USAID | PHILIPPINES
FROM THE AMERICAN PEOPLE

# Final Evaluation Report of the Protect Wildlife Activity

## Final Performance Evaluation of Protect Wildlife Actity

SEAMEO SEARCA

MARCH 2021

# EVALUATION

## End line Report Philippines: Final Performance Evaluation of Protect Wildlife Activity

March 2021, Final Evaluation Report

This publication was produced at the request of the United States Agency for International Development. It was prepared independently by SEARCA, UPLB.

# End line Report Philippines: Final Performance Evaluation of Protect Wildlife Activity

(March 2021, Final Evaluation Report)

Prepared under Purchase Order No.: 72049220P00056

Submitted to:

USAID, Philippines

Submitted by:

SEARCA, UPLB
Los Baños, Laguna
(Contractor)

# ACRONYMS

| | |
|---|---|
| BCC | Behavior Change Campaign |
| BMB | Biodiversity Management Bureau |
| BRAIN | Biodiversity Resources Access Information Network |
| C4C | Campaigning for Conservation |
| CENRO | City Environment and Natural Resources Office |
| CHED | Commission on Higher Education |
| CNCH | Cleopatra's Needle Critical Habitat |
| CSO | civil society organization |
| DA-BFAR | Department of Agriculture—Bureau of Fisheries and Aquatic Resources |
| DENR | Department of Environment and Natural Resources |
| ELP | Environmental Law and Protection |
| FGD | focus group discussion |
| FLUP | forest land use plan |
| FMB | Forest Management Bureau |
| HEI | Higher Education Institution |
| IEC | information, education and communication |
| IEM | integrated ecosystem management |
| KII | key informants interview |
| LGU | local government unit |
| LoP | Life of Project |
| LWR | Lutheran World Relief |
| MENRO | Municipal Environment and Natural Resource Office |
| MMnPL | Mt. Mantalingahan Protected Landscape |
| MMPL | Mt. Matutum Protected Landscape |
| MSU | Mindanao State University |
| PA | protected area |
| PALAWEEN | Palawan Environmental Enforcement Network |
| PAMB | Protected Area Management Board |
| PASu | protected area supervisor |
| PCSD | Palawan Council for Sustainable Development |
| PENRO | Provincial Environment and Natural Resource Office |
| PES | payment for ecosystem |
| PNP | Pasonanca Natural Park |
| PPSRNP | Puerto Princesa Subterranean National Park |
| PSCCJP | Philippine Society of Criminologists and Criminal Justice Practitioners |
| PW | Protect Wildlife Activity |
| RESPONSE | Rapid Enforcement Support, Planning, Operation and Network System Enhancement |
| SA | strategic approach |
| SBPS | Sarangani Bay Protected Seascape |
| ToC | Theory of Change |
| ToR | Terms of Reference |
| UP | University of the Philippines |
| USAID | United States Agency for International Development |
| WEO | Wildlife Enforcement Officer |

# EXECUTIVE SUMMARY

The Protect Wildlife (PW) Activity was a US$24,498,188 USAID-funded initiative implemented from June 17, 2016 to March 31, 2021 by a consortium of organizations led by DAI Global, LLC. It covered several biodiversity hotspots in the Philippines, which included 1) Palawan, Zamboanga City-Tawi-Tawi area, 2) Region 12, particularly the General Santos City, Sarangani and South Cotabato area, and 3) Central Luzon. Its main objective was to support the initiatives that would reduce threats to biodiversity, poaching and the use of illegally harvested wildlife and wildlife products, as well as improve ecosystem goods and services for human well-being.

To achieve its goal, PW formulated an overall Theory of Change (ToC) based on a situational model, which served as the basis of the five strategic approaches. A ToC was also formulated for each strategic approach to guide the implementation of the activity. The overall ToC highlighted the concept that if relevant public and private institutions and the local communities understand the true economic value and sociocultural significance of habitats and wildlife species, including their ecosystem functions, goods and services they provide as a combined result of 1) improved and positively changed communities' knowledge, attitudes and behaviors toward wildlife and biodiversity conservation, 2) augmented public and private sector investments and increased revenues from natural-resources-related enterprises to finance conservation, expansion and diversification of biodiversity-friendly and sustainable livelihoods for local communities in priority sites, 3) improved conservation competencies of LGUs, CSOs and LRMUs in formulating and executing policy- and science-based integrated land use and local development plans and in managing natural resources, including habitats of wildlife, 4) improved capacity of universities to generate scientifically rigorous evidence and knowledge which were essential for conservation and for enriching their curricula and outreach programs and (5) enhanced capacities of national and local enforcement entities to identify, capture, prosecute and adjudicate wildlife crimes and habitat losses, then PW could significantly contribute to the reduction of threats to habitats and to wildlife species. Thereby, the initiative directly and indirectly aimed to enhance the capacities of various threatened habitats of wildlife species, as part of larger land and sea ecosystems, to provide ecosystem goods and services that benefit human well-being.

