determining appropriate PES rates for tourism activities that will be allowed in the islands.

## Year I Highlights

1. Completed cost and revenue analyses of Zamboanga City Water District (ZCWD) operations, including its annual investment in the protection and management of the Pasonanca Natural Park, which is the main source of water of the city. The analysis shows that the current arrangements where DENR has assigned to ZCWD the protection and management of the Pasonanca Natural Park is a PES-like scheme. The amount spent by ZCWD for protection effectively augments government resources for protected area conservation and habitat management. The study also establishes the financial viability of the water utility, the cost of its water operations and the requirements protecting and managing the park, which are all important bases for setting PES rates. In light of the study, Protect Wildlife recommended that the current agreement between DENR and the ZCWD be reviewed and that the parties consider a more comprehensive basis for PES.
2. Explored other opportunities to establish PES and PES-like schemes, initiating site visits to Bog Lake, and the Zamboanga State College on Marine Science and Technology (ZSCMST)'s mangrove and bird sanctuary. In Year 2, Protect Wildlife will continue to advance discussions with the intent to secure a commitment to partnership with the activity on building a PES or PES-like ecotourism initiative.

### **3.3.3 STRATEGIC APPROACH 3: IMPROVE BIODIVERSITY CONSERVATION COMPETENCIES OF LGUS AND CSOS THAT INCLUDE ON-SITE LAND AND RESOURCE MANAGEMENT UNITS**

#### **4th Quarter Highlights**

1. Based on the validated land uses within the Pasonanca Natural Park and Santa Cruz Islands, the two protected areas' TWGs issued resolutions recommending to their respective management boards the adoption of the proposed zoning and the allowed and disallowed land and resource uses in identified

sub-zones. The zoning and land and resource use prescriptions will guide further protected area planning and investment formulation.

2. Participated in consultations and a public hearing organized by Zamboanga City on the updated City CLUP, Zoning Ordinance and Comprehensive Development Plan . The USAID Strengthening Urban Resilience for Growth with Equity (SURGE) activity is supporting the CLUP activity.
3. Partnered with the Mindanao Development Authority (MinDA) and DENR Region 9 to co-host a round-table discussion in Davao City on Turtle Islands Ecotourism. The discussion was designed to initiate planning for the development of the Turtle Islands Wildlife Sanctuary in Tawi-Tawi province as a conservation and ecotourism zone.
4. In response to a request from the Santa Cruz Islands management board conducted a training on coastal resource valuation to enable the TWG to estimate the value of coral reefs damaged by a naval vessel. The protected area management board and the city LGU plan to claim payment from the Philippine Navy for the damage.
5. Supported DENR and Zamboanga City's Office of the City Environment and Natural Resources' (OCENR) celebration of Philippine Arbor Day. Protect Wildlife provided seedlings used in the tree planting activity inside the Pasonanca watershed.
6. Conducted rapid assessments of Bud Bongao or Bongao Peak (a locally managed conservation area), Malum watershed in Panglima Sugala (a source of drinking water of Bongao and a key bird sanctuary) and several marine protected areas in Languyan, Sibutu and Sitangkai LGUs with partners in Tawi-Tawi to identify conservation areas for potential Protect Wildlife support in Year 2. Protect Wildlife will undertake more detailed assessment of the target sites in Year 2.

### **Year I Highlights**

1. Implemented Protect Wildlife's participatory planning for integrated conservation and development training program in Zamboanga City for the Pasonanca Natural Park TWG, Santa Cruz Islands TWG, and the Zamboanga City FLUP TWG. The team successfully trained two LGU officials and 25 community stakeholders and is facilitating the writing of the Pasonanca Natural Park and Santa Cruz Islands management plans.
2. Protect Wildlife and DENR Region 9 partners collaborated to train 111 LGU staff and community members from Zamboanga City, including the forest guards deployed by the ZCWD in the Pasonanca Natural Park, as WEOs. Of these, nine LGU staff and seven community members received their deputation orders from DENR Region 9. The formal deputation of the other trained WEOs will be pursued in Year 2.

### **3.3.4 STRATEGIC APPROACH 4: ENHANCE CAPACITIES OF UNIVERSITIES TO ADVANCE BIODIVERSITY CONSERVATION EDUCATION, RESEARCH, MONITORING AND INNOVATION**

#### **Year I Highlights**

1. Six schools expressed interest in partnering with Protect Wildlife: Western Mindanao State University (WMSU), Zamboanga State College of Marine Science and Technology (ZSCMST), Ateneo de Zamboanga University (AdZU), Universidad de Zamboanga (UdZ), Mindanao State University-Tawi-Tawi College of Technology and Oceanography (MSU-TCTO), and Tawi-Tawi Regional Agricultural College (TRAC).

2. Assessed the research capacity of four universities—WMSU, ZSCMST, AdZU and MSU-TCTO. Through assessments, Protect Wildlife assessed their research activities that are related to biodiversity conservation, existing extension and communication programs, staffing, research-related facilities, and linkages with other research organizations. Findings include:
  - WMSU's strengths are in terrestrial wildlife habitats in their forest reservation and Pasonanca Natural Park.
  - AdZu has the capability to carry out RDE activities on social and environmental sciences (especially on ecotourism areas) and could focus their work in Santa Cruz Protected Seascape and Landscape.
  - MSU-TCTO can build on its previous works on coastal and marine research focusing on marine sanctuaries, threatened species, and mariculture/aquaculture.
  - TRAC has shown interest to do watershed research.

In consultation with the following universities and colleges, Protect Wildlife identified the following areas for potential collaboration:

- AdZU in natural resource profiling and tourism planning in Santa Cruz Islands;
- ZSCMST and WMSU in Barangay Mampang mangrove areas and communities; and
- MSU-TCTO in field testing improved seaweeds cultivars produced in their laboratory.

Protect Wildlife will continue to develop these and other RDE efforts with target schools in Year 2.

3. Identified opportunities to collaborate with WMSU and AdZU to strengthen criminology and police administration curriculum by integrating subjects on biodiversity, and environmental and wildlife laws and policies.

### **3.3.5 STRATEGIC APPROACH 5: ENHANCE COMPETENCIES OF NATIONAL AND LOCAL GOVERNMENT AGENCIES IN ENFORCING BIODIVERSITY CONSERVATION-RELATED LAWS AND POLICIES**

#### **4th Quarter Highlights**

1. Supported DENR Region 9 in its initiative to institutionalize the Regional Anti-Environmental Crime Task Force (RAECTF) through a Memorandum of Agreement (MOA) among the member agencies.
2. Assisted OCENR efforts to operationalize and strengthen the Zamboanga City Anti-Wildlife Trafficking Task Force (ZCAWTTF). The team helped draft the Operational Protocols of the ZCAWTTF, which was disseminated to members-institutions for review.
3. Supported capacity building of the Zamboanga City Composite Fisheries Law Enforcement Team (CFLET) through training of its members and facilitating its organizational planning workshop where enforcement protocols were agreed upon. The CFLET was created by the Zamboanga Mayor in 2016. Its members consist of representatives from the Office of the City Agriculturist, PNP Maritime, Philippine Coast Guard, Philippine Navy, BFAR, Fisheries and Aquatic Resources Management Council (FARMC), and officials of coastal barangays and fisherfolk organizations.

As follow-on assistance towards the enactment of a Zamboanga City Fisheries Ordinance, facilitated a consultation on the proposed ordinance that was attended by 83 stakeholders (members of the Sangguniang Panglungsod and fisherfolk associations, representatives from DA-BFAR, and other local organizations).

4. Conducted a Wildlife and Environmental Law Enforcement Training for staff of the Zamboanga City Water District who are involved in the protection of the core zone of Pasonanca Natural Park.

### **Year I Highlights**

1. Provided a range of support (i.e., enforcement training, partnership building, protocol development) for development and strengthening of environmental and wildlife law enforcement initiatives of the following organizations:
  - Inter-agency enforcement bodies like the Zamboanga City Anti-Wildlife Trafficking Task Force and Regional Anti-Environmental Crime Task Force,
  - Zamboanga City Composite Fisheries Law Enforcement Team,
  - Tawi-Tawi Provincial Wildlife Trafficking Task Force,
  - Enforcement staff of DENR Region 9 and its field offices,
  - BFAR Region 9, and
  - Zamboanga City and Zamboanga City Water District.
2. Supported Zamboanga City efforts to establish the enabling mechanisms to combat illegal, unregulated and unreported (IUU) fishing within its municipal waters. Protect Wildlife assisted the LGU in the revision of its local fisheries ordinance to make it consistent with the Revised Fisheries Code and in the drafting of the resolution creating a City Fisheries and Development Office. Both have been submitted to the Agriculture and Fisheries Committee of the City Development Council for review and for Council approval.
3. In collaboration with PBC 3, provided support to the development of the biodiversity management plan for Zamboanga City that the LGU will formally adopt and integrate into its FLUP and CLUP.



# 4 MANAGEMENT AND ADMINISTRATION

This section provides highlights and summary of the financial performance and human resources and operational activities resulting from various key actions by the management team.

## 4.1 MANAGEMENT AND OPERATIONS

The COP, DCOP, Finance and Operations Director and the Field Managers continued to lead, coordinate and manage the day-to-day operations and implementation activities of Protect Wildlife. DAI Headquarters continued to provide backstop administrative, finance, and technical support and guidance on implementation concerns.

### 4th Quarter Highlights

1. Managed onboarding and termination of Protect Wildlife staff members:
  - a. Hired Antoinette Corazon Guillermo, Private Sector Engagement and LGU Enterprise Development Specialist (replacement of Stella Salas); Noli Llavan, Research and M&E Assistant for the Southern Palawan Satellite Office; Francisco Hernandez, Logistics and Inventory Coordinator (replacement of Louie Lumontod); and Dino Dampa, additional Driver for the Palawan Field Office.
  - b. Processed resignations of Levi Mamuri-Tomagos, HR/Office Manager; Ma. Xenia dela Cruz, Finance Manager; Estrella Regonas, Finance Administrator-Palawan; and Louie Lumontod, Logistics Coordinator. The resignations were due to family matters and employment opportunities nearer to home. Recruitment is ongoing to replace these staff, except for the Logistics Coordinator whose replacement is already onboard as mentioned above.
  - c. Managed ongoing recruitment of the Environmental Compliance Specialist; recruitment for Conservation Financing Advisor is pending.

A summary of Protect Wildlife staff by type (administrative or technical) and location is presented in Table 4.

**TABLE 4: SUMMARY OF TECHNICAL AND ADMINISTRATIVE/FINANCE STAFF BY LOCATION AS OF JUNE 30, 2017**

CATEGORIES	TOTAL	STAFF TYPE		LOCATION		
		Technical	Support	Manila	Palawan	Zamboanga City and Tawi-Tawi
No. of staff on board	44	26	18	27	8	9
No. of staff resigned within the quarter	-4		-4	-3	-1	
No. of staff for USAID approval	-	-	-	-	-	-
No. of staff for recruitment	6	2	4	5	1	
<b>Total Long-Term Technical Assistance Staff</b>	<b>46</b>	<b>27</b>	<b>19</b>	<b>30</b>	<b>8</b>	<b>8</b>

2. The renovation of the new Tawi-Tawi satellite office, which was previously occupied by the Ecosystems Improved for Sustainable Fisheries (ECOFISH) activity, continued this quarter. The Tawi-Tawi team will move to the new office location, at Datu Halun Street, Tubig Boh, Bongao, Tawi-Tawi, on July 1, 2017.

3. The Water Security for Resilient Economic Growth and Stability (Be Secure) activity disposed two new vehicles to Protect Wildlife. One was deployed to the Zamboanga City office while the other one was retained in Manila for possible deployment to a new site in Year 2. Total vehicle count to date is six and distribution is as follows: two in Manila, two in Zamboanga City and two in Palawan.
4. The Be Secure activity also disposed mobile printers, laptop computers, filing cabinets, projectors, cameras, and other small expendable items to Protect Wildlife. These were distributed to Manila staff and field offices.
5. The activity continued to engage the following home office staff to customize information systems and attend to the activity's information technology (IT) needs.
  - Tanja Lumba – refinement of TAMIS technical module and upgrading of TAMIS-Procurement module.
  - Erik Bjers – provided remote IT support.
  - Vahe Sahakyan – provided remote support on the use of the field accounting system.
6. A small satellite office in Brooke's Point was established inside the CENRO Building at E. Rodriguez Street, Poblacion District I.
7. The Finance and Operations Director visited Palawan Office in June 2017 to orient new staff on various financial and operational policies and procedures; attended to HR matters and meet with the outgoing Finance Administrator.
8. On procurement, Table 5 provides a summary of major procurements for the quarter. A large portion of procurement costs were for workshop activities. The table also includes procurement of services for video production and management and media relations for the launch of Protect Wildlife.

**TABLE 5: SUMMARY OF MID-RANGE PROCUREMENT FROM APRIL TO JUNE 2017**

<b>Procured Goods and Services</b>	<b>Date of Activity</b>	<b>Amount Spent (US\$)</b>
Air tickets for Protect Wildlife staff	April to June, 2017	US\$ 29,474
Campaigning for Conservation Training	April 2017	US\$ 12,793
KAP Baseline Survey	April 2017	US\$ 13,280
FLUP Training-workshop on FLUP data collection and analysis	April 2017	US\$ 1,191
Workshop and Pre-Field Validation of land uses with the Mount Mantalingahan Protected Landscape TWG and LGU FLUP TWGs	May 2017	US\$ 2,243
Law Enforcement Training for CFLET	May 2017	US\$ 820
Training of Trainers 6 in partnership with PBC3	May 2017	US\$ 2,522
Training of PCSDS Enforcement Division and Bantay Palawan	May 2017	US\$ 6,488
Consensus building workshop on Mount Mantalingahan Protected Landscape Environmentally Critical Areas Network zones, land uses and use prescriptions	June 2017	US\$ 2,814
Mount Mantalingahan Protected Landscape FLUP Data Consolidation and Analysis Workshop	June 2017	US\$ 2,106
HP Printer Ink Toners for all sites	June 2017	US\$ 5,521

## 4.2 SECURITY

The activity's Security Director continued to provide security risk information and relevant assessments to the staff in Zamboanga City and Tawi-Tawi, Palawan, and Manila. There were also heightened security risks and threats before and after the declaration of martial law by President Rodrigo Duterte on May 23, 2017 (Proclamation No. 216) which suspended the privilege of the writ of habeas corpus in the whole of Mindanao. The martial law intensified military actions in Marawi City, and the campaign against the Abu Sayyaf Group, and the New People's Army. The staff has taken precautionary actions in their travel to the sites in Mindanao and parts of southern Palawan.

# 5 ISSUES, CHALLENGES AND LESSONS

In Year 1, Protect Wildlife faced several challenges—many of which are outside of the activity team’s control—that made an impact or indirectly affected the planning and implementation of activities in the target conservation areas. The key lessons from Year 1 provide insights on how to improve planning and implementation in Year 2.

## 5.1 ISSUES AND CHALLENGES

In Year 1, the activity faced several issues and challenges in the planning and implementation of its activities. These are summarized below:

1. Changes in leadership at the local and national levels in DENR and law enforcement agencies required adjustments in the planning and delivery of technical assistance support. In Year 1, the activity saw at least two major changes in DENR leadership. These changes resulted to changes in the local, regional, and national leadership. For instance, there were changes in DENR Regional Directors in Region 9 and 4B, PENROs in Palawan and CENROs in southern Palawan and Zamboanga City. The team adjusted field implementation schedule and took initiatives to orient the new officials in Region 9, Region 4B, and DENR field units.
2. The declaration of martial law in Mindanao on May 23, 2017 has amplified increasing risks and security threats in Zamboanga-Tawi-Tawi and Balabac, Palawan. Basilan, Sulu, and Turtle Islands remain to be “high risk” for activity planning and implementation. Due to ongoing security concerns, Protect Wildlife staff are not permitted to travel to Balabac, which prohibits capacity to work in a priority site for countering wildlife trafficking. While travel to Turtle Islands is possible—with extensive security preparation—constraints on movement and regular coordination hinder the activity’s capacity to deliver technical assistance. For Year 2 work planning, the continuing risk and security threats in the Protect Wildlife sites means limited field activities with communities and local leaders and officials. The team needs up to date on-site assessment of threats and risks for planning and implementation of technical assistance activities. The team has to depend on local counterparts for carrying out activities.

## 5.2 LESSONS FROM YEAR 1 IMPLEMENTATION

1. There is no short cut to partnership building especially where a highly technical activity is involved, as in the case of Protect Wildlife. The Theory of Change and BCC are new practices to major partners. The hierarchy of indicators and the results chain of each SA are specific subjects all partners need to be privy to. Within Protect Wildlife, there is no excuse for unfamiliarity with these guiding principles and documents, a year after implementation. The main lesson in this case is the importance of making investments (time, effort, and personnel) in preparing the partners, staff, and other key stakeholders to commit to understanding the Theory of Change and connections between SAs. To strengthen partners’ understanding of the Theory of Change and overarching vision of the activity, Protect Wildlife designed Theory of Change review activities for partners in Zamboanga City-Tawi-Tawi and Palawan as part of Year 2 work planning workshops. This will be implemented early in Year 2.

2. Linked to the point above, the need to better define the linkages between SAs and communicate these to the SA teams and administrative and site management and coordination staff has been found to be effective as the activity continues to refine, clarify, and focus its strategies and interventions to meet deliverables and outputs. Successful implementation of an integrated approach to land and resource use in a landscape-seascape requires effective coordination, complementarity of activities, and continuous learning especially between the SA teams, between Manila and site management, and between the technical and administrative and finance staff. Engaging all parties in periodic review of the activity, approach and strategies is needed during the initial years of implementation. Protect Wildlife has facilitated this by engaging all technical staff in Theory of Change review activities, and in quarterly reporting workshops.
3. Effective local governance at the landscape, LGU, and tenure/domain levels is emerging as one of the keys to improve biodiversity conservation and enforcement. Protect Wildlife needs to design training modules to help the LGUs see beyond compliance responsibilities and realize how sound land and resource use within their jurisdictions can direct, compel, or even enjoin decision makers to use public funds and promote private sector investments to conserve biodiversity and protect wildlife. Activity implementers must regularly communicate this message to public officials to reinforce the view that public lands, including conservation areas, are resources that contribute value, economically and intrinsically, to constituents and therefore their conservation and wildlife protection efforts must be sustained.

# 6 PLANNED ACTIVITIES FOR FIRST QUARTER OF YEAR 2

In Chapter 5, Protect Wildlife presents planned activities for the first quarter (July to September 2017) of Year 2. A full Year 2 work plan will be submitted to USAID for approval.

## 6.1 MANILA

### 6.1.1 STRATEGIC APPROACH 1: IMPROVE ATTITUDES AND BEHAVIOR TOWARD BIODIVERSITY AND ITS CONSERVATION IN TARGET AREAS

- Support, coach, and guide the planning and implementation of mini-BCC campaigns in southern Palawan, as a result of the C4C training in Year 1.
- Finalize the design and resource materials, and coordinate all logistics for the BCC-like activity (social marketing on biodiversity conservation) to be delivered in Zamboanga City.
- Review and analyze the outputs of the KAP survey and use the results as baseline on the behaviors of target groups in southern Palawan especially in the Mount Mantalingahan Protected Landscape; and to inform development of mini-BCC campaigns in southern Palawan.
- Commence planning Qualitative Research (focus group discussions and key informant interviews) for baseline KAP of Zamboanga City.

### 6.1.2 STRATEGIC APPROACH 2: INTENSIFY PRIVATE AND PUBLIC SECTOR INVOLVEMENT IN CONSERVING AND FINANCING BIODIVERSITY INITIATIVES

- Finalize arrangements with the selected MFI and begin preparations to launch the LWR-USAID fiduciary fund to support target commodities and communities.
- Explore with other financing organizations possible funding support for community livelihood and enterprises in southern Palawan.
- Continue setting up “ring fencing mechanisms” within LGUs for local water system operations and the ecotourism enterprise in Santa Cruz Islands.

### 6.1.3 STRATEGIC APPROACH 3: IMPROVE BIODIVERSITY CONSERVATION COMPETENCIES OF LGUS AND CSOS THAT INCLUDE ON-SITE LAND AND RESOURCE MANAGEMENT UNITS

- Design and conduct training on FLUP data analysis and integration of socioeconomic and biophysical data into proposed land and resource uses in public lands.
- Organize mapping support requirements to complete ongoing FLUP and protected area management planning activities; provide mapping support to initial work in new sites.
- Assist the site team in the selection of the IP group in Mount Mantalingahan range for assistance in Ancestral Domain Sustainable Development and Protection Plan (ADSDPP) preparation and prepare technical assistance modules that are aligned with the prospective review of zones in the Mount Mantalingahan Protected Landscape.

#### **6.1.4 STRATEGIC APPROACH 4: ENHANCE CAPACITIES OF UNIVERSITIES TO ADVANCE BIODIVERSITY CONSERVATION EDUCATION, RESEARCH, MONITORING AND INNOVATION**

- Pursue with universities and colleges in Zamboanga City, Palawan, South Cotabato and General Santos City the preparation of their RDE agenda, and joint development of research and curricular improvement proposals.
- Provide technical support to site teams and WPU research teams on planned activities for the sea cucumber study in Palawan.
- Prepare for implementation of almaciga and tongkat ali research in Palawan.
- Discuss with FMB proposed national policy actions on almaciga resin tapping.
- Continue to explore with potential partners, e.g., DOST, Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), and University of the Philippines Los Baños, opportunities for joint research, networking and mentoring, and conduct of scientific forum.

#### **6.1.5 STRATEGIC APPROACH 5: ENHANCE COMPETENCIES OF NATIONAL AND LOCAL GOVERNMENT AGENCIES IN ENFORCING BIODIVERSITY CONSERVATION-RELATED LAWS AND POLICIES**

- Conduct the National Consultation on Wildlife Resource Valuation in Support of Law Enforcement, in partnership with USAID PBC 3.
- Support BMB's National Consultations on the Development of a Communication Protocol for Law Enforcement for the Marine Turtle Protected Area Network in the Sulu-Sulawesi Seascape, in partnership with GIZ and Tanggol Kalikasan.
- Conduct training on environmental and wildlife laws for the prosecutors of the Department of Justice who are assigned to green courts in various parts of the country
- Provide technical support to BMB's orientation series on Stop Ivory and Wildlife Trafficking at Airports and Seaports

#### **6.1.6 CROSSCUTTING COMPONENTS**

##### **Gender Analysis**

- Prepare the Protect Wildlife gender report for Year 1 for submission to USAID
- Prepare the gender action plan for Year 2 for discussion with SA and site teams
- Continue to collect and analyze sex-disaggregated data related to specific output and outcome indicators of Protect Wildlife for reporting.
- Assist SA teams develop gender- and IP-sensitive activity designs, policies, ordinances, and management plans.
- Assist site teams establish partnerships with academe and CSOs with gender programs in order to build a local pool of gender focal persons and trainers who can assist in advocating gender parity in conservation activities of local partners of Protect Wildlife

##### **Monitoring, Evaluation and Learning**

- Update the TAMIS Technical and M&E databases and ensure that data on performance indicators and supporting evidences and documents are current
- Develop and improve data gathering tools for output and outcome indicators and environmental impact monitoring, and set up the arrangements with SA and site teams for their use

- Develop the indicators for the Learning Questions and system and timing for data collection and analysis
- Summarize and upload training data for April – June 2017 into the USAID TRAINET database
- Prepare the Environmental Screening Report and Environmental Mitigation Monitoring Plan for sea cucumber ranching for submission to USAID.

## Communications

- Participate in two biodiversity research symposiums: the 26th Philippine Biodiversity Symposium organized by the Biodiversity Conservation society of the Philippines; and the PCSDS-organized 3rd National Conference on Sustainable Development and 4th Palawan Research Symposium. Protect Wildlife’s findings on the violations assessments in its sites and the spatial analysis done in support of conservation-oriented landscape-seascape planning will be presented in both symposia.
- Initiate talks with DENR-BMB to expand current biodiversity advocacy campaign to include key messages and behavior change components that support the efforts of Protect Wildlife and DENR-BMB in combating poaching and trafficking of wildlife.
- Update Protect Wildlife communications materials

## 6.2 PALAWAN

### 6.2.1 STRATEGIC APPROACH 1: IMPROVE ATTITUDES AND BEHAVIOR TOWARD BIODIVERSITY AND ITS CONSERVATION IN TARGET AREAS

- Follow up on the submission of mini-BCC proposals of C4C participants
- Monitor progress of BCC campaign of Brooke’s Point

### 6.2.2 STRATEGIC APPROACH 2: INTENSIFY PRIVATE AND PUBLIC SECTOR INVOLVEMENT IN CONSERVING AND FINANCING BIODIVERSITY INITIATIVES

- With LWR and other partner agencies, finalize the selection of target communities and beneficiaries and initiate the preparation of feasibility studies for priority
- Present the resource valuation and financial analysis to Brooke’s Point LGU and BPRWSA, and generate agreement on the institutional and financial set-up for the PES scheme.
- Continue to explore, identify and assess new PES opportunities for water use and ecotourism

### 6.2.3 STRATEGIC APPROACH 3: IMPROVE BIODIVERSITY CONSERVATION COMPETENCIES OF LGUS AND CSOS THAT INCLUDE ON-SITE LAND AND RESOURCE MANAGEMENT UNITS

- Assist the LGU TWGs in completing the field validation of policy-designated land uses and in the collection, validation, consolidation and initial analysis of data that will be used in FLUP.
- Conduct FLUP Session 3 for the FLUP TWGs of the five Mount Mantalingahan range LGUs. Mentor the TWGs in the sectoral, inter-sectoral and cross-sectoral analysis of FLUP data and in the consolidation of validated land uses.
- Provide technical assistance to the following protected areas:
  - Mount Mantalingahan Protected Landscape – assist generate consensus among protected area management board members on the zoning scheme that will be adopted.



- Tubbataha Reefs Natural Park – advocate for protected area management board approval of the proposed staffing pattern for the TMO
- Rasa Island Wildlife Sanctuary – guide in updating the protected area management plan
- Conduct initial assessment of CADT holders in Mount Mantalingahan range for possible assistance in ADSDPP preparation; coordinate with the IP organization and NCIP Palawan on requirements for free and prior informed consent.
- Prepare 1:20,000 maps for Mount Mantalingahan Protected Landscape for the delineation of the sub-zones and formulation of management prescriptions; provide mapping support to Rasa Island management plan and ADSDPP preparation.

#### **6.2.4 STRATEGIC APPROACH 4: ENHANCE CAPACITIES OF UNIVERSITIES TO ADVANCE BIODIVERSITY CONSERVATION EDUCATION, RESEARCH, MONITORING AND INNOVATION**

- Engage WPU in joint work and logistical planning exercises for the implementation of the research studies on tongkat ali, almaciga and sea cucumber, based on the scope of the research described in the research proposal.
- Continue work with the WPU in implementing planned activities for the quarter for the sea cucumber research – e.g., collection of broodstock for the production of juveniles; securing necessary permits.
- Work with PSU and WPU in developing their conservation-oriented and client-responsive RDE programs.
- Jointly identify and plan with WPU actions to initiate its curriculum development proposal.
- Conduct capability assessment of the Holy Trinity University (HTU) and dialogue on its RDE agenda and proposed areas for research.

#### **6.2.5 STRATEGIC APPROACH 5: ENHANCE COMPETENCIES OF NATIONAL AND LOCAL GOVERNMENT AGENCIES IN ENFORCING BIODIVERSITY CONSERVATION-RELATED LAWS AND POLICIES**

- Continue wildlife and environmental law enforcement coaching sessions with the PCSDS.
- Complete and present the draft wildlife law enforcement protocol to PCSDS
- Conduct consultations with Mount Mantalingahan range LGUs on their policy development needs on fisheries and wildlife habitat management, particularly with respect to the updating of their municipal fisheries ordinances, and the crafting of ordinances for flagship species in partnership with the PCSDS
- Plan with PCSDS the conduct of a policy workshop to update the list of threatened species in Palawan pursuant to the Wildlife Act
- Assist with the deputation of the participants to the Wildlife Law Enforcement Officers Training in Mount Mantalingahan Protected Landscape.

### **6.3 ZAMBOANGA CITY-TAWI-TAWI**

#### **6.3.1 STRATEGIC APPROACH 1: IMPROVE ATTITUDES AND BEHAVIOR TOWARD BIODIVERSITY AND ITS CONSERVATION IN TARGET AREAS**

- Finalize arrangements with the officials of Zamboanga City and DENR for the conduct of the training on social marketing for behavior change in Zamboanga City.

- Conduct the localized social marketing training and develop behavior change communication campaigns that support the implementation of the updated management plans for Pasonanca Natural Park and Santa Cruz Islands.
- Explore the potential of engaging universities and colleges for the qualitative KAP survey.

### **6.3.2 STRATEGIC APPROACH 2: INTENSIFY PRIVATE AND PUBLIC SECTOR INVOLVEMENT IN CONSERVING AND FINANCING BIODIVERSITY INITIATIVES**

- Based on current land cover and uses, complete estimates for the protection, restoration and management of the Pasonanca watershed. Present estimates and financial analysis of the operations of the water utility to officials of the ZCWD, Zamboanga City and DENR and generate agreement on the institutional and financial set-up for the PES scheme.
- Initiate the preparation of the business plan for Santa Cruz Islands.
- Explore other opportunities for PES-like schemes in Zamboanga City and Tawi-Tawi. Review the current environmental users fee scheme for Bud Bongao and determine areas for technical assistance.

### **6.3.3 STRATEGIC APPROACH 3: IMPROVE BIODIVERSITY CONSERVATION COMPETENCIES OF LGUS AND CSOS THAT INCLUDE ON-SITE LAND AND RESOURCE MANAGEMENT UNITS**

- Complete the field validation, through community consultations and community mapping, of policy–designated lands uses within forestlands. Sixteen barangays remain for validation.
- Conduct a writeshop for the drafting of the situational analysis and the management standards, guidelines and prescriptions for the proposed zoning of the Pasonanca Natural Park and Santa Cruz Islands.
- Assess the competencies and management effectiveness of LGUs and existing management bodies for Bud Bongao, and selected marine protected areas in Languyan, Tawi-Tawi. The assessment will be used to develop the technical assistance program for Tawi-Tawi.

### **6.3.4 STRATEGIC APPROACH 4: ENHANCE CAPACITIES OF UNIVERSITIES TO ADVANCE BIODIVERSITY CONSERVATION EDUCATION, RESEARCH, MONITORING AND INNOVATION**

- Review the RDE programs of WMSU, ZSCMST, AdZU, UdZ, MSU-TCTO and TRAC; and identify and prioritize research proposals that are consistent with the RDE of each HEI.
- Facilitate dialogues between universities and colleges and the management boards and relevant stakeholders of the protected areas where their RDE programs are focused on.
- Pursue discussions with WMSU, UdZ, ZSCMST and MIT their curriculum development proposal and plan next steps for the development of the relevant courses.
- Facilitate MOUs or agreement among schools in Zamboanga City and Tawi-Tawi

### **6.3.5 STRATEGIC APPROACH 5: ENHANCE COMPETENCIES OF NATIONAL AND LOCAL GOVERNMENT AGENCIES IN ENFORCING BIODIVERSITY CONSERVATION-RELATED LAWS AND POLICIES**

- Support the public consultation on the Zamboanga City Biodiversity Management Plan
- Conduct an enforcement training for the Tawi-Tawi Wildlife Task Force

- Conduct a wildlife and environmental law enforcement training for Zamboanga City Anti-Wildlife Trafficking Task Force, including uniformed personnel of its member agencies
- Continue skills training in Tawi-Tawi and Zamboanga City for regular enforcers, LGU officials (barangay, municipal and provincial) and other law enforcement agencies.

## **6.4 MANAGEMENT AND ADMINISTRATION**

### **6.4.1 OPERATIONS**

- Continue updating the Field Operations Manual and customizing it according to activity needs and local laws.
- Continue to train Protect Wildlife staff on various TAMIS modules, i.e. travel, procurement, human resources, and inventory management.
- Continue to provide other support needed by the technical team as they roll out various activities in the field.
- Support field staff in moving to the new location of the Tawi-Tawi satellite office and procure the necessary furniture and equipment needed to make the new office operational.
- Provide orientation and systems trainings to newly hired staff.
- Work with the DAI Project Manager based in home office on the development of the Year 2 budget.
- Work with the DAI Project Associate who will be in Manila in August to train the new Finance Manager, re-train the finance team on financial policies and procedures, and check compliance with back-up documentation requirements.

# 7 PAST AND PROJECTED EXPENDITURES

Table 6 provides a summary of Protect Wildlife’s actual expenditures as of June 30, 2017 and projected expenditures based on planned activities for July to September 2017. The highlights are the following:

- For the quarter in review, total spending amount to US\$817,495 that is slightly higher than last quarter’s US\$812,736. Of this amount, US\$644,738 or 79 percent of quarter spending went to Other Direct Cost that includes workshops, local travels, local labor and benefits, procurements, other operational costs, and subcontractor costs. Total actual activity expenditures through June 2017 amount to US\$2,709,264 or 58 percent of Year 1 approved budget. The unutilized budget for Year 1 will be carried forward to Year 2.
- The distribution of spending per CLIN is in Table 6 below which also shows the projected expenditures for next quarter’s planned activities that is approximately 21 percent of Year 1 budget.

**TABLE 6: SUMMARY OF EXPENDITURES AS OF JUNE 30, 2017 AND PROJECTED EXPENDITURES FOR JULY TO SEPTEMBER 2017**

Cost Elements	Sub-CLIN Budget (Year 1)	Expenditures, April 1 to June 30, 2017	Expenditures through June 30, 2017 <sup>4</sup>	Projected Expenditures for July– Sept. 2017
CLIN 0001.01 SA 1 - Subtotal	US\$1,024,868	US\$179,849	US\$596,038	US\$138,718
CLIN 0001.02 SA 2 - Subtotal	US\$1,024,868	US\$179,849	US\$596,038	US\$169,544
CLIN 0001.03 SA 3 - Subtotal	US\$838,529	US\$147,149	US\$487,667	US\$169,544
CLIN 0001.04 SA 4 - Subtotal	US\$698,774	US\$122,624	US\$406,390	US\$115,598
CLIN 0001.05 SA 5 - Subtotal	US\$1,071,453	US\$188,024	US\$623,131	US\$177,251
<b>Total CLIN 0001</b>	<b>US\$4,658,692</b>	<b>US\$817,495</b>	<b>US\$2,709,264<sup>5</sup></b>	<b>US\$770,655</b>
<b>% TO BUDGET</b>		<b>18%</b>	<b>58%</b>	<b>17%</b>

\*Sub-CLIN Budget Year 1 is from the approved Year 1 work plan.

<sup>4</sup> Allocation of actual expenditures was based on the budget percentage per CLI. Cost tagging system was developed in March 2017 to track actual expenditures per CLIN, however there are still revisions needed before it can be used for reporting purposes.

<sup>5</sup> As per DAI/HQ figure, June invoice (1002852-11) shows that the TTD billed (inclusive of June numbers) is US\$2,709,263.48

# ANNEX A

## ASSESSMENT OF FINANCIAL SERVICE PROVIDERS AND AGRICULTURAL COMMODITIES IN SOUTHERN PALAWAN LOCAL GOVERNMENT UNITS

### A.1 RATIONALE

The salient strategic approaches of Protect Wildlife include interventions that will encourage private and public sector investments and funding support to biodiversity conservation. Assistance will include promotion and expansion of biodiversity-friendly and sustainable livelihoods options for local communities in Protect Wildlife's priority sites.

In line with this, Protect Wildlife forged a partnership with Lutheran World Relief (LWR) to help address the livelihood needs of coastal and upland communities in southern Palawan, particularly those within the municipalities that encompass Mount Mantalingahan Protected Landscape, a focal site of Protect Wildlife. The five municipalities are Bataraza, Brooke's Point, Quezon, Rizal and Sofronio Española. LWR committed to support the provision of microfinancing to complement Protect Wildlife's technical assistance to LGUs and communities on biodiversity conservation and natural resource management.

In June 2017, Protect Wildlife and LWR conducted a joint assessment of existing financial service providers in southern Palawan to determine the different types of financial services that are available and identify those that can be tapped for piloting financing programs in the area. The assessment also looked at agricultural production and enterprise development opportunities in the municipalities to provide more focus to the assistance.

### A.2 OBJECTIVES

1. To make an inventory of the types of financial services (i.e., current loan portfolio and programs, etc.) made available by different financial institutions operating in the Mount Mantalingahan range area;
2. To assess opportunities for partnership with financial service providers or institutions in supporting or financing community livelihoods or enterprises in southern Palawan LGUs;
3. To assess existing and emerging agricultural and processed products, and existing local enterprises in the municipalities that have potential for community livelihood or enterprise development; and
4. To recommend next steps for the joint Protect Wildlife-LWR program.

### A.3 EXPECTED OUTPUTS

1. List of financial service providers operating within the Mount Mantalingahan range area and their respective capacities to support livelihoods or enterprises;
2. Consolidated data on top agricultural commodities gathered from the five LGUs, including support services needed; and
3. Recommendations and next steps

### A.4 METHODOLOGY

1. Develop an assessment guide with list of data to be gathered;
2. Conduct interviews with Municipal Agriculture Officers or Municipal Planning and Development Officers;

3. Conduct interviews with officers of financial service providers and regulated institutions (i.e., commercial banks and state banks) operating in southern Palawan or Puerto Princesa City;
4. Conduct interviews and site visits to selected production areas of major commodities and communities with existing enterprises; and
5. Gather and review available secondary data from financial service providers (i.e., audited financial report, loan portfolios, annual reports, publications, etc.), Municipal Agriculture Office and selected entrepreneurs in the area.

## **A.5 FINDINGS**

### **A.5.1 Financial Service Providers**

Most studies on microfinancing would indicate that formal financing services for agricultural production and processing are very limited. Traders are the main drivers of value chains. These traders invest in production and processing, utilizing either their own funds or credit from financial institutions. Since smallholders generally do not have the collateral nor signed contracts with buyers that they can present to access credit, most resort to borrowing money from traders or informal sources who are more accessible and require less documentary conditions.

Constraints to accessing financial services can be summarized as follows:

- Many financial products are anchored on cooperatives or associations. There are many places where few producer organizations can be found; most of those who exist are usually averse to high risks;
- Dominance of spot transactions, which make it difficult for smallholders who cannot present a marketing agreement as collateral;
- Low financial literacy and financial management skills; and
- Low productivity, margins and cash flow for servicing loans.

Financial service providers operating within Mount Mantalingahan range sites consist of six microfinance institutions, three banks and cooperatives. All of these are described in the following pages, with the agricultural and the enterprise development services they offer to farmers, traders, cooperatives and associations.

#### **A.5.1.1 Microfinance Institutions**

The six microfinance institutions (MFIs) operating in southern Palawan are:

- ASA Philippines;
- Center for Agriculture and Rural Development (CARD), Inc.;
- ECLOF Philippines Foundation, Inc.;
- Tulay sa Pag-unlad, Inc. (TSPI);
- Taytay sa Kausawagan, Inc. (TSKI); and
- Negros Women for Tomorrow Foundation (NWTF)

Two of the MFIs, ASA Philippines and CARD, Inc., are among the biggest in the country and have nationwide coverage. The remaining four are focused on specific regions. ECLOF Philippines covers northern Luzon, southern Luzon and Palawan. TSPI operates mainly in Luzon. TSKI operates in selected regions in different parts of the country. NWTF, based in Bacolod City, works in the Visayas, Palawan and Batangas. Four of the MFIs—CARD, TSPI, TSKI and NWTF—have been operating for more than 20 years since the 1980s. ECLOF and ASA started their microfinance operations in 2001 and 2004, respectively. Both CARD and NWTF lending programs are Grameen-based, which largely explain their focus on women.

As shown in Table A.1, these MFIs provide financial services for livelihood and enterprise development and other complementary services. Their loan facilities and social development programs designed to improve the quality of life of their target communities indicate how their operations are guided by both financial and social bottom lines.

The microfinance sector in the Philippines has come a long way. From the early years of replicating the Grameen Bank model in the 1980's, Philippines microfinance has experienced the emergence of new business models and development of more financial products and services for different client needs and for various market segments. Regulators also played a key role in this development. For the past three years (2014 to 2016), the Economist Intelligence Unit (EIU) has ranked the Philippines as the top country in Asia, and third in the world, with the most conducive environment for financial inclusion.

**TABLE A.1: MICROFINANCE INSTITUTIONS OPERATING IN SOUTHERN PALAWAN**

MICROFINANCE INSTITUTIONS	FINANCIAL PRODUCTS AND SERVICES RELATED TO LIVELIHOODS AND ENTERPRISE DEVELOPMENT	OTHER SERVICES
ASA Philippines	<ul style="list-style-type: none"> <li>• Loans</li> <li>• Capital Build-Up</li> <li>• Locked-in Capital Build-Up</li> <li>• Business Development (training and marketing)</li> </ul>	<ul style="list-style-type: none"> <li>• Medical Mission</li> <li>• Disaster Aid</li> <li>• Scholarships</li> </ul>
CARD, Inc.	<ul style="list-style-type: none"> <li>• Business Loan; SME Loan</li> <li>• Agri-Microfinance</li> </ul>	<ul style="list-style-type: none"> <li>• Supplemental Loan Products (housing, education, health, solar and biogas)</li> <li>• Community Development</li> </ul>
ECLOF Philippines	<ul style="list-style-type: none"> <li>• Agri-Microfinance (agri production, livestock and fisheries, asset acquisition)</li> <li>• Enterprise Loans (Micro Negosyo at Serbisyo; SME)</li> </ul>	<ul style="list-style-type: none"> <li>• Institutional Loans (to schools, cooperatives, churches)</li> <li>• Client Service Loan (education, calamity, home repair, appliance, etc.)</li> <li>• L.I.F.E Program (demo and training on organic farming, business development and planning)</li> </ul>
Tulay sa Pag-unlad Inc. (TSPI)	<ul style="list-style-type: none"> <li>• Kabuhayan Program (livelihood assistance-group loan)</li> <li>• Programang Pang-agrikultura (agri loans-group loan)</li> <li>• Maunlad Program (expansion of micro enterprises)</li> <li>• Enterprise Development (training, link with inputs and markets)</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare Loans</li> <li>• Educational Loan Assistance</li> <li>• Housing Loan</li> <li>• Micro-insurance Services</li> </ul>
Taytay sa Kauswagan, Inc. (TSKI)	<ul style="list-style-type: none"> <li>• Microfinance</li> <li>• Business Development</li> <li>• Community Enterprise Development</li> <li>• Farmers Integrated Development Assistance</li> </ul>	<ul style="list-style-type: none"> <li>• Training</li> <li>• Allied Services</li> </ul>
Negros Women for Tomorrow Foundation, Inc. (NWTf)	<ul style="list-style-type: none"> <li>• Dungganon Project (collateral-free credit to start small business ventures)</li> <li>• Kasanag Project (low-interest individual loans to sustain business)</li> </ul>	<ul style="list-style-type: none"> <li>• Medical Mission</li> <li>• Scholarship</li> <li>• WASH Program</li> <li>• Capacity Building</li> <li>• Micro Insurance</li> </ul>

Offerings of MFIs on microfinance are often complemented with business and enterprise development services and community development. Financing is made available to individuals, associations and cooperatives. These MFIs have established partnerships with private institutions, government agencies and international partners to help improve the capitalization of their microfinance operations and their enterprise development services. All six MFIs are accredited with the Microfinance Council of the Philippines (MCPI).

Profile of the MFIs and their performance are described below. Performance indicators include their loan portfolio, client portfolio, staffing numbers and coverage. Most show good financial track record. ASA Philippines, CARD and NWTf reported recovery rates of more than 99 percent while ECLOF has operating self-sufficiency of 110 percent.

### **ASA Philippines**

ASA Philippines is a non-profit, non-stock corporation specializing in microfinance. The foundation started its operations in Camarin, Caloocan City in August 2004. It operates nationwide with 985 branches in all the provinces of the country. It has served more than a million clients, which ASA refers to as micro entrepreneurs. It has 6,287 employees, of which 4,423 are microfinance officers assigned in 925 branches.

ASA Philippines offers three major service products: (a) loans, the amount of which depends on the business or pay-off capacity of the borrower; (b) withdrawable capital build-up; and (c) locked-in capital build-up. ASA Philippines has 1,334,676 active clients nationwide, with about 49 percent engaged in enterprise and trading, 30 percent in agriculture, 8 percent in services, 8 percent in manufacturing and production and 5 percent in other businesses. Of the total borrowers served, 92 percent have reportedly increased their incomes, 8 percent have increased their savings and assets, and 84 percent have sent their children to school. ASA Philippines has a recovery rate of 99.49 percent with a portfolio risk of only 0.33 percent.

Other services it provides are college scholarships, medical missions, business development training and disaster aid.

**TABLE A.2: ASA PHILIPPINES PERFORMANCE PORTFOLIO**

<b>PERFORMANCE PORTFOLIO (AS OF APRIL 2017)</b>		
Loan Portfolio	• Loan Portfolio	PHP 9,760,330,723
	• Disbursed Cumulative	PHP 103,082,370,000
	• Target collections (cumulative)	PHP 93,362,484,552
	• Actual collections (cumulative)	PHP 93,322,039,277
	• Recovery Rate	99.49%
	• Portfolio Risk	0.33%
Membership Portfolio	• Active Borrowers	1,334,676
	• Client Savings Balance	4,998,828,610
Staffing	• Total Employees	6,287
	• Microfinance Officers	4,423
Coverage	• Branches	925
	• Provinces	82

### **Center for Agriculture and Rural Development, Inc.**

CARD, Inc. is a social development organization founded in December 1986. It provides a range of community development services to landless poor women. Through its microfinance services, it aims to address different needs of and improve the quality of life of socially and economically challenged women and their families.



CARD, Inc. started with a Grameen-style micro lending. It refined its methodology to achieve its twin goals of outreach and sustainability. It is now one of the biggest MFIs in the country, with financial self-sufficiency of 125.13 percent and portfolio yield of 54.96 percent. It has 1,460 offices all over the country and employs 5,982 employees. It services about 1,519,840 active members. CARD, Inc. has consistently maintained a near perfect repayment rate since 2001, which contributed to its financial viability as per global microfinance standards.

CARD, Inc. offers small business loans for micro enterprises and agricultural production loans that can include farm equipment and post-harvest facilities. Supplemental loan products include loans for housing, education, health, and solar and biogas facilities. It maintains a special loan facility for indigenous peoples (IPs).

CARD, Inc. operates a rural bank named CARD Bank, Inc. that services its clients who are already capable of formal banking.

**TABLE A.3: CARD, INC. PERFORMANCE PORTFOLIO**

PERFORMANCE PORTFOLIO (AS OF APRIL 2017)		
Loan Portfolio	• Amount Loan Disbursed	PHP 8,037,280,733
	• Amount of Loans Outstanding	PHP 5,940,626,870
	• Amount of CBU	PHP 3,218,703,178
	• Recovery Rate	99.84%
	• Portfolio Yield	54.96%
	• Financial Self-sufficiency	125.13%
	• Revenue Cost Ratio	136.95%
Client Portfolio	• Number of members served	1,447,510
	• Served members	1,519,840
	• Active members with loans	1,125,226
Staffing	• Total Employees	5,982
Coverage	• Total Offices	1,460
	• Unit Offices	1,218
	• Regional Offices	36

***ECLOF Philippines Foundation, Inc.***

ECLOF Philippines is a Christian organization that commits to help build communities and livelihoods that are economically viable, socially desirable and ecologically sound. ECLOF Philippines was registered with the Securities and Exchange Commission (SEC) in 1995 but launched its microfinance operations only in 2001. It is a member of the ECLOF International Global Family that operates in 26 developing countries. ECLOF Philippines operates in northern Luzon, southern Luzon and Palawan, and currently has 20 unit offices. ECLOF’s Palawan branch opened in 2004. It has satellite offices in Quezon, Brooke’s Point and Rizal.

In 2010, ECLOF Philippines decided to focus on agri-microfinance and increase its agriculture portfolio. Individual and association of farmers can access loans for agricultural production, livestock and fisheries, and asset acquisition in support of agricultural activities. It also supports enterprise development through its Micro Negosyo at Serbisyo and Small and Medium Enterprise (SME) loan programs.

ECLOF reports continued and consistent improvement of its lending operations in the last five years. Its loan disbursement significantly improved from PHP 154.1 million in 2012 to PHP 391 million per its audited financial report at the end of 2016. Its loan portfolio doubled from PHP 125.7 million in 2012 to PHP 252.4 million at the end of 2016. The organization has a self-sufficiency ratio of 111 percent. Currently, the PAR rate is at 18 percent.

ECLOF Philippines actively promotes its Living Integrated Farming the ECLOF Way (L.I.F.E.) program. It maintains a 6.3-hectare demo farm at Benguet State University and a learning farm in Narra, Palawan for formal and practical training of farmers, associations and organizations on organic farming and business development and planning. It has established partnerships with the Department of Agriculture, different organic agriculture practitioners and the academe (such as the Western Philippines University in Palawan and Benguet State University) to advance organic farming and build up institutional learning.

**TABLE A.4: ECLOF PHILIPPINES PERFORMANCE PORTFOLIO**

PERFORMANCE PORTFOLIO (AS OF DECEMBER 2016)		
Loan Portfolio	• Amount Loan Disbursed	PHP 391,000,000
	• Loan Portfolio	PHP 252,400,000
	• Total Revenue for the year	PHP 92,500,000
	• Total Net Income for the year	PHP 9,000,000
	• Clients CBU (% to Loan)	30%
	• PAR Rate	18%
	• Operating Self-Sufficiency	111%
Client Portfolio	• Total Clients	20,098
	• Clients with Loans	15,404
Staffing	• Total Employees	204
	• Loan Officers	121
Coverage	• Branches	7
	• Unit Offices	21

***Tulay sa Pag-unlad, Inc.***

Tulay sa Pag-unlad, Inc. (TSPI) is a Christian microenterprise development NGO whose mission is to provide individuals, families and communities the opportunities to experience fullness of life through enterprise development. Established in 1981 as a non-stock, non-profit NGO, TSPI provides a variety of financial and non-financial services to its client micro entrepreneurs and farmers. It operates mostly in Luzon with 148 branches at present. It plans to expand to other areas of the country.

TSPI has extended a cumulative total of PHP 6.4 billion worth of loans and it now has 95 percent of its branches using TxtBilis for loan payment collections. Other than providing agricultural and enterprise loans, TSPI offers trainings to farmers and entrepreneurs on financial literacy, yield-enhancing agricultural techniques, setting up livelihood enterprises and microenterprise management. It also links microenterprises and farms to better markets, lower sources of production inputs and better methods of production.

Its other services include loans for housing, healthcare, education and micro-insurance. TSPI has extended PHP 143 million loans to 4,274 housing and sanitation loan programs for house and toilet construction and water and electrical connections. It has also provided PHP 107 million of loans to beneficiaries who sent 11,401 children to school through its Educational Loan Program.

TSPI is affiliated with three companies that offer related services to TSPI clients and employees. These are TSPI Mutual Benefit Association; TSPI Social Enterprise, Inc.; and the TSPI Employees Cooperative. TSPI works in partnership with a growing list of donors and is an active member of several MFI networks.

**TABLE A.5: TSPI PERFORMANCE PORTFOLIO**

PERFORMANCE PORTFOLIO (AS OF 2014)		
Loan Portfolio	• Loan Portfolio	PHP 1,503,780
	• Amount of Loans Disbursed	PHP 4,559,307
	• Total Assets	PHP 1,951,465
Client Portfolio	• Number of members served	190,686
Staffing	• Total Employees	1,995
Coverage	• Branches	148

**Taytay sa Kauswagan, Inc.**

Taytay sa Kauswagan, Inc. (TSKI) is a Christian development organization providing opportunities that promote spiritual transformation and total human development. TSKI started its operation in 1986. It currently serves CALABARZON, MIMAROPA, Bicol, Visayas, Davao, Caraga, Zamboanga Peninsula and northern Mindanao regions. TSKI has reported 270,103 clients from 543 municipalities served through its 177 branches. Its main office is in Iloilo City.

Currently, TSKI has a loan portfolio of more than a billion pesos. It offers individual and group microfinance loans, and business and community enterprise development services to clients intending to put up a new business, or develop or strengthen existing businesses. Business development services include marketing, product development and label design. TSKI has a Farmers Integrated Development Assistance program, which addresses the needs of poor and marginalized agrarian reform rural farmers who do not have access to formal financing services and postharvest facilities.

**TABLE A.6: TSKI PERFORMANCE PORTFOLIO**

PERFORMANCE PORTFOLIO (AS OF JUNE 2017)		
	• Loan Portfolio	PHP 1,374,139,218.43
Client Portfolio	• Number of clients	270,103
Staffing	• Total Employees	2,589
Coverage	• Branches	177
	• Municipalities	543

**Negros Women for Tomorrow Foundation**

Negros Women for Tomorrow Foundation (NWTF) is an NGO that was registered with the SEC in 1986. Its mission is to help marginalized urban and rural poor of central Philippines fight poverty by providing Grameen-based microfinancing and developmental services. NWTF has a two-level program of services for women who belong to the poorest sectors of society. The first level is through Project Dunganon, where clients learn financial discipline, gain business skills and start their businesses. Project Dunganon helps poor women from rural communities achieve self-reliance through training and providing them with collateral-free credit to start or maintain their own small business ventures. Those who graduate from this program (i.e., those who have honed their business skills and are starting to expand their business) can then avail of services and assistance provided by Project Kasanag. This provides them low-interest individual loans and other services that help them sustainably manage their cash flow and expand their business activities.

Among the training provided by NWTF are on various livelihood activities (e.g., doormat and potholder making, meat processing, etc.), basic bookkeeping, wealth management and savings generation, and leadership.

NWTF has more than PHP 1 billion of loan portfolio disbursed with a recovery rate of 3.23 percent and a repayment rate pegged at 99 percent. Currently, 259,075 are active clients, of which 99.98 percent are women.

The NWTf main office is in Bacolod City. Its operations focus on the Visayas region, Palawan and Batangas. It now operates a micro-finance thrift bank called Dunganon Bank that offers micro-crop loans to its clients.

**TABLE A.7: NWTf PERFORMANCE PORTFOLIO**

PERFORMANCE PORTFOLIO (AS OF DECEMBER 2015)		
Loan Portfolio	• Loan Portfolio	PHP 1,477,844,356
	• Total Assets	PHP 2,270,540,360
	• Average Portfolio	5,965
	• Recovery Rate	3.23%
	• Repayment Rate	99%
	• % of Clients with Insurance coverage	98%
Membership Portfolio	• Active Clients	259,075
	• Active Clients with Loans	247,726
	• Female clients	99.98%
Staffing	• Total Employees	2,464
Coverage	• Branches	121

### A.5.1.2 Registered Banks

Among the registered financial service providers in Puerto Princesa City, there are three banks that have branches in Narra, Sofronio Española, Brooke's Point and Bataraza. These banks offer low-interest agricultural and business loans to farmers, traders, cooperatives and associations. The specific products and services they offer are summarized in Table A.8.

**TABLE A.8: REGISTERED BANKS AND COOPERATIVE AND FINANCING PRODUCTS AND SERVICES**

REGISTERED BANKS	PRODUCTS AND SERVICES
Palawan Thrift Bank	<ul style="list-style-type: none"> <li>• Agricultural loan (for agri traders)</li> <li>• Small business Loan</li> <li>• Business loan</li> <li>• Savings and deposit</li> <li>• Regular account/time deposit</li> </ul>
Coop Bank of Palawan	<ul style="list-style-type: none"> <li>• Agricultural loan</li> <li>• Entrepreneurship loan</li> <li>• Farmers' cooperative loan (for cooperatives, associations, other registered organizations)</li> <li>• Consumer loan</li> </ul>
First Consolidated Bank	<ul style="list-style-type: none"> <li>• Savings Deposits</li> <li>• Loans (industrial/agriculture/housing/ commercial/business loan)</li> <li>• FCB services (payroll servicing, collection servicing, bills payment, remittances)</li> </ul>

These banks provide an alternative financing system to farmers. Often, bank loans are accessed by farmers and agricultural traders who are members of associations and cooperatives or agrarian reform communities as they are familiar with bank administrative procedures and can satisfy loan requirements of the banks.

### A.5.1.3 Multi-purpose Cooperative

The Self-Reliant Team (SRT) Puerto Princesa-Multi-purpose Cooperative of Palawan is the only cooperative in southern Palawan with a lending program for its members. The range of financial services it provides to its members include:

- Savings deposit
- Loans (agricultural, business)
- Providential loan
- Microfinance loan (non-collateralized, with collateral)
- Micro-insurance

The cooperative is a member of the National Confederation of Cooperatives. As a multi-purpose cooperative, most of their client-borrowers are micro-entrepreneurs who are fish vendors, sari-sari storeowners and others who avail of their non-collateralized loans for members. Recently, they extended loans to small and medium rice traders who buy and sell NFA rice. It has established a good reputation as a cooperative in the region.

#### **A.5.1.4 Other Support Organizations**

The ICCO Cooperation is an NGO working on the development and establishment of sustainable value chains through a process that involves small farmer-producers, relevant government agencies and financial service providers. ICCO adopts approaches that aim to make the market more beneficial for the poor and empower small producers and marginalized groups. The potential of tapping ICCO for Palawan, which is covered by its current operations, will be explored by Protect Wildlife.

#### **A.5.2 Existing and Potential Agricultural Commodities**

Secondary information gathered from the Provincial Planning and Development Office (PPDO) shows that in the five southern Palawan municipalities, upland occupants, majority of whom are indigenous peoples, are farming a total 6,051.54 hectares of land.

A mapping of the major commodities produced within the Mount Mantalingahan range LGUs shows that rice, corn and coconut are the common and dominant crops. Brooke’s Point and Quezon are known sources of banana in southern Palawan, while Bataraza is famous for its pineapple. Rubber is the only non-food crop identified among the major commodities. Rubber plantations are found in four of the LGUs. Only Rizal reported significant production of coffee and cacao.

**TABLE A.9: EXISTING COMMODITIES PRODUCED IN FIVE LGUS IN SOUTHERN PALAWAN**

<b>COMMODITIES</b>	<b>SOFRONIO ESPAÑOLA</b>	<b>BROOKE’S POINT</b>	<b>BATARAZA</b>	<b>QUEZON</b>	<b>RIZAL</b>
Rice	✓	✓	✓	✓	✓
Corn	✓	✓	✓		✓
Vegetables	✓	✓		✓	
Cassava				✓	✓
Coconut	✓	✓	✓	✓	✓
Banana		✓		✓	
Pineapple		✓	✓	✓	
Cacao					✓
Coffee					✓
Rubber	✓	✓		✓	✓

In the succeeding discussions, commodities currently produced in each municipality are presented with the crops endorsed by the Municipal Agriculture Office (MAO) and deemed suitable to the area by the Department of Agriculture (based on a study done by the DA in June 2017 covering Sofronio Española, Brooke’s Point and Bataraza).

### A.5.2.1 Sofronio Española

**TABLE A.10: EXISTING AND POTENTIAL COMMODITIES PRODUCED IN SOFRONIO ESPAÑOLA**

EXISTING CROPS	POTENTIAL CROPS (Endorsed by MAO)	SUITABLE CROPS AND POTENTIAL AREA (Based on Recent DA Study)	
Rice	Banana	Banana	3,568 ha
Corn	Cassava	Cassava	5,071 ha
Vegetables	Cacao	Cacao	2,300 ha
Coconut	Coffee	Yam	2,904 ha
Rubber		Legumes	5,453 ha

Rice produced in the lowlands are of the hybrid variety. PhilRice supports rice production and seed banking programs of the LGU for small farmers. Upland rice or kaingin rice is produced by Pala'wan and Cuyonon IP communities. Vegetables are mainly grown in backyards.

Banana, cacao, coffee and cassava (crops endorsed by MAO) are also planted mostly in backyards or upland farms. Cassava is grown in both uplands and lowlands, but farmers are not keen on planting it due to low farm gate prices and limited market demand. Farmers are also growing other root crops like taro, yam and ginger.

Usual marketing practices in the municipality are (a) farmer to small traders or open market for most agricultural cash crops; and (b) contract growing mainly for pineapple, cacao and banana. Smallholder producers are mostly men; most of the ambulant or market vendors or sellers are women.

The DA finds the area suitable for banana, cacao, cassava, yam and legumes. A recent study of a state university concluded that the municipality is suited for expanded banana production. Three of nine barangays—Punang, Labog and Pulot Interior, which are within the Mount Mantalingahan range—are deemed by the DA to be potential areas for production of banana, cacao and cassava. The LGU is willing to encourage farmers to plant cassava and provide space or land for setting up a processing facility if it can be linked to processors of cassava for starch, feeds and other uses.

### A.5.2.2 Brooke's Point

**TABLE A.11: EXISTING AND POTENTIAL COMMODITIES PRODUCED IN BROOKE'S POINT**

EXISTING CROPS	POTENTIAL CROPS (Endorsed by MAO)	SUITABLE CROPS AND POTENTIAL AREA (Based on Recent DA Study)	
Rice	Banana	Banana	3,315 ha
Corn	Cassava	Cassava	3,202 ha
Vegetables	Cacao	Cacao	3,236 ha
Coconut		Sweet Potato	2,705 ha
Banana		Legumes	8,715 ha
Pineapple			
Rubber			

Brooke's Point is the second major producer of banana in the province. Approximately 100 hectares of smallholder farms are planted to improved variety of banana, the lagkitan Cardava. Farm gate prices for banana (Cardava, saba) range from PHP 0.60 to PHP 0.80 per piece. The main market for banana from Brooke's Point is Puerto Princesa City. Part of the banana production is processed locally into banana chips and sold in the local market in Barangay Ipilan in Brooke's Point and in Puerto Princesa City, where demand for banana chips is increasing.

There have been attempts by farmers in the past to plant cassava and coffee but many farmers have discontinued production due to lack of market. The DA initiated a cacao planting program by providing farmers improved variety of seedlings.

Current marketing schemes in Brooke’s Point are (a) farmer to small traders or open market (for most agricultural cash crops); (b) farmers to consolidators (i.e., banana, coconut and mongo); (c) farmers to processors (i.e., coconuts for VCO production); and (d) contract growing (i.e., coconut, pineapple). IP women’s role in marketing is in selling agricultural produce in the open market.

Value chain analysis done by the DA highlights the competitive advantage of Brooke’s Point in banana production. Five barangays out of the 16 barangays of Brooke’s Point within the Mount Mantalingahan range are suitable for banana production. These areas are also suitable for cassava, sweet potato, legumes and cacao.

Lack of market and financing are the major constraints to sustain farm production in Brooke’s Point. However, there are market opportunities that could improve agricultural production, as Brooke’s Point is becoming the hub for several institutional buyers or consolidators in southern Palawan. Among the buyers and consolidators that have presence in the municipality are:

- Cardinal Agri Products, Inc., a subsidiary of a leading business conglomerate with headquarters in Manila. Currently, it is a buyer of coconuts but will soon be opening a plant in Brooke’s Point for production of virgin coconut oil, coco flour, coco milk and coco juice. The main market of the processed products are Korea, Japan, United States and Europe.
- Delinanas Development Corp., a subsidiary of Del Monte Fresh Produce Philippines, Inc. It produces Cavendish banana for export to Japan and Korea in its 300-hectare farm in Barangay Tarusan, Bataraza. It plans to expand to new areas in barangays Sandaoval, Culandanum and Tarusan, also in Bataraza.
- Tristar Group of Banana Companies, the production and exporting arm of JVA Group based in Davao. Tristar maintains a banana production site of about 400 hectares in Sofronio Española.

### A.5.2.3 Bataraza

**TABLE A.12: EXISTING AND POTENTIAL COMMODITIES PRODUCED IN BATARAZA**

EXISTING CROPS	POTENTIAL CROPS (Endorsed by MAO)	SUITABLE CROPS AND POTENTIAL AREA (Based on Recent DA Study)	
Rice	Rice	Rice	5,319 ha
Corn	Pineapple	Cassava	1,706 ha
Coconut		Sweet Potato	678 ha
Pineapple		Yam	880 ha
		Pineapple	500 ha

Bataraza is a major rice producer in the southern Palawan. Rice production covers a total of 6,510.7 hectares in its 22 barangays with 3,247 farmers engaged in rice farming. Most of the rice produced are hybrid varieties and only a small portion is organic. The main market is the National Food Authority (NFA) and local traders from the municipality of Narra and nearby municipalities.

Bataraza is also known in Palawan as a producer of a sweet variety of pineapple. Pineapple is the OTOP (one-town-one-product) of Bataraza. There are about 500 hectares in the municipality that are planted to pineapple, concentrated mainly in Bulalacao (300 ha) and Tarusan (200 ha) with about

300 IP farmer-producers. Production of pineapple is year-round and supply is abundant. Other than the pineapple fruit, IP farmers also sell pineapple suckers as planting materials.

The Department of Science and Technology (DOST) and Department of Trade and Industry (DTI) provided the LGU of Bataraza a fully equipped food processing facility, which the women members of the Rural Improvement Club (RIC) use to produce pineapple jam and banana chips.

Current marketing schemes in Bataraza include (a) farmer to small traders or open market (for most agricultural cash crops); (b) farmer to small processor (i.e., RIC-managed food processing facility); (c) contract growing (i.e., banana); and (d) farmer to consolidators and buyers, such as for rice sold to the NFA. Most of the pineapple vendors in fruit stands or markets and most of those engaged in pineapple processing are women.

#### A.5.2.4 Quezon

**TABLE A.13: EXISTING AND POTENTIAL COMMODITIES PRODUCED IN QUEZON**

EXISTING CROPS	POTENTIAL CROPS (Endorsed by MAO)	
Rice	Rice	3,000 ha
Vegetables	Banana	1,706 ha
Cassava	Cassava	100 ha
Banana		
Pineapple		
Coconut		
Rubber		

Quezon's top agricultural commodities are rice, banana, coconut, pineapple, cassava, rubber and vegetables. Vegetable production is mainly through backyard gardening and for household consumption.

Rice production covers 3,000 hectares of both rain-fed and irrigated farms. Main buyers of rice are NFA and traders from Narra. Rice (dried palay) is currently sold at PHP 15 per kilo. The market for banana (saba, lakatan and latundan) is Puerto Princesa City, with farm gate prices ranging from PHP 0.40 to PHP 0.60 per piece.

Cassava production in Quezon covers approximately 100 hectares of smallholder farms. It is supported by the DA's Agricultural Training Institute (ATI) that has been providing farmers with training on appropriate technologies in growing, maintenance, processing (harvesting to chipping) and drying. The drying facilities of farmers, however, need improvement to obtain good quality cassava chips. Linking the farmers to institutional buyers in or outside Palawan is also an immediate need of cassava growers. Currently, farmers sell processed and unprocessed cassava in the local market or to local traders. San Miguel Corporation is a potential market for processed cassava for animal feeds.

Existing market chain schemes in the area include (a) farmer to small traders or open market (for most agricultural cash crops) and (b) farmer to direct buyers (e.g., rice to NFA, processed cassava to local traders).



### A.5.2.5 Rizal

**TABLE A.14: EXISTING AND POTENTIAL COMMODITIES PRODUCED IN RIZAL**

EXISTING CROPS	POTENTIAL CROPS (Endorsed by MAO)	
Rice	Rice	3,000 ha
Vegetables	Banana	1,706 ha
Cassava	Cassava	100 ha
Banana		
Pineapple		
Coconut		
Rubber		

Rice production in Rizal covers more than 4,000 hectares in both upland and lowland areas. Buying price for rice ranges from PHP 14 per kilo (fresh palay from thresher) to PHP 17 per kilo (dried palay). Main markets include the NFA and local traders from within Rizal and adjacent municipalities. Cassava is usually grown in backyards and sold locally as staple food for IPs.

Farmers have been growing rubber, with plantations covering 700 hectares, of which 100 hectares are ready for tapping. There are also 500 hectares of established Robusta coffee and 1,300 hectares of cacao plantations. The latter, established as part of the DENR's National Greening Program, are now at fruit-bearing stage.

Existing and expected marketing schemes for agricultural products in the area include (a) farmer to small traders or open market (for most agricultural cash crops), (b) farmer to consolidator (potential for rubber, cacao and coffee), and (c) farmer to direct buyers (e.g., rice to NFA). Contract growing of cacao is also a potential scheme.

### A.5.2.6 Recommendations

Based on current production, suitability of the area and potential for processing, the Municipal Agricultural Officers of the five municipalities recommend the expansion of production for the agricultural crops listed on Table 15 (rice is excluded from the list).

**TABLE A.15: AGRICULTURAL COMMODITIES FOR EXPANDED PRODUCTION**

COMMODITIES	SOFRONIO ESPAÑOLA	BROOKE'S POINT	BATARAZA	QUEZON	RIZAL
Cassava	✓*	✓*	✓*	✓	
Banana	✓*	✓		✓	
Pineapple			✓		
Cacao	✓*	✓*			✓
Coffee					
Rubber					✓

Note: \* - not listed among existing major crops in Table A.9

The banana industry is one of the priority agri-based industries in Palawan, as identified in the provincial commodity mapping and in the Provincial Development and Physical Framework Plan. Its further development will contribute significantly to the province's economic growth. The saba variety is widely grown in Palawan, constituting 75 percent of total banana production. The concentration of saba production is in the municipalities of Taytay, Brooke's Point, Aborlan, Roxas, Sofronio Española, Rizal, Quezon, San Vicente, Narra and Puerto Princesa City.

Vast areas of southern Palawan are suitable to banana production. Expansion of banana production in southern Palawan could increase total production of the province beyond the annual average increase of 9.5 percent (based on figures from 2011 to 2014) and allow Palawan to reach or even surpass a production level of 48,799 metric tons by 2019. Palawan ranks 31st of all banana-producing provinces in the Philippines. It is the second largest banana-producing province in MIMAROPA, contributing 13.52 percent to the region's production.

Available data show that of the total saba production in the Palawan, about 20 percent is consumed by farmer-producers, about 3 percent (914.05 metric tons) is shipped out of Palawan, about 24 percent (7,288 metric tons) is processed into banana chips, and about 53 percent (16,521 metric tons) is retailed locally within the province.

An important factor to the viability of the industry is the processing of banana, particularly into banana chips. About 24 percent of available saba supply is utilized for banana chips, with a number of processors in the province venturing into the enterprise. Products are marketed in Metro Manila and locally, particularly as *pasalubong* (food gift) by the increasing number of tourists that visit the province.

Enhancement of the cassava industry will have positive impacts on food security, utilization and productivity of idle lands and incomes of marginal farmers. It will open up opportunities for smallholders to get engaged in the production of value-added cassava products, such as cassava granules, which are used in the production of feeds (industrial-variety unpeeled granules) and cassava starch and other food by-products (food-variety peeled granules).

Cacao and rubber are also among the priority commodities identified by the provincial government for agri-business development.

### **A.5.3 Existing Locally Managed Agri-based Enterprises**

Four agri-based enterprises were operating in Brooke's Point and Bataraza. Two of these are managed by cooperatives, while the other two are run by LGU-supported RICs. All four are into food processing.

#### **A.5.3.1 Brooke's Point Coco-Product Producers Cooperative**

Brooke's Point Coco-Product Producers Cooperative (BPCPPC) is engaged in the production of virgin coconut oil (VCO) and coconut flour. The cooperative was organized by the Augustinian Missionary and was later supported by ABS-CBN Lingkod Kapamilya Foundation, Inc. with the help of the LGU of Brooke's Point and Pacquiao-Lagrada Livelihood Center. Its start-up capital of PHP 300,000 from its donors went into the establishment of a 1,500-square meter facility and processing area situated in Barangay Ipilan. A technical consultant provided by ABS-CBN Foundation supports and helps manage the business.

The cooperative was registered with the Cooperative Development Authority (CDA) in 2015. Membership is composed of 60 men and women, but only 31 are active members, 21 of which are employed to operate the processing plant. There are 13 women employed in the plant. The members are from indigenous Cuyonon and Pala'wan and Muslim communities.

Women are assigned to the last phase of VCO processing, which involves filtering (*pegsesret* in the local language), quality control and marketing. The heavy tasks of splitting the coconut, scraping out the meat and operating the grating and pressing machines are assigned to male employees.

The facility uses different machines and processing equipment, all purchased by donors. These include a grater, air compressor and accessories, continuous pressure filter, stainless storage tank with accessories and sight glass, milk presser, drying table and pulverizing table.

The current average annual volume of production is approximately 600 liters of VCO. This is shipped in bulk every two weeks to ABS-CBN Foundation, which retails and markets the VCO product under the brand name GStuff. The cooperative receives payment through its bank account as soon as the foundation receives the VCO product. At the time of assessment, the employee-members were packaging 250 ml bottles of VCO in time for the Baragatan Festival in Puerto Princesa City.

The cooperative sources coconuts from nearby areas within Brooke's Point and other municipalities. There was a time when it had difficulty sourcing coconuts because of a competitor processor who paid a higher price. Most of the farmers, however, went back to selling to the cooperative since it pays in cash upon delivery, while the competitor paid in cheques, which had to be encashed in Puerto Princesa City.

With the production of VCO now fully operational, the cooperative intends to expand its enterprise, with ABS-CBN Foundation support, to the production of coco flour utilizing the coconut pulp residue. A feasibility study on coco flour has been completed and the drying equipment is in place.

#### **A.5.3.2 Brooke's Point Government Employees' Multi-Purpose Cooperative**

Women members of the Brooke's Point Government Employees' Multi-Purpose Cooperative (BGMPC) manage a food production facility in Sitio Suring in Barangay Pangobilian. Since 2015, the cooperative has been producing food blends and snacks developed by the DOST-Food and Nutrition Research Institute (DOST-FNRI). This enterprise was established as a joint project of the LGU of Brooke's Point, DOST-FNRI and the DTI.

The main products of the cooperative are a rice-mongo (mung bean) blend powder and ready-to-cook baby food, and rice-mongo-flavored curls for schoolchildren. The ready-to-cook baby food blend has a nutrient content enough to meet the daily energy and nutrient requirements of babies aged 6 to 35 months old. The rice-mongo curls serve as a nutritious substitute for children's unhealthy snacks. Major buyers of these food products are 10 LGUs, which have nutrition and feeding programs for infants and public school children.

For its raw materials, the cooperative sources the "kintab" variety of mongo from Manila. Mongo is not a major crop in Brooke's Point. Local farmers consider mongo as a secondary crop or cover crop after rice and a backyard garden crop, and a source of protein by women when they cannot afford to buy meat or fish. Current input requirement for production is 500 kilos of mongo every month. Rice is bought from Brooke's Point or from Narra.

The financial viability of this enterprise has yet to be established.

#### **A.5.3.3 Rural Improvement Club of Brooke's Point**

The municipality of Brooke's Point has a Rural Improvement Club that was formed and is being assisted by the LGU Agricultural Technician. The RIC is a voluntary barangay-based organization usually composed of around 20 rural women with varied interests and capabilities and mobilized for socioeconomic projects. It is also a functional women's group, which serves as a channel for developing women leadership and potential toward home and community improvement.

The RIC manages a shared food processing facility (Kitchen Incubator) for micro-entrepreneurs acquired through the DOST and DTI of MIMAROPA and with assistance from Western Philippines University, Palawan State University and DA-MIMAROPA. Any micro-entrepreneur from Brooke's Point and neighboring towns can utilize the food processing facility for a fee, depending on the type and volume of raw material processed. The collected fees are used for fuel costs and maintenance of the facility and some savings for the RIC. The facility also provides training for women interested in food processing.

At the time of assessment, there was an ongoing training on baking by the Technical Education and Skills Development Authority. There was also ongoing processing of peanut butter and drying of moringa and ginger for tea. Other clients using the facility are processing cashew, jackfruit and pineapple.

### A.5.3.4 Rural Improvement Club of Bataraza

Bataraza has a similar but bigger food processing facility also acquired through the DOST, DTI and DA in the MIMAROPA region. Although the facility was set up in 2015, it only became functional on July 2017. The LGU manages the facility and provides support to the RIC. While the DOST will soon be completing other equipment for the facility, women members of the RIC are being trained by TESDA and the DOST in processing fruit jams, dried candies and vinegar from pineapple, which is abundant in upland barangays and can be supplied by IP communities.

Only four out of 15 members of the RIC have utilized the facility for baking cupcakes and cookies that are sold to schoolchildren and neighbors. Lack of startup capital for a business is one of the reasons cited by the women as to why they are unable to maximize the food processing equipment.

## A.6 RECOMMENDATIONS AND NEXT STEPS

1. USAID Protect Wildlife and Lutheran World Relief will further explore the potential of ECLOF and SRT Multi-purpose Cooperative of Palawan as the conduit of financial services for smallholders and local enterprises. ECLOF has a strong presence in and enjoys a positive reputation among Mount Mantalingahan range LGUs. It also carries a loan portfolio relevant to agricultural production. Follow-up meetings with ECLOF and SRT Multi-purpose Cooperative will be held to further discuss their microfinancing programs and identify opportunities for partnership. The final selection of the MFI partner will be done before the end of July 2017.
2. Protect Wildlife and LWR have to identify other private investors and institutional buyers who may be interested to support livelihood and enterprise development in southern Palawan. Meetings will be set with SMART Communications, San Miguel Corporation, ICCO, FSSI and Peace and Equity Foundation for possible engagement.
3. The support of Protect Wildlife and LWR to farmers should be integrated and sustainable. For example, farmers should be provided with income for the short-term, medium-term and long-term. An example of a crop production mix that may be considered is the following:

Short-term crops:	Peanut, Vegetables, Ginger and Mongo
Medium-term crops:	Banana, Cacao and Cassava
Long-term crops:	Rubber and Coconut
Others:	Livestock (hog, chicken, goat, etc.)

Among the medium-term crops, banana and cassava have the highest potential for financing support.

4. The value chain analysis that have been done for selected crops in each municipality (e.g., cassava, which provides food-grade and industrial-grade cassava, the latter of which can be processed and sold as dried granules or chips to San Miguel Corporation) and the existing market chains or market demand will need to be reviewed. Among the pressing issues that have to be looked at is the need to improve access to market by linking the producers directly with institutional markets or buyers.

The following are some of the opportunities that are specific to the value chain analysis of banana, cassava and cacao:

- access to improved crop varieties and production or cropping technologies to enhance product quality;
- compliance with available standards for improved productivity and production efficiency;
- access to financing for the expansion of production;
- establishing strategic alliances among producers/stakeholders; and
- strengthening partnership with government and industry development institutions.

It is imperative that the Protect Wildlife-LWR team work with selected value chain participants, including smallholders, in doing the analysis to create and demonstrate the benefits of collaboration in value chain management approaches.

5. From these analyses, the team will decide and select which market chain scheme will be applicable for the livelihood support to be provided to a selected barangay or community. Potential institutional buyers of the crops will also be identified.
6. Starting July 2017, LWR will deploy a field staff to be based in Brooke's Point together with the Protect Wildlife team. The Protect Wildlife office in Puerto Princesa will coordinate monthly meetings and reporting.

# ANNEX B

## COST AND REVENUE ANALYSIS OF SELECTED PAYMENT FOR ECOSYSTEM SERVICES IN PROTECT WILDLIFE SITES

### B.1 BACKGROUND

One of the major components of Protect Wildlife’s strategic approach to intensify private and public sector involvement in biodiversity conservation and conservation financing is increased public and private sector investments, and increased revenues from environment and natural resource-related enterprises. These funds would finance conservation, expansion and diversification of biodiversity-friendly and sustainable livelihoods and enterprises for local communities.

Among the deliverables for this SA is a target amount for revenues generated from the sale of ecosystem services, as well as a target number of payment for ecosystem services (PES) or tourism initiatives supported in target sites.

Cost and revenue analysis is one of the tools that can be used to both assess PES potentials and to initiating the PES process.

### B.2 EXECUTIVE SUMMARY

The current state of revenue, costs and projected PES in four areas are presented and evaluated. These are the following:

1. Brooke’s Point Waterworks System, an LGU-run water utility in Southern Palawan;
2. Brooke’s Point Rural Waterworks and Sanitation Association Inc., a community-based water utility, also in Southern Palawan;
3. Zamboanga City Water District, the water utility of Zamboanga City; and
4. Great Santa Cruz Islands, a tourism destination in Zamboanga City.

The first three aforementioned sites are generating PES from the extraction and sale of water. The fourth site generates PES from tourism. For those involving water, two base their PES on volume billed, while another is based on the cost of watershed protection. That involving tourism has PES coming from entrance fees.

The basis for the PES in these areas probably originated from the ease with which these payments could be implemented. This reason is understandable and is a good starting point for the appreciation and execution of PES. However, it can be gleaned that if the eventual objective is the total protection and conservation of the natural resources in these areas, a more comprehensive basis for the PES should be studied, designed and, as much as practically feasible, be implemented.

The value of this study is in:

1. The assessment of the financial viability of economic goods and services linked ENR- and PES-related enterprises that are deemed to have high economic and environmental returns in Protect Wildlife sites;
2. An understanding of the cost and revenue drivers that impact the current and potential income from the sales of ecosystem services and sources of PES;
3. A better appreciation of the factors to be considered when developing PES structures, LGU fund allocations, and financial management systems; and
4. Providing a basis for improved investment decisions in the identified target sites.

### B.3 BROOKE'S POINT WATERWORKS SYSTEM

The Brooke's Point Waterworks System (BPWS) aims to provide water to the 18 barangays of the municipality. It is a PHP 119-million project by the municipal and the provincial local government units. The waterworks system is composed of three separate water systems, as listed in Table B.1.

**TABLE B.1: BPWS WATER SYSTEMS**

WATERWORKS SYSTEM NO.	WATER SOURCE	LOCATION	YIELD PER DAY (M <sup>3</sup> )	BARANGAYS SERVICED
1	Basay-basay River	Ipilan	1,650	Ipilan, Barong-barong, Mambalot, Calasaguen, Maasin
2	Cabinbin River	Mainit	2,300	Aribungos, Imulnod, Pangobilian, Poblacion I, Mainit, Poblacion II
3	Macagua River	Amas	1,500	Amas, Tubtub, Oring-orong, Saraza, Samarenana, Salogon, Malis

In 2016, only Waterworks System 2 was operational. It had its soft opening during the third quarter of 2015. It is expected that Waterworks Systems 1 and 3 will start operating in 2017. The latter two systems will have a mix of level II (communal faucet) and level III (individual household) connections. The projected number of connections will increase from 1,715 at the end of 2016 to more than 8,000 connections by 2021 or in five years. Each residential connection is estimated to consume 15 m<sup>3</sup> per month while commercial and industrial consumers will have an average consumption of 20 m<sup>3</sup> per month. Estimated average consumption for all types of connections in 2016 was 9.73 m<sup>3</sup> per month in 2016. It is expected to increase to 10.89 m<sup>3</sup> in 2017, 12.5 m<sup>3</sup> in 2018 and 15 m<sup>3</sup> from 2019 onwards.

The LGU accounting office has not yet prepared a separate financial report for BPWS. Financial revenues and costs are included in the financial report of the Municipal Economic Enterprise Development Office (MEEDO). The waterworks office has no copy of the feasibility study prepared for the project, thus cost projections were taken from a similar feasibility study conducted in other areas (i.e., Quezon, Palawan) with the same project cost (i.e., PHP 120 million).

**TABLE B.2: BPWS PROJECTED COSTS (in PHP)**

	2016	2017	2018	2019	2020	2021
Production Cost	254,489	262,124	269,988	278,087	286,430	295,023
General Administrative Cost	1,978,837	5,696,730	6,882,015	7,728,015	8,949,015	10,170,015
Maintenance Cost	225,351	422,451	619,551	750,951	882,351	1,013,751
Depreciation	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Interest Expense	6,300,000	6,207,824	5,726,956	5,308,529	4,867,599	4,402,954
<b>Total Projected Cost</b>	<b>12,758,677</b>	<b>16,589,129</b>	<b>7,498,510</b>	<b>8,065,582</b>	<b>18,985,395</b>	<b>19,881,743</b>

In 2016, production cost was PHP 1.29 of water volume produced, while maintenance cost was PHP 1.39 of water volume sold. General administrative costs, which includes staff salaries, electricity, billing and collection costs, and other operating cost were 30 percent of operating revenues. Depreciation is computed using the straight-line method with a system average economic life of 30 years. Interest expense is based on a 5-percent interest rate based on declining balance with a three-year grace period plus gross receipt tax. The loan is payable within 15 years.

**TABLE B.3: BPWS PROJECTED REVENUES (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Water Sales Revenue	4,064,550	4,818,947	7,864,871	2,541,650	15,374,757	8,208,127
New Connection Fees	2,572,500	750,000	1,500,000	1,500,000	1,500,000	1,500,000
<b>Total Projected Revenue</b>	<b>6,637,050</b>	<b>5,568,947</b>	<b>9,364,871</b>	<b>4,041,650</b>	<b>6,874,757</b>	<b>9,708,127</b>

The water sales is estimated to increase once the three water systems become fully operational due to increase in number of connections and in the quantity of water consumed. Another source of income is the one-time payment for new connections of PHP 1,500.

**TABLE B.4: BPWS PROJECTED NET INCOME (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Total Projected Revenue	6,637,050	5,568,947	9,364,871	4,041,650	6,874,757	9,708,127
Total Projected Cost	12,758,677	16,589,129	7,498,510	8,065,582	18,985,395	19,881,743
Projected Net Income	(6,121,627)	(11,020,182)	(8,133,638)	(4,023,932)	(2,110,638)	(173,616)
Income Ratio %	(0.92)	(1.98)	(0.87)	(0.29)	(0.13)	(0.01)

BPWS is estimated to generate profit only after Year 2021 or after five years of operation. The annual deficit will decline once the water utility is able to entice more customers to connect to their water service. In the meantime, it is expected that the LGU will subsidize the deficit.

**TABLE B.5: BPWS STATISTICS ON WATER VOLUMES, CONNECTIONS AND SERVICE COVERAGE**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Production Volume	198,000	361,613	595,374	843,240	1,091,105	1,338,971
Projected Volume of Water Sold	162,360	296,523	488,207	691,457	894,707	1,097,957
Projected Non-Revenue Water	35,640	65,090	107,167	151,783	196,399	241,015
Projected Average Consumption/Month	7.89	10.89	12.50	15.24	15.20	15.17
Projected Average New Connections/Year		500	1,000	1,000	1,000	1,000
Projected Total Connections	1,715	2,215	3,215	4,215	5,215	6,215
Projected Population in Service Area	67,595	68,839	70,106	71,396	72,709	74,047
No. of Population Served by BPWS	8,575	11,075	16,075	21,075	26,075	31,075
% of Population Served by BPWS	0.13	0.16	0.23	0.30	0.36	0.42
Household Served with Water	1,526	2,017	3,013	4,009	5,005	6,001
Average Selling Price	20.41	16.64	16.31	16.27	16.16	16.09
Cost Per m <sup>3</sup>	78.58	57.29	36.28	23.43	19.96	17.57
Production Cost inclusive of NRW	1.29	0.74	0.46	0.30	0.25	0.21
Production cost net of NRW	1.57	0.91	0.56	0.36	0.30	0.26
Breakeven Point - Volume	556,138	1,166,368	1,173,294	1,161,680	1,206,156	1,251,262
Break-even Point – Price	78.58	46.50	31.16	22.27	19.22	17.13

BPWS intends to provide water to the whole municipality except those households that are impossible to reach. In 2016, with the operationalization of Waterworks System 2, only six barangays were reached by the service. In 2017, it is expected that the two other water systems will be operational and can service another 12 barangays. It is estimated that a total of 2,017 level III consumers will be connected with the water service. By the end of 2021, total connections will grow to 6,215. BPWS will have a service coverage ratio of 42 percent by end of 2021 from 13 percent in 2016. The service coverage ratio is still below the country's Millennium Development Goal of 85 percent by end of 2015 for households with access to safe drinking water.



Being newly operated, the BPWS is beset with some operational problems like improper location of pipelines, abnormally high readings of volume consumed, turbidity and perceived poor quality of water supplied. These have hampered their efforts to retain existing consumers and to get more customers. Average consumption per month per household is 7.89 m<sup>3</sup> only. This is because the customers who are situated within the service area of the other water service provider have maintained two water supply connections to ensure that they have an alternative source. Some water readings are also unrealistic, resulting to compromise settlements of water bills.

BPWS average operating cost was very high at PHP 78.58 per m<sup>3</sup> in 2016 compared to the average selling price of PHP 20.41 while production cost was only PHP 1.29. Production cost is low because the water source is a surface water and does not need electricity for extraction. Despite its low production cost, the break-even point price in 2016 was still very high at PHP 78.58 per m<sup>3</sup>. This will reduce as soon as the number of consumers increase. In 2021, the cost per m<sup>3</sup> will reduce to only PHP 17.57, which is almost the average selling price of PHP 16.09.

The average consumption per month of all connection was 7.89 m<sup>3</sup> per month in 2017. This is way below the ideal standard of 15 to 18 m<sup>3</sup> per month for a family of five or six. In the succeeding years, it is projected that residential connections will consume 15 m<sup>3</sup> per month while commercial connections will consume 20 m<sup>3</sup> per month. This will bring the total volume billed to more than 1 million m<sup>3</sup> in 2021 from 162,360 m<sup>3</sup> in 2016. Another factor is the increase of service connections by 4,500 from 2017 to 2021. The non-revenue water is expected to be 18 percent of volume produced considering that the system is still new and leakages are estimated to be minimal.

BPWS has four types of water connections. These are the residential, commercial, industrial and institutional connections. A separate water rate is implemented for residential and institutional and a separate rate structure for commercial and industrial. The water tariff rate of BPWS is lower compared to its competitor—the Brooke’s Point Rural Waterworks and Sanitation Association. The water rate of the latter is almost double the rate of the former.

**TABLE B.6: BPWS PROJECTED PES**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Water Volume Sold	162,360	296,523	488,207	691,457	894,707	1,097,957
Approved PES per m <sup>3</sup> (PHP)		1.00	1.00	1.00	1.00	1.00
Estimated PES Annually (PHP)		296,523	488,207	691,457	894,707	1,097,957

There is a LGU Waterworks Ordinance, which stipulates a PHP 1 levy for every cubic meter sold. The amount is already part of the water tariff being implemented. The levy will be used for the conservation and protection of the watershed. With this, it is estimated that the PES will increase to PHP 296,523; PHP 488,207; PHP 691,457; PHP 894,707; and PHP 1,097,957 in 2017, 2018, 2019, 2020 and 2021, respectively, from PHP 162,360 in 2016. The PES fund will be kept in a special account in the waterworks books of accounts and can only be utilized for watershed protection and rehabilitation.

#### **B.4 BROOKE’S POINT RURAL WATERWORKS AND SANITATION ASSOCIATION**

Brooke’s Point Rural Waterworks and Sanitation Association (BPRWSA) started in 1986 when the water system, which was a water program of the Philippine government and USAID, was turned over to the association. The waterworks covers the barangays of Poblacion I, Poblacion II and Pangobilian. All connections are Level III and metered. The LGU-run BPWS also supplies water in the service area of BPRWSA.

Water source is from deep wells located in Pangobilian with a combined production capacity of 35.5 liters per second. It uses a floating-on-the-line system and water pumping is done 20-24 hours a day using alternating

wells. Production in 2016 was 707,227 m<sup>3</sup> while quantity of water billed was 353,614 m<sup>3</sup>. Currently the water utility has a total of 1,784 connections and service coverage of 54 percent. Some households have both BPRWSA and BPWS connections.

**TABLE B.7: BPRWSA PROJECTED COSTS (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Power Cost/Production Cost	4,404,203	4,237,144	4,353,858	4,474,488	4,599,040	4,727,548
General Administrative Cost	6,510,232	6,423,276	6,513,352	6,614,360	6,761,309	6,901,323
Maintenance Cost	250,575	258,092	265,835	273,810	282,024	290,485
Depreciation Cost	626,659	647,770	823,410	964,405	1,005,962	1,049,180
Interest Expense	48,377	38,377	28,377	18,377	8,377	-
<b>Total Projected Cost</b>	<b>11,840,046</b>	<b>11,604,658</b>	<b>11,984,832</b>	<b>12,345,440</b>	<b>12,656,712</b>	<b>12,968,536</b>

Projected cost were culled from the business plan submitted by BPRWSA to the National Water Resources Board. Projected cost is estimated to decline in 2017 because some performance improvement measures like rationalization of pumping schedules, construction of new reservoirs, repairs of old and worn out pipes, upgrading of pipeline system and streamlining the organization will have been already put in place. BPRWSA intends to supply water only to the three barangays within their current service area. Production cost accounts for 37 percent while general and administrative cost accounts for 55 percent of the total cost. Maintenance, depreciation and interest expense accounts only to 8 percent of total cost. Production cost is made up of expenses for power, chemicals and personnel assigned at the pumping stations. Of these, 83 percent or PHP 3.65 million is expended for power only.

**TABLE B.8: BPRWSA PROJECTED REVENUES (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Water Sales Revenue	13,181,574	11,987,129	12,245,751	12,504,373	12,762,995	13,021,617
New Connection Fees	9,100	9,464	11,249	11,699	12,167	12,653
Other Revenues	773,847	1,148,685	1,173,468	1,198,251	1,223,034	1,247,817
<b>Total Projected Income</b>	<b>13,964,521</b>	<b>13,145,278</b>	<b>13,430,468</b>	<b>13,714,322</b>	<b>13,998,195</b>	<b>14,282,087</b>

Just like projected cost, the projected revenues were also taken from the Business Plan of the water utility. With the entry of BPWS as a competitor, BPRWSA projects a decline in revenue starting 2017. Some water users have both the BPWS and BPRWSA water connections thus the average consumption is expected to decline. New connection fees is minimal because they only collect PHP 250 per new connection. Other revenues, on the other hand will continue to increase. These are collections from fines and penalties for late payments and violations of the provision of the water service contract, reconnection and disconnection fees, payment for water meters and other fees collected from members and consumers.