A ToC-based final performance evaluation was carried out to examine the PW accomplishments against its Theory of Change. The evaluation only covers the first four years of the activity, as it was still ongoing when the evaluation commenced. A mixed-method approach was employed using primary and secondary data gathered from document reviews, KIIs, FGDs and surveys of community households and participants of the PW training. The evaluation covered six PW sites pre-identified by USAID, which included 1) Pasonanca Natural Park (PNP), 2) Mt. Matutum Protected Landscape (MMPL), 3) Sarangani Bay Protected Seascape (SBPS), 4) Mt. Mantalingahan Protected Landscape (MMnPL), 5) Cleopatra's Needle Critical Habitat (CNCH) and 6) Puerto Princesa Subterranean River National Park (PPSRNP). The evaluation of PPSRNP did not include community-level assessment as it was learned early on that PW had not yet done community-level interventions in the area.

As a ToC-based evaluation, the study focused on answering the following key evaluation questions prescribed by USAID as part of the Terms of Reference (ToR) for this work:

1. What were the significant outputs (deliverables) and major outcomes (key results)? Were there unintended, both negative and positive, consequences as a result of Protect Wildlife?
2. How effective and efficient were its strategies in achieving these outputs and outcomes? What factors, internal and external to PW, enhanced or diminished the achievement of these outputs and outcomes?
3. What were some indications of and/or prospects for sustainability of Protect Wildlife's programmatic approaches and main results (both outputs and outcomes)?
4. What evidence(s) supported and proved that key causal links hypothesized in the original overall Theory of Change remained valid?
5. Which contextual factors and assumptions posited during the design of the activity were shown to enhance the validity of the Theory of Change?
6. Were the programmatic approaches and corresponding implementation strategies able to adequately showcase the validity of the Theory of Change?

The evaluation highlighted the following results:

On outputs and outcome targets and accomplishments

Based on the validation, the accomplishments reported by PW were found factual. It exceeded all its output targets for SA1, SA2 and SA4. At the time of evaluation, it was still short of its goal for SA3 and SA5 due to the impact of the COVID-19 pandemic. However, the activity was extended for three and a half months, giving the activity a reasonable amount of time to catch up on its deliverables in these strategic approaches.

The reported outcomes were impressive. PW covered 756,145 hectares of protected areas, exceeding its target by more than 250,000 hectares on the number of hectares of biologically significant areas under improved natural resource management, though it is yet to fully achieve its target on the number of people with improved economic benefits derived from sustainable resource management and the number of people that apply improved conservation law enforcement practices.

On behavioral change (SA1)

Following its Theory of Change that improvement in knowledge, attitude and behavior toward biodiversity conservation and wildlife protection could reduce the adverse practices and strengthen overall support to biodiversity conservation and protection, the PW carried out extensive and innovative campaigning for change (C4Cs) and behavioral change campaigns (BCCs) in the various protected areas (PAs). The campaigns were successful as evidenced by the fact that PW exceeded its target outputs and outcomes. Also, the communities in the PAs were highly aware of the PW and its initiatives through the signages and other campaigns. Moreover, many communities participated in the BCC trainings and seminars, which improved their appreciation of the importance of biodiversity conservation and wildlife protection. The behavioral change campaigns have gained much traction in all sites such that environmentally unsustainable practices have declined and more sustainable practices have increased. Such behavioral change proved to be attributable to PW using the probit model, which showed the highly significant coefficient of the PW training variable as an explanatory variable for the said behavioral change. All these suggested the effectiveness of PW's behavioral change program. In addition, the critical mass of local expertise on designing and delivering effective campaigns established through the training of trainers (ToT) strategy adopted by PW ensured the sustainability of the interventions.