**TABLE B.9: BPRWSA PROJECTED NET INCOME (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Total Projected Income	13,964,521	13,145,278	13,430,468	13,714,322	13,998,195	14,282,087
Total Projected Cost	11,840,045	11,604,658	11,984,831	12,345,439	12,656,712	12,968,535
Projected Net Income	2,127,976	1,757,717	1,572,087	1,441,743	1,447,327	1,431,600
Income Ratio %	0.15	0.13	0.12	0.11	0.10	0.10

BPRWSA is projected to have an average net income ratio over six years of 12 percent. This is within the parameter set by the National Water Resources Board to grantees of Certificate of Public Convenience (CPC). The annual net income is declining because the projected annual connections could not catch up with

the increase in cost thus bringing the net income ratio to only 10 percent in 2021 from 15 percent in 2016. No water rate increase is expected within five years as NWRB prohibits requests for increases within the validity of the Certificate of Public Convenience without a very compelling reason.

**TABLE B.10: BPRWSA STATISTICS ON WATER VOLUMES, CONNECTIONS AND SERVICE COVERAGE**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Production Volume	707,227	655,305	613,656	578,415	548,208	522,029
Projected Volume of Water Sold	353,614	360,418	368,194	375,970	383,746	391,522
Projected % Non-Revenue Water	50	45	40	35	30	25
Projected Average Consumption/Month	16.20	16.20	16.20	16.20	16.20	16.20
Projected Average New Connections/Year		73	35	35	40	40
Projected Total Connections	1,784	1,819	1,854	1,894	1,934	1,974
Projected Population in Service Area	16,427	16,729	17,037	17,351	17,670	17,995
No. of Population Served by BPRWSA	8,920	9,095	9,270	9,470	9,670	9,870
% of Population Served by BPRWSA	0.54	0.54	0.54	0.55	0.55	0.55
Household Served with Water	1,634	1,664	1,694	1,729	1,764	1,799
Average Selling Price	37.28	33.26	33.26	33.26	33.26	33.26
Average Cost Per m <sup>3</sup>	33.48	32.20	32.55	32.84	32.98	33.12
Production Cost inclusive of NRW	6.23	6.47	7.09	7.74	8.39	9.06
Production Cost net of NRW	12.45	11.76	11.82	11.90	11.98	12.07
Breakeven Point – Volume	302,054	343,471	356,593	368,877	378,983	389,133
Break-even Point – Price	33.48	32.20	32.55	32.84	32.98	33.12

Non-revenue water (NRW) was 50 percent of total volume produced in 2016. It is expected that due to the NRW reduction program of the water utility, NRW will gradually decrease to 25 percent of production, which is the maximum allowable limit for water utilities. Among the programs to be done to achieve this are the replacement of old and worn out pipes, prompt repairs of leaks within one day, and close monitoring of the pipeline system. Due to this, the 2016 production cost per m<sup>3</sup> of 6.23 will rise to 9.06 in 2021. The increased production cost will come from a combined decrease in volume produced and the increase in production expenses. Average consumption is estimated to be the same because while the other water service provider has a lower rate, the BPRWSA water service is more preferred by some consumers because of better quality of product and service than the competition. In the next five years, the water utility projects that the service coverage ratio would increase slightly to 55 percent starting in 2019 from 54 percent from 2016 to 2018. Expansion of services within five years will be limited only to the three barangays where they are currently operating. On the other hand, the margin between the average water tariff or rate and the average cost will be very slim but the operation will still be profitable. This will be adjusted once they will request for the renewal of CPC and water rate adjustment with NWRB

There are two types of water connections: residential and institutional, and commercial and industrial. The rate for commercial is twice the price set for residential connections. Water tariff is inclusive of the watershed protection cost although the amount added is only about 10 percent of the projected PES annually.

**TABLE B.11: BPRWSA PROJECTED PES**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Water Volume Sold	353,614	360,418	368,194	375,970	383,746	391,522
PES per cubic meter (PHP)					1.00	1.00
Estimated PES Annually (PHP)		360,418	368,194	375,970	383,746	391,522

In their proposal for the approval of their water rates by the NWRB, BPRWSA has included a provision for watershed development or tree planting activities for PHP 30,000 annually. However, during the 2017

General Assembly, the general membership approved a provision of PHP 1 per m<sup>3</sup> of water sold that will be set aside as payment for ecosystem services. It is then projected that BPRWSA will provide annually the amount equivalent to the volume produced and this will be kept in a separate bank account and will only be used for programs and projects related to watershed development and management. This can also be used to programs, projects and activities contained in the LGU's watershed management plan.

## B.5 ZAMBOANGA CITY WATER DISTRICT

The original water system in Zamboanga City was built by the United States colonial government in 1911 for the purpose of serving the needs of US forces in the city at the time. It consisted of an intake box, a grit removal basis, a three-kilometer reinforced concrete aqueduct, a reservoir and a distribution system. This was expanded in 1930.

Zamboanga City took over the management of the water system in 1948. The water system was subsequently renamed as Zamboanga City Waterworks and Sewerage System. In November 8, 1973, the Zamboanga City Council passed Resolution No. 446 creating the Zamboanga City Water District (ZCWD) amended by Resolution No. 77 dated March 6, 1974.

Water sources include the Tumaga River, six springs and 21 deep wells. The Tumaga River, whose headwater is at the Pasonanca Natural Park, provides 78 percent of the water supply of ZCWD while springs and deep wells provide only 3 percent and 18 percent, respectively. Total combined discharge capacity is 1,210 liters per second or 38,158,160 m<sup>3</sup> per annum.

**TABLE B.12: ZCWD PROJECTED COSTS (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Pumping/Production Cost	25,382,629	26,651,761	27,984,349	29,383,566	30,852,745	32,395,382
General Administrative Cost	376,851,510	395,694,086	415,478,790	436,252,729	458,065,366	480,968,634
Depreciation Cost	44,305,403	44,305,403	45,191,511	45,191,511	45,191,511	45,191,511
Bulk Water Purchase		35,001,435	38,501,579	42,351,736	46,586,910	51,245,601
Interest Expense	20,116,594	22,116,594	25,116,594	25,116,594	30,116,594	35,116,594
<b>Total Projected Cost</b>	<b>466,656,136</b>	<b>523,769,278</b>	<b>552,272,822</b>	<b>578,296,137</b>	<b>610,813,126</b>	<b>644,917,722</b>

General and administrative costs account for 75 to 81 percent of the total cost, while depreciation and bulk water purchase is at 10 to 15 percent, production cost at 5 percent, and interest expense at 4 to 5 percent of total cost. In the general and administrative cost, 31 percent goes to the salaries of 624 staff. The cost of watershed protection is at 4 percent of this cost. The latter includes payment for the people who do guarding and patrolling of the watershed in Pasonanca Natural Park. Interest expense is for their credit facility of PHP 1.3 billion granted by the Land Bank in 2013. The loan carries an interest rate of 5 percent per annum. As of 2015, the ZCWD had a total drawdown of PHP 400 million.

**TABLE B.13: ZCWD PROJECTED REVENUES (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Water Sales Revenue	536,087,272	629,356,411	650,824,795	677,660,275	709,862,851	742,065,427
New Connection Fees	4,113,000	4,500,000	6,000,000	7,500,000	9,000,000	9,000,000
Other Revenues	12,968,811	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000
<b>Total Projected Revenue</b>	<b>553,169,084</b>	<b>641,356,411</b>	<b>64,324,795</b>	<b>92,660,275</b>	<b>26,362,851</b>	<b>758,565,427</b>

Water sales revenue accounts for approximately 97 to 98 percent of the total income of ZCWD while new connection fees and other revenues like surcharges, reconnection fees, and penalties account for only 2 to 3

percent. New connection fee is around PHP 3,000 per application. Water sales is expected to consistently rise, averaging an increase of some 6 percent annually. New connections are projected to grow from 1, 371 in 2016 to 1,500; 2,000; 2,500; 3,000 and 3,000 in 2017, 2018, 2019, 2020 and 2021, respectively. The number for other revenues is assumed using the average from 2014 to 2016.

**TABLE B.14: ZCWD PROJECTED NET INCOME (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Total Projected Revenue	553,169,084	641,356,411	664,324,795	692,660,275	726,362,851	758,565,427
Total Projected Cost	466,656,136	523,769,278	552,272,822	578,296,137	610,813,126	644,917,722
Projected Net Income	86,512,947	117,587,133	112,051,973	114,364,138	115,549,726	113,647,705
Net Income Ratio %	16	18	17	17	16	15

Projected net income ratio is expected to be between 15 to 18 percent of projected net income. Net income was lowest in 2016 at 16 percent due to the shortfall in water supply brought by El Niño's long dry spell.

**TABLE B.15: ZCWD STATISTICS ON WATER VOLUMES, CONNECTIONS AND SERVICE COVERAGE**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Production Volume	34,840,189	39,500,000	39,500,000	39,500,000	39,500,000	39,500,000
Projected Volume of Water Sold	16,538,794	19,418,587	20,080,987	20,908,987	21,902,587	22,896,187
Projected % Non-Revenue Water	53	51	49	47	45	42
Projected Average Consumption / Month	24	28	28	28	28	28
Average Tariff Per cubic meter	32.41	32.41	32.41	32.41	32.41	32.41
Projected Average New Connections Annually	1,371	1,500	2,000	2,500	3,000	3,000
Projected Total Connections	57,131	58,631	60,631	63,131	66,131	69,131
Projected Population in Service Area	872,658	885,922	899,388	913,059	926,937	941,027
No. of Population Served	342,786	351,786	363,786	378,786	396,786	414,786
% of Population Served	39	40	40	41	43	44
Household Served with Water	51,165	52,768	54,568	56,818	59,518	62,218
Average Selling Price	32.41	32.41	32.41	32.41	32.41	32.41
Cost per m <sup>3</sup>	28.22	26.97	27.50	27.66	27.89	28.17
Production Cost inclusive of NRW	4.19	5.44	4.91	4.75	4.52	4.24
Production cost net of NRW	13.39	13.26	13.98	14.64	15.46	16.33
Breakeven Point - Volume	14,292,136	15,806,924	16,694,218	17,480,174	18,472,218	19,517,953
Break-even Point - Price	28.22	26.97	27.50	27.66	27.89	28.17

Production volume is expected to increase from 34,840,189 m<sup>3</sup> in 2016 to 39,500,000 m<sup>3</sup> starting 2017 and onwards. This will be made possible as ZCWD entered into a joint venture agreement with Prime Water Resource Infrastructure Corporation (PWRIC) in 2014 for the design, financing, construction and operation of a 50-million-liter-per-day bulk water supply facility by the PWRIC. The facility will be operational in 2017. This joint venture will augment the current water supply requirement of the water district, enabling them to provide constant and adequate water supply to their consumers. Due to this increased supply, the average consumption is projected to be 28 m<sup>3</sup> per household per month, which is equivalent to the previous three-year average from 2013 to 2015. This is more than the ideal range of 18 m<sup>3</sup> per month for a family of five or 21 m<sup>3</sup> for a household of five to six people. Likewise, the number of connections will significantly increase to 69,131 by 2021, bringing the service coverage to 44 percent of the total population of the city. The service coverage ratio is much lower than the MDG goal of 85 percent and the 69 percent average of water districts included in the DILG benchmarking exercise for the Philippines Small Town Water Utilities Data Book. The NRW in 2016 is more than double of the ideal ratio of 20 to 25 percent of production volume. It is expected

that NRW will decrease to 42 percent by the end of five years. This will be due to the implementation of NRW reduction initiatives and a network restoration drive in a 2015 joint venture with the Manila Water Company. The program is expected to be completed in ten years.

In 2016, production cost was only 5 percent of total cost. Production cost was PHP 0.73 per m<sup>3</sup> produced; inclusive of NRW, however, when computed using volume sold the production cost per m<sup>3</sup> is at PHP 1.53 per m<sup>3</sup> sold. The high difference between the two computations is due to a high NRW, which accounts to more than 50 percent of the volume produced. Total average cost per m<sup>3</sup> sold was PHP 28.22 per m<sup>3</sup> while the average selling price or tariff was PHP 32.41. The rates imposed by ZCWD is lower than the other water districts operating in Region 9, such as Ipil, Dapitan, Pagadian, Dipolog, Labason, Polanco and President Roxas. Average profit per m<sup>3</sup> was PHP 4.19 per m<sup>3</sup> sold or a profit margin of 13 percent, which is more than the allowed 12 percent cap on water utilities.

The pricing scheme being used by the water district is an increasing block method, which provide for higher rates for those who consume more and is differentiated according to type of connection. Water rate for commercial and industrial connections is twice higher than residential connections.

**TABLE B.16: BPRWSA PROJECTED PES**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Water Volume Sold	16,538,794	19,418,587	20,080,987	20,908,987	21,902,587	22,896,187
Amount Allocated Annually	15,467,555	21,000,000	22,050,000	23,152,500	24,310,125	25,525,631
Effective PES (PHP) per m <sup>3</sup>	0.94	1.08	1.10	1.11	1.11	1.11

The Memorandum of Agreement among the DENR, Zamboanga City and ZCWD states that it is the responsibility of the water district to protect and guard the watershed in the Pasonanca Natural Park. Annually, an allocation of more than PHP 20 million has been allocated for this purpose. However, in 2016, the amount utilized out of an allocation of PHP 20.7 million was only PHP 15.5 million due to some procurement issues. The bulk of the annual budget is used to pay for the more than 100 guards deployed in the area. Effectively, the PES was PHP 0.94 in 2016 but this will increase to an average of PHP 1.10 per cubic meter of water volume sold from 2017 to 2021.

## **B.6 GREAT SANTA CRUZ ISLAND**

The Great Santa Cruz Island, located in Zamboanga City, is one of the unique beaches in the Philippines with pink sand and surrounded by clear turquoise waters. It is also one of the protected areas in Region 9 under Proclamation No. 271 for marine life preservation, conservation and protection. The protected area was originally under the jurisdiction of the Department of Tourism and Philippine Tourism Authority. In June 2011, the development, management and protection of the island was transferred to Zamboanga City through a MOA signed by the city, DENR, DOT, TIEZA and the Protected Area Ecotourism and Management Board. Presently, there are no overnight accommodations available and camping is not allowed. Structures and facilities like picnic huts, grilling and washing stations, gazebo and comfort rooms are low impact to ensure that the environment remains pristine and habitable for the different animal species. Among the activities allowed are snorkeling, swimming, lagoon tour, boating, diving, bird watching and cultural immersion in a peace-loving Sama-Bangingi community.

Tourism potential is high. Visitors' arrivals have been on the uptake, except in 2014 when there was a siege in Zamboanga City, which resulted in a 36 percent decline in the number of visitors to the island. The highest number of visitors come in the months of April, May and December accounting for about 41 percent of the total annual tourism arrivals in the area.

**TABLE B.17: GREAT SANTA CRUZ ISLAND PROJECTED COSTS (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Salaries and Wages		2,568,033	2,568,033	2,568,033	2,568,033	2,568,033
Maintenance and Other Operating Expenses (MOOE)	3,408,336	4,599,086	4,829,040	5,070,492	5,324,017	5,590,218
Capital Outlay		312,000	50,000	50,000	50,000	50,000
Total Projected Cost	3,408,336	7,479,119	7,447,073	7,688,525	7,942,050	8,208,251
Average Cost per Visitor	87.58	151.20	135.17	115.96	103.12	93.50

Presently, the Protected Area Management Unit is under the Office of the City Mayor. Salaries of the protected area management unit staff are taken from either the Tourism or the Mayor's Offices. Under City Ordinance No. 2013-618, the management unit staffing pattern shall be composed of 16 people including four utility workers; to be headed by a Senior Environmental Management Specialist or Senior Tourism Officer. Cost for salaries account for 31 to 36 percent of total costs, while MOOE accounts for 69 to 64 percent of total cost. The main cost driver for MOOE is the allocation for fuel, oil and lubricants, which accounts for about 31 percent of the total MOOE spending. This cost is for the patrolling and guarding of the PA. Likewise, wages for four job order staff are part of the MOOE.

**TABLE B.18: GREAT SANTA CRUZ ISLAND PROJECTED REVENUES (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected Total Revenues from Entrance/Conservation/Environmental Fee	739,385	4,436,310	5,323,572	5,855,929	6,441,522	7,085,674
Projected Revenue from Rental of Picnic Huts	500,000	600,000	700,000	800,000	900,000	900,000
Total Projected Revenue	1,239,385	5,036,310	6,023,572	6,655,929	7,341,522	7,985,674
Average Revenue per Visitor	32.45	30.13	125.27	127.54	128.30	129.29

The main source of revenue for Great Santa Cruz Island is the environment, conservation, rehabilitation and improvement fee of PHP 100 per visitor per day. Children and senior citizens are given 20 percent discount. In 2016, the fee imposed was based on the old rate of PHP 20 per visitor, but starting in 2017, it is projected that the new rate, which was approved on June 13, 2013, will be implemented. Another source of revenue is the rental of picnic huts. It is projected that on the first year an average of 10 picnic huts will be occupied for about a hundred days, at two days per weekend and at a minimum of PHP 500 picnic per hut. The average revenue from each visitor is projected is lower than the average cost per visitor from 2016 to 2018. However, in 2019 to 2021, the average revenue will be higher than the average cost due to the implementation of the PHP 100 conservation fee and DAO 2016-04 entitled the revised rates of fees in PA, where applicable.

**TABLE B.19: GREAT SANTA CRUZ ISLAND VISITORS PROJECTION**

	2016 (Actual)	2017	2018	2019	2020	2021
Projected No. of Visitors	38,915	50,590	63,237	75,884	91,061	104,720
No. of Senior and Children Visitors	3,892	5,059	6,324	7,588	9,106	10,472
No. of Regular Paying Visitors	35,024	45,531	56,913	68,296	81,955	94,248
Entrance/Conservation/Environmental Fee						
Senior Citizen and Children	16	80	80	80	80	80
Regular Paying Visitors	20	100	100	100	100	100

Zamboanga City is the center for meetings, conferences and education in Region 9. In addition, the National Geographic magazine recently recognized Great Santa Cruz Island as among the best beaches in the world. These factors are expected to boost visitors to the islands by 30 percent in 2017, 25 percent in 2018, 20 percent in 2019, 15 percent in 2020 and 10 percent annually in 2019 to 2021. The projected average annual

increases of 23 percent lower the annual average increase of 43 percent from 2013 to 2016. The number of visitors will increase from 38,915 in 2016 to 104,720 in 2021.

**TABLE B.20: GREAT SANTA CRUZ ISLAND PROJECTED NET INCOME/LOSS (in PHP)**

	2016 (Actual)	2017	2018	2019	2020	2021
Total Projected Revenue	1,262,734	1,524,354	7,921,614	9,678,377	11,683,028	13,538,946
Total Projected Cost	3,408,336	7,648,902	8,547,858	8,799,710	9,390,645	9,790,838
Net Income Ratio %	(1.699)	(4.222)	(0.085)	0.086	0.192	0.266

At present, and even after three years, it is estimated that the projected revenue from the fees and rental of picnic huts will not be able to cover the operating costs that will be incurred by the city for the Great Santa Cruz Island. However, the cost bottom line will improve from a negative net income ratio from 2016 to 2018 to 8 percent, 19 percent and 27 percent from 2019, 2020 and 2021, respectively.

## **B.7 ANALYSIS AND CONCLUSION**

1. Water utilities in this study are financially viable except for Brooke's Point Waterworks System, which is still starting out and has no solid basis yet to project its costs.
2. The present PES practice of pegging it at the volume sold is easier to track and to implement. However, if the water utility's non-revenue is very high, beyond the limits provided by LWUA and NWRB, it might be better to consider basing the PES on the production volume. This will compel the utility to improve the efficiency of its operations like addressing systems losses and leakages. This will also help conserve water.
3. The small water utilities have negative or lower net income ratio while the water district has a higher net income ratio. This may be because the water district has more customers, more financial flexibility, and better economies of scale. In short, the water district has the capacity to take on additional cost or an increased PES rate.
4. Collecting PES is one thing, but how it is being used needs to be transparent too. PES fund utilization should be agreed upon by the protected area management board, DENR, LGU and the water utility. There should also be regular reporting of collections and utilization to all concerned.
5. Great Santa Cruz Islands has the potential to generate even more revenue. It can be self-sustaining in the long run if costs are managed; the new rate is implemented; and coupled with good promotion, marketing and tourism infrastructures and facilities are enhanced to cater to the needs of the tourists. Since it has already gained international recognition, it is best to set separate fees for foreigners and for other activities that may be enjoyed in the island.



# ANNEX C

## TECHNICAL WORKING GROUP RESOLUTIONS

### MOUNT MANTALINGAHAN PROTECTED LANDSCAPE TECHNICAL WORKING GROUP RECOMMENDATION ON LAND USE CATEGORIES/ZONES AND ALLOWED/DISALLOWED RESOURCE USES AND SUB-LAND USES IN MOUNT MANTALINGAHAN PROTECTED LANDSCAPE

WHEREAS, the Technical Working Group (TWG) of Mount Mantalingahan Protected Landscape (MMPL) composed of the Forest Land Use Plan TWGs of the five municipalities of MMPL is tasked to study the current land use categories or zones and the allowed/disallowed resource uses and sub-land uses within MMPL;

WHEREAS, the study is in line with mainstreaming the MMPL zoning guidelines in the Forest Land Use Plans (FLUP) being prepared by the Municipalities of Batataza, Brooke's Point, Quezon, Rizal, and Sofronio Española;

WHEREAS, the study involved, among others, mapping and field validation of policy-designated land uses and the actual uses in the barangays within MMPL;

WHEREAS, after due consideration of and compliance with laws and policies affecting land and resource uses and the validation of actual land uses in MMPL, the TWG of MMPL, hereby recommends the following:

#### I. Land Use Categories/Zones

The TWG recommends that the Protected Area Management Board (PAMB) of MMPL undertake the review of the present zoning in MMPL for the purpose of clearly defining the Protection and Conservation Areas (PCA) and the Production Areas following the approved land use and zoning guidelines of the MMPL Management Plan and other applicable policies and guidelines.

#### II. Allowed/Disallowed Resource Uses and Sub-Land Uses

The TWG also recommends that the following be the allowed and disallowed resource uses and sub-land uses in the Environmentally Critical Areas Network (ECAN) Zones in MMPL:

Zone	Disallowed Uses/Activities	Allowed Uses/Activities
Core Zone	<ul style="list-style-type: none"> <li>• Mining</li> <li>• Quarrying</li> <li>• Logging / Cutting of trees</li> <li>• Kaingin</li> <li>• Farming</li> <li>• Expansion Of Human Settlement</li> <li>• Oil Palm Plantation, including other industrial crops</li> <li>• Conversion of Mangrove Areas</li> </ul>	For Indigenous Peoples / Tenured Occupants Only: <ul style="list-style-type: none"> <li>• Conduct of rituals</li> <li>• Gathering herbal medicines</li> <li>• Gathering of Almaciga resin, rattan, honey, birds' nest, and other non-timber forest products</li> <li>• Subsistence hunting</li> </ul>

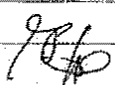
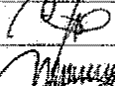
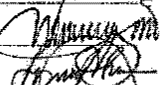
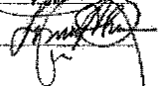
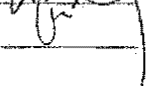
	<ul style="list-style-type: none"> <li>• Charcoal Making</li> <li>• Tan Barking (Mangroves)</li> <li>• Hunting</li> <li>• Wildlife Gathering, Poaching</li> <li>• Bioprospecting / Biopiracy</li> <li>• Use of non-selective herbicide (glyphosate)</li> <li>• Sale/lease of ancestral land</li> <li>• All other human activities except those specified in the next column</li> </ul>	<p>Other Allowed Activities</p> <ul style="list-style-type: none"> <li>• Reforestation, NGP, assisted natural regeneration</li> <li>• Rehabilitation</li> <li>• Eco-tourism</li> <li>• Research</li> <li>• Delineation of Tribal Zone / Establishment of boundaries or monuments of CADT</li> <li>• Pre-school / elementary schools in ancestral domain areas</li> <li>• Health center in ancestral domain areas</li> <li>• Spring development</li> </ul>
Restricted Use	<ul style="list-style-type: none"> <li>• Mining</li> <li>• Quarrying</li> <li>• Kaingin</li> <li>• Farming</li> <li>• Cutting of trees / Logging</li> <li>• Timber poaching</li> <li>• Expansion Of Human Settlement</li> <li>• Charcoal Making</li> <li>• Plantation of Oil Palm and other industrial crops</li> <li>• Sale/lease of ancestral land</li> <li>• Use of non-selective herbicide (glyphosate)</li> <li>• Wildlife hunting / gathering</li> </ul>	<ul style="list-style-type: none"> <li>• Pre. School / Elementary</li> <li>• Gathering of almaciga resin, rattan, honey and other non-timber forest products (for IPs and tenured occupants only)</li> <li>• Subsistence Hunting (for IPs only)</li> <li>• Eco-tourism</li> <li>• Spring development &amp; Ram pump</li> <li>• Health center</li> <li>• Herbal Medicine Gathering</li> <li>• Reforestation / NGP / ANR</li> <li>• Ritual</li> <li>• Research</li> <li>• Traditional Kaingin</li> <li>• Regulated utilization of IP community housing materials</li> <li>• Hydro energy project</li> <li>• Regulated settlement</li> <li>• Tree farms</li> <li>• Agroforestry / Planting of fruit trees</li> <li>• Promotion of natural, organic, diversified, integrated system of production</li> </ul>
Controlled Use	<ul style="list-style-type: none"> <li>• Mining</li> <li>• Quarrying</li> <li>• Charcoal Making</li> <li>• Oil Palm Plantation</li> </ul>	<ul style="list-style-type: none"> <li>• Communal Forest</li> <li>• Almaciga resin, yantok, honey, and other non-timber forest products gathering</li> <li>• Ecotourism</li> </ul>

	<ul style="list-style-type: none"> <li>• Cutting of Trees except for IP community household consumption</li> <li>• Sale / lease of ancestral land</li> <li>• Use of non-selective herbicide (glyphosate)</li> </ul>	<ul style="list-style-type: none"> <li>• Water source for domestic use / Water system</li> <li>• Clonal nurseries – enhanced training program</li> <li>• Regulated / Traditional kaingin</li> <li>• Farm to market road</li> <li>• Reforestation</li> <li>• Regulated utilization of IP community housing materials</li> <li>• Hydro energy project</li> <li>• Regulated Settlement</li> <li>• Research</li> <li>• Issuance of tenure instruments (i.e. PACBRMA)</li> <li>• Livelihood projects</li> <li>• Tree farming (in open areas)</li> <li>• Agroforestry (in open areas)</li> <li>• Promotion of natural, organic, diversified, integrated system of production</li> <li>• Maintain the remaining primary forest</li> </ul>
Traditional Use	<ul style="list-style-type: none"> <li>• Mining</li> <li>• Quarrying</li> <li>• Charcoal Making</li> <li>• Expansion of Oil Palm Plantation</li> <li>• Sale / lease of ancestral land</li> <li>• Wildlife hunting / gathering of endangered species or for commercial purpose.</li> </ul>	<ul style="list-style-type: none"> <li>• Regulated quarrying</li> <li>• Regulated / traditional kaingin</li> <li>• Farming</li> <li>• Livelihood: Sawali-making and handicrafts for IPs</li> <li>• Irrigation system</li> <li>• Reforestation, NGP</li> <li>• Agroforestry (in open areas)</li> <li>• Settlement</li> <li>• Farm to market roads</li> <li>• Commercial tree plantation / Plantation crops (in open areas)</li> <li>• Timber production</li> <li>• Ecotourism</li> <li>• Nursery</li> <li>• Herbal medicine gathering</li> <li>• Gathering of non-timber forest products</li> <li>• Regulated utilization of IP community housing materials</li> </ul>

		<ul style="list-style-type: none"> <li>• Electrification</li> <li>• Spring development</li> <li>• Water system</li> <li>• Small-scale livestock and poultry raising</li> <li>• Recreational activities</li> </ul>
Multiple Use	<ul style="list-style-type: none"> <li>• Mining</li> <li>• Illegal cutting of trees</li> <li>• Timber poaching including mangroves</li> <li>• Littering/waste disposal in shores or coastal areas</li> <li>• Foreshore quarrying</li> <li>• Expansion of Oil Palm Plantation</li> </ul>	<ul style="list-style-type: none"> <li>• Ecotourism development</li> <li>• Timber Plantation</li> <li>• Regulated quarrying</li> <li>• Agriculture</li> <li>• Infrastructure</li> <li>• Livelihood</li> <li>• Irrigation</li> <li>• Agro – tourism</li> <li>• Living tradition</li> <li>• Basic services <ul style="list-style-type: none"> <li>○ Electricity</li> <li>○ Schools</li> <li>○ Roads</li> <li>○ Water system</li> </ul> </li> <li>• Settlement</li> <li>• Tourism</li> <li>• Commercial and industrial activities</li> <li>• Agri-processing</li> <li>• Recreational activities</li> </ul>

The Technical Working Group further agrees to submit the foregoing recommendation for consideration and approval of the MMPL PAMB.

Signed this 29<sup>th</sup> day of June 2017.

Name	Municipality/Agency	Designation	Signature
SR. Xenia Mae C. Inanda	Brook's Pt / MMPL-PMB	Proj. Director	
ARISTOTELES S. SANTIAGO	Espanola	MA	
REMILO L. MONTAÑA	Anatani Peninsula	MEMBER - MANAGER	
JONATHAN T. OJEDA	Espanola	SB member	
ARSANI K. BERNARDO	S. ESPANOLA	SB MEMBER	

BERNARDO A. LUCERO	BROOKS PT/MPDO	PDO I	
DEY RITAN F. REBATA	LGU - BROOKS POINT	DRAFTSMAN II	
JUDY MARIE B. CAJABO	LGU - S. ESPAÑOLA	PDO I	
APOLLO V. REGALO	PCSOS	PDO III	
ERNESTO S. NAGATO	LGU - SJ. Española	MOROMO - OIC	
ESPERANZA B. CARRASCO	LGU - QUEZON	TRINERO	
ROGER GARCIA	IDERS	E.D	
ROBERTA B. BORDON	LGU - QUEZON	A.T.	
RODEL S. LAMPINES	PCSOS	PDA	
EDWIN I. CARRASCO	PCSOS	PDO-III	
KATHLEEN RYAN MORA	DEWK CENTRO	FOV. I	
RENATO A. BACOS	LGU - BROOKS POINT	A.T.	
JAYRUEL C. RIVERA	LGU - BATAVIA	TRINERO	
ANA MARIA GENCIANED	PCSOS - BATAVIA	PCSOS - PDA I	
ALMA V. VALUEDOR	LGU - BATAVIA	MPDC	
CRISTIAN Z. LAGRADA	LGU - BROOKS PT.	SB MEMBER	
JOSÉ C. PIRAMIDE	LGU - BROOKS POINT	MPDC	
ELMIER MASUCHES	LGU - BROOKS PT.	ZONING INSPECTOR	
ARNOLD PETER L. AURINO	DEWR - MMPL	FOOTS I	
VIN CHRISTIAN A. VEGA	PCSOS	PDO III	
JENEL JOY C. TORRES	LGU - MZAL	CAO JT	
HENRY V. PALANCA	LGU - RIZAL	MOD. for a/c/Hiring	
PEPITO J. DRILON	LGU - RIZAL	SB MEMBER	
CASPER E. MORAN JR.	LGU - RIZAL	#12	
MARY JANE R. CATEDRINO	LGU - RIZAL	Statistician I	
SILICO J. VALDESTANON	SBO - RIZAL	IPMR	
MILFREDO N. TABA	SB - RIZAL	SB member	

**PASONANCA NATURAL PARK  
TECHNICAL WORKING GROUP  
RECOMMENDATION ON LAND USE CATEGORIES/ZONES  
AND ALLOWED/DISALLOWED RESOURCE USES AND SUB-LAND USES  
IN PASONANCA NATURAL PARK**

WHEREAS, the Technical Working Group of Pasonanca Natural Park is tasked to update the Management Plan of Pasonanca Natural Park;

WHEREAS, among the major steps to be taken in the process of updating the Management Plan is the identification and establishment of land use categories/zones and allowed/disallowed resource uses and sub-land uses within Pasonanca Natural Park and its Buffer Zones;

WHEREAS, after due consideration of and compliance with laws and policies affecting land and resource uses and the validation of actual land uses in Pasonanca Natural Park and its Buffer Zones, the Technical Working Group of Pasonanca Natural Park, during its meeting on June 7, 2017, agreed to recommend the following land use categories/zones and allowed/disallowed resource uses and sub-land uses therein:

**I. Land Use Categories/Zones**

**A. Strict Protection Zone**

The current boundaries of the Strict Protection Zone will be modified as follows:

1. Modification / re-alignment of the boundary of the Strict Protection Zone (SPZ) to follow the boundaries specified in Proclamation 199, Series of 1987. This will result in the exclusion from the SPZ of the portion of Sitio Duminatag, Barangay La Paz, the actual uses of which are agriculture and settlement.
2. Modification / re-alignment of the boundary of the SPZ in Barangay Pasonanca to exclude the residential area (titled lots), Abong-Abong Park, and the area for special use by the Zamboanga City Water District, from the SPZ.
3. The areas excluded from the SPZ will be reclassified as multiple use zones (MUZ)

**B. Buffer Zones I and II**

The following will be established in the Buffer Zones:

1. Protection and Conservation Areas within the Buffer Zones to cover the following:
  - a) Water Sources
  - b) High Vulnerability Areas (e.g. landslides)
  - c) Areas with Residual Forest
  - d) Areas with slope of 50% and above

e) High Biodiversity Areas

2. Multiple Use Zones in the Buffer Zones

II. Allowed/Disallowed Resource Uses and Sub-Land Uses

A. Strict Protection Zone

1. Closed to human activities except for scientific studies
2. Only protection and rehabilitation activities will be allowed

B. Protection and Conservation Areas in the Buffer Zones

1. Only protection and rehabilitation activities will be allowed

C. Multiple Use Zone

1. Production Areas

- a) Agriculture
- b) Agroforestry
- c) Livelihood


2. Ecotourism / Recreation


3. Human Settlement (to include schools, chapels, health center, etc.)

4. Special Use Areas (ZCWD project)

The Technical Working Group further agreed to submit as it hereby submits the foregoing recommendation for consideration and approval of the Pasonanca Natural Park Protected Area Management Board. The map of Pasonanca Natural Park containing the foregoing recommendation is attached for reference and made an integral part of this recommendation.

ATTESTED BY:

  
Forester Domiliza B. Campaner  
PASu, Pasonanca Natural Park  
Chairperson, TWG

  
Engr. Valerie Day Butierrez  
Zamboanga City Water District  
Co-Chairperson, TWG

June \_\_, 2017

**GREAT AND LITTLE STA. CRUZ ISLANDS  
PROTECTED LANDSCAPE AND SEASCAPE (GLSCIPLS)  
TECHNICAL WORKING GROUP RECOMMENDATION ON LAND AND  
WATER USE CATEGORIES/ZONES AND ALLOWED/DISALLOWED  
RESOURCE USES AND SUB-LAND AND WATER USES IN GLSCIPLS**

WHEREAS, the Technical Working Group of Great and Little Sta. Cruz Islands Protected Landscape and Seascape (GLSCIPLS) is tasked to update the Management Plan of GLSCIPLS;

WHEREAS, among the major steps to be taken in the process of updating the Management Plan is the identification and establishment of land and water use categories/zones and allowed/disallowed resource uses and sub-land and water uses within GLSCIPLS;

WHEREAS, after due consideration of and compliance with laws and policies affecting land and resource uses and the validation of actual land uses in GLSCIPLS, the Technical Working Group of GLSCIPLS, during its meeting on June 6, 2017, agreed to recommend the following land and water use categories/zones and allowed/disallowed resource uses and sub-land and water uses therein:

**I. Land and Water Use Categories/Zones**

**A. Strict Protection Zone**

1. The entire Little Sta. Cruz Island will be retained as a Strict Protection Zone (SPZ).
2. The waters surrounding the Little Sta. Cruz Island will be declared as a Strict Protection Zone up to the extent shown in the attached map.

**B. Multiple Use Zone**

The Multiple Use Zone in the Great Sta. Cruz Island and its surrounding waters will be retained with the following sub-zones:

1. Settlement Zone
2. Restoration Zone
3. Recreation Zone
4. Multiple Use Zone in Waters

**II. Allowed/Disallowed Resource Uses and Sub-Land and Water Uses**

**A. Strict Protection Zone**

1. Closed to human activities except for scientific studies
2. Only protection and rehabilitation activities will be allowed
3. Consequently, the following will have to be undertaken:
  - Relocation of the naval station/detachment to Great Sta Cruz Island



- Strict implementation of the Parola arrangement
- Prohibition of military exercises within the SPZ
- Prohibition of motorized sea vessels within the SPZ
- Renaming of the Biodiversity Research Center in Little St. Cruz Island as Biodiversity Research and Learning Center, Guidelines for allowed activities in the Biodiversity Research and Learning Center will be formulated,

B. Multiple Use Zone

1. Settlement

- The present settlement area will be retained. Expansion of the settlement area will not be allowed.

2. Restoration

- Restoration activities will be limited to areas owned by the government

3. Ecotourism / Recreation

4. Livelihood

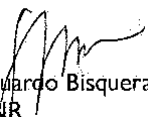
5. Fishing

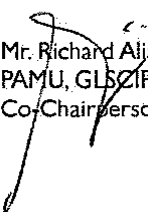
6. Navigation

- Only sea vessels going to Great Sta. Cruz Island will be allowed to go inside the boundary of GLSCIPLS
- Navigation zones for motorized and non-motorized vessels within the boundary of GLSCIPLS will be identified.
- Sea vessels passing through such as, but not limited to, passenger vessels bound for Basilan will not be allowed to pass inside the boundary of GLSCIPLS.

The Technical Working Group further agreed to submit as it hereby submits the foregoing recommendation for consideration and approval of the GLSCIPLS Protected Area and Ecotourism Management Board. The map of GLSCIPLS containing the foregoing recommendation is attached for reference and made an integral part of this recommendation.

ATTESTED BY:

  
 Dr. Eduardo Bisquera, Jr.  
 OCENR  
 Chairperson, TWG

  
 Mr. Richard Aljangan  
 PAMU, GLSCIPLS  
 Co-Chairperson, TWG

June \_\_, 2017

# ANNEX D

## TRAINING MODULES ON FOREST LAND USE AND PROTECTED AREA MANAGEMENT PLANNING IMPLEMENTED IN YEAR I

### D.1 FOREST LAND USE PLAN PREPARATION

#### D.1.1 Module 1: Orientation of the FLUP Technical Working Group and Action Planning

This one-and-a-half-day module immediately follows the formal creation of the FLUP technical working group by the target local government units. TWG members are convened and given an orientation on the activities comprising the FLUP formulation process. The training can be done for a single LGU (e.g., Zamboanga City) or for a cluster of LGUs that make up a landscape (e.g., five LGUs that comprise the Mount Mantalingahan Protected Landscape in southern Palawan).

TWG members consist of LGU technical staff; CENRO/PENRO staff; representatives from concerned national government agencies (e.g., NCIP); and representatives from civil society organizations, academe and the private or business sector.

The orientation covers the following:

- Roles and responsibilities of the FLUP TWG, and Protect Wildlife's support to planning, capacity building and legitimization activities;
- Principles and practice of integrated ecosystems management landscape approach in conservation planning and management;
- Policy-designated land and resource uses in public lands within LGU boundaries. This is shown through maps prepared by the Protect Wildlife team and processed using geographic information system.
- Post-orientation actions of the TWG: data collection and mapping; validation of policy-designated land uses; and consensus on protection and production areas within forestlands, and land and resource uses at the LGU, barangay and management unit levels.

At the end of the training, TWGs prepare a general action plan for the entire FLUP formulation process.

#### D.1.2 Module 2: Data Gathering, Field Validation and Data Preparation

This module consists of three sub-modules, as follows:

##### D.1.2.1 Module 2A: Training on Data Gathering and Analysis

This three-day module provides instruction and guidance to TWGs on what data to gather, update and validate for the FLUP that will complement the comprehensive land use plan of the LGU. The data requirements are based on the new Housing and Land Use Regulatory Board Guidelines, which require the inclusion of FLUP in CLUPs. These include biophysical features, demographic and sociocultural characteristics, economic sectors and sources of employment, access to social services and available infrastructure facilities. The module also provides guidance on how to analyze FLUP data.

This training is intended for TWG members. At the end of the training, TWGs prepare a detailed action plan for the gathering, updating, validating and summarizing FLUP data.

### **D.I.2.2 Module 2B: Training on Spatial Analysis**

The FLUP formulation process demands heavy mapping and map analysis work. A spatial analysis training will ensure accurate and timely production of maps and correct analyses of map data. The training builds the capability of LGU and CSO staff in spatial planning by improving their understanding of spatial analysis tools and techniques, and their applications in planning.

This module covers instruction and guidance on the following:

- Specific thematic map data requirements and their use in FLUP formulation;
- Sources of maps;
- GIS tools and their application in compiling and updating of existing shapefiles and performing spatial analysis;
- National policies relevant to mapping for FLUP; and
- Spatial analysis procedures to derive policy-designated land and resource uses within landscapes.

This training is not exclusive to the TWG members. LGU, DENR or CSO staff with basic mapping skills are encouraged to attend and are expected to support FLUP activities in their respective areas.

At the end of the training, the participants prepare a detailed action plan for gathering and preparing basic FLUP thematic maps. Based on the action plan, Protect Wildlife GIS specialists will determine the appropriate timing for on-site mentoring and coaching meetings with the trained staff to check on their progress in spatial data preparation and the quality of maps and data. The coaching sessions will also look into the derivation of tabular data from spatial data, which will be used in the succeeding module.

### **D.I.2.3 Module 2C: Field Validation of Policy-Designated Land Uses**

This module consists of a pre-validation session and the actual field validation workshops. The pre-validation session provides a detailed orientation to TWG members of the validation process and the assignment of responsibilities to individual members for the actual field validation activity. TWG members converge for one or two days for this purpose. For the actual field validation, participants include the TWG members and community representatives from barangays of the LGU that are within public lands.

The field validation of policy-designated land uses adopts a participatory and consultative process. Culturally sensitive community mapping exercise are held with key stakeholders from barangays in public lands. The validation team brings to the barangay a large printed map showing the latest available information on land uses within and outside policy-designated protection and conservation areas. Information are sourced from DENR-NAMRIA maps, LGU or DENR maps and satellite imageries from Google Earth. After a short orientation on the need and objective of the forest land use planning and the community mapping method that will be used, community members are asked to indicate in the maps what the current land and resource uses are in specific areas.

The period of field validation depends on the number of barangays to be covered. Validation can be done in individual barangays or for clusters of barangays converging in a central barangay.

Participants of this module consist of TWG members and community members who took part in the validation exercise.

Upon completion of the field validation activity, validated land uses are consolidated to prepare the Existing Land Use Map, which will be used in the data analysis module.

## **D.2 PROTECTED AREA MANAGEMENT PLAN PREPARATION**

The training modules for protected area management planning is similar in design to that of FLUP preparation, particularly the first two modules. There is flexibility, however, in the scope and the overall period of training for protected area management plan preparation in view of the following factors:

- Size of the protected or conservation area;
- Ecosystems types;
- Number of LGUs covered;
- Availability of the area profile and basic maps;
- Existence of a management plan; and
- Existence of a zoning scheme and map.

### **D.2.1 Module 1: Orientation of the Protected Area Technical Working Group and Action Planning**

This one-and-a-half-day module is the first activity of the protected area TWG after its formation. TWG members are convened and given an orientation on the processes and activities involved in Protected Area Management Plan formulation per existing DENR policies. It involves preparation of an action plan for the entire management plan formulation process.

TWG members who comprise the organizations represented in the protected area management board are the main participants of this module.

The orientation covers the following:

- Roles and responsibilities of the protected area TWG, and Protect Wildlife's support in the preparation of the protected area management plan and its legitimization and implementation;
- Principles and practice of the IEM landscape approach in support of conservation planning and management;
- General Management Planning Strategy (GMPS) of the DENR, which sets out the planning process for protected areas; and
- Existing policies and requirements in protected area management planning, including technical bulletins on the outline of the protected area management plan and guidelines in ecotourism planning and management.

The module also includes a preliminary discussion on protected area zoning and issues on the current zoning scheme. At the end of the training, TWG members prepare a general action plan for the entire protected area management plan formulation or updating process.

### **D.2.2 Module 2: Field Validation and Spatial Analysis**

This module consists of two sub-modules, as follows:

#### **D.2.2.1 Module 2A: Training on Spatial Analysis**

The Protected Area Management Plan formulation process requires strong mapping and map analysis support, particularly for the establishment or revision of zones and sub-zones within the PA. This module ensures that accurate maps are produced and that spatial analysis tools and techniques are applied in planning.

This module covers instruction and guidance on the following:

- Specific thematic map data requirements and their use in the Protected Area Management Plan formulation;
- GIS tools and their application in compiling and updating of existing shapefiles and performing spatial analysis;
- Spatial analysis process in deriving policy-designated land and resource uses using the landscape-seascape-based integrated environment management approach and its application on Protected Area Management Plan formulation; and
- Spatial analysis procedures to analyze existing and proposed zoning regimes for the protection and conservation area.

DENR staff and selected LGU representatives in the protected area TWG are the ideal participants of this module.

### **D.2.2.2 Module 2B: Field Validation of Policy-Designated Land Uses**

This module consists of two parts: a pre-validation session and the actual field validation workshops. In the pre-validation session, TWG members are given an orientation on the validation process and on the responsibilities of individual members or sub-teams in the actual field validation activity. TWG members converge for one or two days for this purpose. TWG members then undertake the actual field validation with the participation of community representatives from barangays within the protected area boundaries.

The field validation of land uses within the strict protection and multiple use zones involves a participatory and consultative process. Stakeholders from barangays that cover the protected area are engaged in a community mapping exercise after a short orientation on the protected area, the objectives of the activity and the community mapping method that will be used. Many protected area barangays have indigenous communities, thus the process has to be culturally sensitive. The validation team brings to the barangay a large printed map showing the latest available zoning boundaries and policy-designated land uses. Community members are asked to indicate in the map the current land and resource uses in specific areas.

The period of field validation depends on the number of barangays to be covered. Validation can be done in individual barangays or for a cluster of barangays converging in a central barangay.

Participants of this module are TWG members and community members who participated in the validation exercise.

Upon completion of the field validation activity, the validated land uses are consolidated to prepare the existing land use map within the strict protection and multiple use zones of the protected area.

### **D.2.3 Module 3: Review of Zoning and Land and Resource Uses in the PA**

This module consists of two sub-modules, as follows:

#### **D.2.3.1 Module 3A: Review of Zoning and Land and Resource Uses in the PA**

For this module, the TWG is convened to discuss the consolidated map of validated land uses as output of Module 2B. The TWG reviews the zoning regime of the protected area vis-à-vis the validated land uses. Based on the review and other technical inputs, the TWG comes up with recommendations on broad land use categories or zones: protection or strict protection zone, and production or multiple use zone. They then determine applicable sub-zones for the multiple use zone (e.g., agriculture, agroforestry, plantations,

ecotourism, etc.). When agreement among TWG members is achieved on the zones, workshops are held to determine the allowed and disallowed land and resource uses in the zones and sub-zones.

At the end of this module, a map showing the agreed protected area zones and sub-zones and a summary of allowed and disallowed uses of land and resources in each zone is prepared. The TWG may draft its endorsement of the zoning and land and resources uses to the protected area management board.

The module may require more than one TWG session if agreement on the zones and uses is not immediately reached.

### **D.2.3.2 Module 3B: Training of Community Members on Integrated Conservation and Development (with Consensus Building on Zoning and Land and Resource Uses)**

The training of community members on integrated biodiversity conservation and development starts with their participation in the community mapping or field validation of land uses in their respective barangays, which is part of the whole protected area zoning process. Those who were involved in land use validation will be prioritized in the selection of the participants for this module. TWG members are also expected to attend this one-and-a-half-day module.

To strengthen the learning of community members during the land use validation module, this module starts with a presentation adjusted to the level of community members. The presentation includes the following:

- Importance of biodiversity conservation, and of balancing conservation and development;
- Important policies affecting land uses;
- Policy-designated land uses within the protected area;
- Validation process, particularly the community mapping method they took part in; and
- Benefits and ecosystem services derived by communities from natural resources in the area, and problems and issues of the community in relation to existing resources and actual land uses.

These will be reinforced through their participation in the following:

- Review of the consolidated map of field-validated, policy-designated land uses and zones in the protected area;
- Discussion and achieving consensus on the recommendations of the TWG on proposed zoning or broad land use categories (protection and conservation areas and production areas) in the protected area;
- Discussion and achieving consensus on the TWG's proposed policy-consistent allowed and disallowed sub-land uses and resource uses per zone and sub-zone; and
- Identification of possible conservation and development activities by major broad land use category that the communities may implement in the respective areas. The support that they will need from the DENR, LGU, NGOs and the private sector will also be determined.

At the end of this module, endorsement will be secured from community members on the recommended broad land use categories and allowed or disallowed resource uses and sub-land uses in the PA, which may be translated later into barangay resolutions.

Results of discussions and agreements reached in this module will be integrated into the TWG resolution endorsing the zoning and land and resource uses to the protected area management board for adoption or appropriate action.

# ANNEX E

## LIST OF MAPS PREPARED AND SPATIAL ANALYSIS PERFORMED IN FLUP AND PROTECTED AREA MANAGEMENT PLAN PREPARATION

### E.1 THEMATIC MAPS

#### Basic Maps

These maps are used to characterize the protected area or the forestlands of an LGU. Shapefiles of these maps are sourced from NAMRIA, DENR, LGUs, other national agencies and satellite images that are available online (e.g., Google Earth), although some are generalized and therefore requires field validation.

- Elevation
- Slope
- River system and catchment boundaries
- Land classification (A&D, public lands/forest lands)
- Land Cover (using NAMRIA land cover data)
- Land use
- Municipal and barangay boundary
- Critical habitats or key biodiversity areas
- Protected areas
- Indigenous Community-Conserved Areas (ICCA) and cultural and heritage sites
- Ancestral domain areas (under CADT, CADC, CALC)
- Tenured areas (community-based, private, institutional)
- Local and communal watersheds & parks
- Local conservation areas
- Marine Protected Areas (MPAs)

These maps are also used, through map overlays, to compose a map of policy-designated protection and conservation areas. The various national and local policies that define protection and conservation areas of a landscape are:

- Protected areas: National Integrated Protected Areas System Act (RA 7586)
- Natural closed and open canopy forests: (Executive Order 23-2011, Executive Order 193-2015)
- Mangrove forests: Revised Forestry Code (Presidential Decree 705)
- ICCA-designated conservation areas: Indigenous Peoples' Rights Act (RA 8371)
- Areas > 1000 masl & > 50% slope: Revised Forestry Code
- Riparian zones – 20 m in A&D lands and 40 m in forest lands (Revised Forestry Code)
- Critical habitats: Wildlife Act (RA 9147)
- Local and communal watersheds & parks and other ordinance supported conservation areas: Local Government Code (RA 7160) and local ordinances
- Caves, unique natural & cultural attractions and heritage sites: Local Government Code (RA 7160), DENR administrative orders, local ordinances
- Marine protected areas and fish sanctuaries: Fisheries Code (RA 7160), local ordinances
- Environmentally Critical Areas Network (Strategic Environmental Plan of Palawan, RA 7611)

## Other Map Layers

These maps are used to show (a) users and impact areas of ecosystem services and (b) areas exposed or vulnerable to geohazards. These are composed from available maps and enriched by attribute data that are available in LGU profiles, DENR statistics and available studies. Map overlays are done (e.g., settlements map and geohazards) to determine settlements, economic activities and infrastructure that may be affected (and the degree to which they will be affected) by specific geohazards.

- Geohazard map (landslide areas, flooding areas, coastal areas affected by sea level rise, fault lines)
- Population distribution or settlements
- Economic activities
  - Major agricultural production areas
  - Major fishing grounds, aquaculture, mariculture
  - Mineral tenements
  - Non-timber forest product gathering areas
  - Tree plantations
  - Ecotourism areas
- Water-related infrastructure
  - Domestic water supply sources, watersheds and service area
  - Irrigation water sources, watersheds and service area
  - Hydropower dams and other related infrastructure
- Other infrastructure

## E.2 EXISTING LAND USE MAP

The map of policy-designated protection and conservation land uses that is produced using the basic thematic maps is validated with community representatives to determine if these areas are utilized for the purposes set out in current policies. Through a participatory mapping process augmented by the interpretation of available satellite images of the sites, the actual land uses are determined. Results are consolidated into a map of existing land uses in policy-designated protection and conservation areas.

## E.3 ZONING AND LAND AND RESOURCE USES

The policy-designated land uses and the existing land use map are overlaid to be able to compare the difference between the intended uses per policies and current uses. This analysis provides the basis for the Technical Working Group to determine if the zones will be maintained or need to be revised given the site context and the enforceability of the zones in the area. The TWG submits their recommendations to the management board (for protected areas) or the LGU and DENR (for forestlands) for adoption in the protected area management plan or the FLUP and CLUP.



# ANNEX F

## ASSESSMENT OF RESEARCH CAPABILITIES OF SELECTED UNIVERSITIES IN PROTECT WILDLIFE SITES

### F.1 INTRODUCTION

The objective of Strategic Approach 4 is to develop a pool of local experts and trained human resources that will be available to concerned stakeholders in the conduct of scientific analyses and in the design, implementation and monitoring of habitat and biodiversity conservation programs that address local ecological, economic and sociocultural conditions. To be able to pursue this objective, Protect Wildlife has to enhance the capability of universities and colleges develop research programs and implement research projects that are attuned to the development priorities of regional and provincial government. Protect Wildlife needs also to enhance the curricular offerings of these schools with subjects on biodiversity and ecosystems conservation.

To determine where and what type of assistance Protect Wildlife has to provide there is need to conduct an analysis of the research capability of HEI partners. The assessment focuses on the following criteria, which incorporate those used by the Commission on Higher Education (CHED) for HEI centers of excellence<sup>6</sup>:

1. Research management: existence of a research unit with an assigned Director of Research (or Vice-President/Vice Chancellor)
2. Research faculty: number of faculty involved in research, qualifications (doctorate, master's, baccalaureate degrees), fields of specialization (highlight those related to biodiversity conservation, environmental protection, natural resource or ecosystem management, climate change)
3. Research, development and extension (RDE) program for the current year: highlight presence of research related to biodiversity conservation, environmental protection, natural resource or ecosystem management, climate change, ENR-based economic activities (e.g., upland agriculture, forestry, fisheries, eco-tourism), other relevant areas
4. Research that are ongoing or conducted in the past three years: highlight presence of research related to biodiversity conservation, environmental protection, natural resource or ecosystem management, climate change, ENR-based economic activities, other relevant areas. Also, highlight research done in protected and conservation areas.
5. Publication: papers or studies of research faculty that are published in local or international scientific journals in the last five years; presence of a university journal for research and technical studies
6. Participation in national and international symposia/fora: research presentations made in the last five years
7. Research facilities: existing facilities (excluding teaching laboratories) and equipment that may be relevant to n research related to biodiversity conservation such as laboratories (e.g. tissue culture, chemical, water quality, DNA analysis), hatcheries, demonstration/field trial sites (on-site or off-site), IT laboratories, others
8. Research network: membership in research consortia and collaborative research undertaken with other universities or research organizations (local and international)

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<sup>6</sup> Key criteria used by CHED for assessing research capability: (a) research unit and facilities, (b) pool of qualified faculty, (c) research policy, (d) research agenda, (e) publication and presentation in conferences, and (f) research budget.

9. Research budget and funding sources: annual budget allocation for research, external sources of funding in the last five years, amount of research grants obtained from local or foreign funding organizations

The information on the above are obtained through interviews/meetings with HEI officers, submissions of the HEI, and ocular inspection of the facilities. The information gathered are summarized and are used for subsequent discussions on the formulation of a conservation-oriented and client-responsive RDE agenda.

## **F.2 WESTERN PHILIPPINES UNIVERSITY**

Western Philippines University is a state HEI located in Aborlan, Palawan. The university began as the Aborlan Farm Settlement School for the Tagbanuas, an indigenous people group of Palawan, in 1910. It became the Aborlan Agricultural High School in 1928 and the Palawan Regional Agricultural School in 1960. It was renamed Palawan National School in 1962 and became the Palawan National Agricultural College in 1963. Its name was again changed to State Polytechnic College of Palawan in 1995 by virtue of RA 8012, and in 2004, former President Gloria Macapagal-Arroyo signed RA 9260 converting it to Western Philippines University.

Among its curricular offerings in the graduate degree includes PhD and MS in Fisheries; MS in Marine Biology; BS in Agriculture, Aquatic Biology, Environmental Management, Forestry and Fisheries; Diploma in Fishery Technology and Certificate in Forest Ranger and Criminology.

The university has eight campuses, with the main campus located in San Juan in Aborlan. Its Puerto Princesa campus is located in Santa Monica.

The colleges doing research in biodiversity conservation, environmental science and ecosystems, as well as in sociocultural aspects, are the College of Fisheries and Aquatic Sciences (CFAS); College of Agriculture, Forestry and Environmental Sciences (CAFES); and College of Arts and Sciences (CAS).

### **F.2.1 Research Faculty**

Based on the list of completed researches from 2010 to 2015, there are 71 faculty at WPU conducting research, 12 from CAS, 43 from CAFES and 16 from CFAS. Of the 12 faculty researchers of CAS, one has a PhD degree, three are currently working on their PhD degrees, five have Masters of Science, two are currently working on their MS degrees, and one is bachelor's degree holder. Out of the 43 researchers in CAFES, ten have their PhD degrees, 16 have their master's degrees, 16 are BS degree holders, and one has a doctorate degree in business administration. CFAS has seven faculty members with PhD degrees and four PhD candidates. CFAS has three faculty members with MS degrees and two with BS degrees.

### **F.2.2 Research Conducted**

WPU conducted 148 research projects from 2010 to 2015. CFAS completed 77 studies or 52 percent of the total projects conducted during the period. CAFES conducted 51 studies or 34 percent, while CAS conducted 20 studies or 14 percent.

**Fisheries and marine science.** The researches on marine science were mostly on general marine ecosystem resources assessment, mostly on fishes, corals and sea cucumber. One study delved on anti-bacterial potential of crude extract from sea cucumber. The studies on top shell were on restocking and on their dietary requirements. The abalone studies centered on culture of the species, one was on fishing and trading practices, one on product development and another on red seaweeds food for abalone. There were studies in the Tubbataha Reef regarding bivalves and crustaceans. One research studied the toxicity of rabbitfishes

venom extract on tilapia. Hawksbill and green turtles were also in the list of researches conducted by the university. There were also studies on the enhancement of productivity of seaweed farming in Palawan, as well as studies on community organizing and capacity building while there was one project on livelihood baseline study.

**Environment and biodiversity.** The studies on the environment and on biodiversity were diverse and varied. There were studies of floral diversity and composition of various parts of Palawan such as the Mount Mantalingahan range, some watersheds and islands. There were also studies on food plants utilized by different tribes of Palawan. Mangroves were also the subject of a number of studies. There was at least one study on phytochemical analysis of medicinal plants used by the Tagbanuas and another study on the agglutination of plant leaf extract to ABO blood groups. One study delved on the impact of forest conversion to oil palm on avifaunal diversity.

**Agriculture and forestry.** Studies on agriculture and forestry were quite diverse as in the studies on environment and biodiversity. The studies ranged from rice production, native chicken, organic agriculture, status of almaciga trees to insects and insect control in mangoes. A study as specific as leaf architecture of cinnamon was undertaken.

**Climate Change.** Two studies on climate change were conducted. One was on biomass and carbon assessment in mangrove areas and the other was on monitoring and evaluation of ecosystems changes for enhancing resiliency and adaptation.

**Assessment.** Because of the diversity of the studies in agriculture and forestry as well as in environment and biodiversity, it is difficult to fit them into common themes. As such, it is not easy to determine whether the projects would lead to the establishments of livelihood projects for the benefit of intended beneficiaries. There are, however, some studies in agriculture that may find application, such as on cashew processing, organic low land rice agriculture, modernized vegetable production, certified seeds and organic fertilizer demo study, and smarter approaches to invigorate agriculture. There are, however, studies that have no practical application such as the one on leaf architecture of cinnamon.

A few studies on fisheries and marine science may find possible application as livelihood for coastal residents or fisher folks such as seaweed culture, product development of abalone and deep-sea traps for catching shrimps.

Palawan is recognized as the last frontier of biodiversity. There are species that could be sources of medicine, food, condiments, and for other purposes such as handicrafts, yet there are very limited studies on these. There is one study on the identification and collection of indigenous fruits in Palawan and another one on indigenous crops and wild plants used by Pala'wan tribe in southern Palawan and a third on indigenous food plants used by Tagbanuas. One would expect more studies especially in the domestication of these plants and on food preparation as well as initiatives to popularize these crops from the forests. These could very well be bases for livelihood of indigenous peoples and could be the base for small-scale enterprises. There was only one study on the phytochemical analysis of medicinal plants used by Tagbanuas.

There are also very few studies on non-timber forest products such almaciga resin, rattan, bamboo, vines and other forest growths but these are patently sources of livelihood of upland residents particularly indigenous peoples. One study reported on the status of almaciga in Cleopatra's Needle.

There are also no studies on the watersheds around the Mount Mantalingahan range and in other watersheds of Palawan except on floral survey. Long-term monitoring of land use changes in the watershed would provide information on the management of the watershed. Likewise, there are no studies on water resources in the watershed. Water is a very important commodity and even if Palawan is not presently under threat of

insufficient or polluted supply of water, data and information on water systems and supply from the watersheds could keep Palawan water-secure in the near term. Soil erosion should also be studied in the watersheds and sustainable soil management practices such as agro-forestry should be transferred to upland population conducting kaingin.

There should also be more studies on fisheries and marine science that generate technologies as practical basis for livelihood or enterprise development for coastal residents and fisher folks.

### **F.2.3 Ongoing Research**

The university has two on-going research programs, both under CFAS. One is on “People and the Environment: Assessment of Reef Fish Resiliency and Associated Livelihoods”, which is part of a program with the University of the Philippines Marine Science Institute as lead institution. The other is the “Synoptic Investigation of Human Impacts on Nearshore Environments: Coral Reefs” as part of a program with the De La Salle University as lead institution.

WPU has 11 research projects being conducted by CAS with three projects, by CAFES with four projects and by CFAS with four projects

Most of the ongoing projects of the CAS are on biodiversity dealing with birds feeding on fruits of various species. One is on the role of women and children on the livelihood of families living in the coastal areas of Aborlan, Palawan.

CAFES has 10 ongoing researches. However, there seems to be no theme that binds them together. The topics of the studies range from assessment of pests and diseases of Palawan to ethnoveterinary practices for livestock and poultry in Palawan. There is one study of interest though which is, varietal screening of ubi against anthracnose. This could lead to the development of organic pesticide.

The College of Business Management (CBM) is also conducting studies. Two of its seven studies deal with climate change, including scoping on the policy frameworks of LGUs in climate change mitigation, and benefits and costs of green technologies to acceptors in Aborlan, Palawan. One study is on the contribution of wives to family expenditures.

CFAS has the most number of studies with 28. There are three studies on anti-microbial properties, one is on *Haliotis asinina*, one on mangrove species and other is on indigenous plant species in Palawan. Sea cucumber has the highest number among the on-going researches ranging from collection and preservation of rare species, spatial distribution, population of sea cucumbers in exploited and unexploited areas, to nutrient analysis and status, challenges and opportunities in some sites. There is also a preparation of field guide of sea cucumbers.

Earthworms are also being studied as part of biodiversity investigations. Some new species have been discovered and are in the process of being described. There is also a study on the carbon sequestration of earthworms.

**Assessment.** Among the ongoing studies, the investigations on anti-bacterial properties of plants and marine organisms have the possibility of finding use as jumping-off for further work on the development drugs or medicines. The studies on sea cucumber should be focused to be the basis for livelihood and enterprise development, especially for coastal communities. Studies should always be focused on the application of the results of the studies such as for the establishment of livelihood or for enterprise development.

#### **F.2.4 Research Fund Sources**

University funds financed most of the projects completed from 2010 to 2015. However, there were studies with external funding. Funds were provided by the Philippine Council for Industry, Energy and Emerging Technologies Research and Development (PCIEERD) of the Department of Science and Technology (DOST); PCSD; DENR, the Department of Agrarian Reform (DAR); World Wildlife Fund (WWF); Bureau of Agricultural Research (BAR) of the Department of Agriculture (DA); Katala Foundation, Inc. (KFI); USAID-STRIDE; Okinawa Institute of Science and Technology (OIST); Astoria Palawan; and the Philippine Council of Agriculture, Aquatic, natural Resources Research and Development (PCAARRD-DOST). Some studies were self-financed.

#### **F.2.5 Publications**

WPU publishes a research journal called *The Palawan Scientist*. It is an annual multi-disciplinary publication. It accepts original research articles, notes, and short communication in agriculture, fisheries and aquatic sciences, environment, education, engineering, mathematics, sociology and related disciplines, which include art and the humanities. Review of articles is done by a group of reviewers composed of persons who are experts in their own fields and coming from institutions outside of WPU and includes reviewers from outside the country such as Malaysia, Iran, Japan and the United States.

Authors of published articles in *The Palawan Scientist* receive an incentive of PHP 12,000 per article. This is in line with the practice of publications of other local universities and research institutions but contrary to the practice of some foreign and even local publications where the authors have to pay to get an article published. The provision of incentives to authors encourages researchers to publish especially in government research institutions where research reports wind up unpublished, which is actually a waste of government funds.

#### **F.2.6 Research Facilities**

WPU has a clonal nursery, which was provided by the DENR as part of an agreement for the university to produce planting materials for the National Greening Program of the department. As supplement to the clonal nursery, the university also operates a green house where planting materials are grown until ready for out-planting in the field. The university has likewise a tissue culture laboratory, where planting materials of species whose seeds are refractory or difficult to germinate or species that do not produce seeds regularly, are produced. A botanical garden is also situated at the Aborlan campus of the university where various fruit bearing species are maintained as well as some medicinal plant species.

On fisheries and marine science, the university has a hatchery used to produce juveniles of top shells and abalone as well as in the culture of groupers. The hatchery is located in the Binduyan Marine Research Center in Binduyan, Puerto Princesa. The university has likewise a microbiology laboratory located in the Puerto Princesa campus.

WPU operates a 45-hectare demo farm, a coconut plantation, a nine-ha rubber plantation with an accompanying latex processing laboratory. It also has a rubber clonal nursery. Similarly, the university has a cashew plantation with a processing laboratory. Income from these farms and plantations supplements the budget that the university gets from the national government through the General Appropriations Act.

The university also runs a teaching chemistry laboratory.

### **F.2.7 Research Network**

The research network of the university includes agencies and institutions that have collaborative research work with the university. It also includes those that are providing research funds to the university. WPU have had collaborative research with the UP Marine Science Institute, and the De La Salle University.

The agencies providing research funds to the university are already listed under *Research Fund Sources*.

### **F.2.8 Conclusion**

WPU has established the culture of research on biodiversity and environment/ecosystems conservation. The expertise of its researchers are in marine science, biodiversity and environmental science as well as in agriculture and forestry. They are highly capable of conducting research on these fields. However, researches are barely scratching the surface of the extensive and diverse plant species that have been serving the indigenous people as source of food and medicine. These should be further studied to serve the greater population. Likewise, the resources that abounds in the marine and coastal areas should be studied as source of livelihood for coastal population.

The researches should also be anchored on the development and investment plans of the region as well as the province, which apparently were not taken into consideration. Assistance in enhancing research in the university would be in providing focus to the research program with respect to the development and investment priorities of the region and the province.

## **F.3 WESTERN MINDANAO STATE UNIVERSITY**

Western Mindanao State University (WMSU) is the premier and only state university in Zamboanga City. It has two campuses: the main campus of 79,000 square meters and 9,147 square meters is in the city (Barangay Baliwasan) and the satellite campus of 200,000 square meters occupied by the College of Agriculture and the College of Forestry in San Ramon, 20 kilometers from the city. Campuses comprising the external studies units are in the provinces of Zamboanga del Sur, Zamboanga del Norte and Zamboanga Sibugay, including the newly integrated formerly CHED-supervised institutions in Molave and Tampilisan. It has a student population of over 32,000, regular faculty members of over 600 and over 150 administrative personnel.

It has 12 colleges, three institutes and two autonomous campuses offering undergraduate and postgraduate courses specializing in accounting, education, engineering, nursing, arts and humanities, social work, science and mathematics. Along with these major fields of concentration, WMSU offers courses in agriculture, architecture, forestry, home economics, nutrition and dietetics, social work, criminology, Asian and Islamic Studies and special degree courses for foreign students. It also offers external studies and non-formal education courses.

WMSU ranked sixth among 68 universities all over the country, according to a survey on the Top Academic Institutions in the Philippines conducted by the Commission on Higher Education. The university's College of Teacher Education is a Center for Development; the College of Architecture is a Center of Development; and the College of Social Work and Community Development was awarded the Best School for Social Work in the Philippines.

The colleges doing research work on biodiversity and environmental conservation are the College of Agriculture, College of Forestry and Environmental Science, and College of Sciences and Mathematics. Degree courses offered that are related to biodiversity protection and conservation are BS Agroforestry, BS Biology, BS Forestry and BS Environmental Science.

### F.3.1 Research Faculty

WMSU listed ten faculty members capable of conducting research on biodiversity and environmental studies. Areas of specialization of seven out of the faculty is on environmental studies and biodiversity; two on biological sciences with one having an expertise in marine sciences and one on sustainable development studies.

### F.3.2 Research Conducted

The kind of research conducted is reflective of the expertise of the researchers (Table F.1). There are 12 researches reported and one research project for implementation. Five of the 12 researches conducted were on marine science, three on forestry, two on climate change, and two on environmental science. The study for implementation is on climate change. There seems to be a disconnect between the number of faculty in environmental science in which there are seven of them and the number research conducted which were only four. This is indicative of the industriousness of one person who has conducted all of the five studies on marine science.

**TABLE F.1: RESEARCHES CONDUCTED BY WMSU**

TITLE	TYPE (Research, Development, Extension)	DURATION	SOURCE OF FUND	PERSONNEL INVOLVED
Survey of Algal Phase Shifts in Selected Coral Reefs of Sulu and Bohol Sea, Philippines	research			Roldan T. Echem
Body Shape Variation of Selected Sardine Species Using Landmark-based Geometric Morphometrics	research			Roldan T. Echem
Geographical Information System Mapping and Carbon Stock Assessment of the Experimental Forest Area	research			Cecille C. Diamante
Intertidal Macrobenthic Algae in Selected Coastal Areas of Sulu Sea and Bohol Sea, Philippines	research			Roldan T. Echem
Landmark-based Morphometric Analysis on Selected Species of Fishes (Teleostei: Leiognathidae)	research			Roldan T. Echem
Community Structure and Macrofaunal Species Associated with Seagrasses in Selected Coastal Areas of Sulu Sea and Bohol Sea	research			Roldan T. Echem
Ground Litter Arthropod Fauna in the Tropical Lowland Rain Forest Sites of Pasonanca Natural Park, Zamboanga City	research			Joselito A. Vega Mario R. Obra, Jr.
Vegetation Structure along the Riparian Zone of the Pasonanca Natural Park in Zamboanga City: Implications for the Sustainability of Water Supply	research			Jessica Ma. Paz S. Casimiro
Cave-Dwelling Bats of Apolinario Cave, Barangay Lapakan, Zamboanga City	research			Mario R. Obra, Jr.
Multi-Purpose Tree Species (MPTS): Its Effects in the Soil Properties in the WMSU Experimental Forest Area (Phase II)	research	October 2010- September 2012	WMSU- GAA	Almudi Lukman, Ardel S. Barre, Fredelino San Juan

TITLE	TYPE (Research, Development, Extension)	DURATION	SOURCE OF FUND	PERSONNEL INVOLVED
Species Conservation of Indigenous Palms of Western Mindanao State University Experimental Forest Area	research	April 2011- September 2012	WMSU- GAA	Almudi Lukman, Ardel S. Barre, Fredelino San Juan
Carbon Sequestration Potentials of Various Tree Species in Upland Ecosystems	research	July 2015- December 2016	WMSU- GAA	Ardel S. Barre, Frredelino San Juan, Cecille Diamante
Adaptive Practices of Farmers in Coping Climate Change	research	For implementation	WMSU- GAA	Ardel S. Barre, Frredelino San Juan, Cecille Diamante

### F.3.3 Publications

WMSU publishes a technical journal called WMSU Research Journal. It is an annual publication starting in 2015. It is peer reviewed and with local circulation. WMSU provides cash incentives for authors with published articles in the Journal. Below are the recent publications of faculty of WMSU in the WMSU Research Journal. Of the nine listed published articles, five were authored by the same person, all in marine science (Table F.2). It is interesting to note that the prolific researcher has teamed up with a nationally well-known marine biologist and scientist, a Ramon Magsaysay Awardee and former DENR Secretary Dr. Angel Alcala. It also shows the willingness of Dr. Alcala to nurture and develop budding researchers in marine science.

WMSU plans to apply for CHED's Journal Incubation Program grant. It is in the process of finalizing preparation of required documents for this grant. The grant includes a 400T incentive to prepare the journal within the next three years to be indexed in Scopus or World of Science (formerly ISI). It also includes additional cash incentives for authors (not necessarily from WMSU) with published articles in the journal.

**TABLE F.2: RECENT PUBLICATIONS OF WMSU IN THE WMSU RESEARCH JOURNAL**

NAME	NAME OF PUBLICATION	DATE PUBLISHED	AUTHOR	AUTHOR OUTSIDE WMSU
Survey of Algal Phase Shifts in Selected Coral Reefs of Sulu and Bohol Sea, Philippines	<i>WMSU Research Journal</i> Vol. 33, No. 2	December 14	Roldan T. Echem	Angel C. Alcala
Body Shape Variation of Selected Sardine Species Using Landmark-based Geometric Morphometrics	<i>WMSU Research Journal</i> Vol. 33, No. 2	December 14	Roldan T. Echem	
Geographical Information System Mapping and Carbon Stock Assessment of the Experimental Forest Area	<i>WMSU Research Journal</i> Vol. 33, No. 1	June 14	Cecille C. Diamante	
Intertidal Macrobenthic Algae in Selected Coastal Areas of Sulu Sea and Bohol Sea, Philippines	<i>WMSU Research Journal</i> Vol. 33, No. 1	Jun 14	Roldan T. Echem	Angel C. Alcala
Landmark-based Morphometric Analysis on Selected Species of Fishes ( <i>Teleostei:Leignathidae</i> )	<i>WMSU Research Journal</i> Vol. 33, No. 1	Jun 14	Roldan T. Echem	
Community Structure and Macrofaunal Species Associated with Seagrasses in Selected Coastal Areas of Sulu Sea and Bohol Sea	<i>WMSU Research Journal</i> Vol. 33, No. 1	Jun 14	Roldan T. Echem	
Ground Litter Arthropod Fauna in the Tropical Lowland Rain Forest Sites of Pasonanca Natural Park, Zamboanga	<i>WMSU Research Journal</i> Vol. 33, No. 1	Jun 14	Joselito A. Vega Mario R. Obra, Jr.	



NAME	NAME OF PUBLICATION	DATE PUBLISHED	AUTHOR	AUTHOR OUTSIDE WMSU
City				
Vegetation Structure along the Riparian Zone of the Pasonanca Natural Park in Zamboanga City: Implications for the Sustainability of Water Supply	<i>WMSU Research Journal</i> Vol. 32, No. 1	Jun 13	Jessica Ma. Paz S. Casimiro	
Cave-Dwelling Bats of Apolinario Cave, Barangay Lapakan, Zamboanga City	<i>WMSU Research Journal</i> Vol. 31, No. 1	Jun 12	Mark Neil B. Iran John Ramon S. Quin Mario R. Obra, Jr.	

### F.3.4 Research Facilities

The existing research facilities of WMSU include a tissue culture laboratory for banana, mushroom, pineapple and rubber; chemistry, biology and food technology laboratories for water analysis, phytochemical analysis, microbiological analysis and proximate analysis; and an experimental forest area

The experimental forest is more than 1,000 hectares. However, the area has not been developed even for income-generating projects. This resource presents high potential as an area for continuing extension laboratory where the university can promote its technologies in support of livelihood projects especially those based on biodiversity conservation or based on biodiversity existing in the area.

### F.3.5 Research Network

The research network of WMSU includes the Western Mindanao Agriculture, Aquatic, Forestry and Natural Resources Research and Development Consortium (WESMARDEC) and the Zamboanga Council for Health Research and Development Consortium (ZCHRDC).

### F.3.6 Conclusion

**Research faculty and studies conducted.** The list of research faculty submitted to SA 4 appears to be incomplete and requests for the complete list has been forwarded to the Director for Research. There are at least three colleges capable of conducting research in biodiversity and environmental conservation and protection: the College of Agriculture, the College of Forestry and Environmental Science and the College of Sciences and Mathematics.

There are seven of the ten faculty members with specialization in Environmental Studies, two on Biological Sciences and one on Sustainable Development Studies. Yet five of the reported studies were on marine sciences and only three in forestry and two in environmental science. The five marine science studies were conducted by only researcher in the College of Sciences and Mathematics. This calls for a deeper look into the reason for the lower performance of the faculty with disciplines in environmental studies to determine the type of assistance needed to improve their performance.

**Research facilities.** WMSU has a number of teaching laboratories, which can conduct water analysis, phytochemical analysis, microbiological analysis, proximate analysis. These facilities would allow them to conduct research requiring such facilities such as phytochemical analysis of plants with potential for medicinal uses or for organic insecticides and fungicides.

The facility of the university with high potential for instruction and extension purposes is the experimental forest. This should be developed into a continuing research and extension laboratory to transfer technologies developed by the university for establishing livelihood and enterprise development.

All 10 faculty listed as doing research have advanced degrees except for one who has a degree in Bachelor of Laws. As such, they are capable of doing research. Protect Wildlife can look into enhancing research facilities to the level that is reasonable used in research projects assisted by Protect Wildlife.

## **F.4 MINDANAO STATE UNIVERSITY-TAWI-TAWI COLLEGE OF TECHNOLOGY AND OCEANOGRAPHY**

Mindanao State University-Tawi-Tawi College of Technology and Oceanography (MSU-TCTO) is an autonomous campus of the Mindanao State University System located in Sanga-Sanga, Bongao, in the province of Tawi-Tawi. In the latest webometrics released by a Spain-based public research, which aims to cite schools having the number of online-published books and other materials, it ranks three of MSU campuses to include MSU-Tawi-Tawi in the 200-bracket list. It ranks 199 in almost 2,200-plus universities and colleges in the country that offer degrees.

On March 16, 1982, RA 197 was signed into law, changing the name of Sulu College of Technology and Oceanography into Tawi-Tawi College of Technology and Oceanography. It became part of the Mindanao State University System as an autonomous campus.

There are two institutions in MSU-TCTO offering BS courses related to biodiversity and environmental conservation. The College of Fisheries offers a Bachelor of Science in Fisheries; Diploma in Associate in Aquaculture; and Diploma in Fisheries Technology, major in Aquaculture, Fish Capture Technology or Fish Processing Technology. The Institute of Oceanography and Environmental Science offers a Bachelor of Science in Environmental Science and a Bachelor of Science in Marine Biology.

### **F.4.1 Research Faculty**

MSU-TCTO's 32 researchers are capable of conducting research in biodiversity and environment conservation, mostly within the fields of fisheries and marine sciences. Thirty-one are faculty members while one is a designated researcher. All 32 researchers have permanent positions.

Of the 32 researchers, four have PhD degrees in marine science and biology, 13 have MS in various fields of marine science and fisheries, and 13 have BS degrees in marine science and fisheries. One faculty member has an MA in marine management and one has an MAT in home economics. On areas of specialization, seven are in marine biology; five in biology and fish processing; four in fish culture and in capture fisheries; three in aquaculture; and one each in marine science, marine conservation, ocean science and in food processing.

### **F.4.2 Completed, Ongoing and Proposed Research Projects**

Table F.3 lists 19 completed, ongoing and proposed marine science research projects of MSU-TCTO. The topics and the species or commodity studied are varied. There is lack of unifying thread that binds them. It would be a great contribution of the university one or two commodities are studied to the point that they develop the technologies needed by the local industry or coastal communities. This shows that each researcher has his or her own area or commodity of interest and pursued research on this. However, a well-defined research, development and extension program would have anchored all the research endeavors of the university for purposive development goals.

Seaweed is the main marine industry product of Tawi-Tawi and yet there is only one study on seaweed. The project on "Sea out-planting and seedstock production of laboratory generated carrageenophyte cultivars" could be studied to determine its readiness for transfer to seaweed farmers as an extension project of the university. The MSU-TCTO Seaweed Cultivars Laboratory has been successful in developing seaweed cultivars through sporulation, tissue culture and micro propagation. The next step is to transfer the technologies to seaweed farmers.

There were six project that are funded by DOST-PCAARRD out of 19 listed projects. This means that the university is capable of producing proposals that can generate outside support. Other funding agencies should also be explored such as DA-BAR and probably CHED. The university is in a position to develop a project

that can be submitted for funding by international donors such as the World Bank or GIZ or JICA or even USAID.

**TABLE F.3: COMPLETED, ONGOING AND PROPOSED RESEARCH PROJECTS BY MSU-TCTO**

TITLE	RESEARCHER	FUNDING AGENCY
National Program on Enhancement of Blue Swimming Crabs Fishing Production Evaluation and Enhancement of Blue Swimming Crab Wild Stocks in Tawi-Tawi	Romero, Filemon G.	DOST-PCAARRD
Sardine Science at Work for Adaptive Resource Management (Sardine SW ARM)	Romero, Filemon G.	DOST-PCAARRD
Non-Detriment Finding Study on (Mameng) Humphead Wrasse <i>Cheilimus undulates</i> Fishery in Sibutu and Sitangkai, Tawi-Tawi	Romero, Filemon G.	DOST-PCAARRD
Marine Macrobenitic Algae in Tawi-Tawi, Philippines; Species Composition, Distribution, Diversity and Abundance"	Shariff, Rosalinda P	MSU-TCTO APDP
On the Sustainability of Small-Scale Fisheries in the Philippines	Muallil, Richard N	MSU-TCTO APDP
Water Acidification: A Limiting Factor on Larval Settlement of Donkey's Ear Abalone <i>Haliotis asinina</i> , Linne	Imlani, Ainulyakin	MSU-TCTO APDP
Photosynthetic Responses of Farmed Carrageenophytes to Long-Term Laboratory Culture Conditions	Diansuy, Araniza M	MSU-TCTO APDP
Spatio-Temporal Variation Sea Turtle By Catch In Selected Islands of Tawi-Tawi: Implications To Ecology and Conservation	Serag, Karen Joy B	MSU-TCTO APDP
Gravities and Survival Rate of Siganids, Snappers, Sweet Lapu Groupers, Caranx and other Finfishes or other High Commercial Value Species.	L.R. Reyes and R. Tangon	MSU-TCTO
Economic Prospects Faring of Pompano ( <i>Trachinetus blochee</i> ) in Floating Net Cages at Bongao Channel, Sanga-Sanga, Bongao, Tawi-Tawi	L.R. Reyes and R. Tangon	MSU-TCTO
Broodstock Management and Production of Seabass ( <i>Lates calcarfer</i> ) in Floating Net Cages at Bongao Channel, Sanga-Sanga, Bongao, Tawi-Tawi	L.R. Reyes and R. Tangon	MSU-TCTO
Assessment of Technical and Economic Production of Seabass Culture in Floating Net Cage	L.R. Reyes and R. Tangon	MSU-TCTO
Marine Biological Collection Research in Bongao Island	R.M. Sabal	MSU-TCTO
Market-based assessment of commercially important fishes and identification of spawning periodicity of highly seasonal fishes in Tawi-Tawi	Muallil, Richard N	MSU-TCTO
National Assessment of Coral Reef Environments (NACRE) Program	Halun, Zayda B	DOST-PCAARRD
Sea out-planting and seedstock production of laboratory generated carrageenophyte cultivars	Romero, Jumelita B	DOST-PCAARRD
Production of Corals for Reef Restoration Through Sexual: The Production in Selected Reef Coral Species Across the Philippine Archipelago-Tawi-Tawi Component	Romero, Filemno G. and S. Zayda B. Halun	DOST-PCAARRD
Quality assessment of processed sea urchin ( <i>T. gratilla</i> ) roe	J. Tikmasan	MSU-TCTO
Hydrobiological survey of Bongao channel	A. Abdulgani	MSU-TCTO

### F.4.3 Publications

MSU-TCTO's technical publication, *MSU Tawi-Tawi Research Journal*, has not been published since 2009. This is main reason why faculty members of the university have been publishing their papers outside of the university. The new Chancellor, Dr. Joyce Sali, has given instruction to publish the research journal before her investiture in July and also because the MSU Tawi-Tawi will be the host of the MSU System Research and Innovation Summit in July 2017.

The list of publications (Table F.4) were of those published from 2013 to 2015 and they are of varied subjects ranging from abalone to coral reefs to tilapia.

**TABLE F.4: RECENTLY PUBLISHED RESEARCHES BY MSU-TCTO**

TITLE	TYPE	PUBLICATION	AUTHOR(S)
Community assemblages of commercially important coral reef fishes inside and outside marine protected areas in the Philippines	Refereed Journal	Published: <i>Regional Studies in Marine Science</i> , 1, 47- 54. 2015.	R. Muallil
Effects of reduced pH on the growth and survival of postlarvae of the donkey's ear abalone, <i>Haliotis asinina</i> (L.)	Refereed Journal	Published: <i>Aquaculture International</i> , 23(1), 141-153.2015	A. Tahlil
Effects of Reduced pH on Larval Settlement and Survival of the Donkey's Ear Abalone, <i>Haliotis asinina</i> (Linnaeus 1758)	Refereed Journal	Published: <i>Philippine Journal of Science</i> , 144(1), 21-29. 2015	A. Tahlil
Stress Response and Amino Enzymes Catabolism of Nile Tilapia <i>Oreochromis niloticus</i> Exposed to Hyperosmotic Culture Conditions	Refereed Journal	Published: July 29, 2015 at <i>Science Alert</i>	Jumah, Yashier
Status, Trends and Challenges in the Sustainability of Small-Scale Fisheries in the Philippines: Insights from FISHDA Model	Refereed Journal	Published: September 14, 2014; at <i>ELSEVIER Marine Policy</i>	Muallil, Richard N
Catch Trends in Philippines Small-Scale Fisheries Over the Last Five Decades: The Fishers' Perspectives	Refereed Journal	Published: February 2014; at <i>ELSEVIER Marine Policy</i>	Muallil, Richard N
Fluctuating Asymmetry in Genetically Improved Nile Tilapia, <i>Oreochromis niloticus</i> (Linnaeus), Strains in the Philippines"	Refereed Journal	Published: December 16, 2015; at <i>Philippine Science Letters</i>	Muallil, Richard N
Turrid Fishery in Central Visayas, Philippines	Refereed Journal	Published: 2014; at <i>Asian Fisheries Science</i>	Muallil, Richard N
The Effects of Reduced pH on the Early Life History of the Donkey's Ear Abalone, <i>Haliotis asinina</i> Linnaeus 1758: Implications of Ocean Acidification to the Abalone Industry of the Philippines	Refereed Journal	Published: June 29, 2014; Springer International Publishing Switzerland	Tahlil, Abdurajis
Socioeconomic Factors Associated with Fishing Pressure in Small-Scale Fisheries along the West Philippine Sea Biogeographic Region	Refereed Journal	Published: 2013; at <i>ELSEVIER Ocean and Coastal Management</i>	Muallil, Richard N
A Framework for Vulnerability Assessment of Coastal Fisheries Ecosystems to Climate Change- Tool for Understanding Resilience of Fisheries (VA-TURF)	Refereed Journal	Published: July 15, 2013; <i>ELSEVIER Fisheries Research</i>	Muallil, Richard N

### F.4.4 Research Facilities

Among the HEI partners of Protect Wildlife, MSU-TCTO has submitted a most comprehensive list of equipment, tools and research facilities obtaining in the university. While many of the apparatuses are for instructional purposes, they can be used for research purposes. The area of priority of MSU-TCTO is basically on marine science and fisheries. This is seen from the laboratories, tools and equipment of the university. As such, MSU TCTO is highly qualified to undertake research on marine science and fisheries.

#### **F.4.5 Research Network**

MSU-TCTO has established a wide network of collaborators in research, including UP MSI, DLSU, University of San Carlos, UP Visayas, UP Mindanao, MSU Naawan, Jose Rizal Memorial State University and Xavier University. These institutions are very well known research centers on marine science not only in the Philippines but also internationally such as the Marine Science Institute of UP Diliman. The network of the university includes funding agencies such as PCAARRD, which has provided financial assistance to some studies. MSU-TCTO is also a member of the ARMMARDEC.

#### **F.4.6 Conclusion**

Through the years, MSU-TCTO has established its capacity to conduct research in marine science and fisheries as can be seen from the list of researches conducted as well as its publications. The array of laboratory and research facilities support that. The fact that its publication, the MSU Tawi-Tawi Research Journal, ceased publication for a while is a glitch, but that is being corrected by the present Chancellor who has given instruction to speed up its publication.

The extension program of the university has yet to be determined for this is an indicator of its impact on its constituents.

# ANNEX G

## SUMMARY OF ASSESSMENT ON WILDLIFE GATHERING AND TRAFFICKING IN PROTECT WILDLIFE SITES

### G.1 INTRODUCTION

One of the key results areas of Protect Wildlife is to enhance the competencies of national and local government agencies in enforcing biodiversity conservation-related laws and policies. In order to establish a baseline of the current situation of wildlife law enforcement, Protect Wildlife conducted participatory assessments of wildlife law enforcement in the priority sites of Palawan and the Sulu Archipelago.

The violations assessment will provide Protect Wildlife with critical data from which it can base its strategic program interventions on environment and wildlife law enforcement under Strategic Approaches 3 and 5. To have an overview of the entire wildlife law enforcement situation, this activity uses the environmental law enforcement continuum as its main platform for study.

### G.2 METHODOLOGY AND OUTCOMES

The assessments were done via mapping workshops where the participants were made to locate wildlife habitats, land and marine resource uses; areas where wildlife is illegally gathered, consolidated, and transported; and areas where illegal fishing practices occur.

The participants were then grouped either by area, or by agency, where they were made to address issues on enforcement such as gaps in policies, capacities and logistics, and identify common violations and actors. Participants were also made to analyze local enforcement capacities through a guided assessment workshop. For the guided assessment, the participants rated local law enforcement agencies and systems with the following scores: Very Low (1), Low (2), Medium (3), High (4), Very High (5). The results presented in this report are the average scores.

Field assessments included both land-based and sea-borne actions in the target sites. Selected hotspot areas based on the results of the mapping exercises conducted during the workshops served to guide the selection of sites for field validation. For IUU fishing, additional information was derived from visual infrared imaging radiometer suite (VIIRS). Apprehension reports provided by partner agencies allowed the activity to lay out the concentrations of wildlife trafficking, especially in Palawan.

While the activity has finished conducting assessments in the whole of Palawan, Zamboanga City, and Tawi-Tawi, data from the assessment from the Calamianes Group of Islands is still being finalized, while the field validation in Tawi-Tawi is still to be conducted by September 2017. The delay in the field validation in Tawi-Tawi is due to the changing security situation in the region brought by the occupation of the Maute Group in Marawi City and the subsequent declaration of martial law in the whole of Mindanao.

### G.3 MAINLAND PALAWAN

Assessments in Palawan were conducted in partnership with the Palawan Council for Sustainable Development Staff (PCSDS) as they are taking the lead in wildlife law enforcement in the Province. The assistance of the PCSDS was crucial during the consultation-workshops conducted and during the on-site field validations

Initial results of the assessment showed that among the most heavily harvested and trafficked wildlife in Palawan included several species of birds, pangolins, wild cats, marine turtles and endemic fresh water turtles.

Smuggling of timber to Malaysia was also highlighted as an ongoing threat to the biodiversity of the province. Other issues raised during the workshops includes policy gaps and challenges in the implementation of wildlife, fisheries and forestry laws.

Protect Wildlife staff conducted a field validation after the assessment by visiting seaports to determine the incidence of IUU fishing in Puerto Princesa. Interviews conducted showed that fishers from Puerto Princesa would freely fish in municipal waters belonging to other municipalities. Protect Wildlife staff also documented possible violations of the PCSD's closed season for grouper or *lapu-lapu* in one barangay where fish traders were readying groupers for transport.

For the guided assessments, participants from various law enforcement groups in Palawan filled up a guided survey form. While Palawan-based law enforcement agencies have more experience than other parts of the country in terms of wildlife law enforcement with major apprehensions of illegally trafficked wildlife being reported during the workshops, they did score themselves in the low to fair range, recognizing their shortcomings in terms of skills for enforcement, logistics, case filing, and establishment of systems and protocols. Table G.1 shows the results of the guided assessment.