On conservation financing (SA2)

Premised on the belief that community livelihoods and enterprises are strongly linked to ecosystem goods and services, PW worked to increase public and private sector financing for both community livelihoods and onsite conservation management efforts in the various PAs. The initiative was able to generate US$609,278, which was much higher than its target of US$500,000; supported 147 payment for ecosystem (PES) or ecotourism initiatives, which was higher than its target of 100; and increased public and private investments in wildlife anti-poaching and anti-trafficking efforts by US$7,544,421, which exceeded its target of US$5,000,000. However, the initiative fell short by almost half in terms of its outcome target to increase the number of people with improved economic benefits derived from sustainable natural resource management by 100,000.

The PW carried out significant activities on conservation financing for the Pasonanca Natural Park such as 1) clarifying with the Zamboanga City Water District the PES-like scheme, 2) gathering, analyzing cost and revenue data and 3) exploring ecotourism sites where the PES-like scheme could be adopted. Moreover, PW assisted in identifying livelihood and community enterprise programs, orienting the Pasonanca Natural Park technical working groups and Protected Area Supervisors (PASus) on the Integrated Protected Area Fund and other financing schemes and causing the inclusion of the funding needs of priority investments in the Zamboanga City Forest Land Use Plan (FLUP) and the management plans of Pasonanca Natural Park. For MMPL and SBPS, the PW carried out the trainings on PES, organized PES orientation activities involving commercial farms and plantations and resorts operating within the PAs. The most significant support of PW on conservation financing, especially on PES, was in Palawan. The activity worked with the Brookes Pt. Water System, Brookes Pt. Rural Waterworks and Sanitation, Sofronio Española Water Supply, the LGUs of Rizal, Bataraza, Taytay, El Nido and Puerto Princesa Water District, as well as the Puerto Princesa Subterranean River National Park. Some notable accomplishments of PW in Palawan included 1) the development of financial guidelines to plow back revenues for watershed management following the LGU ordinance for Brooke's Point Water System in Palawan, 2) the approval of the resolution to collect a PES

for watershed management by Brooke's Point Rural Waterworks and Sanitation Association and 3) the drafting of the PES ordinance in Sofronio Espanola and Bataraza. Instituting a PES mechanism is long, complex and involves political processes to ensure collection, retention, ring-fencing and actual investments in environmental protection. Thus far, the PW could only be credited for laying the groundwork for the eventual adoption of PES in the various PAs.

The PW also partnered with many public and private institutions to provide investment and support wildlife conservation and community livelihood. A number of conservation farming arrangements were identified and designed with these partners ranging from production inputs, technical training, capability-building for farmer organizations, credit ormicrofinance and postharvest facilities. The results of the community survey showed that a majority of the respondents received livelihood assistance related to conservation and protection during the implementation period of the PW. The respondents reported their income increased by 25 percent on average as a result of their participation in the livelihood programs. The household income function empirically confirmed the income increase and could be attributed to the PW intervention.

The evaluation concludes that PW was generally effective in its strategic approach to conservation financing, especially in laying the groundwork for PES and partnering with various institutions to increase conservation investment and livelihood support. Sustainability was also ensured as PW established and empowered local technical working groups (TWGs) who could continue to build on what has been achieved and sustain the effort on conservation financing.

<u>On competency enhancement for PA management (SA3) and enforcement (SA5)</u>

Strategic approach 3 focused on improving the conservation competency of LGUs and resource managers by capacitating and linking them with NGAs and CSOs and the private sector, which could provide assistance related to policies, budget and people. Strategic approach 5 complemented this further by assisting in assessing the capabilities of NGAs, local authorities and CSOs and providing them with support, tools and regulatory framework needed to identify, report, prosecute and convict violators of habitat land uses and wildlife laws.

As of the evaluation period, PW failed to reach its output targets in both strategic approaches, mainly due to the pandemic's movement restrictions. In strategic approach 3, the activity had trained 164 LGU staff in participatory planning, which was short of its target of 200. It was also short of reaching its target of 2,500 community members trained in planning and implementing integrated conservation and development as it was able to capacitate only 1,498 community members. In addition, while it targeted to train, certify and formally deputize 200 LGU staff as Wildlife Enforcement Officers (WEOs) and 500 community members trained certified as WEOs, it was only able to involve 80 LGU staff and 500 community members, respectively. Under strategic approach 5, the PW exceeded by 458 its target of 1,000 to train government staff in combating wildlife and environmental crime. However, the number of new or revised laws and regulations adopted to combat wildlife crimes was only 39, which was still short by 11 compared to the target. The PW reported 700 confiscations, seizures and arrests resulting from capacity building carried out, albeit this was still short by 300 compared to the targeted number. It should be noted, though, that the evaluation was conducted while PW still had six months left as the activity was extended for another three and a half months.

The formulation or updating of PA management plans was one of the very significant accomplishments of PW. The assistance included 1) the facilitation of consultations, 2) public hearings, 3) GIS data compilation, 4) zoning and mapping, 5) training the community stakeholders on boundary setting, 6) building the information, education and communication component of the management plan, 7) facilitation of decisionmaking and planning exercises for the plan's final elements and 8) leading the technical working groups assigned to prepare the agenda.

The accomplishments of PW on capacity building were undoubtedly impressive. The activity carried out a long list of trainings covering a broad range of topics that were relevant to addressing the complex problems associated with wildlife conservation and protection, such as planning, enforcement, technical capacity, livelihood support, conservation financing, behavioral change and many others. The PW also focused on policies, tools and technical skills. For tools, the development and adoption by the Palawan Council for Sustainable Development (PCSD) of the Biodiversity Resources Access Information Network (BRAIN) was

one of the concrete outputs.

The results of the survey of participants in the various PW trainings showed that almost all viewed the trainings as relevant and appropriate. The participants claimed the seminars improved their knowledge about the tools and methods in wildlife conservation. They also believed the training boosted their individual capacity on law enforcement, resulting in more enforcement actions in all sites. Moreover, the participants regarded the trainings as effective and could be sustained by the relevant agencies as the PW has already empowered them. The communities have already been observing a reduction in the incidence of wildlife crimes in the PAs.

On support to HEIs (SA4)

This strategic approach claimed that if higher education institutions (HEIs) have increased technical know-how to conduct research, source and mobilize research funds and enrich conservation curriculum and syllabus, then these institutions will be able to produce tools and knowledge products that will enhance the capacities of LGUs, CSOs and government agencies.

There were only two target indicators under this strategic approach and PW exceeded its targets for both indicators. It supported 27 research initiatives against its target of 25 and there were 14 universities developing conservation curricula against the target of 10. While only 15 out of the 27 supported research initiatives were completed, PW could still be considered effective as the uncompleted research was due mainly to the pandemic and could be expected to be completed soon. The fact that more than half of the research projects were done by graduate students should be viewed positively as graduate students have access to technical advisers who could assure the quality of the research output. Several student-led scientific articles have been published in peer-reviewed journals, such as 1) DNA Barcodes and Genetic Diversity of Philippine Fruit Bats, 2) Mangrove Crown Measurement Using Airborne Lidar and Hamraz Technique and 3) Rediscovery of Guttman's Stream Frog in the Mountains of Southern Mindanao. The research scholarships awarded to MS and Ph.D. students may also be viewed as part of the PW support to enhance capacities to innovate, design and generate scientifically rigorous evidence. Among the notable completed research projects supported by the PW were inquiries focused on threatened Philippine endemic species such as the Philippine pangolin study in southern Palawan, the Philippine Eagle survey in Pasonanca National Park and the Sulu Hornbill study in Upper Malum Watershed of Tawi-Tawi. The completed researches that produced tools and knowledge products to enhance capacities were noteworthy, such as the scientific validation of medicinal plants in Mt. Matutum Protected Landscape, a pilot study on sandfish sea ranching in Palawan and Ranger-and-Community Perception studies in Palawan and Sarangani Bay.

On curriculum development, the PW targeted only 10 HEIs to develop conservation curricula because the development of standard curricula takes time and so much effort. Nevertheless, it was reported to have exceeded its target by supporting 14 HEIs, which developed conservation-oriented curricula. The PW was instrumental in facilitating the adoption by HEIs of the Environmental Law and Protection (ELP) syllabus endorsed for use by the Commission on Higher Education (CHED) and the Philippine Society of Criminologists and Criminal Justice Practitioners (PSCCJP). Sustainability was ensured as the enhanced curriculum became an integral part of the relevant courses being developed with support from PW, such as BS Criminology, BS Agroforestry, BS Environmental Science, BS Marine Biology, etc.

On evidence supporting that key causal links remain valid

The evaluation was able to empirically establish the following: 1) knowledge, attitude and behavior have improved as a result of the C4C and BCC initiatives of PW, especially the community trainings and seminars conducted; 2) public and private sector investment in conservation initiatives increased due to various partnerships forged, especially on PES and livelihood support and that as PW was able to lay the groundwork for various conservation financing schemes more considerable increase may be expected in the future; 3) conservation competencies of LGUs, resource managers and other critical stakeholders improved significantly on PA management and enforcement as a result of the various PW trainings; 4) capacity of HEIs must have improved as a result of the research support provided and the ELP syllabus adopted; 5) capacity of national and local enforcement entities improved as a result of the various trainings and policy advisories provided by the PW. All these support the conclusion that the PW was able to significantly contribute to the reduction of threats to habitats and wildlife species. The evaluation also concluded that all the hypothesized links remain valid.