**TABLE G.1: PRELIMINARY RESULTS OF SKILLS SURVEY ON WILDLIFE LAW ENFORCEMENT AGENCIES BASED IN PALAWAN**

<b>INTELLIGENCE AND INVESTIGATION</b>	<b>Weighted Average</b>	<b>ENFORCEMENT PATROLS</b>	<b>Weighted Average</b>	<b>LAW ENFORCEMENT MANAGEMENT</b>	<b>Weighted Average</b>
Specialized intelligence and investigation	2.74	Skilled and knowledgeable enforcement staff	2.55	Competent and effective leadership	2.86
Comprehensive intelligence gathering	2.33	Experienced and competent patrol leaders	2.80	Proactive and dynamic patrol strategies	2.74
Efficient data management and analysis	2.63	Suitable and sufficient equipment/supplies	2.13	Collection and use of patrol data	2.35
Robust evidence handling and management	2.73	Appropriate terms and conditions of service	2.59	Management systems and infrastructure	2.40
Competent case development and case filing	2.57	Supported and incentivized patrol staff	2.19	Clear and consistent standard procedures	2.72
Forensic capability	1.50				
<b>Weighted average</b>	<b>2.416</b>	<b>Weighted Average</b>	<b>2.452</b>	<b>Weighted Average</b>	<b>2.616</b>

**TABLE G.2: PRELIMINARY REVIEW OF EXISTING CAPACITIES ON PARTICIPATORY AND INTER-AGENCY ACTIVITIES ON IUUF AND WILDLIFE TRAFFICKING ENFORCEMENT OPERATIONS IN PALAWAN**

<b>OPERATIONAL ASPECTS</b>	<b>STAFF/BODY</b>	<b>TRAINING/ SKILLS OF STAFF</b>	<b>RESOURCES/ LOGISTICS</b>	<b>INSTITUTIONAL ARRANGEMENT</b>
Crime prevention	2.25	1	1	3
Search and surveillance	3.25	3	1	3
Arrest/apprehension	4	1	1	3
Seizure and confiscation	4	1	1	3
Prosecution/case build-up	2.25	1	1	1

Scoring System: Very Low (1), Low (2), Medium (3), High (4), Very High (5)

The PCSDS Enforcement Division has identified a need to develop enforcement and operations protocol for wildlife law enforcement, the development of an enforcement training program and module for its WEOs, and skills development such as wildlife forensics trainings.

The activity has met with the PCSDS to collaborate on a systemized capacity building program focusing on developing an enforcement protocol and operations plan for the province, and to upgrade the skills of its enforcers especially on forensics and wildlife identification. These have been based on the results of the guided assessments done as preliminary inputs to SA 5 program development.

Currently, basic trainings on the Manual of Operations on Wildlife Law Enforcement have been conducted for PCSDS enforcers and operatives of Bantay Palawan, a provincial government-organized law enforcement team who is also tasked to implement environmental laws. An enforcement coaching program for case build-up and case development is also focusing on the PCSDS Quick Reaction Teams in Northern and Southern Palawan.

### **G.3.1 Wildlife Crime Incidences in Palawan**

Palawan remains to be one of the main sources of wildlife for trafficking within the Philippines and also as a transshipment point for wildlife resources. Its geophysical characteristics, compounded by limited enforcement personnel, has resulted in the continuing gathering of wildlife for the pet trade, especially those for wild birds; and terrestrial animals, the pangolin still remains to be one of the most harvested species, together with forest turtles. The PCSDS still has to conduct a study on the current populations of wildlife in Palawan and how poaching has impacted their numbers.

Enforcement efforts of PCSDS in Palawan alone have resulted in the confiscations of 121,241 wildlife items in the last seven years from 2010 to 2016. While reports on the illegal gathering of wildlife occur in the northern and southern areas of Palawan, most of the apprehensions occur during the transshipment phase in Puerto Princesa. It is in the capital city of the province where all the site-based national government agencies have their head offices. While there has been an increasing effort of late to address trafficking at the gathering site, this is still hampered by a poor communications infrastructure and the remoteness of the areas.

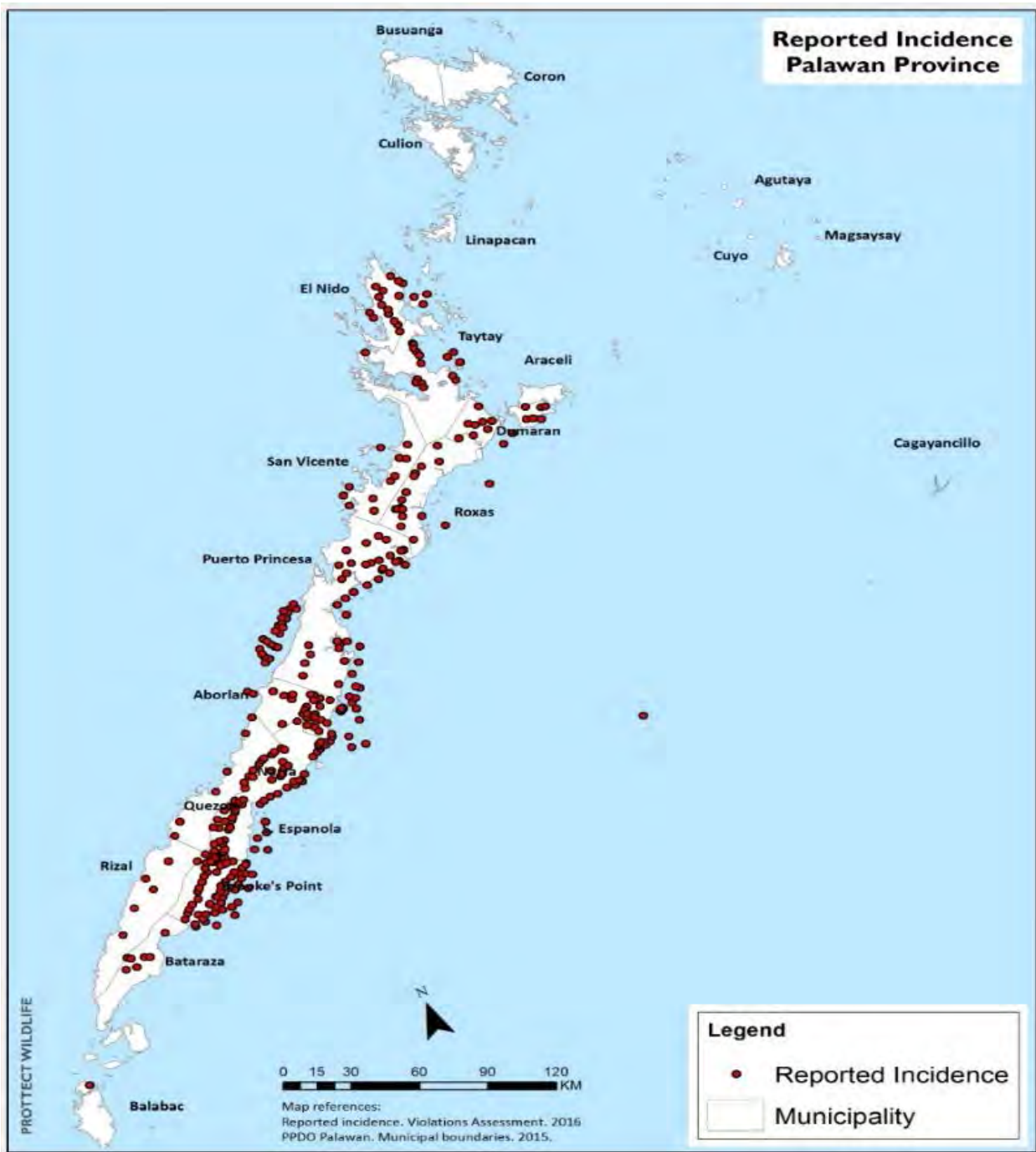
Wildlife from Palawan is transported domestically to Mindoro, Batangas, the Bicol region, Davao region, General Santos City, the Visayas and Metro Manila.

International transshipment of wildlife, particularly marine turtles and giant clams, is done via boats from consolidation sites in Bataraza and Balabac. Main destinations include China, Malaysia and Indonesia.

Figures G.1 to G.3 map out the data on wildlife crime incidences as a result of violations assessments conducted by Protect Wildlife, in addition to the apprehension data provided by the PCSDS.



**FIGURE G.1: REPORTED INCIDENCES OF WILDLIFE CRIME IN PALAWAN**



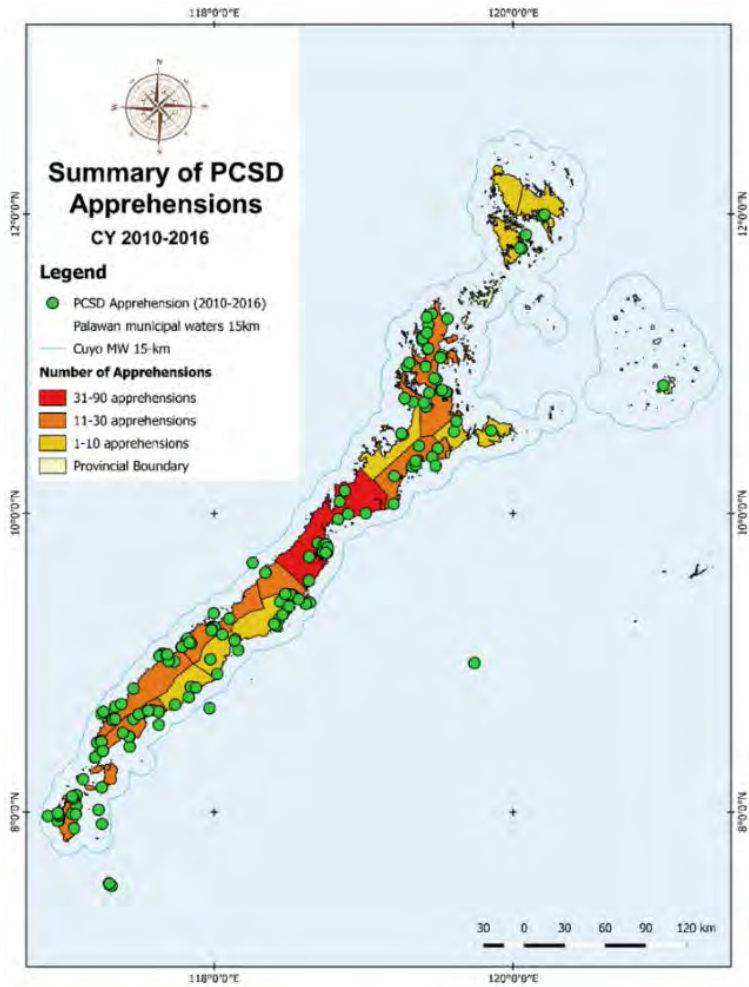
**FIGURE G.2: REPORTED INCIDENCES OF GATHERING AND TRAFFICKING OF WILD BIRDS IN PALAWAN**



**FIGURE G.3: REPORTED INCIDENCES OF GATHERING AND TRAFFICKING OF WILD TERRESTRIAL MAMMALS IN PALAWAN**

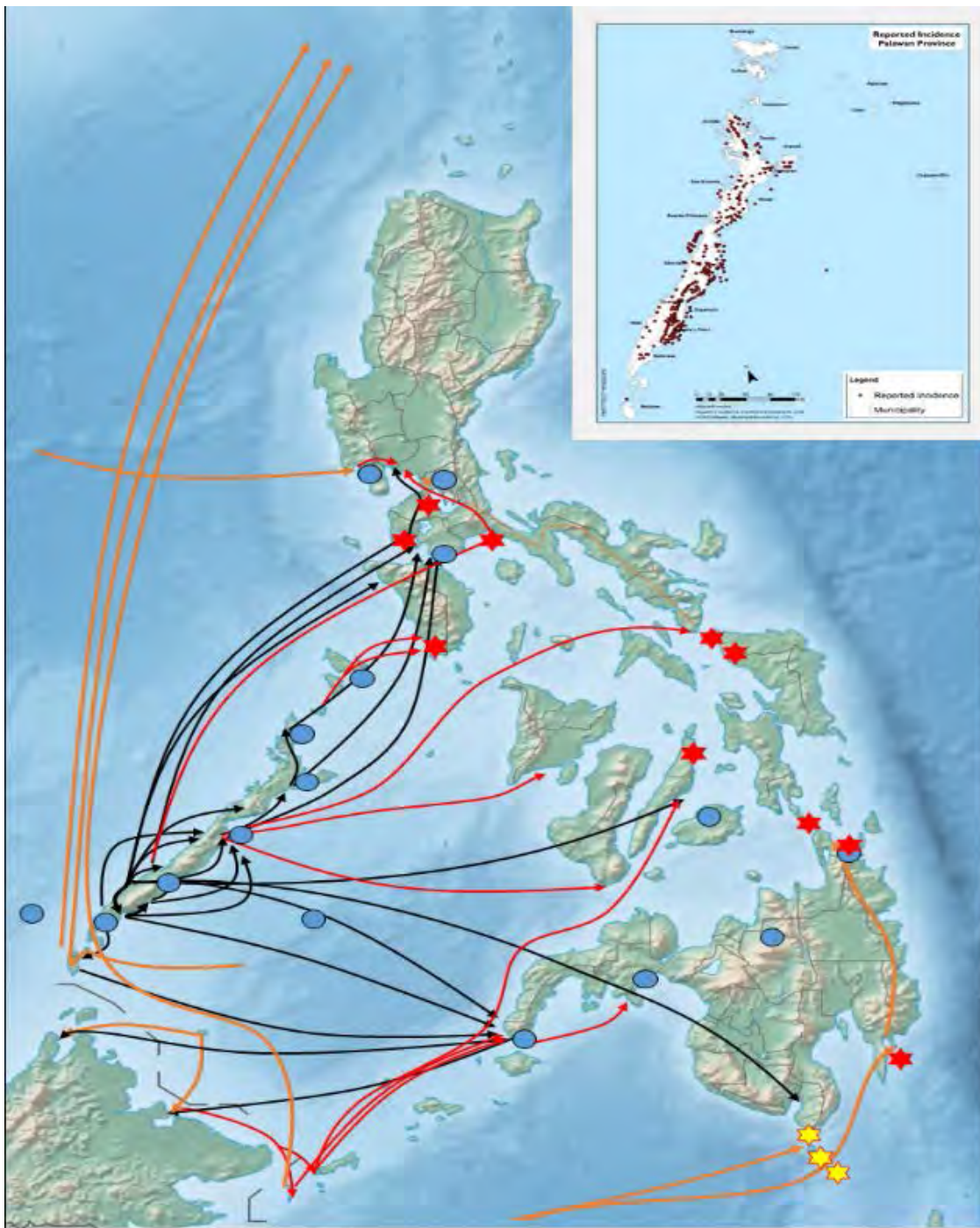


**FIGURE G.4: SUMMARY OF PCSD APPREHENSIONS (2010-2016)**



SPECIES	UNITS	SPECIES	UNITS
Balinsasayaw nest (15g/pc)	62,676	Salt water crocodile	14
Seahorse (@300 pcs/kg)	24,249	White/black lip oyster (kg)	13
Turtle eggs (pcs)	10,145	Palawan Hornbill	12
Fresh water turtles	6,557	Triton trumpet	12
Samong	5,759	Katala/Philippine Cockatoo	10
Pangolin meat (kg/pcs)	2,933	Tabon bird eggs	9
Pawikan/turtle (pcs)	2,652	Long tailed Macaque	7
Assorted shells	1,065	Leopard Cat	4
Talking Hill mynah	847	Giant clam	4
Scorpion	500	Panther	4
Blue-naped parrot	498	Mameng	4
Pearl oyster	496	Palawan Porcupine	3
Philippine forest turtle	473	Palawan bearcat	3
Beetles	439	Monitor Lizard	3
Tiger cowrie	313	Turtle dried meat (sack)	2
Butterflies/moths	295	White bellied sea eagle	2
Turtle scutes/shell (kg)	214	Crested Serpent Eagle	2
Pangolin/Balintong	184	Asian Small Clawed Otter	2
Sea snail	144	Horse-fly	2
Asian box turtles	116	Cicadas	2
Asian leaf turtle	114	Civet cat	2
Pangolin scales (kg)	113	Wild dove	2
Geckos	65	Gray imperial pigeon	1
Horned helmet	56	Eagle (unclassified)	1
Ants	52	Crested Goshawk Eagle	1
Sting ray	52	Bee	1
Turtle plastron (pcs)	45	Wasp	1
Palawan bearded pig (kg)	24	Wild boar (skull)	1
Manta Rays (kg)	20	Tutuliao	1
Tipay shells (sacks)	19	Reticulated python	1

**FIGURE G.5: UPDATED WILDLIFE TRADE ROUTES IN THE PHILIPPINES**



## Updated Wildlife Trade Routes

Data Sources:  
Wildlife Trade in Southern Palawan (Katala, 2007); DENR-BMB Report on Major Confiscations; PCSDS Case Profile, 2010-2016; Protect Wildlife Violations Assessment (2017)

### G.3.2 Mount Mantalingahan Protected Landscape

Data for the Mount Mantalingahan range was obtained in workshops held during trainings for wildlife law enforcers in November 2016 covering all five LGUs comprising the protected landscape. Results of the mapping workshop show that the western side of the MMP has the highest intensity of gathering of wildlife species, with the municipality of Rizal bearing the brunt of poaching activities (Figure G.6). While Rizal has the biggest forest cover in the Mount Mantalingahan range, law enforcement remains weak due to its inaccessibility compared to the other LGUs in the area. The main cause of wildlife poaching remains to be the commercial trade in threatened species, far outweighing local consumption of wildlife as a reason for the continued hunting of wildlife resources. Wild birds, particularly parrots and mynahs, are some of the most heavily trafficked animals being taken from the area.

Communities have reported that main consolidation sites for illegally gathered wildlife in the Mount Mantalingahan range remain to be Quezon for birds and Bataraza for marine turtles. Wildlife are then transported to mainland Luzon via sea using small cargo vessels or large bancas. The western side of the Mount Mantalingahan range has the heaviest pressure in terms of wildlife gathering.

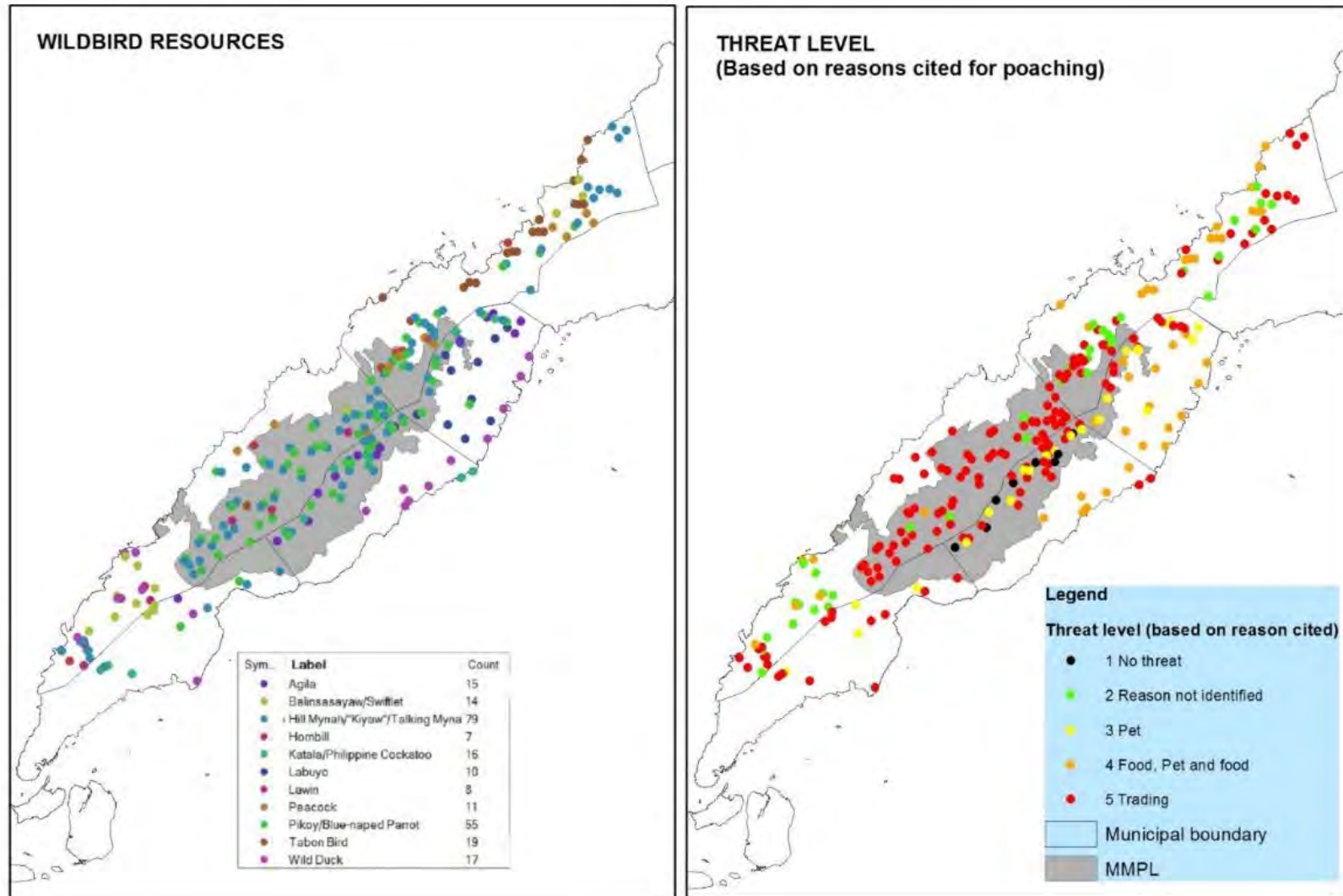
Katala Foundation has compiled data (Table G.3) from the PCSDS and the DENR as to the numbers of wildlife trafficked in Southern Palawan. Mynahs and other wild birds, as well as freshwater turtles, are widely targeted by wildlife poachers.

**TABLE G.3: TRAFFICKED WILDLIFE FROM SOUTHERN PALAWAN (2000-2006)**

Scientific Name	Species	No. of individuals	IUCN status (2007)	Endemic in Palawan (√ = yes)
<i>Dorcus</i> spp., <i>Odontolabis</i> spp.	Beetles	3,926		√
<i>Gracula religiosa</i>	Hill myna	1,522	LR/LC	subspecies <i>palawensis</i>
<i>Tanygnathus lucionensis</i>	Blue-naped parrot	652	LR/NT	
	Freshwater turtles	233		depending on species
<i>Anthuraceros marchei</i>	Palawan hornbill	38	VU	√
<i>Gallus gallus</i>	Red jungle-fowl	35		
<i>Macaca fascicularis</i>	Long-tailed macaque	27	LR/NT	
<i>Haliaeetus leucogaster</i>	White-bellied sea-eagle	23		
<i>Polyplectron enphautum</i> ( <i>napoleonis</i> )	Palawan peacock-pheasant	22	VU	√
<i>Prionailurus bengalensis</i>	Leopard cat	21	LR/LC	
<i>Manis culionensis</i>	Palawan pangolin	18	LR/NT	√
<i>Aonyx (Amblonyx) cinerea</i>	Small-clawed otter	15	NT	
<i>Tragulus nigricans</i>	Balabac mouse deer	15		√
<i>Arctictis binturong whitei</i>	Palawan bearcat	14	LR/NT	√
<i>Python reticulatus</i>	Reticulated python	14		
<i>Cacatua haematurus pygia</i>	Philippine cockatoo	13	CR	
<i>Sundasciurus steerii</i> tree squirrel	Southern Palawan	13	LR/NT	√
<i>Spizaetus cirrhatus</i>	Changeable hawk-eagle	10	LR/NT	
<i>Hylapetes nigripes</i>	Palawan flying squirrel	10	LR/NT	√
<i>Hystrix pumila</i>	Palawan porcupine	8	LR/LC	√
<i>Spilornis cheela</i>	Crested serpent-eagle	5	LR/LC	
<i>Tupaia palawensis</i>	Palawan tree-shrew	5	VU	√
<i>Chalcophaps indica</i>	Common emerald dove	3	LC	
<i>Accipiter trivirgatus</i>	Crested goshawk	2	LC	
<i>Sus barbatus</i> <i>ahoenobarbus</i>	Palawan bearded pig	1	VU	√

Legend: LR: low risk, LC: least concern, NT: near threatened, VU: vulnerable, CR: critically endangered.

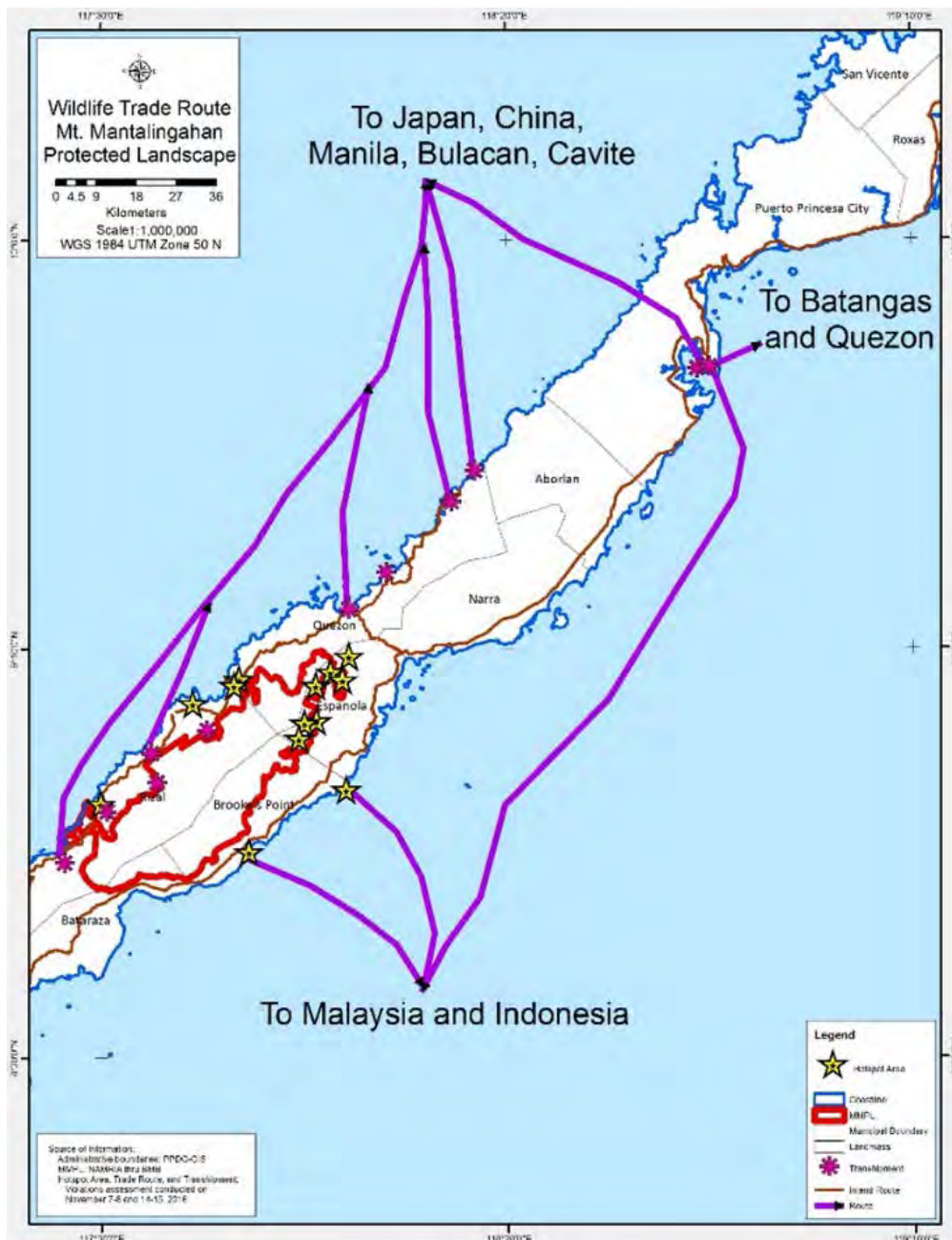
**FIGURE G.6: GENERAL HABITATS AND WILDLIFE TRAFFICKING TRENDS IN MOUNT MANTALINGAHAN RANGE**



Transport of wildlife from areas within the Mount Mantalingahan range are done mostly by sea from legal piers where commercial shipping traffic dock, and illegally built piers which dot the area that are mostly unmonitored. International destinations for trafficked wildlife include Malaysia, Indonesia, China and Japan, with domestic destinations being Manila, Bulacan, Cavite, Batangas and Quezon.

One of the more interesting results is the identification of Puerto Princesa as a destination for pangolins and marine turtles, belying expectations that these are shipped directly from the Mount Mantalingahan range. This may be due to an issue of miscommunication from the participants, as anything they sometimes referred to items being shipped north as *pa-Puerto* or going to Puerto Princesa.

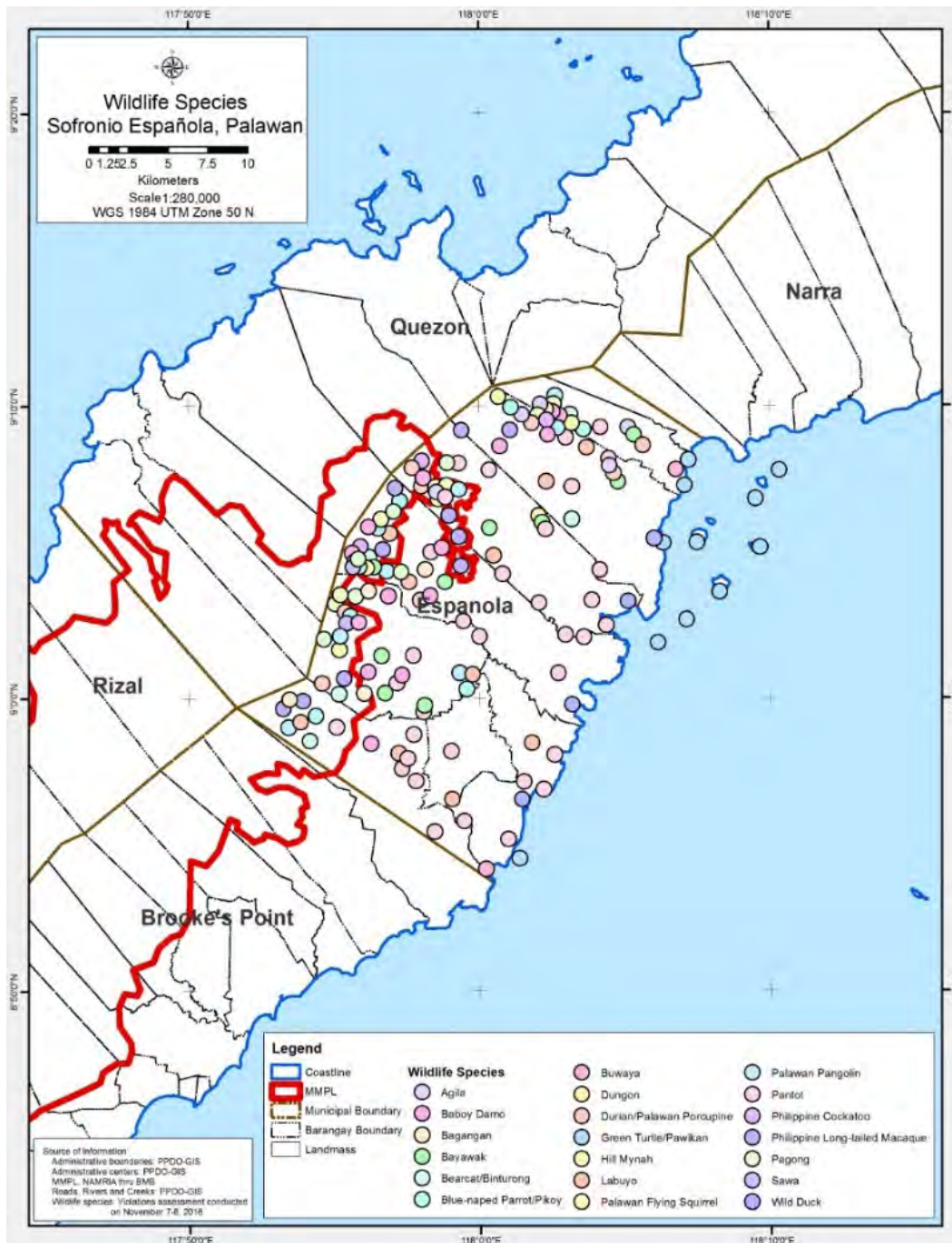
**FIGURE G.7: TRAFFICKING ROUTES FOR WILDLIFE FROM THE MOUNT MANTALINGAHAN RANGE**



During assessments, community members and LGU officials from the five municipalities in the Mount Mantalingahan range gave inputs on various wildlife resource uses in their respective areas.

In Sofronio Española, while it occupies a smaller area of the Mount Mantalingahan range compared to other LGUs, there remains a wide variety of wildlife. Wild pigs, monitor lizards, porcupines, squirrels, stink badgers, monkeys, pond turtles, wild ducks and pythons are consumed for food. Parrots, cockatoos, mynas and pangolins are target species for wildlife trade. Wild birds are brought to Quezon for consolidation and eventual shipment to Batangas, while pangolins are brought to Puerto Princesa

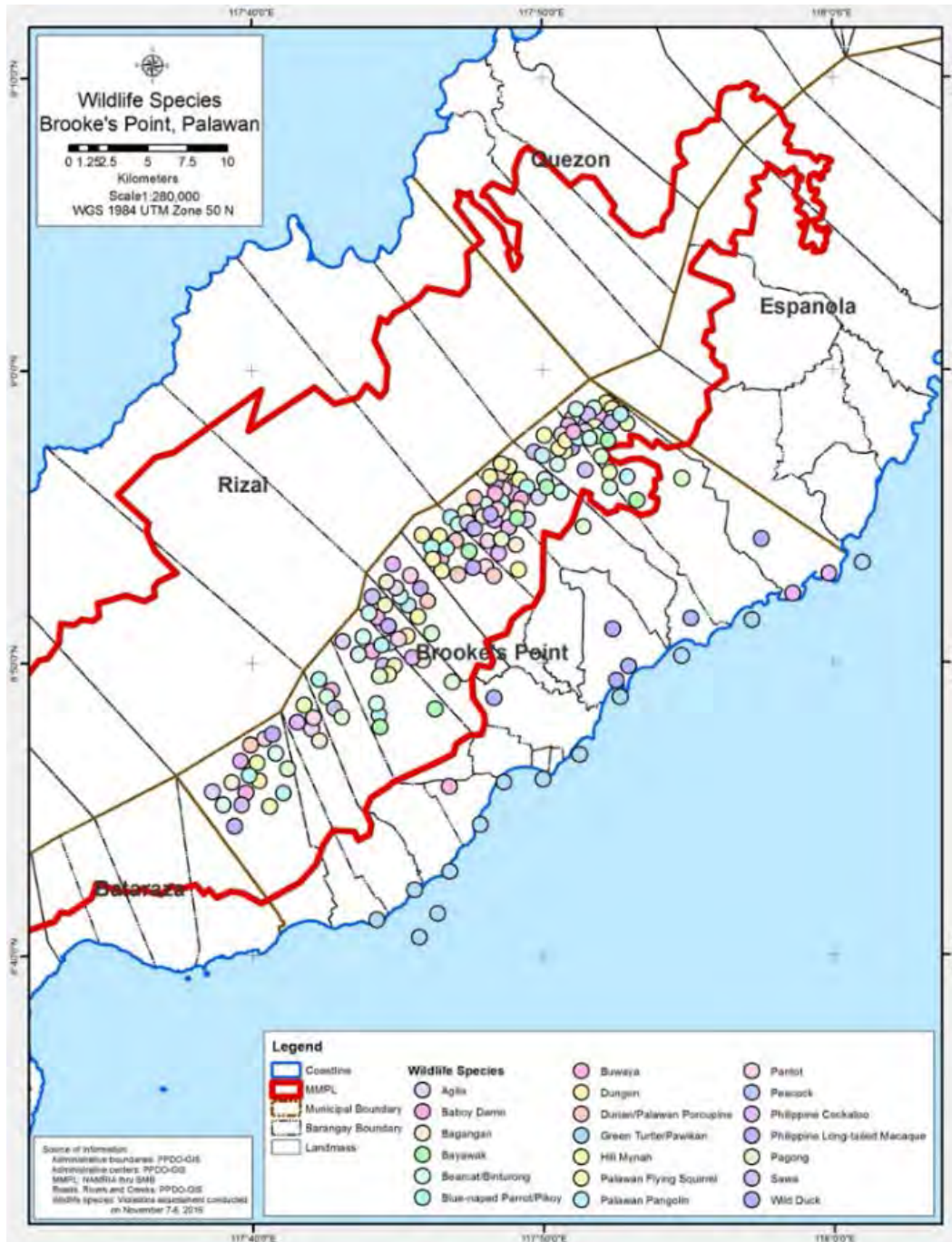
**FIGURE G.8: WILDLIFE RESOURCES IN SOFRONIO ESPAÑOLA**





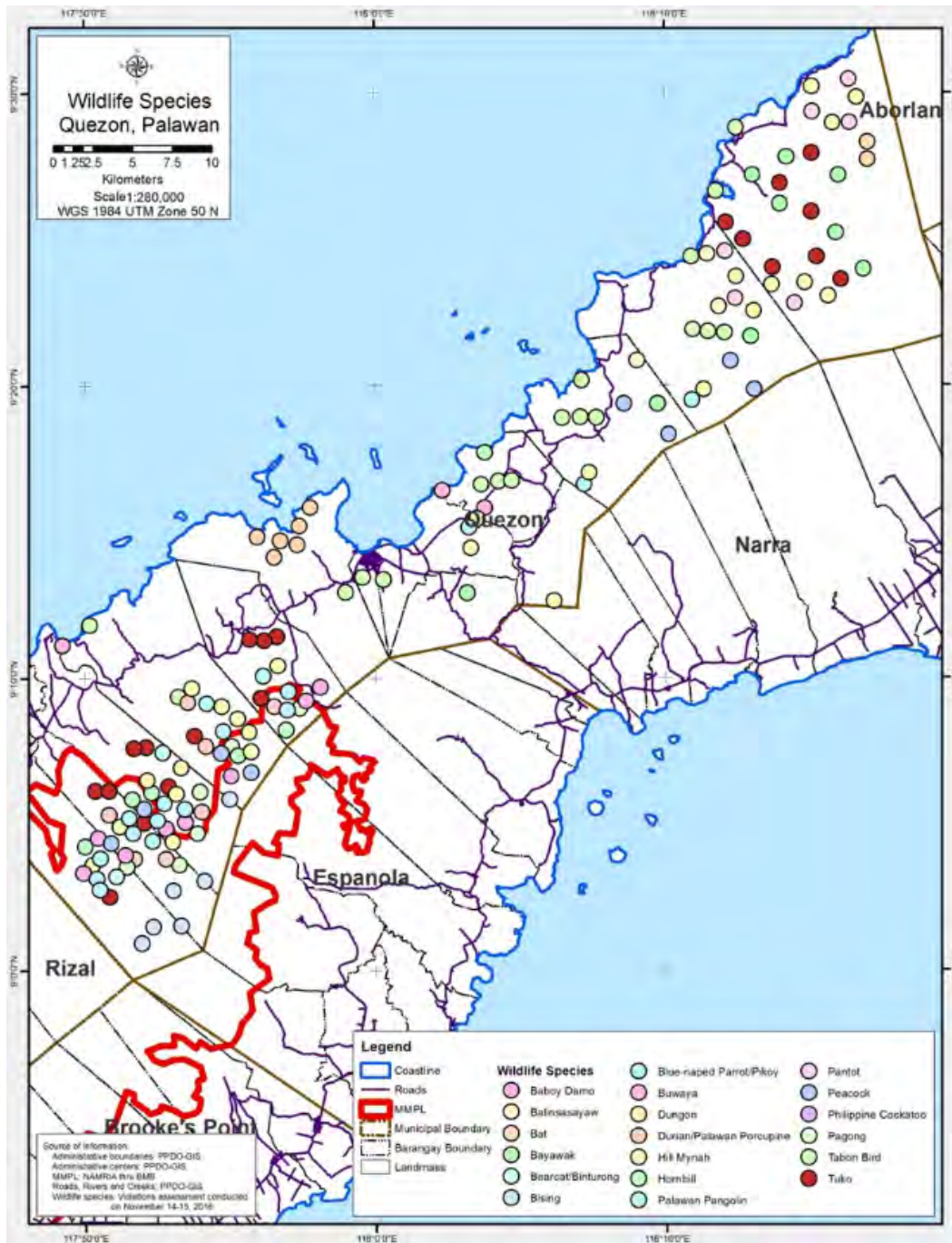
Participants in Brooke's Point identified a substantial number of wildlife species spread out in their Mount Mantalingahan range areas. Wild pigs, monkeys, pythons, otters, wild ducks and monitor lizards are consumed locally as food, particularly by indigenous communities. Some bearcats are kept as pets by residents. Key species caught for the wildlife trade include cockatoos, parrots, mynas, pangolins and sea turtles. Parrots are consolidated in barangays Imulnod and Poblacion and then brought to Puerto Princesa. Pangolins are also brought to Puerto Princesa.

**FIGURE G.9: WILDLIFE RESOURCES IN BROOKE'S POINT**



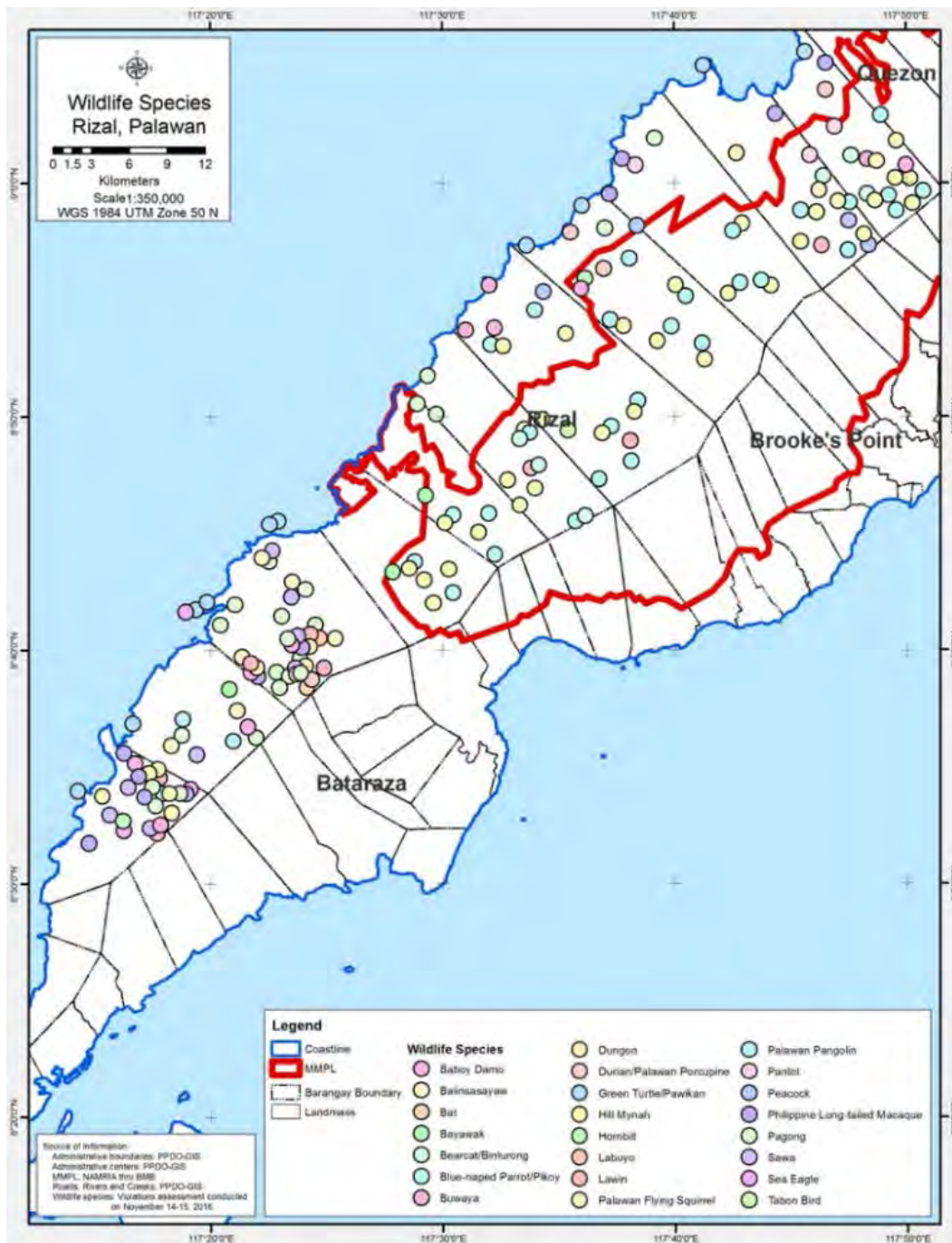
Quezon is identified as one of the two main hotspots for wildlife trafficking in the Mount Mantalingahan range. The municipality is one of the main consolidation areas for illegally trafficked wildlife coming from southern Palawan, with Quinlogan as the main consolidation site. Monitor lizards, squirrels, stink badgers or *pantot* and, surprisingly, Tabon birds, are caught for food. Bearcats, parrots, hornbills and peacocks are collected primarily for the pet trade.

**FIGURE G.10: WILDLIFE RESOURCES IN QUEZON**



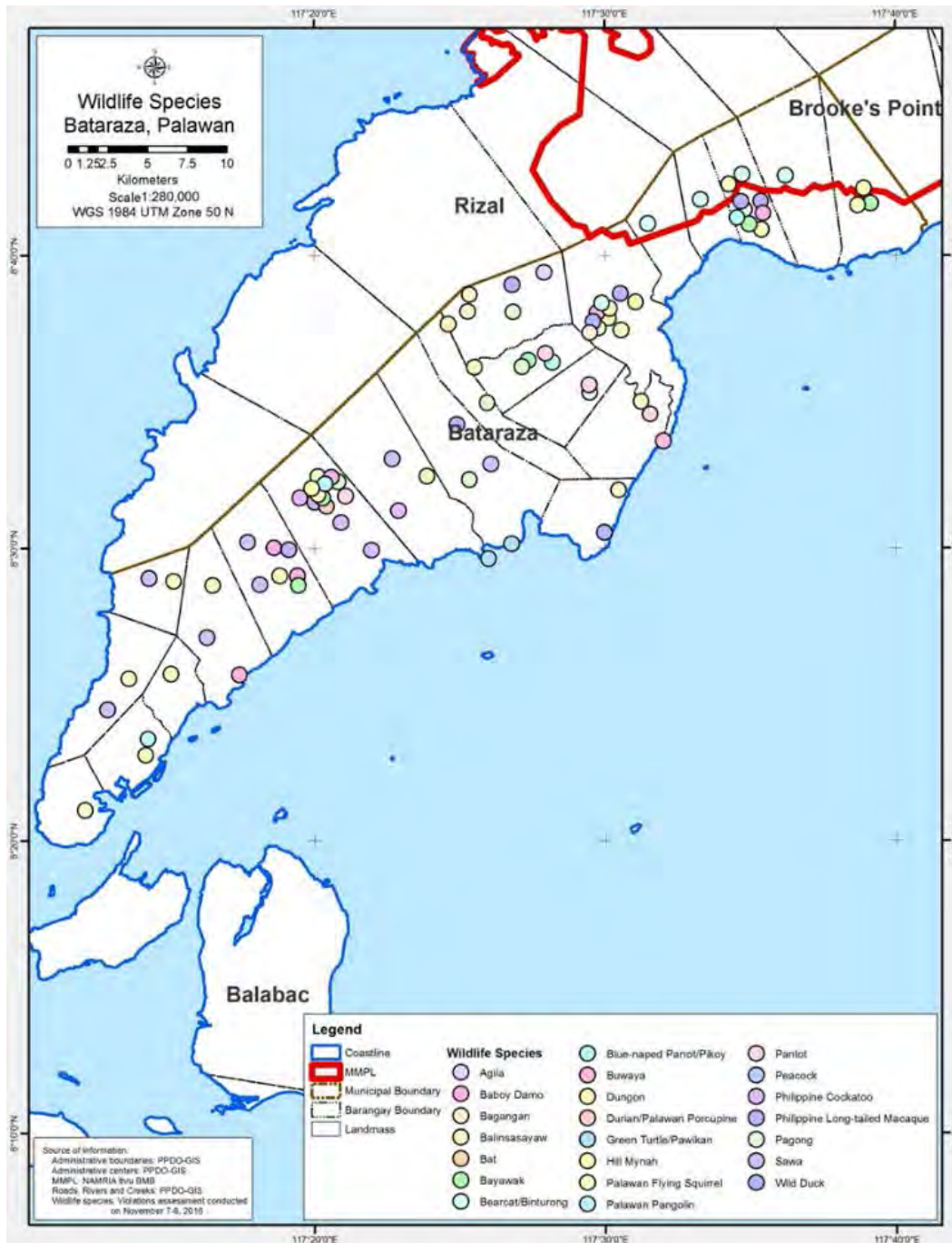
Rizal has one of the largest forested areas among the five municipalities in the Mount Mantalingahan range. Even areas outside the park boundaries are rich in wildlife, with major areas identified as wildlife habitats. Wild pigs, monitor lizards, squirrels, stink badgers, monkeys, pythons, Tabon birds and wild duck are taken primarily for food. Bearcats, mynas, parrots, crocodiles, hornbills, peacocks and sea eagles are captured for trade. Barangays Iraan, Candawaga and Bunog were identified as consolidation areas for wildlife prior to being shipped to Batangas.