On contextual factors and assumptions enhancing the validity of the Theory of Change

The contextual factors may be categorized into (1) social, (2) economic and (3) institutional. This section only highlights those who figured prominently in the evaluation.

Social

This figured prominently, especially in the strategic approach to behavioral change (SA1.). Behavior is a manifestation of knowledge and attitude and has a deep sociocultural root. In the case of biodiversity conservation and wildlife protection, the challenge was to influence a shift from how people view themselves and their communities in relation to wildlife and its habitat. Making a profound influence on behavior necessitates addressing its cognitive and affective roots.

The initiatives of PW on behavioral change easily gained traction in the various sites, considering that the communities within or near the PAs, especially the IPs, were known to have a long-established sense of connectedness with their environment. Such a sense of connectedness must have been further reinforced by the knowledge they gained from the various PW trainings and seminars. For instance, in the FGDs, the community representatives expressed that they initially viewed the zonation and imposed restrictions as a threat to their livelihood. However, they now have a better appreciation of why these have to be done as they realized that their communities will eventually bear the brunt of environmental degradation. The community participatory approach employed by the PW, such as in zoning and mapping, led to a sense of co-ownership and collective responsibility and enabled the integration of indigenous knowledge in the process.

Economic

The economic contextual factors were found important in both SA1 and SA2. The success of PW in its behavioral change approach would not have been possible if not for the livelihood support provided to the communities. As shared by one of the CENROs in one of the FGDs, "no PA management will succeed without any tenure and livelihood for the community surrounding it. It is inevitable that stakeholders will use the resources. On the other hand, livelihood will also become the biggest threat in the protected area because hunger will always push the inhabitants to gather resources and without management, this will become unsustainable".

The success of livelihood support also hinges on the presence of viable opportunities for community livelihood and enterprises. There were a large number of possible livelihood opportunities in the various PAs identified as a result of an assessment conducted by the PW. This included existing and new opportunities, which then became the subject of livelihood support provided by the PW and its various partners. Examples of these were vegetables, coffee, cacao, purple yam and seaweeds. This enhanced the success of PW in its livelihood support as the commodities already have good market potential. The situation would have probably been more difficult had there been minimal livelihood opportunities in the area, as dependence on the PA's flora and fauna would be difficult to alleviate.

It was also learned that the income-generating activities in the communities and the private sector benefit the environment. The PW reported outcomes on the amount of investment mobilized for conservation. Examples of private sector investments that supported conservation were 1) the investments in agroforestry in the Tigpalan Watershed, 2) procurement and distribution of fruit tree seedlings and vegetables in Palawan, 3) seaweed drying facilities sponsored by the Lutheran World Relief for the coastal households in Quezon, Palawan and 4) the yam production supported by Sunlight Foods in various parts of Palawan. Such income-generating activities by the communities had been enhanced through a clear land and resource plan, which is an important requisite for the private sector to participate in exploring the income opportunities and build viable value chains that will benefit the communities.

Institutional

The PW built on the existing institutional capacity in its behavioral change campaigns. As a result, it was able to achieve a considerable reach. The institutional partners of PW, which they have capacitated, carried out the C4Cs and BCCs. This highlighted the link between the behavioral change strategic approach and strategic approaches 3 and 5 on capacity building.

The effort of the PW to build the capacity of people in PA management and law enforcement was crucial to sustain the improvement in community attitude and behavior toward conservation and wildlife

protection. The community will instantly revert to its old attitude and behavior if it sees that the institutions mandated to lead biodiversity conservation and wildlife protection are ineffective and the effort on enforcement of laws against wildlife crimes is not sustained.

On programmatic approaches and implementation strategies

The programmatic approach pursued by PW was thematic in nature and was designed to address the various thematic challenges in biodiversity conservation and wildlife protection. Behavioral change, conservation financing, capacity in PA management and enforcement and science-based support through the HEIs were the thematic areas covered. The thematic approach was designed to provide focus and complementation among the various thematic strategies to achieve synergy and influence sector-wide development.

The benefit of the programmatic approach was clearly demonstrated in all the strategic approaches. Treating each strategic approach as a distinct thematic concern enables a clear demonstration of the pathway, causal links and context as a result of which the desired change can be achieved. The overall ToC, however, weaved the strategic approaches together to achieve cross-reinforcement and synergy.

Insights on challenges in doing ToC-based evaluation

ToC-based performance evaluation is relatively new in the evaluation field, thus, it is still replete with challenges. The following were the insights derived in doing a ToC-based evaluation of the Protect Wildlife Activity, which may inform future ToC-based evaluation:

1. Establishing the context of the ToC

   A Theory of Change should be context-specific. The relative importance of each ToC element depends on the specific context of the area where the ToC is expected to work. For instance, a ToC where the capacity building (say capacity in formulating protected area management plan) is expected to generate more significant change in areas where the capacity on this is much less than in areas where capacity is already developed. The challenge, however, is when the program being evaluated has no explicit characterization or description of the context where the ToC is expected to work. The evaluation has to establish the context itself, which becomes difficult as establishing the context before or just when the program started is nearly impossible, especially when the evaluation is done many years after the inception of the program.

   Establishing the context is particularly daunting when a single general ToC is applied in different program sites with very diverse conditions. Ideally, a ToC should be formulated only after a thorough examination of the specific context or conditions of the area and after a good evaluation of the problems and constraints from which a specific context or area-specific ToC can be drawn. A ToC-based evaluation will then be easier to carry out if the ToC has been formulated in this manner.

2. Incremental nature of change

   In a ToC, change refers to the difference in the condition of the outcome variable before and after an intervention. It, therefore, means that change is incremental in nature. Establishing and quantifying such increment, however, depends on the availability of baseline condition or scenario. The obvious challenge is when such a baseline is not available. This could be addressed if an acceptable counterfactual can be created, i.e., using "with or without" evaluation design. However, in some programs, especially those dealing with natural resources (e.g., wildlife or biodiversity), it is impossible to establish a "without a program" since different areas would have different conditions of natural resources. The evaluation, therefore, has to resort to a "before and after" design which, because of the baseline absence, ends up relying on the respondent's baseline scenario recollection. The establishment of the baseline should be made imperative in all development programs, especially if the evaluation intended to establish the program performance is based on the ToC.

3. Attribution

Attribution is a challenge in any evaluation, regardless of whether or not the evaluation is ToC-based. However, the challenge is more formidable in a ToC-based evaluation. Addressing the attribution issue always necessitates empirical and rigorous analytics, which will enable the isolation of the effect of the subject variable from the effects of the rest of the other variables. In a non-ToC-based evaluation, establishing the marginal effect of the subject variable using quantitative estimating models is often enough. In a ToC-based evaluation, however, there is a need to establish, in addition to quantitative estimates, at least a rigorous qualitative whether the observed effect could really stem from the logic models derived from the ToC. This makes the issue of attribution more challenging in a ToC-based evaluation.

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

# 1.0 EVALUATION PURPOSE AND EVALUATION QUESTIONS

## 1.1 Evaluation purpose

Evaluation is a systematic, rigorous and impartial assessment covering project design, implementation, context and results concerning relevance, coherence, effectiveness, efficiency, sustainability and other criteria. It is done mainly to demonstrate the results of interventions, ensure accountability and derive lessons learned which may prove useful in packaging and implementing future programs.

Final performance evaluation is imperative as the Protect Wildlife Activity draws to a close. The evaluation results could help inform similar natural resource conservation activities currently or in the future, contribute to the growing body of evidence of good practices and a better understanding of the enabling and hindering factors in biodiversity conservation and anti-wildlife trafficking.

Lessons from the activity may also have particular utility for ongoing programs of the Department of Environment and Natural Resources (DENR) of the Philippines, USAID E3/Forestry and Biodiversity Office, USAID contractors and the broader biodiversity conservation and forestry community, including donors, civil society organizations, academe and the private sector.