**FIGURE G.11: WILDLIFE RESOURCES IN RIZAL**



Participants from Bataraza were more familiar with areas outside of the Mount Mantalingahan range. Wild pigs, monitor lizards and otters are taken for food, while bearcats, squirrels and monkeys are hunted for food or as pets. Sea eagles are taken as pets by locals. Marine turtles are shipped directly to Puerto Princesa or are consolidated in Canipaan for consolidation. Parrots, mynas and cockatoos are consolidated in Bono-bono and then transported to Puerto Princesa. Pangolins are shipped to Puerto Princesa.

**FIGURE G.12: WILDLIFE RESOURCES IN BATARAZA**

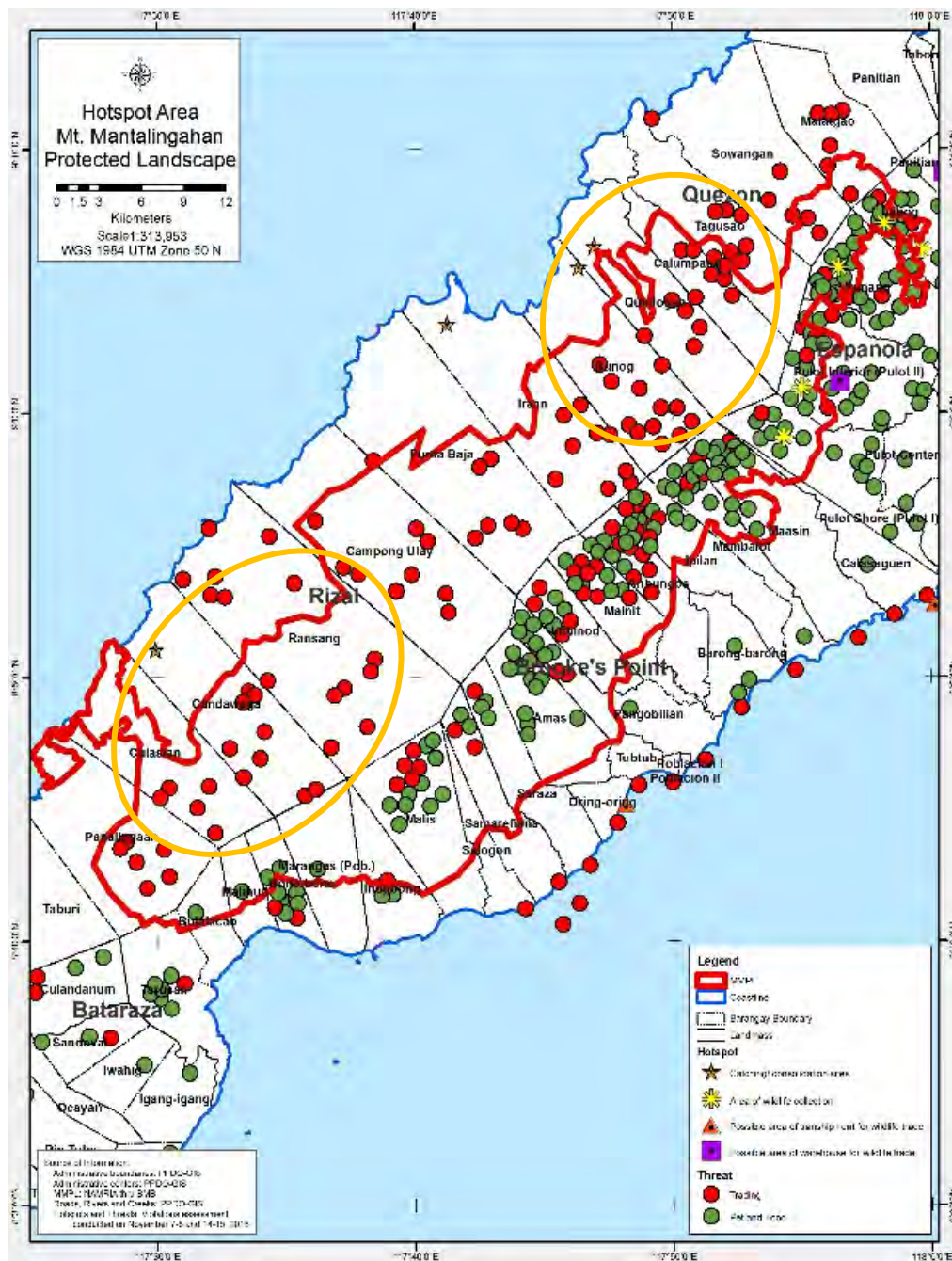


### G.3.3 Field Validations in Selected Sites in Southern and Northern Palawan

#### G.3.3.1 Rizal, Southern Palawan

The activity held the second phase of assessment of wildlife law enforcement in Palawan on March 2017. This involved visiting a site known to be a major gathering area for wildlife based on data obtained during the violations assessment for mainland Palawan.

**FIGURE G.13: ORIGINAL TARGET AREAS FOR VALIDATION OF ASSESSMENT IN SOUTHERN PALAWAN**



## Site and methodology

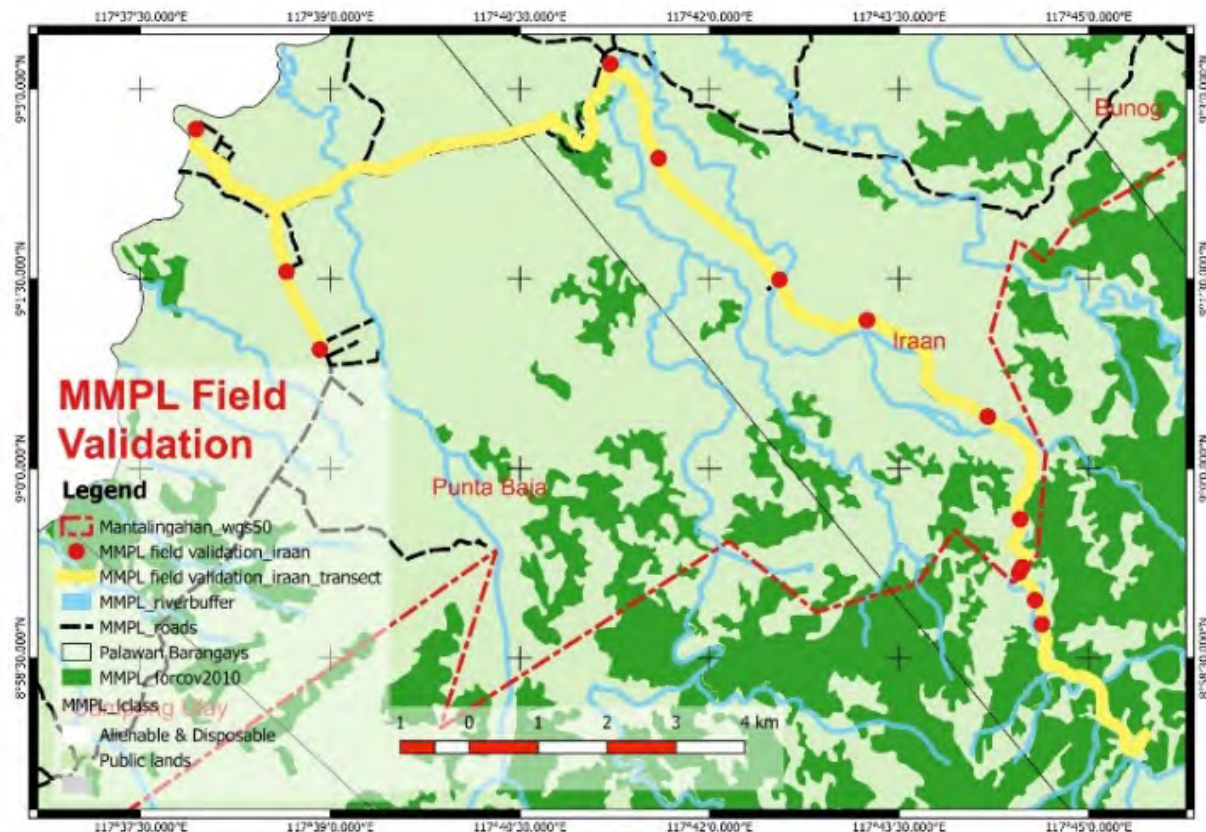
The SA 5 team chose the western side of the Mount Mantalingahan range for site validation, with Rizal and Quezon identified as hotspots among the five municipalities in terms of gathering and transshipment of wildlife. The site visit was coordinated with PCSDS field staff and local contacts in barangays Calumpang and Culandanum in Quezon and barangays Ransang and Candawaga in Rizal as validation sites. The validation team hiked through the forest to document resource use of local communities, including wildlife, timber, and non-timber forest products such as almaciga, honey or rattan. The team also recorded land utilization, particularly in upland areas.

Based on PCSDS recommendation, time constraints and remoteness of the area, the validation team ended up visiting barangays Iraan and Bunog in Rizal, which are known gathering areas of wildlife and timber. A fish landing site was also visited by the team in Barangay Punta Baja to document the storage area of live reef fish for food trade.

### Barangays Iraan and Punta Baja

The team traversed almost 19 kilometres for the first validation site covering barangays Iraan and Punta Baja.

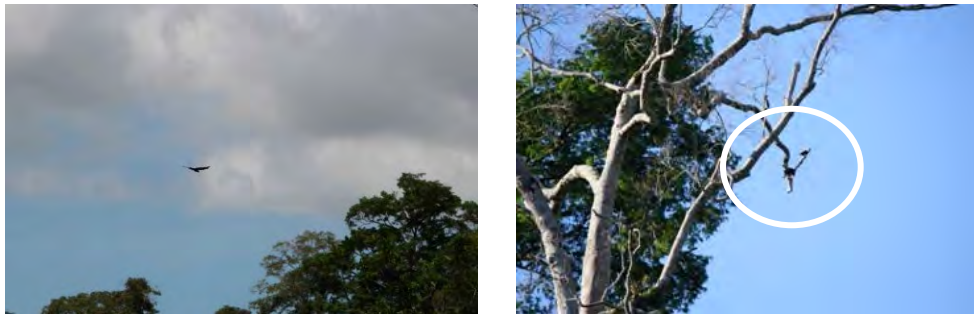
**FIGURE G.14: FIELD VALIDATION ROUTE IN BARANGAY IRAAN**



Key observation and results during the field visit showed the following:

**Wildlife trafficking.** The area is a breeding ground of mynas and other wild birds that are usually targeted for pet trade. Mynas, raptors and other wild birds were documented roosting in trees (Figure G.15), and birdcalls from several other species could be heard in the area. According to the local guide, the month of March is the start of the breeding season for mynas and the gathering of chicks will begin in April and run for a couple of months. Wildlife poachers in the area usually gather two out of every three chicks in a clutch so that there will be some birds left to breed. During conversations with locals, the team learned that a juvenile bearcat could fetch for PHP 4,000 as a pet. Monkeys were also documented being kept as pets by locals. During the validation, the team came across individuals with air rifles or air rifles converted to fire 0.22 caliber rimfire ammunition. Interviews with locals indicate that they hunt squirrels, birds, porcupines, wild pigs and other small animals for food. Pangolins are also caught, with the meat taken for food and their scales sold to traders.

**FIGURE G.15: WILD BIRDS ROOSTING IN BARANGAY IRAAN**



**Non-timber forest products.** Indigenous Pala'wan communities are dependent on almaciga resin for their livelihood. Several groups were documented carrying loads of resin on their backs. These will be sold for PHP 15 per kilogram depending on the quality of the resin. Indigenous family members, both men and women, would gather almaciga resin and transport them to buyers. A sack full of almaciga resin normally weighs 40 to 60 kilograms. (Figure G.16). According to locals, the strenuous labor in harvesting and transporting almaciga resin, compounded with poor nutrition, sanitation and healthcare have resulted in communicable diseases such as tuberculosis being widely spread among indigenous communities. The almaciga resin gathering site in the area was validated by PCSDS and is covered by an expired concession permit. The team was not able to verify the sustainability of the tapping process, as almaciga stands were located in a more remote area.

**FIGURE G.16: HARVESTING OF ALMACIGA RESIN IN IRAAN**



**Illegal logging and *kaingin*.** The team detected illegal logging in several areas, including logging of *ipil*, which is classified as threatened by the PCSD under the Wildlife Act. A majority of cut-down trees were documented in the upland areas. Numerous small *kaingin* plots and huts also dotted the area (Figure G.17) and are occupied mostly by indigenous families.

As to the reported presence of armed rebels in the area, the team was unable to get any information from residents as to whether they were involved in exacting revolutionary taxes from the sale of trees being cut in the area. In other areas of the Philippines, communist rebels levy a tax of at least PHP 1 per board foot of timber.

**FIGURE G.17: KAINGIN AREAS IN IRAAN**



**Live reef fish for food trade.** There is a fish landing area for both municipal and small-scale commercial fishing vessels in Punta Baja. Several buildings housed not only cold storage facilities for fresh fish but also tanks for keeping live reef fish, such as grouper or *lapu-lapu*, for food trade that is regulated by the PCSD pursuant to the Wildlife Act. The closed season for this type of fisheries is from June 16 to August 31 and from October 16 to December 15 every year.

**FIGURE G.18: TANKS IN PUNTA BAJA FOR LIVE REEF FISH**

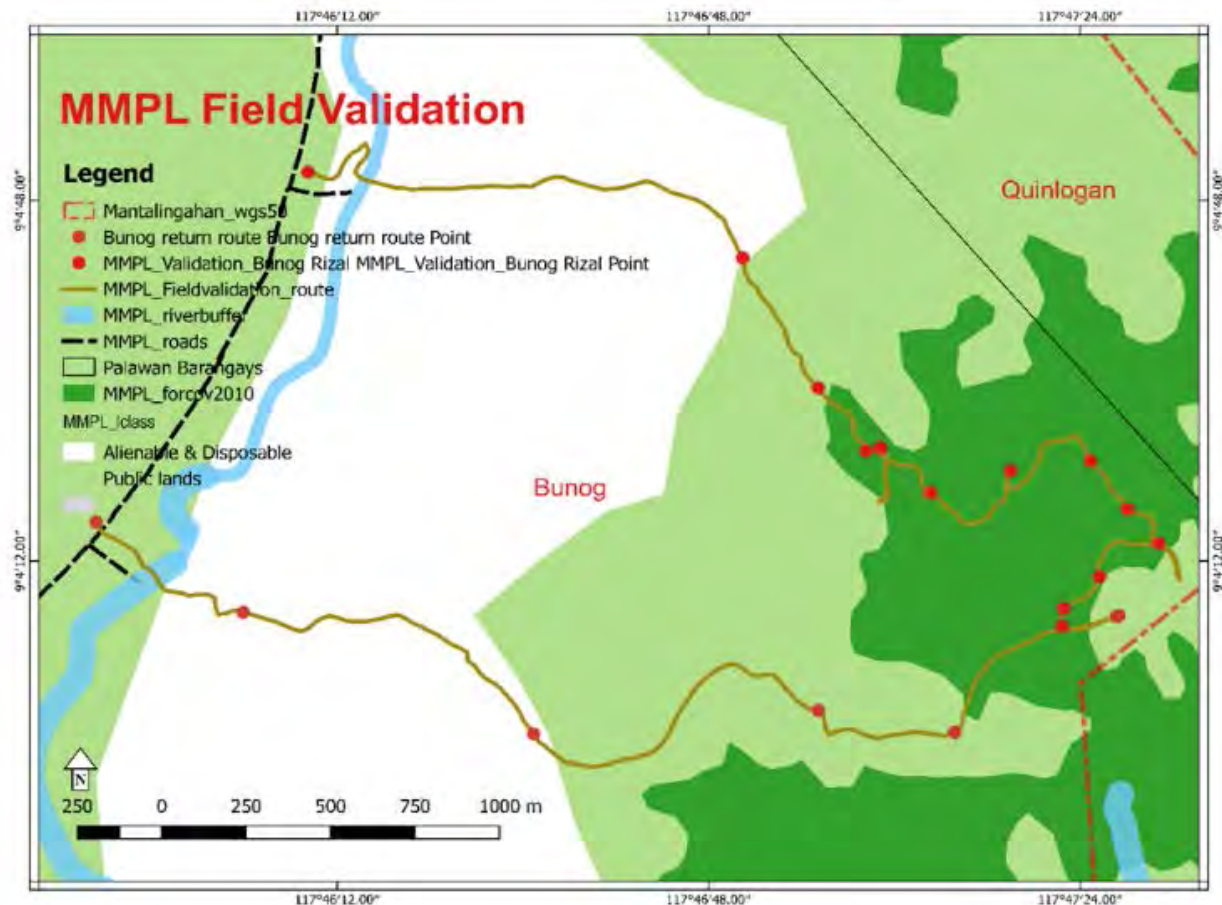




## Barangay Bunog

The team traversed almost nine kilometres through Barangay Bunog, mostly within a buffer zone of the Mount Mantalingahan range. PCSDS considers the area as an important habitat for the endemic *katala* or Philippine cockatoo.

**FIGURE G.19: FIELD VALIDATION ROUTE IN BARANGAY BUNOG**



Key observation and results during the field visit showed the following:

**Illegal logging.** The team documented illegal logging activities in a wide area in the buffer zone of the Mount Mantalingahan range. Targeted species include *ipil*, *kalantas* and *antipolo*, among others. Identified uses for these include hulls for boats and material for housing. The team estimated about 25,000 board feet of wood could be harvested from the trees documented throughout the area. Illegal lumber could be transported through at least two access points going into the area. Red dots on Figure G.19 mark the location of different kinds of land and resource uses in Bunog. Red dots on the upper line represent illegal logging and *kaingin*, while red dots on the lower line indicate areas where upland farming is practiced.

During the field validation, the team heard a chainsaw operating in the vicinity but could not determine its exact location. The team attempted to locate the chainsaw, leading to the discovery of four individuals clearing a huge portion of the forest for *kaingin*. The team documented huge trees felled with axes and other cutting tools.

**FIGURE G.20: ILLEGAL LOGGING IN BUNOG**



**Land Conversion.** Locals in the area were preparing numerous *kaingin* plots in time for the planting season. The plots vary in sizes, the largest one measuring at one hectare. Based on conversations with community members, some areas are being prepared for coffee, while most were being cleared for sweet potato and other root crops. The rate for hired labor was PHP 180 per day. Based on Figure G.19, the areas where *kaingin* sites were documented are classified as forest land.

Some *kaingin* sites that were being prepared were previously fallow areas, where big trees already regenerated. Newly cut and some burned large trees were found in these areas that were being prepared.

**FIGURE G.21: KAINGIN IN BUNOG**

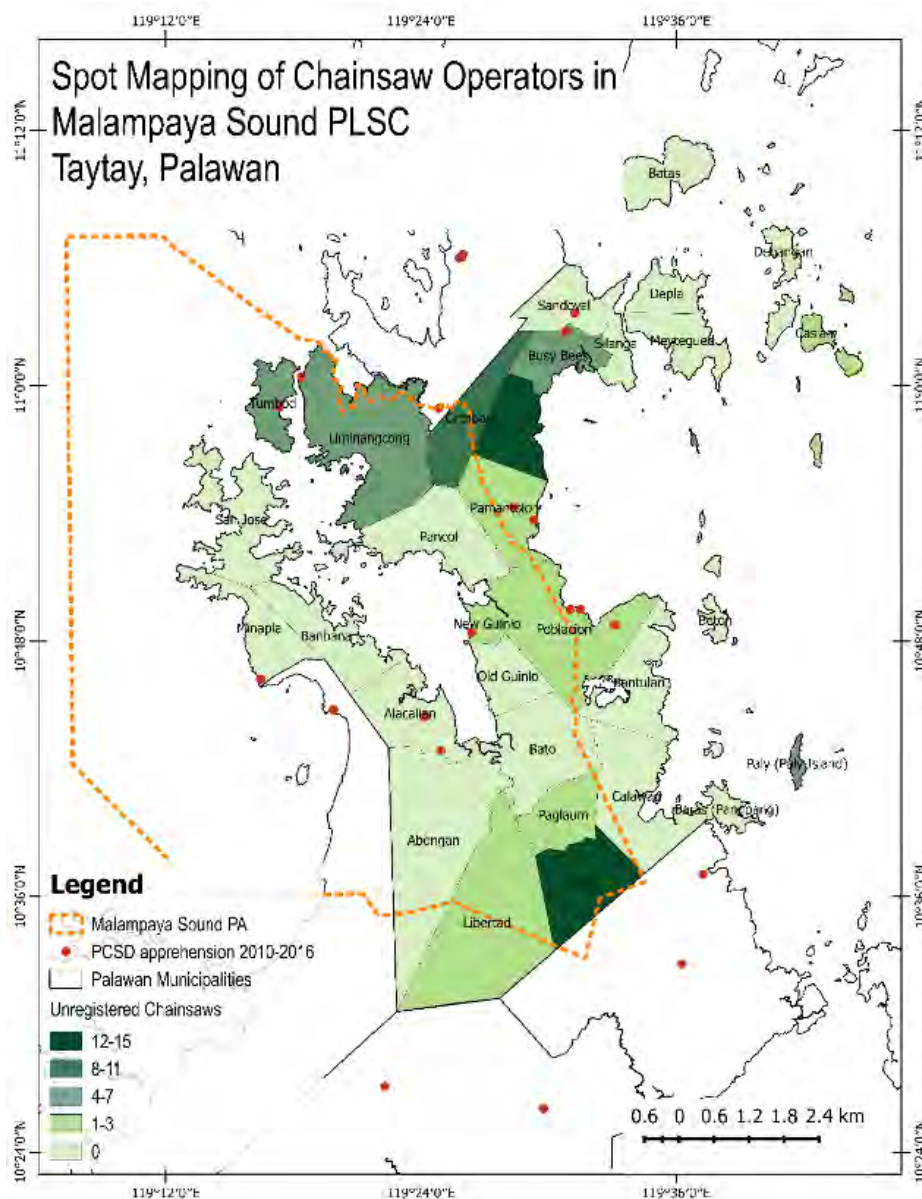


### **Recommendations**

An expansion of alternative livelihood opportunities would be beneficial for the communities in the areas visited by the validation team. PCSDS and civil society should be monitoring the almaciga resin trade to ensure that non-indigenous people gatherers are not encroaching on almaciga stands. There is a need to localize the classification or grading of almaciga resin to help IP communities get fair value for their product. Leaving the grading or classification at the hands of buyers can put IP gatherers of almaciga resin at a disadvantage. In upland farming areas, extension for planting inputs and identification of planting areas for abaca, coffee and cacao can be provided to communities and other land claimants. These crops depend on big trees for shade, thereby promoting conservation of regenerated fallow areas.

With the absence of a DENR field office in Rizal, PCSDS has to rely on its four enforcers in the area to lead its enforcement activities. Both PCSDS and the DENR should have a convergence in their approach to forestry and wildlife law enforcement. By identifying priority areas for deployment by their respective enforcement staff, the two agencies can increase the number of personnel that can be mobilized as needed, and provide additional logistical support such as hauling trucks, personnel carriers and personal protective gears.

### G.3.3.2 Taytay, Northern Palawan



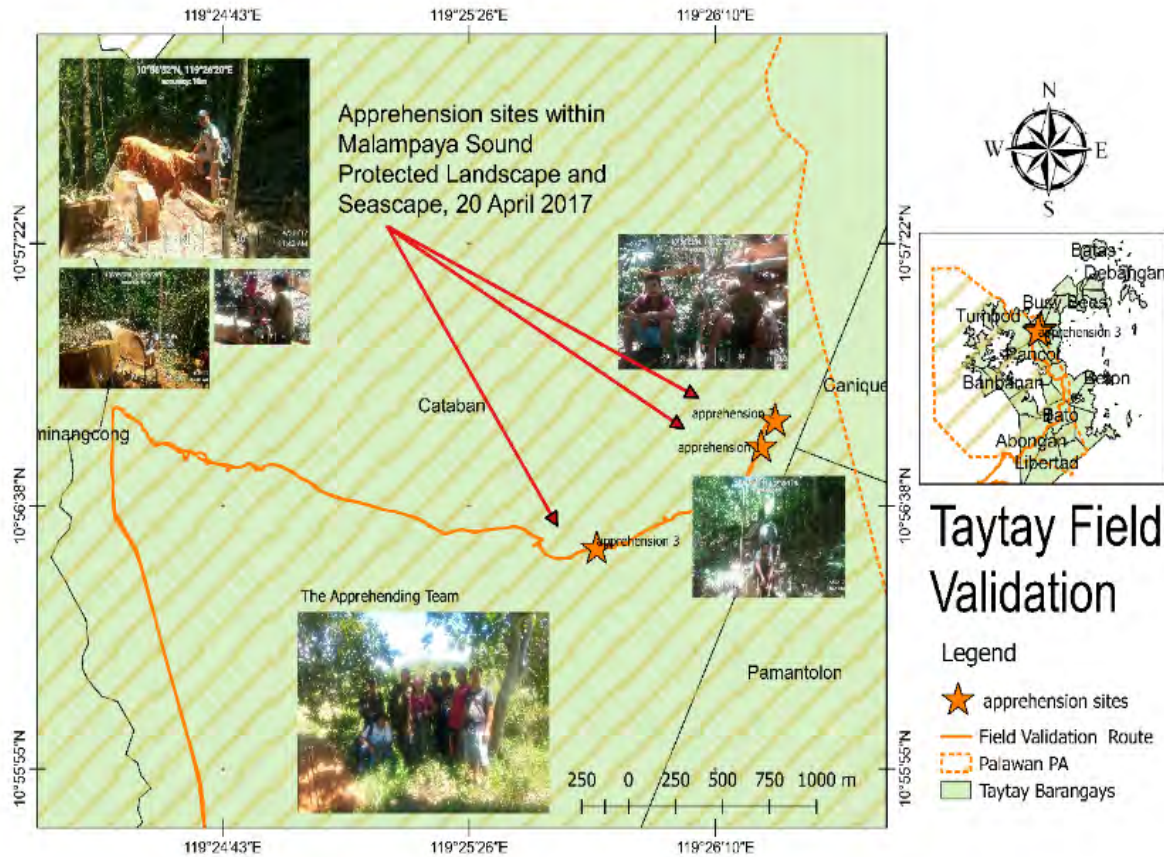
**FIGURE G.22: CHAINSAWS IN MALAMPAYA**

In April 2017, the team conducted a field validation in Taytay within the Malampaya Sound Protected Landscape and Seascape.

Despite being a protected area, PCSDS data showed the proliferation of unregistered chainsaws in barangays forming part of the Malampaya Sound PLS, a wildlife habitat for pangolins, freshwater turtles, raptors, marine turtles and the critically endangered Irrawaddy dolphin. Despite past efforts of the PCSDS in apprehending unregistered chainsaws, illegal logging still occurs in the area.

The validation team was composed of Protect Wildlife staff, members of the PCSDS Quick Reaction Team and the provincial LGU’s Bantay Palawan team. Illegal logging activities were detected in three sites by the validation team, well within the protected area. The target species of the illegal loggers were *ipil*, classified by the PCSD as threatened. Its wood is a highly prized for construction and infrastructure works like bridges.

**FIGURE G.23: FIELD VALIDATION ROUTE IN TAYTAY**



#### G.4 ZAMBOANGA CITY

For Zamboanga City, the activity’s point of contact is the Office of the City Environment and Natural Resources, which is taking the leadership role of the Zamboanga City Anti-Wildlife Trafficking Task Force.

The assessment covering Zamboanga City was participated in by about 50 people from the city LGU composed of members from the Offices of the City Agriculturist, Veterinarian, Tourism and Planning; representatives from national government agencies such as the DENR, BFAR, PNP, Coast Guard, Task Force Zamboanga, and other law enforcement groups operating in the City; the academe; and civil society. Aside from the City, other areas covered by the Assessment included the six watersheds of Zamboanga City, including the Pasonanca Watershed; and, the Great and Little Santa Cruz Islands Protected Landscape and Seascape, which is an important habitat for endangered sea turtles.

Research data and the results of the assessment showed that fisheries a major livelihood for the City’s residents. The city is also the home port of a substantial number of commercial fishing vessels, including those whose gears should have been phased out for being classified as destructive. Data also shows that there are over 100 legal and illegal ports throughout the city.

Initial results of the assessment in Zamboanga City indicates that it is a transshipment hub for endangered wildlife such as birds from Palawan and Malaysia; sea turtle eggs are still being gathered from nesting sites; while the watersheds are being threatened with illegal logging and encroachment.

Local law enforcement skills rated poorly across the board for the members of the Zamboanga City task force on wildlife trafficking, law enforcement personnel for Santa Cruz Islands, and for the guards tasked to protect Pasonanca watershed. The results of the guided survey shows that there is a need to assist law enforcement agencies in the city in developing systems related to wildlife law enforcement, from patrol strategies to the filing of cases with the Office of the Prosecutor.

The following tables are the results of the guided assessment on wildlife law enforcement capacity and the policy gaps that need to be addressed in relation to biodiversity and wildlife conservation in the city.

**TABLE G.4: PRELIMINARY RESULTS OF SKILLS SURVEY ON WILDLIFE LAW ENFORCEMENT FOR ZAMBOANGA CITY-BASED LAW ENFORCEMENT AGENCIES**

AREAS OF CONCERN	WEIGHTED SCORE
Intelligence and investigation	2.13
Law enforcement patrols	2.11
Law enforcement management	2.30

**TABLE G.5: PRELIMINARY RESULTS ON SKILLS SURVEY ON WILDLIFE LAW ENFORCEMENT IN ZAMBOANGA CITY**

INTELLIGENCE AND INVESTIGATION	Weighted Average	ENFORCEMENT PATROLS	Weighted Average	LAW ENFORCEMENT MANAGEMENT	Weighted Average
Specialized intelligence and investigation	2.10	Skilled and knowledgeable enforcement staff	1.90	Competent and effective leadership	2.44
Comprehensive intelligence gathering	1.48	Experienced and competent patrol leaders	1.90	Proactive and dynamic patrol strategies	2.13
Efficient data management and analysis	1.82	Suitable and sufficient equipment/supplies	2.14	Collection and use of patrol data	2.06
Robust evidence handling and management	1.08	Appropriate terms and conditions of service	2.15	Management systems and infrastructure	2.09
Competent case development and case filing	1.82	Supported and incentivized patrol staff	2.15	Clear and consistent standard procedures	2.50
Forensic capability	1.54				
<b>Weighted average</b>	<b>1.643</b>	<b>Weighted Average</b>	<b>1.950</b>	<b>Weighted Average</b>	<b>2.245</b>

**TABLE G.6: PRELIMINARY REVIEW OF EXISTING CAPACITIES ON PARTICIPATORY AND INTER-AGENCY ACTIVITIES ON IUUF AND WILDLIFE TRAFFICKING ENFORCEMENT OPERATIONS IN ZAMBOANGA CITY**

OPERATIONAL ASPECTS	STAFF/BODY	TRAINING/ SKILLS OF STAFF	RESOURCES/ LOGISTICS	INSTITUTIONAL ARRANGEMENT
Crime prevention	2.64	3.07	2.43	3.67
Surveillance	2.43	2.79	2.76	2.43
Search	2.31	2.46	2.79	2.57

OPERATIONAL ASPECTS	STAFF/BODY	TRAINING/ SKILLS OF STAFF	RESOURCES/ LOGISTICS	INSTITUTIONAL ARRANGEMENT
Arrest/ apprehension	2.36	2.86	2.71	2.36
Seizure & confiscation	2.36	2.64	2.57	2.43
Prosecution/ case build-up	2.0	2.14	2.64	2.29

**TABLE G.7: PRELIMINARY RESULTS OF EXISTING CAPACITIES ON PARTICIPATORY AND INTER-AGENCY ACTIVITIES ON WILDLIFE AND ENVIRONMENTAL LAW ENFORCEMENT IN PASONANCA AND OTHER WATERSHEDS**

PASONANCA WATERSHED	STAFF/BODY	TRAINING/ SKILLS OF STAFF	RESOURCES/ LOGISTICS	INSTITUTIONAL ARRANGEMENT
Crime prevention	2	2.5	2	3
Search/ Surveillance	2	2	2	3
Arrest/ apprehension	4	3	3	3
Seizure & confiscation	3	2	3	3
Prosecution/ case build up	2	2	1	3

OTHER WATERSHEDS	STAFF/BODY	TRAINING/ SKILLS OF STAFF	RESOURCES/ LOGISTICS	INSTITUTIONAL ARRANGEMENT
Crime prevention	2	2	1	3
Search/ Surveillance	2	2	1	2
Arrest/ apprehension	2/ 4	2/ 4	1	3
Seizure & confiscation	2/ 4	2/ 4	1/ 4	3
Prosecution/ case build-up	2	2	1	3

**TABLE G.8: PRELIMINARY RESULTS OF EXISTING CAPACITIES ON PARTICIPATORY AND INTER-AGENCY ACTIVITIES ON WILDLIFE AND ENVIRONMENTAL LAW ENFORCEMENT OF GROUPS ASSIGNED TO SANTA CRUZ ISLANDS**

	STAFF /BODY	TRAINING/ SKILLS OF STAFF	RESOURCES/ LOGISTICS
Crime prevention	1	1	3
Search/ Surveillance	3.5	2.5	3
Arrest/ apprehension	3.5	2.5	3
Seizure & confiscation	3.5	1.5	3
Prosecution/ case build up	1	1	1

Scoring System: Very Low (1), Low (2), Medium (3), High (4), Very High (5)

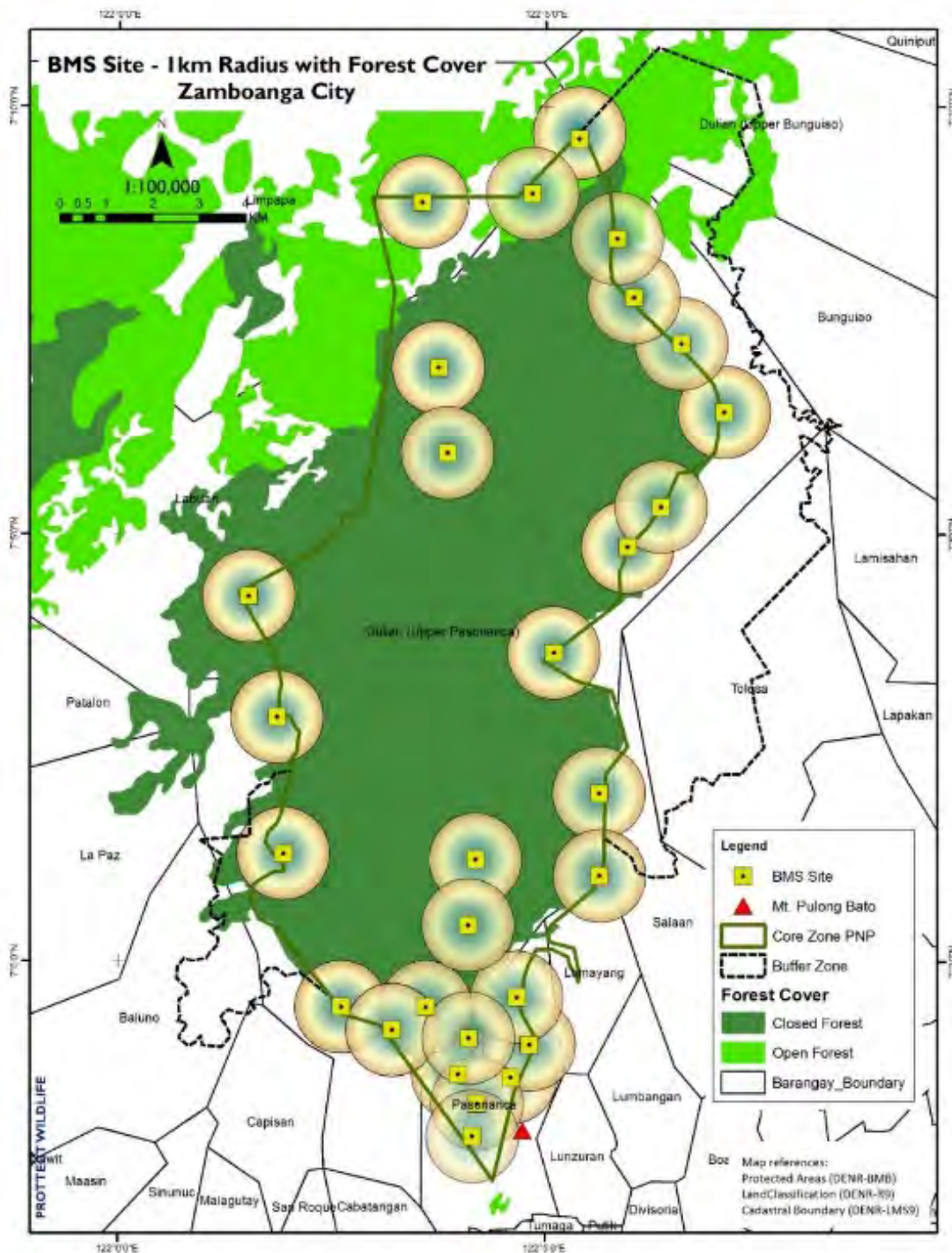
**GENERAL INFORMATION ON POLICY NEEDS AND GAPS**

- Protected areas and watersheds: enforcement authority of private security guards and other volunteers, co-management agreements
- Coastal areas/mangroves: regulation on vessels passing through the PA, entering lagoon, use of motorized vessels
- IUUF and Wildlife Trafficking: Inter-agency cooperation through existing MOU, updated ordinances on fisheries and Bantay Dagat/Gubat operations

In terms of manpower, the Pasonanca watershed appears to be in good footing with the deployment by the water district of 188 forest guards to look after the area. With a ratio of one ranger for every 65 hectares of forest, this is one of the most ideal set ups for guarding a delineated forest in the entire country.

Despite their presence, during the field validation, the transport of illegally cut timber was documented together with heavy charcoal making. The guards are lacking in technical skills on law enforcement but still serve a deterrent function for open access to the site. Other activities that were detected included illegal gold mining and encroachment/illegal occupation in the buffer zone of the Pasonanca watershed and within the Manicahan watershed. The activity has started training the watershed guards in partnership with the local water district and DENR.

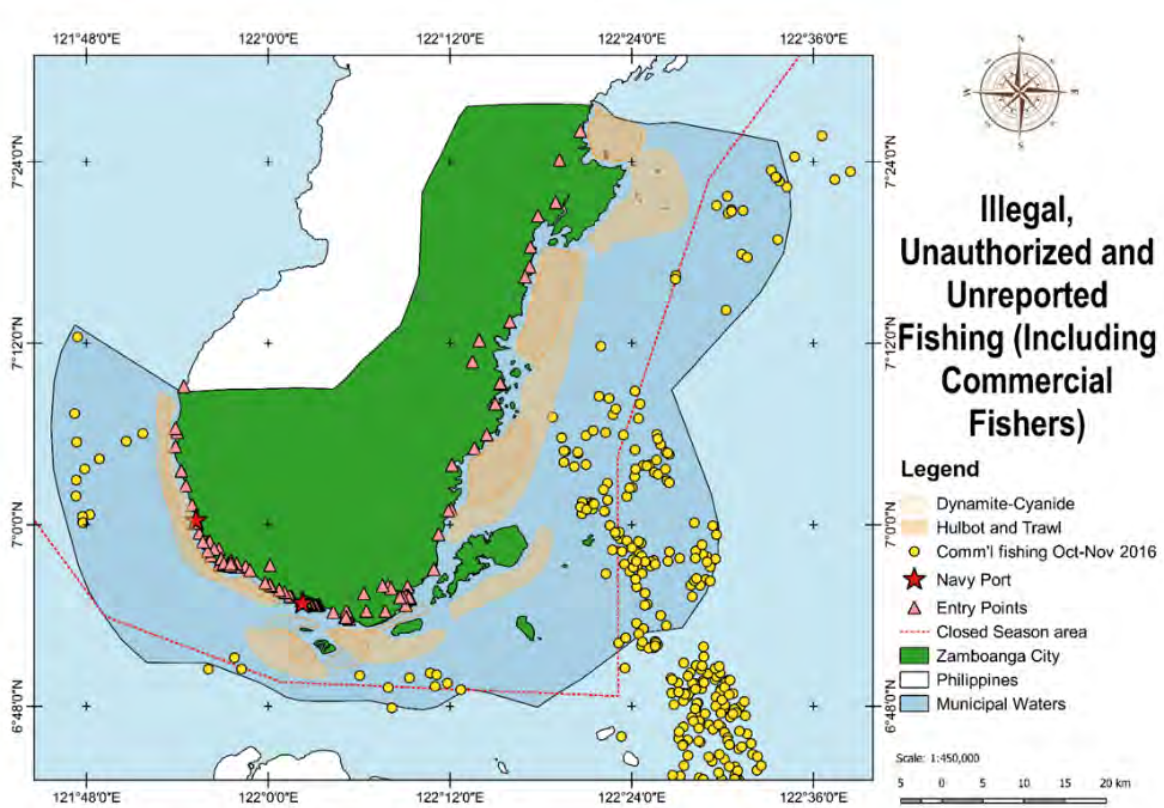
**FIGURE G.24: PASONANCA NATURAL PARK**



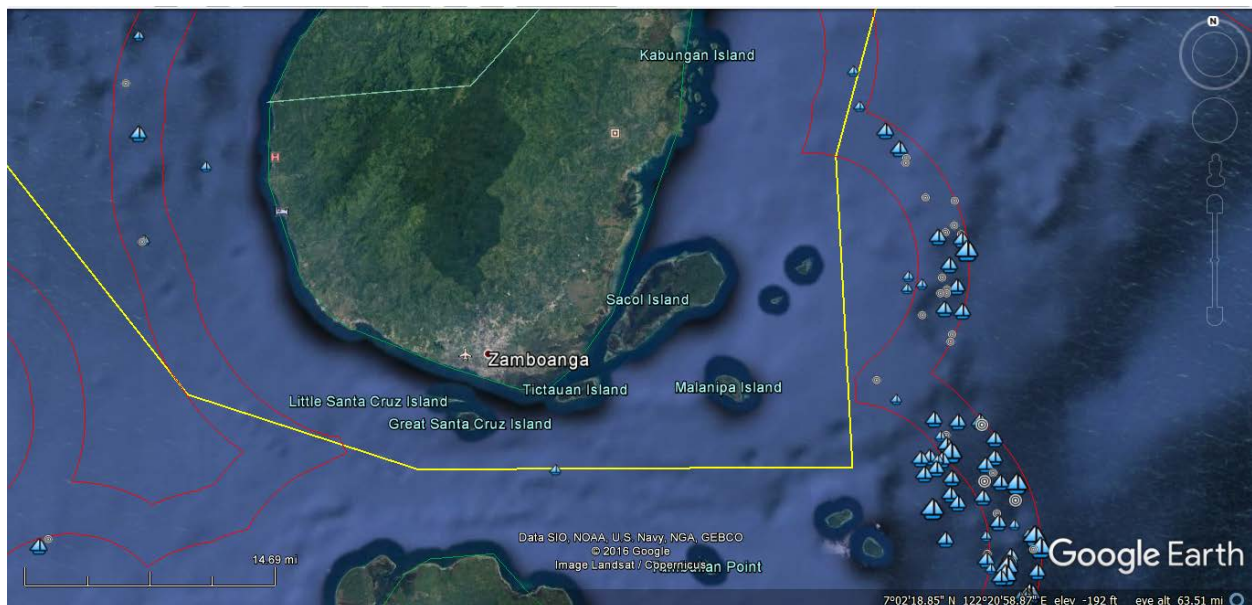




**FIGURE G.26: VIIRS DATA INDICATING FISHING ACTIVITIES OF COMMERCIAL FISHING VESSELS**



**FIGURE G.27: COMMERCIAL FISHING VESSELS DOCUMENTED DURING MONITORING ACTIVITY JUXTAPOSED WITH VIIRS DATA OF DECEMBER 1-12, 2016**

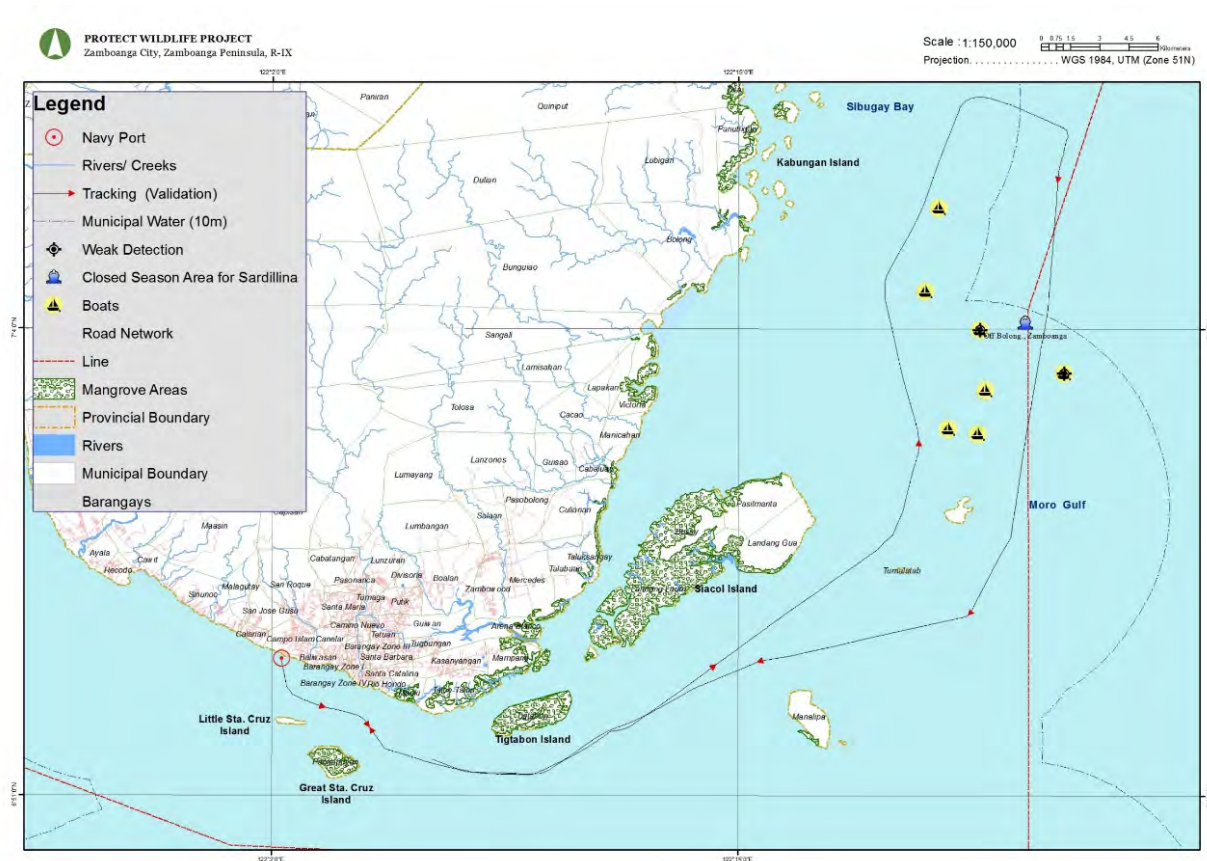


Field validations for compliance assessment were conducted in Zamboanga City’s municipal waters, in partnership with the Philippine Navy. Documented during the validation were the encroachment in the City’s municipal waters of fishing vessels using banned fishing gears such Danish seine, and the operation of commercial fishing vessels operating as trawls, ring nets, and purse seiners. Encroachment in seasonally closed areas for sardine fisheries by commercial fishing vessels using superlights were also observed from 6:00 PM to midnight on December 1, 2016.