## 1.2 Evaluation questions

The end line evaluation of PW focused primarily on validating its Theory of Change (ToC), programmatic assumptions and implementing strategies, as well as in documenting and measuring the actual outputs (deliverables) and outcomes (key results). To achieve this, the evaluation sought to provide empirical answers to the following key research queries:

1. What evidence(s) supported and proved that key causal links hypothesized in the original overall Theory of Change remained valid?
2. Which contextual factors and assumptions posited during the design of the activity were shown to have enhanced the validity of the Theory of Change?
3. Were the programmatic approaches and corresponding implementation strategies able to adequately showcase the validity of the Theory of Change?
4. What were the significant outputs (deliverables) and major outcomes (key results)? Were there unintended, both negative and positive, consequences as a result of Protect Wildlife?
5. How effective and efficient were its strategies in achieving these outputs and outcomes? What factors, internal and external, to Protect Wildlife enhanced or diminished the achievement of these outputs and outcomes?
6. What were some indications of and/or prospects for sustainability of Protect Wildlife's programmatic approaches and main results (both outputs and outcomes)?

# 2.0 PW BACKGROUND

## 2.1 PW context

Protect Wildlife (PW) is a US$24,498,188 USAID-funded initiative implemented from June 17, 2016 to December 11, 2020 by the DAI Global, LLC in partnership with various government entities and non-government organizations. Its principal government counterpart was the Department of Environment and Natural Resources—Biodiversity Management Bureau (DENR—BMB), in coordination with the Forest Management Bureau (FMB), Department of Agriculture—Bureau of Fisheries and Aquatic Resources (DA—BFAR) and law enforcement agencies. It worked directly with the DENR regional offices, the Provincial Environment and Natural Resources Offices (PENROs) and municipal and/or City Environment and Natural Resources Offices (CENROs), as well as the provincial, city and municipal LGUs.

The main objective of the Protect Wildlife Activity was to support the initiatives that will align conservation policy with on-the-ground wildlife management actions and law enforcement. It aimed 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. The areas covered by the initiative included 1) Palawan, Zamboanga City-Sulu-Tawi-Tawi area, 2) Region 12, particularly the General Santos City, Sarangani and South Cotabato area and 3) Central Luzon area (Box 1). These landscapes and seascapes were considered important suppliers of major ecosystem goods and services—provisioning, supporting, regulating and cultural enrichment. These sites also serve as habitats to wildlife such as birds and fishes, pangolins and turtles, humphead wrasse, giant clams among others.

| Palawan | Zamboanga City-Sulu-Tawi-Tawi |
|---|---|
| - Mt. Mantalingahan Protected Landscape<br>- Tubbataha Reefs National Park<br>- Rasa Island Wildlife Sanctuary<br>- Ursula Island Game Refuge and Bird Sanctuary<br>- Cleopatra's Needle Critical Habitat<br>- El Nido-Taytay Managed Resource Protected Area | - Pasonanca Natural Park<br>- Great and Little Sta. Cruz Islands Protected Landscape<br>- Talon-Talon-Mampang mangrove area<br>- Manicahan and Ayala Watershed<br>- Zamboanga City LGU forests outside Pasonanca Natural Park<br>- Bud Bungao Conservation Area<br>- Upper Malum Watershed (Panglima Sugala) |
| **General Santos City, Sarangani and South Cotabato** | **Central Luzon** |
| - Mt. Matutum Protected Landscape<br>- Allah Valley Protected Landscape<br>- Sarangani Bay Protected Seascape<br>- Mt. Busa Key Biodiversity Area | - Aurora Memorial National Park<br>- Mt. Mingan<br>- Pampanga-Bataan side of Manila Bay |

Box 1. Protect Wildlife sites

The integrated ecosystem management (IEM) approach was used and supported by the four pillars, which included 1) viewing threats to habitats and wildlife species from the larger context of local economic development, systems governance and social and cultural norms, 2) situational crime prevention by establishing an entry point for community stewardship and policing the harvesting of wildlife, 3) inclusiveness by engaging all stakeholders to have an active voice in defining development objectives and promote empowerment of community members and their ownership and commitment to conserving ecosystem services and 4) brokering public-private partnerships to provide financial support to local conservation and development efforts through direct investments in ecologically sound commercial ventures and innovative technologies to combat wildlife crime.

Recognizing the complexity of the solution needed for the conservation of habitat areas and wildlife species, PW utilized a multi-pronged approach to combat the drivers and threats. These five strategic approaches (SA) were: 1) improved attitudes and behavior toward biodiversity and its conservation target areas, 2) intensified private and public sector involvement in biodiversity conservation and conservation financing, 3) refined biodiversity conservation competencies of local government units and civil society organizations that included on-site land resource management unit, 4) enhanced capacities of universities to advance biodiversity conservation, education, research monitoring and evaluation and 5) intensified competencies of national and local government agencies in enforcing biodiversity conservation-related laws and policies. The strategic approaches were drawn from an overall Theory of Change (ToC) (Annex 6) which served as the unifying framework for the whole activity. Specific ToCs for each of the strategic approaches have also been formulated.