The use of superlight and other lights for fishing work in two stages. The lights are switched on to attract the fish for aggregation prior to the nets being cast to capture them. However, instead of the superlight vessels deploying their nets within the closed area (yellow line), they instead slowly move out of the area bringing with them the schools of fish that they were able to gather. It can be assumed that it was outside of the closed area where they deployed their nets to haul in the fish. VIIRS data also corroborated the operation of commercial fishing vessels Zamboanga City’s municipal waters, indicating a need for stronger fisheries law enforcement in the area.

For municipal fisheries, cyanide and dynamite fishing activities were also detected, along with shark fishing. Protect field teams also monitored the collection of marine turtle eggs during engagements with the communities.

**FIGURE G.28: ROUTE OF MONITORING VESSEL DURING COASTAL MONITORING ACTIVITY FOR IUU FISHING IN MUNICIPAL WATERS OF ZAMBOANGA CITY AND CLOSED AREA FOR SARDINE FISHERIES**



## G.5 TAWI-TAWI

For the province of Tawi-Tawi, the assessment was conducted in January 2017 and was attended by representatives from national government agencies; provincial government of Tawi-Tawi; municipalities of Bongao, Panglima Sugala, Languyan and Turtle Islands; and civil society organizations.

**TABLE G.9: PRELIMINARY RESULTS OF SKILLS SURVEY OF NATIONAL LAW ENFORCEMENT AGENCIES OPERATING IN TAWI-TAWI**

CORE OPERATIONAL ASPECTS	Bureau of Customs	DENR-Taganak	PNP-MG, 1st SOU	PNP-SAF (51SAC)	PNP-TTPPSC	PCG-Bongao	BFAR
<b>A. Intelligence and Investigation</b>	<b>2.02</b>	<b>2.44</b>	<b>1.24</b>	<b>1.79</b>	<b>1.84</b>	<b>1.44</b>	<b>1.59</b>
Specialized intelligence and investigation capacity	2.88	3.00	1.50	2.63	2.50	2.13	2.00
Comprehensive intelligence gathering	2.67	3.00	1.33	1.67	1.33	1.83	1.89
Efficient data management and analysis	2.00	3.00	2.00	2.75	2.33	1.75	2.00
Robust evidence handling & management	2.25	3.00	1.50	2.25	2.50	1.75	2.00
Competent case development and charging	2.25	3.00	1.25	1.88	2.88	1.25	2.00
Forensic capabilities	2.33	2.67	1.33	1.83	2.00	1.67	1.67
<b>B. Law Enforcement Patrols</b>	<b>2.50</b>	<b>2.79</b>	<b>1.64</b>	<b>1.99</b>	<b>2.84</b>	<b>2.09</b>	<b>2.50</b>
Skilled and knowledgeable patrol staff	2.75	2.75	1.75	2.00	2.88	2.00	3.00
Experienced and competent patrol leaders	2.50	3.00	2.25	2.63	2.25	2.63	3.00
Suitable and sufficient equipment and supplies	2.00	2.20	1.20	1.30	2.13	1.80	1.40
Appropriate terms & conditions of service	2.75	3.00	1.00	2.50	3.17	2.00	3.08
Supported and incentivized patrol staff	2.50	3.00	1.00	1.50	3.78	2.00	2.00
<b>C. Law Enforcement Management</b>	<b>1.86</b>	<b>2.27</b>	<b>1.42</b>	<b>2.01</b>	<b>2.30</b>	<b>1.74</b>	<b>2.09</b>
Competent and effective leaders	2.13	3.00	2.25	3.13	3.00	2.13	2.83
Proactive and dynamic patrol strategies	2.00	3.00	2.00	3.00	3.00	2.50	3.00
Collection and use of patrol data	2.75	3.00	1.50	2.00	2.75	2.50	2.25
Effective management systems and infrastructure	2.42	2.33	1.33	1.92	2.75	1.58	2.39

Scoring System: Very Low (1), Low (2), Medium (3), High (4), Very High (5)

As expected, the DENR rated itself well in all aspects compared to the other government agencies due to the specialized training it has received in relation to wildlife law enforcement. While it can be assumed that the uniformed services such as the PNP and the Coast Guard have received better training in terms of intelligence gathering and analysis, they have rated themselves poorly in this aspect, as wildlife law enforcement may not be a priority for them despite the area being an identified trafficking hotspot.

With regard to suitable equipment for patrols and support for personnel, it is interesting to note that the specialized units of the PNP such as the MG Special Operations Unit and the Special Action Force have rated themselves as very low to low despite being provided with top-line equipment; while the more regular unit such as the Public Safety Company rate themselves higher in this regard.

In terms of fisheries law enforcement, the BFAR and the PCG also rate themselves inadequate in terms of intelligence gathering. They similarly rate themselves low in terms of equipment and support for patrol staff. Note that Tawi-Tawi is dependent mostly on fisheries for its livelihood.

**TABLE G.10: PRELIMINARY RESULTS OF THE SKILLS SURVEY OF FOUR MUNICIPAL LGUS IN TAWI-TAWI**

<b>CORE OPERATIONAL ASPECTS</b>	<b>Panglima Sugala</b>	<b>Languyan</b>	<b>Bongao</b>	<b>Turtle Islands</b>
<b>A. Intelligence and Investigation</b>	<b>2.08</b>	<b>2.26</b>	<b>1.57</b>	<b>1.90</b>
a. Specialized intelligence and investigation capacity	2.75	3.75	2.38	1.25
b. Comprehensive intelligence gathering	2.67	3.00	1.33	2.67
c. Efficient data management and analysis	1.50	1.75	2.00	3.00
d. Robust evidence handling and management	3.25	3.75	2.00	3.00
e. Competent case development and charging	2.75	2.75	1.88	2.50
f. Forensic capabilities	2.83	2.33	1.83	2.00
<b>B. Law Enforcement Patrols</b>	<b>2.31</b>	<b>3.59</b>	<b>2.17</b>	<b>2.90</b>
a. skilled and knowledgeable patrol staff	2.88	4.00	2.13	3.25
b. Experienced and competent patrol leaders	3.25	4.25	2.38	3.00
c. Suitable and sufficient equipment and supplies	1.50	2.00	2.50	2.60
d. Appropriate terms and condition of service	2.25	3.88	2.00	3.00
e. Supported and incentivized patrol staff	1.67	3.83	1.83	2.67
<b>C. Law Enforcement Management</b>	<b>1.70</b>	<b>2.68</b>	<b>1.70</b>	<b>2.53</b>
a. Competent and effective leaders	2.00	4.00	2.25	3.00
b. Proactive and dynamic patrol strategies	1.75	3.00	2.00	3.50
c. Collection and use of patrol data	2.50	2.75	2.00	3.50
d. Effective Management systems and infrastructure	2.25	3.67	2.25	2.67
e. Clear and consistent standard and procedures	-	-	-	-

Scoring system: Very Low (1), Low (2), Medium (3), High (4), Very High (5)

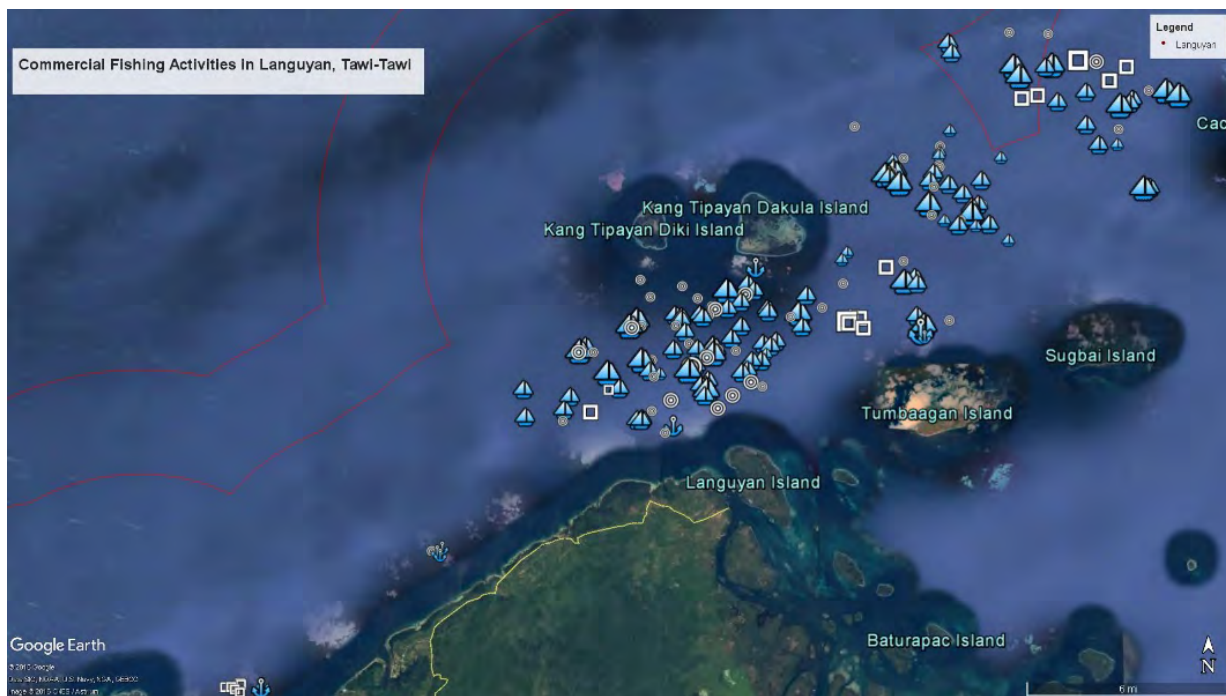
Among the LGUs, there is a wide disparity in skill sets related to wildlife law enforcement. Languyan rates itself the highest, while the capital, Bongao, rated itself the lowest among the four LGUs. Languyan also scores itself higher compared to national government agencies, including the DENR-Taganak, except in terms of the investigation and intelligence component. While Languyan rates itself well in terms of intelligence gathering, skills and incentives for its patrol staff, it rates itself low with regard to logistics related to equipment and supplies.

The good rating of Languyan is due to the fisheries law enforcement trainings it has received from other groups for the past several years. However, it would be interesting to correlate the results of their self-assessment with their efforts on actual environmental law enforcement.

Figure G.29 shows the location of commercial fishing vessels recorded by VIIRS covering the period of October to December 2017. It clearly shows the continuing encroachment of commercial fishing vessels in the municipal waters of Languyan. Compared to other municipalities located in Bongao Island, the intrusion of commercial fishing vessels in their municipal waters is negligible based on VIIRS data for the same period.

In practice, some commercial fishing vessels use explosives to stun fish especially when the fish catch is plentiful to avoid the fish tearing their nets as they are hauled in. Furthermore, interviews with key informants during the assessment will reveal that there is an informal agreement within the community that residents using illegal fishing methods will not be apprehended during times of celebration such as weddings, birthdays and other cultural practices, particularly when the fishing effort is in support of the event.

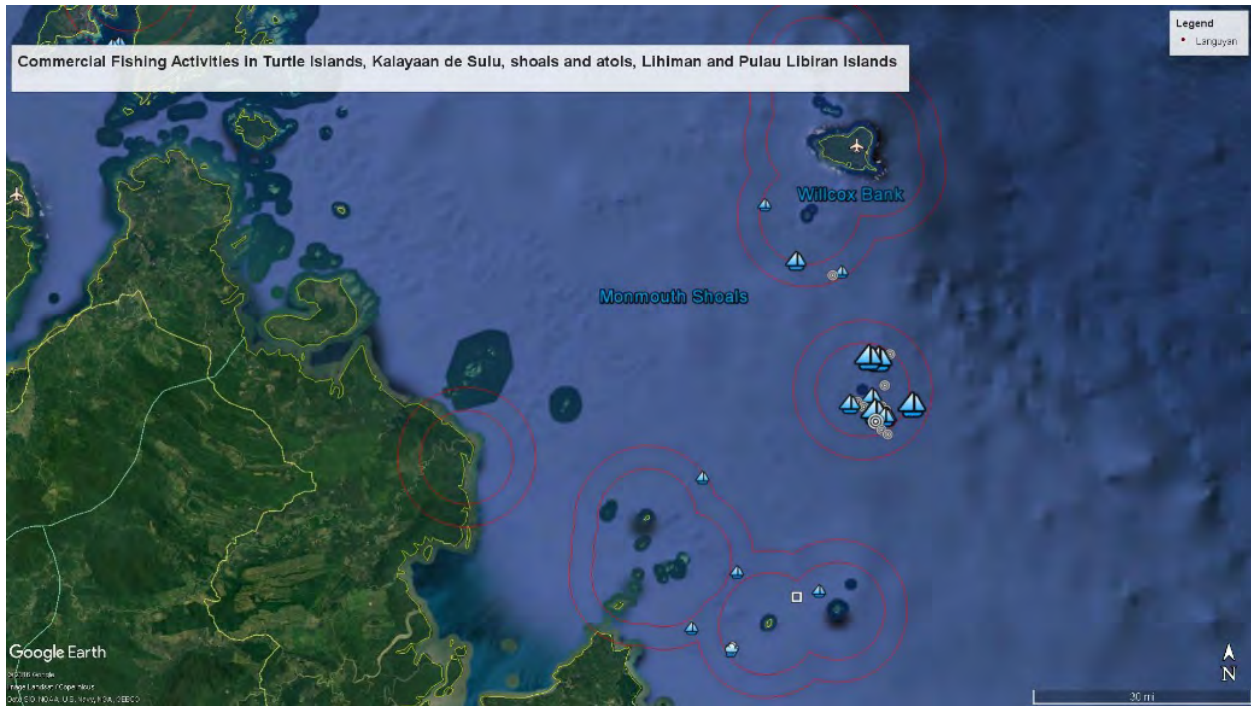
**FIGURE G.29: COMMERCIAL FISHING VESSELS ENCROACHING IN LANGUYAN MUNICIPAL WATERS (OCTOBER-DECEMBER 2017)**



As for Turtle Islands, it is interesting to compare their ratings with DENR-Taganak. Turtle Islands rates itself well in the components of law enforcement patrol capacity and management, almost being at par with the DENR. Ironically, Turtle Islands is still regarded as one of the major hotspots for the illegal trafficking of marine turtles. Furthermore, based on VIIRS data, large commercial fishing vessels can be seen operating in the municipal waters of Turtle Islands, which is a key migratory path for nesting sea turtles.

Aside from enforcement capacity, the team also assessed violations incidence, resource use patterns, organizational and institutional set-up in relation to wildlife law enforcement and local policy setting.

**FIGURE G.30: COMMERCIAL FISHING VESSELS OPERATING IN MUNICIPAL WATERS OF TURTLE ISLANDS FOR OCTOBER 2017**



# ANNEX H

## SUMMARY OF GENDER ANALYSES RESULTS IN SELECTED PROTECT WILDLIFE SITES

### H.1 INTRODUCTION

Within the international and national development conservation projects, there is a growing recognition on the importance of women's and men's role in natural resource management development process. The identified key channels that these conservation management processes can be effective are seen in the coastal and upland communities where almost half of the population are women whose crucial role is searching for food or augmenting income for the subsistence of the family.

The activities that women and men in the coastal and upland communities undertake from agricultural tasks of planting, gathering firewood, water, gleaning, harvesting marine products, non-timber products, etc. are dependent on natural resources. Hence, the growing realization that the success of conservation management depends on the support of local people is critical to reduce pressure on protected areas but also to balance the economic and cultural needs of local people, the environment and succeeding generation.

To accomplish their tasks, women and men in the communities are, formally or informally, resource managers. As conservation actors (i.e. any individual who takes action regarding the management of natural resources), they must be fully involved in the processes regarding resource use.

While both women and men are active in their tasks as conservation actors and stakeholders, there is still very limited information on women in protected areas. In the 2014 Survey and Registration of Protected Area Occupants (SRPAO) of the Biodiversity Management Bureau, roughly half of protected area occupants are women and yet little information regarding their roles, needs, livelihood activities, participation, etc. in the context of protected area management are not adequately known.

Although, there are sex-differentiated data available, documenting differences using sex-disaggregated data does not provide specific issues, inequities or differences in experiences of men and women that may help projects plan out interventions to fully involve the men and women in the community. While collecting sex-disaggregated data information is a first step toward gender responsive programs and policies, some agencies have begun collecting disaggregated information at the local level; currently, sex-disaggregated information is rarely used in national and local environmental policies or programs. Data that provide information on women's and men's resource use, access to resources, and participation in environmental decision-making contributes to sound policies.

Women and men have different gender-based roles and responsibilities in their own lives, families, households, and communities. They have different knowledge of, access to, and control over natural resources, and different opportunities to participate in decisions regarding natural resource use. Understanding women's and men's relationships to the environment plays an important role in developing solutions for more sustainable use of natural resources. Ignoring gender distorts the understanding of human impacts on the environment.

In relation to biodiversity and natural resources, taking a gender perspective involves understanding and integrating the relations and differences between men and women into projects. This includes the different roles, rights and opportunities of men and women concerning access, use, management and conservation of natural resources. It also involves considering the different ways in which environmental degradation affects men and women.

Protect Wildlife's strategy to achieve its objectives is built on an integrated ecosystem management approach. It recognizes the unique conditions within each landscape and seascape and will respond to the threats to biodiversity within the context of economic development, systems of governance, social and cultural norms. Thus, these require a holistic understanding why conservation of the natural environment is not only protecting wildlife but also having to balance the economic socio-cultural needs of men and women, their well-being and the quality of life.

In order for the Protect Wildlife to gain better understanding on the dynamics and differences of women's and men's roles and responsibilities that affect their participation to conservation and wildlife management, several gender analysis activities were done in the selected areas of Protect Wildlife priority sites. The sites are:

- Mt. Mantalingahan domain and tenure holders in Palawan (CADT, CADC, CBFM holders)
- Coastal communities of Zamboanga City (Talon-Talon and Mampang)
- Tenure holders of Pasonanca Natural Park and the Santa Cruz Protected Landscape & Seascape
- Selected farming and fishing communities in Tawi-Tawi (barangays in Bongao, Panglima Sugala, Languyan)

The results of the gender analysis are inputs to the design and implementation of Protect Wildlife Strategic Approach activities to ensure that voices of women and men specifically from the local communities are heard through consultations, planning, training, etc.

## **H.2 OBJECTIVES OF THE GENDER ANALYSIS**

- Describe the reproductive, productive and community roles women and men play in communities in the selected farming and coastal communities of Mount Mantalingahan Protected Landscape, Zamboanga City and Tawi-Tawi so that the Protect Wildlife can be guided in its interventions;
- To surface out barriers to women's full participation in decision-making and implementation roles in biodiversity conservation and wildlife protection; and
- Recommend strategies to be responsive to the different needs and dynamics of men and women in selected sites of Protect Wildlife, in accordance with the activity's gender equality and women empowerment principles.

## **H.3 METHODOLOGY**

- Focus group discussions (FGDs) with men and women from farming and coastal communities within priority sites

The approach for the conduct of the gender analysis activity is through focus group discussions. Unlike individual interviews, focus group discussion provides an added dimension to the interaction among members. It is also a way to crosscheck information for accuracy by listening to the members with different points of view on the same topic.

The participatory process can in itself increase the community's awareness of the patterns, value, inter-relatedness, imbalance and impact of their work and relations. A gender analysis provides necessary information to improve project planning and design; and baseline data from which to measure changes in condition as well as position later on.

Male support and involvement is important in development work with women in both integrated and women-only projects. Opportunities for dialogue and negotiation between women and men, and for creating a common understanding of the benefit to men and the community of women's participation. The strategy



for achieving this is best developed by women and men who are already supportive. . Advice can be sought on ways to maximize women's involvement, benefits and participation as decision-makers; and to gain the co-operation and support of men.

To generate data and information, the activity will use several Gender analysis tools adapted from the Harvard Gender Analysis framework and IUCN Gender Analysis Guide.

The focus group discussion will generate information to identify if there are gender issues on tasks and responsibilities of men and women in family and community activities.

A facilitated group discussion on Activity Profile/Gender Roles and Responsibilities will help examine the gender-based division of labor. It categorizes the different reproductive, productive and community activities of men and women and shows who does what, when (seasonally or daily) and where (at home, in the farm, outside the farm/coastal activities). It gathers information about gender differences in production practices and the intensity of practices. This activity will be conducted with single-sex groups so that the responses from men and women can then be compared and analyzed.

## **H.4 SUMMARY OF FINDINGS**

The following is a summary of the results from the gender analysis conducted in the selected sites of Protect Wildlife where barriers to participation as well as other concerns were surfaced out by the men and women respondents.

### **H.4.1 Barriers to Women's Participation**

In the sites where gender analyses were undertaken, similar barriers to women's participation were revealed:

- 1. Multiple burden of women for Punta Baja, Rizal; Bono-Bono-Malihud, Bataraza; and Amas, Brooke's Point in Palawan; Mampang, Talon-Talon and Santa Cruz in Zamboanga City; and Panglima Sugala and Bongao in Tawi-Tawi**

A basic barrier is the increasing burden borne by women who have to cope with multiple responsibilities and tasks. Most basic is the supply of domestic water.

The location of water sources need at least two to three hours to be able to get water for the family. During the El Nino phenomenon, depleting sources of water from streams were observed in Bono-Bono-Malihud, Bataraza and Amas, Brookes Point Palawan. While in Mampang Talon-Talon and Santa Cruz Islands in Zamboanga City resulted to more time and money needed to fetch or buy water for home use.

The competing demands of household responsibilities and involvement in micro level income generating activities leave little time to maximize opportunities presented by the Protect Wildlife. This is experienced in Amas, Brooks Point and Bono-Bono, Malihud, CBFM Bataraza.

In Sowangan, Quezon and Punta Baja, Rizal in Palawan and Tolosa in Zamboanga City, some substitute caregivers through relatives or neighbors can be arranged, but this means advance notice is important to enable interested women to participate.

In addition, the burden of travel time and transportation cost which is unaffordable may prevent the participation of women.

**2. Low self-confidence (Most women respondents from barangays of Bongao, Panglima Sugala, Languyan in Tawi-Tawi; Amas, Brooke's Point; Bono-Bono, Malihud, CBFM Bataraza in Palawan; and Santa Cruz Island, Mampang and Talon-Talon in Zamboanga City)**

Women expressed low self-confidence interacting in large groups because of low literacy. The need for gender-sensitive trainers especially if they are male was emphasized; with women needing special attention and techniques to make them comfortable and draw them out to express their opinions. Some women said they would be encouraged to participate in specific training for women only, separate from the men.

**3. Limited participation in decision-making**

The lack of representation of women in decision-making was most pronounced in Bono-Bono, Malihud, CBFM Bataraza, where women were excluded from membership in the PO and from specific activities like CBFM training because they did not know they could participate. This also applies to Tolosa in Pasonanca National Park in Zamboanga City, where women's participation in decisions is hampered by the fact that the PO only male household heads are recognized as members. In Santa Cruz Island, Zamboanga City women are unable to participate in resource management actions and decisions because they are not recognized as fishers.

In terms of membership in leadership positions, only one leader is a woman in the Samahan ng Pala'wan sa Amas, Brooke's Point and only two out of fourteen Board Directors in Sowangan, Quezon CADT are women.

**4. Limited perspectives or beliefs that hinder participation in productive work**

The limited perspectives and capacities of women in specific spheres also inhibit their active participation in development opportunities.

**a. Productive activities vs. reproductive activities (Santa Cruz Island, Tolosa, Mampang, Talon-Talon, Zamboanga City, Barangays of Panglima Sugala, Bongao in Tawi-Tawi)**

The women of perceive their current productive work as family obligations and therefore do not ask for or receive information on services and opportunities they can avail of. In Mampang and Santa Cruz Island, Zamboanga City economic opportunities for women focus on vending, livestock fattening and sari-sari store operation, which are mainly extensions of reproductive work. While the

**b. Law enforcement**

The prevailing belief is that enforcement is for men only because the understanding is that enforcement is confined to apprehending violators, which is a dangerous job that women in the home should not be exposed to. Thus, the potential contribution of women in prevention, detection and information gathering is not recognized or utilized. Enforcement is thus considered for men only. Although, respondents from Mampang, Zamboanga City and Punta Baja, Rizal, Palawan explicitly expressed that they have observed illegal activities around their barangays like harvesting mangroves and poaching of wildlife but they fear for their lives since those behind might get back at them and their families.

## 5. Limited access to livelihood resources

Lack of access to information, livelihood technology, market options and credit is another major barrier for women.

### a. Technical information

Almaciga resin suppliers from Amas, Brooks Point and Bono-Bono, Malihud, CBFM Bataraza, Punta Baja experience disruptive delays in obtaining permit to transport the resin. The arduous processing and unclear government procedures result in disincentive especially for women unable to pay for the labor of helpers in gathering and hauling products.

While traders are able to comply with requirements to engage in export of products, the producers are intimidated by the processes and are unable to level up their business into exporting in order to benefit from higher profits.

Some livelihood opportunities like contract growing require specific credentials. The farmer/producers for example are disqualified if they cannot present ownership documents to their land resources.

### b. Market options and market information

Most of the Women respondents from Zamboanga City, Palawan and Tawi-Tawi who are relied upon for productive work, fall into the trap of no-collateral credit from traders that obliges producers to sell at trader-dictated prices.

For example, without any other source of information about market prices, women producers of vegetables from Tolosa, Zamboanga City, Bono-Bono, Malihud, CBFM Bataraza, Amas, Brookes Point and Punta Baja almaciga harvesters, Sowangon, Quezon rely solely on the traders who buy at the farm gate for the price of goods like root crops, baskets, bananas, and kaingin rice, seaweeds, fish catch etc.

### c. Livelihood technology

Women of Bongao, Tawi-Tawi have been trained in production of banana chips and peanut butter, while in Amas Brookes Point and Punta Baja, Palawan for coco jam and honey processing; they lack the capacity to scale up production to become a successful micro-enterprise. Technology and further training to address this concern is needed.

There are a number of potential products that can be developed or up-scaled into next level enterprises when provided with appropriate technology and credit support:

Bono-Bono, Malihud, CBFM Bataraza, has identified the following;

- abundant yantok or rattan poles could be designed and produced into furniture
- abundant pineapples can be made into jams and other products; pineapple leaves can be processed into fibers or distributed fresh in Puerto Princesa hotels and resorts
- Saba which is harvested every three months and sold to a consolidator and sent to Iloilo and Bacolod can be locally processed into chips, or other value-added products
- IP bamboo bilao which are currently produced and sold regularly to a buyer who comes regularly can be improved and workmanship refined to fetch better prices

- tiger grass brooms, bamboo baskets, bilao and banig produced and sold during market days can be improved and workmanship refined to fetch better prices

Panglima Sugala, Tawi-Tawi has identified the following;

- Woven mats using locally available materials
- Traditional foods like lapok-lapok bread, crispy dilis

In Amas, Brooke's Point, women have not been able to take advantage of market potential of their coco jam. While unmet demand for coco jam is high, the rising prices in copra results in decreased supply of raw material for jam making even if coco jam is a processed product and should be more profitable. Possibly, the pricing of the coco jam needs to be reviewed, considering the considerable added work involved in its production—splitting, drying and cooking.

There are a number of livelihood training participated in by women. However, since these are not packaged with capital or credit assistance, as well as product development and design; or accompanied with mentoring, the training results do not lead to establishing businesses.

#### d. Credit

Generally, credit for scaling up production of marketable goods is unavailable to women in Bongao, Tawi-Tawi and Santa Cruz Island, Zamboanga City. In Amas, Brooks Point, the women engaged in almaciga resin are without capital and therefore unable to advance payments to laborers they hire to gather and haul the resin when there are marketing delays. This makes their livelihood business less resilient and there are threats to sustainability when the laborers are discouraged to provide their services because of delayed payment.

## 6. Inadequate information dissemination approaches

Current modes of disseminating information are no longer effective and have become major barriers to all women respondents' participation.

Traditional approaches to information dissemination continue to inadvertently exclude women. Further, the assumption that information given to heads of households reaches all the concerned household members still prevails. These approaches and assumptions should be updated. Since the heads of households are usually men, information does not reach all women who may benefit from it. This is true for Amas Brooks Point; Sowangan, Quezon; and Tolosa Pasonanca National Park, Zamboanga City

In Mampang, Talon-Talon and Santa Cruz Island, which is a remote sitio of the barangay, and the women respondents from the selected barangays of Bongao, Panglima Sugala and Languyan, Amas, Brooke's Point, Punta Baja, Rizal of Palawan information is coursed through barangay leaders and male tribal leaders and do not reach women. Consequently, women are usually not informed of training opportunities. Similarly, Sowangan, Quezon, Palawan households, are scattered and located in hard to reach upland areas. Thus, new modes of information dissemination are needed.

In Languyan, Tawi-Tawi, information about training and technology transfer target men because of traditional assumptions that farming and fishing related technologies are the realm of men effectively if inadvertently exclude women from benefiting from these.

Further, the gender analyses revealed barriers to participation experienced by both women and men respondents:

**1. Lack of capacity in various aspects that result to limited participation of men and women in decision making**

a. Management of tenure rights

CBFM Holders of Bono-Bono, Malihud, CBFM Bataraza, lack management and negotiating skills. Apparently, the authorities, responsibilities and obligations of being a CBFM holder are not clear. They cited an example when they were just “informed” or asked that a water system be installed in the CBFM area; there was no written agreement or that the organization would be paid for the use of water resources. They were not able to assert their position as CBFM holders. There was no discussion about compensation, and no opportunity to participate in deciding on what the arrangements would be.

Further, IPs sell or pawn their kaingin plots to lowlanders who tend to “overuse” the land and sometimes cause forest fires. CBFM PO lacks the capacity to control the lowlanders. It seems organizational strengthening training was conducted only during formation phase. Further training is needed and requested by the PO.

The CADT holders of Sowangan, Quezon and Punta Baja, Rizal Palawan have a similar experience. There is an increase in rental or verbal agreements granted to lowlanders; threatening to replace traditional ecological kaingin practices with input-intensive farming. The CADT/CADC holders do not know how to control the practice of harmful practices.

A related experience involves almaciga resin collection (Punta Baja, Rizal, Bon-Bono Malihud CBFM) While the IPs apply very rigid practices of cleaning the area around the tree, sanitizing the “tarasan” and removing bark that is vulnerable to termite infestation, and practice a form of fallowing between tappings; the encroachment of “diwan” who have no understanding of the proper techniques pose danger to the sustainability of the tree and its benefits.

b. Business development and management

Languyan, Tawi-Tawi seaweed farmers lack the capacity to address management issues. While the producers are aware of the cycle of planting, production, harvesting, and the occurrence of ice-ice disease, they are continue to suffer delays in delivery commitments. If the ice-ice disease is a natural phenomenon in the production cycle, they should be able to negotiate better delivery dates with the traders.

Further, they should be able to negotiate the dictates of the buyers who insist on harvesting immature produce; or who refuse to buy at the peak such that the produce reaches over-maturity. Daily or weekly price fluctuations victimize producers especially because the produce is perishable. Improvement in production timing as well as post-harvest handling and marketing systems is needed.

In Languyan, Tawi-Tawi, the potential to produce marketable processed goods is underutilized. There is ample experience and skills in mat weaving using pandan. However, the supply of pandan that can be used for mat weaving is diminishing. There are no initiatives to develop this potential industry.

In Mampang and Talon-Talon, Zamboanga City, product pricing was an expressed need in order to negotiate fair prices for goods, along with improved seaweed drying processes and expanded access to markets.

c. Land rights

The women and men respondents in Bongao, Panglima Sugala, Languyan, Tawi-Tawi, there is a lack of capacity to interface from traditional to current governance systems. Where inheritance used to adequately establish land ownership, current dictates require land ownership certificates, or titles, or other legal documents to assert ownership. Where production and land used to be synonymous, the current separation of production from land rights has brought about production sharing schemes, which reduce the role of farmers from owners to tillers and producers. As such, they have lost the opportunity to enter into contract farming even if they are the direct producers.

In addition, Bongao, Panglima Sugala, Tawi-Tawi and Languyan, Tawi-Tawi manifest low awareness of land rights and weak capacity to harness the support of concerned agencies to assist them in pursuing their right to land resources. In Bongao, Panglima Sugala, Tawi-Tawi, the lack of land rights effectively excludes them from the contract farming system, which may present favorable opportunities for them. Feudal relationships with supposed landowners persist. In Panglima Sugala, production sharing schemes continue operate. A feudal relationship with the ex-governor persists.

d. Networking with LGU

A constraint common to Amas, Brooke's Point; Languyan, Tawi-Tawi; Bono-Bono, Malihud, CBFM Bataraza, Punta Baja, Rizal; is a general lack of understanding of how to approach concerned government agencies and access support services that they need.

In Languyan, Tawi-Tawi, they are unable to access significant LGU resources especially for industries (nickel mine) operating within their barangay. They observe the discharge of domestic effluents that threaten farming environment; but do not know what to do about it. They also know that Cyanide fishing and poaching by outsiders including foreign/Chinese vessels within municipal waters continue to occur, but do not know how to address these.

In Mampang, and Talon-Talon, farmers observe dumping of waste on abandoned salt beds and fishponds and the problem of waste disposal that river currents bring to the mangrove areas; but do not know what to do about it. They expressed a need for more information on environment management to improve understanding of ecosystems, but do not know how to access it.

In Languyan, Tawi-Tawi, current threats to seaweed farming include foreign debris and sea turtles that get caught in seaweeds. This occurrence requires some research to identify improvements in the use of floats; innovate methods to prevent debris and turtles from being caught; or propose alternative technologies to replace use of floats. The seaweed farmers do not know how to access these services.

In Sowangan, Quezon, Bon-Bono-Malihud, Bataraza technical assistance is needed to correctly value resources such as water so that fair payment for ecosystem services can be demanded and collected. They do not know how to access this support.

## 2. Limited access to credit and market options are experienced by both men and women respondents in the selected areas of the gender analyses

For example, Languyan, Tawi-Tawi where there are no credit facilities except the mayor who does not collect from the loans that the people have borrowed, and where because of limited capital investment especially for small scale farmers, they end up with traders who provide loans and dictate prices at harvest time.

The same case happens in Mampang and Talon-Talon, Zamboanga City, where seaweed farmers fall into the trap of no-collateral credit from traders who oblige producers to sell at trader-dictated prices. This is aggravated by the fact that they have no other market options, so they have no basis for negotiating fair prices.

This is also a practice in areas where almaciga is harvested, traders loan out money to indigenous people. However, prices of harvested almaciga are set by the traders.

In some case, however, the management of credit presents additional problems. For instance, there are borrowers who use only 20 percent of loans for business and the 80 percent is used for non-business related items like motorcycles and cellphones. This consumption orientation becomes a barrier to meaningful use of credit.

### H.4.2 Recommendations to Address Barriers to Women's Participation

#### 1. Recognition of women

- a. Interventions that require the participation of women have to take into account their respective situations. Women from Amas, Brooke's Point and Bono-Bono, Malihud, CBFM Bataraza and Sowangan, Quezon need advance notice so that they can make arrangement for substitute caregivers. It would be best to hold events in venues accessible and close to their areas. If travel is necessary, transportation cost should be defrayed. (SA 1,2,3)
- b. An important concern is confidence building especially for women. Majority of the women respondents have low literacy. Discussions should be down to earth, using simple language, and facilitating techniques should be gender sensitive. For example, when possible, groups of women should be separated from the men so that they can talk more freely. Rather than general questions that ask for voluntary replies, the discussion leader could address specific women to share their views in a reassuring way. Also acknowledging the women's contributions should be done frequently to build pride and confidence. (SA 1,2,3,5)
- c. Recognition of women as having equal rights as men and appreciation of their roles and contributions in affairs like membership in CBFM PO, involvement in conservation activities, participation in law enforcement should be promoted. Otherwise, their potential contributions will be lost.

Promote greater participation of women in decision-making. For example, for activities that require labor inputs such as NGP, both men and women respondents suggested that participation of women should be discussed and decided by the women. This was shared by the women in Tolosa, Zamboanga City and the Bono-Bono-Malihud, Bataraza CBFM holders.

## 2. Empowerment through perception and behavior change

- a. Women empowerment through perception and behavior change campaigns should be supported. This will address the notion that women's productive work is part of her family obligations and as such do not require participation in learning opportunities. This will also open avenues to re-examine gender roles towards more balanced distribution so that women's burdens can be shared more equitably with the men.

Behavior change can target major groups. These involves the women farmers, who need encouragement to become active members of the CBFM PO, as CADT/CADC members.

This will address the unintended exclusion at the time the PO was organized. It will also help the women gain recognition for their contribution to the productivity of the community. They also need special attention during meetings to speak up in groups. As suggested by them, confidence building can be achieved if they start interacting publicly on topics of interest such as livelihood, and exclusively with other women with whom they are comfortable.

The other group is comprised of the informal leadership and formal local government; so that they can use their influence to support efforts in NR management. The harvesting of water resources for lowland domestic and irrigation water use, which consumers pay for, must also benefit the upland communities. A possible scheme is to impose payment for ecosystem services (PES) to the CBFM, CADT/CADC areas for their sustained NR management. The formal local government can be effective promoters of PES.

The local leadership or panglima, whose influence is apparent, can use their influence to encourage women to be more active as members of the PO.

## 3. Focused capacity building

Training, dialogues, technology transfer, information sharing, market support and similar activities should continue in a more targeted way.

- a. Instilling longer-term livelihood/business perspective

The activity profiles show the variety of activities that the women are engaged in on a daily basis. They do many little things that may not amount to much. It may be time to examine the larger picture for example, identifying improvement of major livelihood and upscaling of micro-enterprises with high potential for success. The concept of one town one product may help define the single focus where most of the women's energy will be applied.

For example, will it be coco jam from Amas, Brooks Point? Or pandan mat weaving in Languyan, Tawi-Tawi? Or pineapple jam and fiber cloth or bilao baskets from Bono-Bono, Malihud, CBFM Bataraza? Or the best quality seaweed farmed in Mampang and Talon-Talon, Zamboanga City? Or banana chips and peanut butter from Bongao, Tawi-Tawi (SA 2)

## 4. Research Support

There is a need to research on the potentials of wild fruits, berries that can be processed as jams, dried fruits etc. and study the market potential of the products. Within Palawan, there are many hotels in Puerto Princesa and tourist areas that can promote local products.



Research on simple processing technologies for agricultural products like the saba bananas, or root crops that the IPs have produced and on its potential market link.

Research on good planting materials for root crops e.g. camote, cassava suited for uplands

Study/research on the market value chain of almaciga, bananas, and root crops so that it could command a better price.

Study and train the tappers of almaciga so that proper tapping is practiced and sustainability of supply is secured.

All these researches should not only be focused on the technical aspects but also on how appropriate are these for women and IPs to follow considering their level of education.

## **5. Market support**

Assistance in accessing market and price information, in improving market options and in developing skills in negotiation are important to break from the stranglehold of traders. Although this should be done carefully and patiently, to make sure that the women and men concerned are ready to assume greater responsibilities and tasks in the running of their major livelihood. This will initiate the process of turning their small-scale livelihood into enterprises in the medium term.

As suggested by the respondents, new training to further strengthen the members' skills is needed, especially in negotiating prices with buyers. In addition, expanding membership by encouraging the women to become members is timely since they expressed interest in more livelihood training.

Except for the processed jams, handicraft, dried fish marketing has been focused on selling raw products. Some processing may be introduced to profit from value-adding efforts. The volume of produce is more predictable now that the fruit trees are mature and the feasibility of producing processed food products can be studied so that producers are protected from the seasonality of prices.

Identify and analyze existing livelihood enterprises with the intent to move or link them toward higher value chain in producing marketable goods which should not be too labor intensive considering their household roles.

Promote potential livelihood/enterprise based on their Indigenous knowledge and skills that are not intervening with their household chores, which the women consider important for the family. If a livelihood is introduced, the process can be thoroughly explained so that the women can decide based on information if they will pursue the said livelihood. The experience can be processed thoroughly and the insights can help identify new alternatives that will be more appropriate to their interest and willingness.

## **6. Credit support**

Assistance is also needed to fill the credit gap as well as the concomitant need for borrowers to manage their loans and build their credit standing. This will be valuable in terms of developing reliability and integrity, which are credentials necessary for sustainable businesses.

Especially for sites with very limited access to credit, explore possible partnerships with microfinance organizations who not only provide loan services but also other services such as value formation, savings, agriculture technology training like organic farming, adult education, caring for the environment etc.

## **7. Promotion of linkages and networks**

External assistance from an activity like Protect Wildlife can facilitate establishing linkages with relevant government agencies. For example, transparent and mediated discussions with DENR and women from Amas, Brooks Point and Languyan, Tawi-Tawi regarding almaciga permits; preparation of proposals for consideration of LGU in order to access support from the nickel mine operating in Languyan; dialogue with DA to address the problem of weevil insects in Bono-Bono, Malihud, CBFM Bataraza; dialogue with LGU to access potable water supply especially in sites where sources are far and fetching water takes time away from productive work; networking with concerned agencies to strengthen environment law enforcement; coordination with tourism offices to train local guides especially on scientific values for areas with attractions; initiate joint efforts for the establishment of sanctuaries/wildlife habitats (Mount Mantalingahan range and Santa Cruz Islands) in appropriate areas identified as potential for eco-tourism.

## **8. Improved information**

New modes of information dissemination should be initiated. Complementary to the current practice of coursing information through the barangay leaders which is effective to reach men but usually excludes women, discussions at the community level should help identify more effective ways to reach women. In some instances, the rural health unit may be a good communication post. However, information relayed there is still confined to what are considered women-oriented concerns like health. This can be expanded to include subjects like technical training, livelihood technologies and other community events and opportunities. Aside from this, more creative approaches have to be developed and tested.

### **H.4.2 Recommendations to Address Barriers Experienced by both Men and Women**

#### **1. Management of tenure rights, authorities, obligations and responsibilities**

The management of tenure rights especially by CBFM and CADT holders needs to be strengthened. With the increasing trend in IPs permitting, selling or pawning their farm plots to lowlanders, the ecologically sound farming practices of the IP are being replaced by the input-intensive farm practices of the lowlanders.

Training of tenure holders should be conducted to improve their understanding that they continue to be responsible for activities done in their plots regardless if these have been “turned over” in exchange for payment; as well as to develop their management skills in controlling the harmful farm practices applied by the lessees/ permittees. Where possible, identify and establish the almaciga and kaingin areas that have been occupied by “diwans” and monitor their practices that may be detrimental to the conservation areas.

Further, tenure holders should be trained on how to deal with resource users such as water districts and to assert their right and authority to demand fair compensation and to formalize and legalize these terms. It may be time to level up the discussion with CBFM/CADT/CADC through the protected area management board what management of natural resources means. Especially since the local government is harvesting water and benefiting from ecosystem services. This may include forging agreements with other entities like the nickel mine in Languyan when applicable.

## **2. Strengthening business development and management skills**

There is also a need to assist men and women in the Protect Wildlife sites to improve their business development and management skills. A study on the production and marketing cycle of seaweed farming and advice (e.g. timing of delivery commitment) on how to negotiate with buyers would be critical. Another study on product pricing would be helpful including how to access and use market information. A specific research area is to identify improvements in the use of seaweed floats; innovate methods to prevent debris and turtles from being caught; or propose alternative technologies to replace use of floats. Livelihood initiatives can capitalize on existing skills, which are underutilized such as culturing cucumber, fresh fish and aquarium fish etc. in the coastal and marine areas of Zamboanga City and Tawi-Tawi.

## **3. Facilitating linkages and networks**

Facilitated meetings should be conducted to clarify land rights and how to obtain security of tenure; and how to address issues that adversely affect the quality of their land resources, e.g. discharge of domestic effluents that threaten farming environment; cyanide fishing and poaching by outsiders including foreign/Chinese vessels within municipal waters; dumping of waste on abandoned salt beds and fish ponds; and the problem of human waste disposal that river currents bring to the mangrove areas.

# ANNEX I

## REPORT ON THE ROUNDTABLE DISCUSSION-WORKSHOP ON MEDICINAL PLANTS, INCLUDING TONGKAT ALI, IN SOUTHERN PALAWAN

### I.1 INTRODUCTION

The Food and Agriculture Organization (FAO) defines biological diversity or biodiversity as the “the variability among living organisms from all sources whether terrestrial, aquatic or marine”. This includes variability within species, between species and variability among ecosystems. The Philippines contains about 8,000 species of flowering plants and about 4,500 species of non-flowering plants, which include algae, fungi, hepatics, mosses and ferns. They are found in various habitats from marine, fresh water and terrestrial habitats. Of these plants, an estimated 30 to 40 percent are endemic to the Philippines and cannot be found elsewhere in the planet.

Despite this abundance of biodiversity the Philippines is considered one of the 10 hotspots in the world. The main reason for the loss of biodiversity is the destruction of their habitat. The forests of the Philippines have been subjected to indiscriminate logging, kaingin-making and converted to settlement areas. There was little provision for replenishing the destroyed forest and it is feared that many of the plant species would have perished at the end of the century.

Plants are very vital in the chain of life. Plants that we consider weeds today may be the source of important products necessary to sustaining life on earth such as food, medicine, energy and other uses that make life more bearable. More than 70,000 different plant species are used in traditional and modern medicine. Production of at least one third of the world’s food, including 87 of the 113 leading food crops, depends on pollination carried out by insects, bats and birds. This ecosystem service is worth over US\$200 billion per year.

Palawan is considered the “last ecological frontier” because of the extensive biodiversity found in its forests, fresh water bodies and marine ecosystems. Because of the diversity of flora and fauna found in the islands, its topography being divided by tall mountains ranges such as Mount Mantalingahan, Mount Gantung in the southern part and Cleopatra’s Needle in the northern part of the province, and because it is home to three major indigenous communities namely: Batak which is located in the central and northern part, Tagbanua in the central, northern and southern part and Pala’wan in the southern part of the province, the United Nations Educational, Scientific and Cultural Organization (UNESCO) named it as a “Man and the Biosphere Reserve”.

Palawan has at least 1500 species of flowering plants. At least 225 species or 15 percent of it are endemic to the island. Despite this, there was no mention of species that have medicinal properties.

### I.2 MEDICINAL PLANTS IN PALAWAN

A number of studies on medicinal plants of Palawan have already been conducted. One such study examined methanol extracts of 68 tree species, representing 35 families in *in vitro* antiplasmodial, brine shrimp toxicity, and cytotoxicity assays. A number of the species studied showed positive results. Similarly, crude ethanol extracts from 12 Philippine medicinal plants were evaluated for their antibacterial activity against methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Enterococcus*, extended spectrum  $\beta$ -lactamase-producing, carbapenem-resistant *Enterobacteriaceae* and metallo- $\beta$ -lactamase-producing *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. Results showed that *P. betle* had the greatest potential value against both Gram-negative

and Gram-positive multidrug-resistant bacteria. Favorable antagonistic activities were also exhibited by the ethanol extracts of *Psidium guajava*, *Phyllanthus niruri* and *Ehretia microphylla*. The use of non-timber forest products by indigenous peoples in Palawan, in particular the Tagbanuas, were also studied. Their proximity to the forest allows them easy access to NTFPs. However, greater earning from these forest products is prevented by distance from markets, legal land issues and lack of formal education. Increasing access to manufactured products has lessened their dependence on NTFPs for food, medicine and housing purposes.

### **I.3 ISSUES ON TONGKAT ALI**

During a forum, on February 8 to 9, 2017 in Puerto Princesa, on the establishment of the Research, Development and Extension (RDE) Agenda for universities in Palawan, the issue of medicinal plants in Palawan was raised. Tongkat ali (*Eurycoma longifolia* Jack) was mentioned because of the method of extraction of this plant through uprooting. Allegedly, active chemicals that give the plant its medicinal properties are found in the roots. If not effectively replenished there is threat that the plant could become extinct.

Protect Wildlife responded positively by organizing a round table discussion (RTD) cum workshop to take a deeper look on medicinal plants found in the Mount Mantalingahan range with emphasis on tongkat ali. The RTD-workshop was held on April 26 to 27, 2017.

The overall objective of the RTD-workshop is to establish the state of the art of *Eurycoma longifolia* Jack (tongkat ali) and other medicinal plants towards a sustainable management and conservation of the resources and to chart future actions regarding their ecological sustainability, sustainability as livelihood and to turn them into national industries. The specific objectives are the following:

1. Determine available information and knowledge on the extent of the current natural stand of *Eurycoma longifolia* Jack and other medicinal plants, uses, beneficiaries, harvesting policies, buyers/markets, processing and marketing, financing, socio cultural values, and conservation and sustainable management issues;
2. Determine current medicinal uses of *E. longifolia* Jack. and other medicinal plants in the communities and their potential medicinal uses such as medication for malaria which still persists in some parts of Palawan;
3. Identify immediate measurers (policies and regulations, research, extension, incentives) to sustain and expand the nascent *E. longifolia* Jack and other medicinal plants as an industry at the community level; and
4. Identify species of medicinal plants occurring in the Mount Mantalingahan range; identify specific research areas and management practices that will help expand and sustain natural stands of tongkat ali and other medicinal plants; increase the value added accruing to collectors, communities, buyers, processors and marketing agents.

### **I.4 ROUNDTABLE DISCUSSION-WORKSHOP ON MEDICINAL PLANTS, INCLUDING TONGKAT ALI**

The RTD-workshop took place on April 26 to 27, 2017 in Puerto Princesa, Palawan. There were 24 participants, including four collection permittees of tongkat ali in Taburi, Rizal who are indigenous people. The Palawan Council for Sustainable Development, which is the government agency that awards the permits, was represented as well as the buyer and processor of tongkat ali, Phytomedical Nutrients, Inc. The DENR was represented by officers from the PENRO Palawan, the CENRO Brooke's Point, CENRO Quezon and the Ecosystem Research and Development Bureau (ERDB). The DOST was represented by DOST Palawan, the Forest Products Research and Development Institute (FPRDI), and the Philippine Council for Health Research and Development (PCHRD).

The RTD-workshop was preceded by a program where an overview of medicinal plants found in the Mount Mantalingahan range was presented with emphasis on tongkat ali; the permitting policies and regulations of PCSD; collection and primary processing of tongkat ali by Chieftain Jamludin Attim, a permittee from Taburi, Rizal; the processing of tongkat ali by the President of the Phytomedical Nutrients, Inc. the current buyer and processor of tongkat ali in Rizal; and a presentation of the completed and current researches and potential medicinal applications of tongkat ali and other medicinal plants. A presentation was also made on research priorities of the PCHRD and a short introduction of the “Tuklas Lunas Center” of the PCHRD. The program was followed by a RTD-workshop on medicinal plants in the Mount Mantalingahan range with emphasis on tongkat ali.

## I.5 RESULTS OF THE ROUNDTABLE DISCUSSION-WORKSHOP

To give direction to the discussions, a matrix of issues, gaps in knowledge and information on medicinal plants, interventions needed to address the issues, and the expected outputs was prepared and distributed prior to the discussion-workshop. Prior to the end of the discussions on the first day Dr. Romeo Lerom of Western Philippines University (WPU) suggested that wild fruits found in the Mount Mantalingahan range be included as a topic for discussions. Fruits eaten by birds and other animals were also added for discussion in the RTD. Discussions, recommended interventions on the various issues and expected outputs are summarized:

### I.5.1 Tongkat Ali

**Extent of the resource.** No specific inventory of the plant has been made. It was raised why there are apparently no tongkat ali in northern Palawan and it was thought that it could be the soil properties in the north that is the main determinant on this matter. Furthermore, no detailed study whether the plants found in the Mount Mantalingahan range are the true *Eurycoma longifolia* Jack or a subspecies, *E. eglamdulosa* Merr.

- **Intervention:** The recommended intervention is to conduct an inventory in Palawan, determine soil characteristics of different areas of Palawan and to make an identification of the identity of the plants located in the Mount Mantalingahan range, whether they are the true *E. longifolia* Jack or *E. eglamdulosa* Merr.
- **Expected output:** The extent of the resource is determined, identity the plants found in the Mount Mantalingahan range whether the true *E. longifolia* Jack or the subspecies *E. eglamdulosa* Merr. clarified; and the role of soils in the distribution of the species determined.

**Permitting.** *E. longifolia* Jack is categorized as ‘endangered’ and therefore there should be no extraction. Yet four IP Chieftains in Taburi, Rizal were granted permits to extract the plant and they have in fact done some extraction. There are also inconsistencies in the Terms and Conditions of the Wildlife Collector’s Permit.

- **Intervention:** Conduct a dialogue with PCSD, PENRO, the permittees, buyer and processor, Barangay LGU of Taburi, and Protect Wildlife to streamline policies regarding collection of tongkat ali and its replenishment without sacrificing sustainability of the resource.
- **Expected output:** Streamlined policies on the extraction and replenishment of tongkat ali that give assurance to its sustainability.

**Replenishment.** There is no established protocol on the rehabilitation of tongkat ali, whether by seeds, wildlings or coppicing. There is no technology in the development of farm plantations.

- **Intervention:** Study the most efficient and effective method of rehabilitation of tongkat ali, using seeds, wildlings and coppicing and develop the technology for farm plantation development.
- **Expected output:** Protocol for sustaining the resource by farm plantation development using the most efficient and effective ways of producing planting materials.

**Extraction method.** The current practice of collection of tongkat ali is by uprooting owing to the allegation that the active chemicals reside in the roots. There has been no local study of the level of the active chemicals in the stem, bark and leaves of the plant.

- **Intervention:** Study the level of active chemicals in various parts of the plant which could be basis for revising the policies on the extraction of tongkat ali.
- **Expected output:** Revised policy on the extraction and utilization of tongkat ali.

**Utilization of tongkat ali.** The medicinal application of tongkat ali has been anecdotal and there is no documentation of the preparation of the materials for use for various ailments. Mr. Jamludin Attim provided in his presentation a list of ailments that tongkat ali can cure and the preparation/concoction of tongkat ali.

- **Intervention:** Established list of traditional/indigenous knowledge on medicinal uses of tongkat ali, and its preparation.
- **Expected output:** Documentation of the traditional/indigenous medicinal uses and preparation of tongkat ali for application against ailments.

**Post-harvest processing.** There is no documentation of local post-harvest processing of tongkat ali for various products.

- **Intervention:** Conduct study to document post-harvest processing of tongkat ali for various products, uses and applications.
- **Expected output:** Post-harvest processing of tongkat ali for various products and uses documented.

**Cost of production.** There is no clear basis for the buying price of the roots as raw materials and the final products.

- **Intervention:** Conduct a study on the cost of production as basis for pricing the raw materials as well as the price of the final products. Conduct also value chain analysis of tongkat ali production.
- **Expected outputs:** Document on the cost of production as well as value chain analysis of the material. This will also result in proper monitoring of social benefits brought by tongkat ali industry; proper monitoring of the amount and management of royalties (amount paid by the buyer for each kilo of roots bought by him to the Chieftains, the community, the CADC, for reforestation and for the barangay.

**Socioeconomic impacts.** The extraction and sale of tongkat ali roots is bound to create socio-economic impact in the family and community. There is no study yet on these impacts, neither is there one on the political impacts of this development in the barangay. There is likewise no study on the environmental impacts of the extraction of the resource. The role of women in the chain of activities in the collection, processing and marketing of tongkat ali products has not also been documented.

- **Intervention:** Conduct a study on the socioeconomic impacts, political impacts, environmental impacts and the role of women in the collection, processing and marketing of tongkat ali.
- **Expected outputs:** Social impacts, economic benefits, political impacts and environmental impacts of tongkat ali utilization determined; possible changes/amendment on requirements for granting permits.

## **1.5.2 Other Wildlife Medicinal Plants**

**Plant species with medicinal properties.** The IPs and other upland dwellers have long been using wildlife medicinal plants and this knowledge is merely handed down from generation to generation. There has been some documentation of these species but the area covered by these studies is rather limited. There is need to document wildlife medicinal plants coming from a larger geographic area in the Mount Mantalingahan range.

The IP participants took turns in enumerating medicinal plants but using local names. There is need to identify these plants and establish baseline data on their distribution and extent of the resource.

- **Interventions:** Conduct an ethnobotanical study as well as ethnopharmacological survey which includes community and indigenous/traditional knowledge; validation of indigenous knowledge, documentation of new/other uses, identify wildlife plant species used by IPs and upland dwellers; pilot studies; establish road map for the medicinal species; collection and analysis of all studies on medicinal plants done in Palawan.
- **Expected outputs:** Established information on medicinal plants of Palawan; identification of potential medicinal plants for further research studies.

**Resource assessment.** There is no knowledge on the distribution of these wildlife medicinal species; there is also a need to establish database on health research and development especially on plant biodiversity; data could be obtained from research consortia and other sources.

- **Intervention:** Conduct study on the distribution of wildlife medicinal plant species, establish databases on health research and development on plant biodiversity; collect data from all possible sources.
- **Expected outputs:** Information on the wildlife medicinal resources.

**Propagation.** To ensure sustainability of the resources it is necessary to propagate/domesticate these wildlife traditional medicinal plants. There are scanty information on their propagation.

- **Intervention:** Establish a roadmap for these wildlife medicinal plants up to the production of commercial drugs. Establish protocols on their propagation and multiplication.
- **Expected outputs:** Protocols for propagation and domestication established for their sustainability.

### **I.5.3 Screening of Wildlife Medicinal Plants, including Tongkat Ali**

**Development of new medicinal products from medicinal plants and tongkat ali.** Thus far, information on the medicinal uses of some plants in the Mount Mantalingahan range have been anecdotal. These have not yet been documented. There is need to actually develop new drugs from these medicinal plants.

- **Interventions:** Screen medicinal plants and tongkat ali for many illness. Upgrade the facilities of universities to improve their capacities to undertake such screening activities.
- **Expected outputs:** Improved research facility and capacity of research institutions and universities to implement research program on drug discovery. Potential medicinal uses of medicinal plant species including tongkat ali are identified.

### **I.5.4 Wild Fruits from the Mount Mantalingahan Range**

It was suggested that the RTD-workshop also include in the discussion of wildlife resources in the Mount Mantalingahan range and wild fruits for human consumption, as well as those eaten by birds and other wild animals. The following are the results of those discussions:

**Species.** There is no known documentation of the wild fruits from the Mount Mantalingahan range that are consumed by IPs and other upland dwellers as well as by wild animals. The IP participants enumerated species that they know are being eaten by them and also those by birds and other animals. The list is shown in Appendix 3.

- **Intervention:** Conduct documentation and identification study; provide national museum and WPU herbarium of voucher samples. Conduct research on functional food (identification of nutritive value of food).



- **Expected outputs:** Documented list of edible wild fruits and those consumed by wild animals from the Mount Mantalingahan range.

**Processing of fruits for consumption.** There is likewise dearth of materials on how these fruits are prepared for human consumption.

- **Intervention:** Document the preparation of these fruits for human consumption. There was a suggestion that Protect Wildlife hold a wild tropical fruits festival where the media are invited to generate their awareness of these treasures from the wild.
- **Expected outputs:** Document describing the preparation of wild fruits for human consumption. The public would have a higher awareness of the presence of these biodiversity resources that could motivate them to be more conservation conscious.

## **I.6 WAY FORWARD**

The RTD-workshop pointed actions to be taken to advance the conservation and sustainable utilization of medicinal plants including tongkat ali in the Mount Mantalingahan range. These include the following:

1. Clarification on the policies on tongkat ali regarding extraction and utilization. There is need for a dialogue among PCSD, PENRO, the IPs awarded collection permits, Phytomedical and Nutrient, Inc., Western Philippines University and Protect Wildlife. This will also clarify policies on the collection of other biodiversity resources (medicinal plants) found in the Mount Mantalingahan range.
2. Documentation of knowledge and indigenous practices, including gaps on data and information on medicinal plants (including tongkat ali) in the Mount Mantalingahan range.
3. To address the gaps in data, information and knowledge on medicinal plants (including tongkat ali) research studies should be undertaken. This should be preceded by the preparation of a State of the Art in medicinal plants, including tongkat ali and the formulation of a research, development and extension program on medicinal plants.
4. Screen medicinal plants and tongkat ali for various illnesses.
5. Identification and award of contract to an HEI to prepare the State of the Art and RDE program on medicinal plants, in particular tongkat ali, to start with.

# ANNEX J

## REPORT ON THE ROUNDTABLE DISCUSSION-WORKSHOP ON ALMACIGA RESIN IN SOUTHERN PALAWAN

### J.1 INTRODUCTION

Almaciga (*Agathis philippinensis* Warb.) is a medium to very large monoecious (both female and male flowers are found in the same tree) but strongly dichogamous (female and male flowers mature differently) tree. It can grow up to 60 m tall, with cylindrical straight bole of up to 400 cm in diameter, without buttresses but often with swollen superficial roots at base; large branches usually upturned. The tree needs shade to grow well. It grows slowly during the first few years; afterwards, when released from competition from other plants, growth becomes rapid. Diameter increment can easily exceed 1 cm annually.

*Agathis philippinensis* Warb. occurs naturally in the Philippines, Sulawesi and northern Moluccas. It grows in almost all of the Philippine mountain ranges, in well-drained slopes or at altitudes of 200-2000 masl. It occurs as a solitary tree as well as dominant and main or even sole canopy tree.

The wood of almaciga is highly priced for veneer and plywood, furniture, paneling, musical instruments, pencil slats, carvings, toys, engineering instruments, household utensils, artificial limbs and prostheses. However, the value of the tree is not in its wood but in the resin that can be collected from it. The inner bark exudes a clear resin called “copal” or Manila copal. Manila was once the most important port of export hence the name Manila copal.

Manila copal is an important raw material for varnish as it has good storing quality, very lustrous, elastic, and good weathering properties. It is used in the manufacture of lacquers, paper size, paint driers, linoleum, oilcloth, water proofing compounds, printing inks, adhesives, floor polish, shoe polish, for fluxes and in the manufacture of patent leather. Indigenous people in southern Palawan use the resin for varnish, incense, fuel for lamps and torches, sealing wax, liniment, unguent to deter leeches, and smudges against mosquitoes.

#### J.1.1 Resin Collection

Since the resin is found in the inner bark of the tree, collection is through incision on the bark or tapping (Figure J.1). When cutting, great care must be exercised to avoid damaging the cambium as the resin ducts are only found in the bark. Damage to the cambium (Figure J.2) and sapwood results in attacks by termites and wood-rotting fungi follow. Only if the cambium is not damaged will the bark regrow and heal the wound.

The average annual yield of copal from *A. philippinensis* Warb. ranges from 0.6 to 5.6 kg per tree with a recorded 16 kg for productive trees. Almaciga is declining in the Philippines because of unscrupulous tapping for resin and illegal cutting and deforestation.

#### J.1.2 Manila Copal Production and Export

Indonesia is the largest producer and exporter of almaciga resin. Production of the resin from 2002 to 2006 is shown in Table 1. It shows a decreasing trend. In 2006, the Philippines exported 163 tons of Manila copal worth US\$135,693 (Table J.2), while in 2013, a volume of 383 tons valued at US\$504,000 was exported. Most of these came from southern Palawan. Although categorized as a minor forest product, it is one of the country's leading dollar earners among the non-timber forest products.

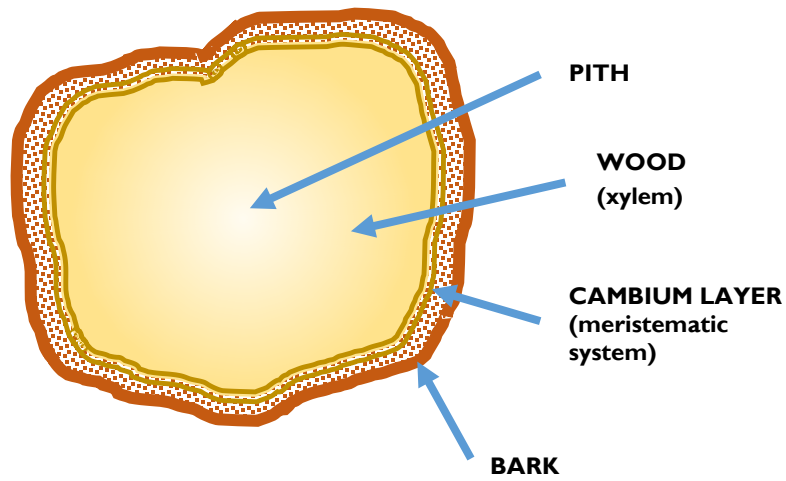
**FIGURE J.1: INCISION MADE ON THE BARK OF ALMACIGA TREE**



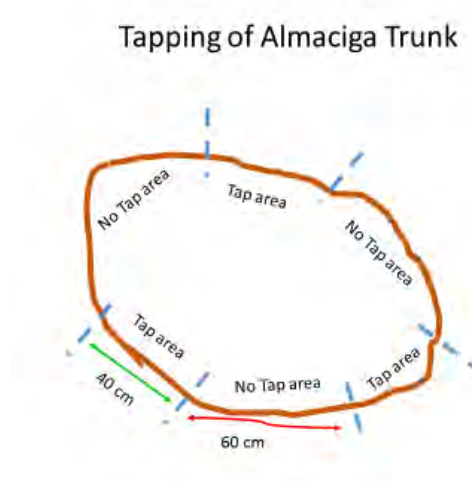
**FIGURE J.2: DEEP TAPPING DESTROYS THE CAMBIUM LAYER**



**FIGURE J.3: CROSS SECTION OF ALMACIGA STEM**



**FIGURE J.4: TAPPING DISTANCE ALONG THE CIRCUMFERENCE OF THE ALMACIGA TREE**



**TABLE J.1: ALMACIGA PRODUCTION (kg)**

SOURCE	2002	2003	2004	2005	2006
Palawan	521,220	292,334	110,455	50,545	168,227
Samar			257,088		
Philippines	521,220	292,334	367,543	50,545	168,227

**TABLE J.2: ALMACIGA EXPORT (kg)**

Year	Quantity	Value (US\$) FOB
2002	209,080	149,893
2003	199,159	174,807
2004	230,403	221,658
2005	190,500	154,375
2006	163,345	135,693

### J.1.3 Tapping for the Resin

The resin of almaciga from Palawan is reputed to be of highest quality for which reason it is in great demand. For this reason almaciga trees in Palawan have been subjected to intensive tapping. It has been observed that the traditional modes of tapping almaciga include deep tapping, overtapping and frequent rechipping. All of these modes are detrimental to the trees and endangering the industry.

In deep tapping the cuts are deliberately extended deep into the sapwood destroying the cambium layer, the layer of meristematic tissues surrounding the stem of the tree. These layers of tissues increase the diameter of the tree.

In over-tapping, oversized cuts or too many cuts are made around the tree circumference. Proper tapping requires that the length of the cut should not be longer than 40 cm and that the distance between cuts around the circumference of the tree should at least be 60 cm (Figure J.4). Violations result in impaired growth and often the death of the tree.

Frequent rechipping involves making cuts in short time interval due to the belief that this will induce greater flow of the resin. This introduces impurities into the exuded resin instead of increasing the flow rate. Chips of bark, wood and foreign materials lower the resin grade. Resin must be collected at least every 2 weeks to give ample time for the accumulation of large, easily removed lumps of hardened resin.

## J.2 ISSUES ON ALMACIGA

One of the issues raised during a Research, Development and Extension (RDE) forum sponsored by Protect Wildlife held in Puerto Princesa on February 8 to 9, 2017 was the state of the health of almaciga trees subjected to resin tapping. Many are infected and dying. Aside from the export earnings from almaciga resin or Manila copal it is also an extensive livelihood source of many IPs in the Mount Mantalingahan range area. The demise of the trees will jeopardize income source of the IPs and a thriving varnish and paint industry in Cebu and Manila.

Interviews with researchers at the Forest Products Research and Development Institute (FPRDI) and at the UPLB College of Forestry and Natural Resources (UPLB CFNR), both in Los Baños, have confirmed the health status of tapped trees. They warned that if the unsustainable practice of many of the tappers is not changed, many of the trees would certainly die.

To sustain the livelihood of communities and the industries based on continued supply of almaciga resin as well as dollars earned from the export of this non-timber forest product some issues must be resolved and provided solutions. Among these are:

- Extent of the resources, assessment of health of almaciga trees;
- Policies (national and local) on collection and disposal of almaciga resin
- Socio-economic role of almaciga resin and tapping in the community including indigenous knowledge and practices in the use of almaciga resin; customary laws and tradition in the collection and use of almaciga resin
- Lack of grading standards on the resin
- Pricing practices
- Reasons for non-adoption of good tapping practices despite several training conducted;
- Post-harvest value adding by communities
- Role of women in the collection and trade of almaciga resin
- Reproduction of almaciga trees

### **J.3 ROUNDTABLE DISCUSSION-WORKSHOP ON ALMACIGA**

In response to the urgent call of many participants during the RDE forum in February 2017, Protect Wildlife sponsored round table discussions (RTD) cum workshop on almaciga resin industry for southern Palawan. The main objective of the forum was to validate information on almaciga and to chart the way forward in conserving the resource for sustainability, sustain a growing livelihood in the area, and to convert it into a local industry.

Specific objectives were to:

1. Assess the extent of the resource and the state of the health of tapped almaciga trees
2. Determine the status of the industry
3. Determine the socio-economic role of almaciga in the upland communities in southern Palawan where it is found,
4. Determine the policies on collection and disposal of the resin,
5. Establish activities to add value to the resin to increase benefits accruing to the communities
6. Determine how to sustain the resource and make it a community enterprise.

The expected outputs were:

1. Based on presentations, discussions, FGD and literature, a compilation of policies, practices, uses, and recommendations on the development, use, management, and conservation of almaciga trees can be prepared.
2. Suggested areas for research, technology and policy development for community livelihood and enterprises, good tapping practices, management and development in coordination with government and private sector agencies.
3. Actions leading to making almaciga resin as a sustainable and smallholder-oriented production and marketing units for community-owned buying, processing, and marketing industries.

The RTD/Workshop was conducted on May 18 and 19, 2017 in Puerto Princesa, Palawan. The RTD-workshop was attended by 42 participants, 15 were IP tappers from the municipalities of Brookes' Point, Rizal and Quezon, 7 non-government organizations (NGOs), 7 LGUs, and 11 from the government. Two the LGU participants were mayors, one from Brookes' Point and the other from Rizal.

There were eight paper-presentations ranging from an overview of almaciga and almaciga resin, policies on permitting, sustainable harvesting and management of the resource, baseline studies and value-chain analysis of almaciga resin production.

## J.4 ROUNDTABLE DISCUSSION-WORKSHOP OUTPUTS

To provide direction and for efficiency in the conduct of the workshop a guide was prepared and prepared and used during the workshop. The important issues and recommended actions to take are the following:

**Permitting.** The following are the sub-issues on permitting:

**Duration of permit.** The Ordinary Minor Forest Products License has a duration of one year. There is no provision in the license stating that the duration of the license is one year, however, it can be inferred from the fact that the license expires one year from the time it was granted.

**Recommended Action:** The permit should have a life span or duration of five years. Representations should be made with the proper authorities to revise the duration of the license.

**Length of time it takes to renew permits.** This issue is probably the most crucial issue in the conduct of business in the industry. Some applications for renewal have been with the authorities for more than three years with no signs that they are going to approved soon.

One reason for the slow or delay in the renewal of license is the number of needed endorsements. Approval of renewal is by the DENR Regional Director. Before the necessary documents for renewal reach the RD Office, the following endorsements are required. These includes endorsements from a) barangay sanggunian/chairman; b) municipal sanggunian/Mayor; Environmentally Critical Areas Network Board, CENRO; PENRO; Provincial Board/Governor; the Palawan Council for Sustainable Development (PCSD); the National Commission on Indigenous People (NCIP) both provincial and regional.

The situation is further complicated by the fact that MIMAROPA Region is made up of islands and the Regional Office of the NCIP and the DENR are located in Metro Manila. This makes it very difficult and costly to follow up papers.

The applicants have no way of knowing the fate of their application because there is no feedback mechanism that would inform applicant of the status of their application. The license is only for one year yet the time it takes to have is renewed is 3 to 4 times longer than the life of the license.

The consequence of this slow renewal process is that licensees cannot transport their products (resins) because they would be held as conducting illegal activities. The effect downstream is that processors would have reduced supply of raw material increasing the price of raw materials, which would also increase the price of finished products.

**Recommended Action:** The action recommended is for the government agencies both national and local to streamline the process. Participants questioned the need for an inventory of the resource after only 1 year lapsed from previous inventory. Besides this is very expensive for the licensee because he is asked to bear the cost of the inventory, often at a cost of PHP 30,000 or more.

**Grading Standards and Pricing.** One of the hot issues was on pricing of the resin. Prices are dictated by the grades of the resins. However, it is the buyer that determines the grades, often allegedly downgraded and therefore fetching a lower price. The reason is that the industry does have agreed grading standards for the resin. This is to the disadvantage of the sellers or the tappers.

**Recommended Action:** Develop a grading standard based on the grades developed by *Samahan ng mga Palawano sa Amas, Brookes Point* (SPABP) and have it approved and adopted by the industry.

**Proper tapping procedure.** From the workshop, it was gathered that there is a wide range of techniques used by the tappers across the five municipalities of the Mount Mantalingahan range in harvesting the resin

from the almaciga. The practice ranges from a proven technical way of incising the bark without damaging the cambium layer practiced by the Amas-SPBAP. There is also an indigenous way of triangular incision to let the resin flow. Accordingly, ‘diwans’ or non-IPs and even some IPs enticed by traders commonly employ unsustainable tapping beyond the recommended width, length and harvesting cycle in the hope of increasing harvest. The latter practice open the tapped tree to infection by fungi and attack by termites causing a number of tree deaths.

**Recommended Action:** The participants from Rizal, Española and Quezon are asking for proper training on the technology of almaciga resin tapping. From the discussion, FPRDI can conduct a standardized almaciga resin tapping and post-harvest techniques. A letter of request is needed to access training from FPRDI. Ms. Florena Samiano of FPRDI intimated that PCIEERD had allocated budget for training in tapping of trees that produces exudates, which include pili and Benguet Pine. She promised to find out if PCIEERD would fund a training in Palawan on tapping of almaciga for its resin.

**Health status of tapped trees.** A very crucial issue because if the tapped trees continue dying the threat to the industry is high.

**Recommended Action:** Assess the health status of tapped trees.

**Role of LGUs in the management of almaciga trees and tapping.** The local government of the municipality of Governor Generoso, Davao Oriental is managing the almaciga resources in their municipality including permitting activities. It appears, based on the presentation of Vice Mayor Vicente Orenca and Mr. Joey Gamao (Tourism Officer of Governor Generoso), the almaciga resin industry in the municipality is well managed. The LGU entered into an agreement with the DENR and the management board of the Mount Hamiguitan Protected Landscape, which was declared as a World Heritage by the United Nations. Mayor Norman Ong of Rizal, Palawan is very interested in pursuing the same arrangement that the LGU in Governor Generoso had with the DENR and the protected area management board of Mount Hamiguitan.

**Recommended Action:** Interested LGUs should discuss the issue with the DENR, PCSD, NCIP, and the stakeholders. The presentation of the LGU from Governor Generoso will be provided to Mayor Feliciano and Mayor Ong.

**Product development and the role of women in the almaciga resin industry.** Per licensee, there are at least 20-30 tappers, who are mostly men. However, in Rizal, there are around 10 women who do the tapping of almaciga. The harvested almaciga is brought down to a common place where these are sorted, dried further and cleaned mostly by women. Tappers are paid immediately. The almaciga resin is sorted according to color and size. According to NATRIPAL and Amas SPBAP, class A is white and fist size “tipak” with no impurities commands a good price of 30 pesos a kilo. Matchbox size, class A: is bought at 28 pesos per kilo. Class B and C: are yellow in color, smaller in sizes and contain impurities. The women are involved in the post-harvest activities such as: paying the tappers, sorting, cleaning, drying, packing, overseeing the transport marketing, recording and bookkeeping.

**Recommended Action:** In addition to training on resin tapping, which is directed mostly to men, training on the development of new resin products such as handicrafts should be conducted to provide more income to families.

**Monitoring of performance of permittees.** It was suggested during the discussions that the health of tapped almaciga is in bad shape because there is no monitoring of the performance of permittees; how tapping is conducted by their tappers. Since no monitoring is done, the permittees and tappers are not under pressure to perform well. Often in the belief that cutting deep into the wood will induce higher resin exudation tappers cut beyond the cambium layer resulting in the infection of the tapped area and losing the ability of the tree to form callus over the wound.

**Recommended Action:** The action recommended is the formation of an inter-agency monitoring team composed of DENR, PCSD, LGU, NGO assisting POs in the area, and the permittee. Monitoring should be done at least once a year.

### **Socioeconomic as well as environmental and political impacts of almaciga resin industry in Palawan.**

The almaciga resin industry has been in Palawan and elsewhere in the Philippines since the early 1900s. Yet the economic condition of the people who tap the trees has not changed much. The families of tappers are still below the poverty level and many of them are deep in debt to the “ahente” or buyers. With a stagnant economic status, it is expected that their social status has remained stagnant as well. The environmental and political impacts of the industry are not well documented.

**Recommended Action:** Conduct a study or even case studies on the socioeconomic, political and environmental impacts of the almaciga resin industry in southern Palawan.

#### **J.4.1 Expected Outputs**

1. Based on the discussions during the RTD-workshop all of the expected outputs were realized. Policies on permitting was extensively discussed with recommendations on streamlining the policies, to make it easier to apply for a collection permit, practices; recommendations were made on the development of new products at the community level; recommendations were also made on better management, and conservation of almaciga trees.
2. Recommended areas for research included the following: further improvement of tapping techniques, socio-economic, environmental and political impacts of the almaciga resin industry in the communities; and procedures, training on proper tapping procedures, development of new products at the community level. For better management, it was recommended that monitoring should be conducted on the tapped trees by a composite team made up of government and non-government organizations including representatives of the licensees.
3. Recommended actions leading to making almaciga resin as a sustainable and smallholder-oriented production and marketing units for community-owned buying, processing, and marketing industries included the establishment of grading standards as basis for pricing to remove the practice of buyers dictating the grade of the resin and therefore the price, development of almaciga plantations at lower elevations.

#### **J.5 WAY FORWARD**

The following are the summary of the major recommended actions to take relative to fostering sustainability in the almaciga resin industry in Palawan:

1. Streamline the permitting process to reduce processing time;
2. Develop grading standards of almaciga resin as basis for prices of resins;
3. Conduct training on proper tapping procedures
4. Assess the health status of tapped trees
5. Explore possibility of LGUs playing a larger role in the almaciga industry
6. Establish a monitoring system on tapping and on the health of tapped trees
7. Initiate the planting of almaciga throughout Palawan
8. For social benefits of the almaciga industry: A study on cultural, social and organizational issues determining the direct and indirect benefits of almaciga commercialization for different social groups and between men and women should be undertaken. This may include distribution within individual households or across the community, via income generation, employment generation, and preservation of traditional resource use. Ideally, potential commercialization activities should have a positive, or at least a neutral impact, on the most vulnerable members of the community.



# ANNEX K

## ASSESSMENT OF PROSPECTIVE SANDFISH OCEAN NURSERY AND SEA RANCH SITES IN PALAWAN

### K.1 OVERVIEW

This activity is the initial step towards the proposed project on sandfish or sea cucumber sea ranching in Palawan, which will be implemented by the College of Fisheries and Aquatic Sciences, Western Philippines University (CFAS-WPU) with grant from Protect Wildlife. It aims to identify suitable sites for sea ranching of sandfish, which is a high-value invertebrate that can potentially augment the income of people in coastal communities. Sea ranching will also enhance the natural stock of sandfish, which is now dwindling in most areas due to unregulated harvesting. Three areas including the Barangays of Aramaywan and Tabon in Quezon, Rasa Island in Narra, and Salvacion in Puerto Princesa City, were surveyed through ocular rapid assessment last June 28 to 30, 2017. The assessment was conducted by the team composed of the Protect Wildlife Staff, Protect Wildlife consultant aquaculture specialist Dr. Annette Menez, and CFAS-WPU faculty (Dr. Roger Dolorosa, Dr. Jhonamie Mabuhay-Omar and Jean Beth Jontila).

### K.2 SITE: QUEZON

Quezon was one of the sites where an initial assessment and inventory of sea cucumber species was conducted by WPU under CHED sea cucumber program. There is a very high level of awareness in this municipality of the economic value of sea cucumbers. The high value of dried sea cucumbers is encouraging more growers who get permits from the municipal government and pay “tax” for the pens. A zoning map where the location of all the registered pens is indicated is available at the Municipal Agricultural Office.

#### K.2.1 Aramaywan, Quezon

The Aramaywan site has silty muddy substrate primarily covered with seagrass *Enhalus acoroides*. There are also patches of Mangroves present. The site is vulnerable to strong monsoon winds and waves. There is no suitable site for Hapa nets establishment.

There are a number of fishers who have been undertaking pen culture of *H. scabra* (kurtedo) in this barangay. They collect wild juveniles (> ~100 g) and stock them in pens to grow-out. One person interviewed mentioned he built an impoundment made of rocks where he stocks the sea cucumbers. This activity has been ongoing for a number of years. He reported that Malaysians buy live kurtedo (~5 pcs per kilo) at PHP 150. These Malaysians come every 6 months or once a year. They bring the sea cucumber to Kodjak, Malaysia where they are processed. There was also a Chinese buyer based in El Nido who bought the sea cucumbers very cheaply and always changed prices and requirements thus he stopped the grow-out of kurtedo.

A number of the “balatan” pens with guardhouses were noted in Aramaywan. It should be noted that conflicts are arising in the area because IPs complained that they are unable to glean anymore due to these pens. The barangay LGU had reservations about expansion of sea cucumber culture in their area if the IPs (Tagbanuas) will be disadvantaged. The LGU is supportive of the project but conflicts should be addressed first.

Aramaywan is approximately 35 km away, an hour difficult drive from the town proper adding to the fact that Quezon is already nearly 150 km away from Puerto Princesa. The road is rough and the coast is difficult to access. The site is too far and difficult to access and monitor thus was not considered. However, this is a good site for future expansion also to provide an income source to IP community members.

### K.2.2 Tabon, Quezon

The Tabon site, a flat adjacent to mangrove plantation, is a gently sloping wide sandy muddy intertidal and subtidal area dominated by *Enhalus acroides*. The area is very shallow up to over 100 m from the shore and will not be suitable for the floating hapas for early juvenile rearing. According to people, juveniles and sub adults are seldom found in this site.

The team had a meeting with the Municipal Agricultural Office, Barangay Fisheries and Aquatic Resources Management Council head and a sea cucumber trader and gatherer of the barangay. Like in Aramaywan, there are people undertaking pen grow-out although this a newer development in this area. The Barangay Fisheries and Aquatic Resources Management Council head has started to venture in pen grow-out given the high monetary returns experienced by her neighbors. A grower/processor interviewed said that they stock up the pens with small kurtedo (~ 80 -150g) year round but supply from gleaners is most abundant during November or December when the tide is lowest at night and harvest them after one year. They report harvesting > 700 g, up to over 1 kg individuals after a year. If true, the growth rate in the site is in the high range of the growth rates known for sandfish. Interestingly, the trader said he buys all live sandfish brought to him but stocks the small ones in his pen. He only process animals > 400 g, which fetches a good price. Unlike in Aramaywan, the traders sell the processed sea cucumbers (primarily *H. scabra* ('Kurtedo') and *Stichopus horrens* ('hanginan') in Puerto Princesa.

Growers had the wrong perception that the sandfish in the pens produce the juveniles they find inside the pens when they harvest. A simple overview of the life cycle of *H. scabra* and how they reproduce was given by Menez to inform the group. The Municipal Agricultural Office and the people were grateful for the information shared during the small group meeting on site. Future information campaigns should help raise understanding of the biology and ecological considerations critical in sustaining populations.

### Recommendation

Quezon is quite far from WPU and transport of broodstock to PAC in Coron will not be practical as a pilot site for research and sea ranching. This is a good grow-out site for future expansion when there is a local supply of cultured juveniles in Puerto Princesa.

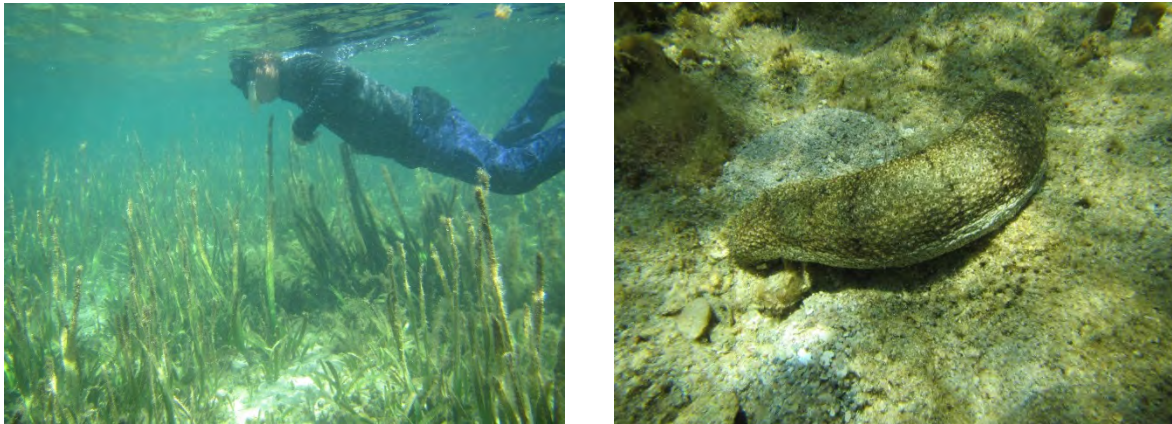
### K.3 SITE: RASA ISLAND, NARRA

Rasa Island is identified as a suitable site for sea ranching of sandfish. The presence of mangrove forests ensure continuous supply of nutrients to adjacent seagrass beds. Nutrient rich sediments are essential to the growth of sandfish since they are detritus feeders. There are three potential sites assessed in Rasa Island.

Site 1 (facing the mainland), has heterogeneous seagrass beds composed of *Enhalus acoroides*, *Thalassia hemprichii*, *Cymodocea rotundata*, *Halodule uninervis* and *Halopila* sp. Among these species, *E. acoroides* predominate but the presence of *T. hemprichii* and the type of sediment, which is generally sandy-silty, indicate that the area is suitable for the release of sub-adult sandfish. However, the site is not recommended for the advance nursery phase that utilizes pens because such stage requires relatively coarse sediments and not the silty one. It is therefore suggested to look for an area within the island having seagrass of around 30 percent cover and coarse sand substrate for the advance nursery phase. For purposes of research, advance nursery phase using pens can also be tested in site 1. This is also a good site for installation of hapa nets for rearing of juveniles since the area is protected during northeast monsoon. Individuals of sub-adult sandfish (approximately 100-150 g) were sighted in this area. Site 2 is also dominated by *E. acoroides* but it also has patches of *T. hemprichii* and *C. rotundata*. The sediment is also sandy-silt in areas near mangrove stands, which is suitable for sub-adult sandfish. Towards the deeper portion, coralline substrates with *Sargassum* were present, indicating that the area is relatively exposed to strong wave actions/current. This site is therefore only good for rearing of sub-adult but not for installing hapa nets and pens. Site 3 has mangrove stands also but the seagrass beds are mostly dominated by *E. acoroides* and the substrate is silty in which only adult sandfish can thrive.

An interview conducted with the boatman who is also a cucumber collector revealed that Rasa island is a regular collection area of 50-100 gleaners (predominantly resident IP families and their relatives) and shallow water divers (not using compressors). *H. scabra* is the most abundant species found in the island. He noted that large sandfish are not common and are found in deeper waters > 3 m. Many of the sandfish they collect are about 100-200 g only. These are the sizes commonly harvested and sold to processors. Sandfish over 1 kg in weight could also be found but this was rare.

#### **FIGURE K.1: SITE IN RASA ISLAND**



Rasa Island is almost three hours away from Puerto Princesa City, around two hours from the City to Panacan Wharf, Narra, and 20-30 minutes boat ride from wharf to Rasa Island. The island is a protected area under NIPAS and has a management body. While there are no residents in the island, the intertidal area around the entire island is a traditional gleaning area of IPs and other nearby communities dependent on sea cucumber collection as a source of income. While the reserve includes some water area, there is no restriction on fishing and exploitation around Rasa Island. It will be essential to meet with the protected area management board, as well as the direct resource users (gleaners) and the wardens to engage them in the prospective the establishment of a research pilot sandfish sea ranch in the area. This will require consultation meetings and work planning with the management board to facilitate multisectoral partnerships. The presence of the Katala Foundation, which primarily works for conservation in the area, may be valuable in this regard.

#### **Recommendation**

The western subtidal area of Rasa Island is a suitable area for sea ranching. There is a mixed sea grass area with patches of coarse /medium sand which is a good juvenile release area (for advanced ocean nursery rearing) and the adjacent areas with finer sand with silt towards the shallower intertidal area adjacent to the coast are good habitats for the sub adults and adults. Given low density of larger sandfish, collection of broodstock and temporary holding in the area does not seem immediately feasible.

#### **K.4 SITE: SALVACION, PUERTO PRINCESA CITY**

Sites along barangay Salvacion in Honda Bay were surveyed. The coast is lined with mangrove forest and the nearshore area is very shallow, the deepest portion in the center of the area surveyed is only about 4 m at low tide according to Dr. Dolorosa and the barangay officials. The area is designated as a mariculture zone. The barangay officials who accompanied the team said they just endorse applicants for mariculture project to the City and they have no coastal or fishery barangay projects.

The deeper subtidal area on the western portion of the cove has a sandy muddy substrate that can be suitable for sandfish ocean nursery – floating hapa and advanced nursery in pens trials. This is near the location of the

small pearl oyster hatchery and which is a USAID STRIDE activity of Dr. Dolorosa. The ongoing research project of Dr. Dolorosa and presence of personnel with experience in culture and grow-out is an advantage especially for research and experiments, which can be undertaken by WPU faculty and students.

The residents in Salvacion and neighboring villages use the surveyed areas for gleaning, sea cucumber harvesting and other fishing activities. Some residents in Sitio Tag-bato had in the past engaged in the culture of wild-caught sea cucumber juveniles. The president of BFARMC is interested in facilitating the collection and handling of breeders. He is also interested about the sea cucumber sea ranching project.

The team interviewed one of the barangay councilors who is also buyer of kurtedo and other sea cucumber species in the area, and was a caretaker for a venture on sea cucumber grow-out in pens over 10 years ago. He reported that kurtedo grew to almost 1 kg in their holding pen (40 by 50 m) which he stocked with 2000 juveniles. However, actual survivors and the total harvested from the pen were not recorded. He noted that there are much less sea cucumbers collected from the area. Most of the collectors are from neighboring barangays in Honda Bay. The councilor is willing to collect broodstock and construct a holding pen. He said if they collect during the low tide at night, he can supply 50 to 60 broodstock (2 to 3 pieces per kilo) in size. If this can be worked out, this will facilitate transport to El Nido since the barangay is near the highway. In addition, the WPU Binduyan hatchery is about an hour away from this site.

The potential site for sea ranching is at the vicinity of Krisjewels hatchery which is under a 25 year stewardship to a certain resident in the village. Arrangement on the steward is needed if the site will be used for growth studies of hatchery-produced sea cucumbers. The barangay has identified its mariculture zone but the map needs to be secured by Wildlife Protect from the city government. The potential of these areas for sea cucumber sea ranching activity is high as previously experienced by the BFARMC official.

Salvacion is about 40 km away from the city center. The first two areas (near Krisjewels Hatchery) is about 10 min boat ride from Aguada. Sitio Tagbato on the other hand is about 35 km from the city center and has a more accessible coastal area along the national highway.

## **Recommendation**

Barangay Salvacion could be the source of sea cucumber broodstock for juvenile production.

## **K.5 IMMEDIATE NEXT STEPS**

1. Consultations in Rasa Island for establishment of a pilot/demonstration sandfish sea ranch
2. Procurement of broodstock from Salvacion, Puerto Princesa and transport to PAC.
3. Procurement of juveniles from Salvacion broodstock from PAC. The juveniles will be used in the pilot sea ranching in Rasa Island and research studies in Salvacion.