## 2.2 PW program design and management

The PW did not work directly with beneficiaries but with governing institutions and those involved in the management of the protected areas. Since the primary concern of the activity was to support the alignment of policies with management and enforcement at the ground level, the range of interventions of PW covered from the national level (policy reviews and formulation), development of capacities in policy development and enforcement and development of best practices and models such as on conservation financing and the use of advance tools (e.g., BRAIN) down to the site levels. A national office based in Manila served as the nerve center to a network of established site offices.

The range of interventions included 1) review and support to national policies related to wildlife protection and conservation, 2) support to the review and updating of protected area management plans in the various sites, 3) conduct of seminars and trainings designed to inculcate the value and need for wildlife conservation and protection, 4) development of monitoring tools to aid enforcement, 5) capacity building for those directly involved in the management of protected areas, 6) support to academic institutions to upgrade their curricula and support the conduct of researches that were relevant to the project and 7) an extensive effort to educate the communities and other stakeholders on the need to protect and conserve wildlife.

## 2.3 PW reported accomplishments

The PW output and outcome indicators were directly derived from the ToC and covered the five strategic approaches. As reported, it achieved its output targets for strategic approach 1, exceeded all of its targets for strategic approaches 2 and 4 and most of its targets for strategic approach 5 (Annex Table 1). As of the evaluation period, though (September 2020), PW fell short of its output targets for all indicators under strategic approach 3. In addition, it fell short of its target on new or revised laws and regulations adopted to combat wildlife crimes.

The reported outcomes were also impressive. PW covered 756, 145 hectares of protected areas (Annex Table 2), exceeded its target (by more than 250,000 hectares) on the number of hectares of biologically significant areas under improved natural resource management as a result of USD assistance as well as its target on reducing GHG emissions. It fell short though of its target on the number of people with improved economic benefits derived from sustainable resource management and the number of people that apply improved conservation law enforcement practices. It should be noted that the PW was adversely affected by the pandemic toward the later part of project implementation, which was the primary reason for failing to achieve some of its outcome targets.

# 3.0 EVALUATION METHODS AND LIMITATIONS

## 3.1 Evaluation focus

The evaluation was focused on the six evaluation questions enumerated earlier. It covered the following PW implementation areas preidentified by the USAID and specified in the Terms of Reference (ToR) for this work. The areas were 1) Pasonanca Natural Park (PNP), 2) Mt. Matutum Protected Landscape (MMPL), 3) Sarangani Bay Protected Seascape (SBPS), 4) Mt. Mantalingahan Protected Landscape (MMnPL), 5) Puerto Princesa Subterranean River Natural Park (PPSRNP) and 6) Cleopatra Needle Critical Habitat (CNCH).

## 3.2 Evaluation framework

Performance evaluation is a summative, systematic, rigorous and impartial assessment of project design, context, implementation and results related to relevance, coherence, effectiveness, efficiency and sustainability. An intervention may be considered relevant if it addresses a key concern in achieving the objectives and effective if outputs have been delivered on time and in the condition necessary to lead to outcomes. Efficiency relates inputs to outputs, while sustainability refers to the likelihood that the outcomes or benefits will endure and the measures taken by the program to ensure such outcome will continue and eventually translate to impact.

It is clear from the evaluation key questions that the performance evaluation of the PW is ToC-based. Such evaluation is intended to examine the validity of the ToC and the logic models or impact pathways which are direct derivatives of the theory. Intuitively, a ToC is said to be validated if the intended change is realized following the logic model of such theory. Therefore, validating the ToC necessitates a determination of the change effected, a confirmation of the causal links assumed between inputs, outputs and outcomes, an examination of the context against, which change is realized and the causal links appeared to have viably operated.

In a ToC, change refers to the difference in the condition of the outcome variable before and after the intervention. Change, therefore, is incremental in nature. A determination of the difference in the condition of the outcome variable before and after the intervention and empirically establishing the basis for attributing such change are the most critical challenges in any evaluation study. In a ToC-based evaluation, attribution has to be addressed by establishing the marginal effect of the intervention variable on the outcome variable empirically and by confirming whether the causal links hypothesized in the logic model viably operated. The analysis is reinforced by examining the context within which the intervention program operated and pinning down specific contextual factors that could have enabled the realization of the change and the causal links to work.
Therefore, the evaluation of the PW was cast against the Theory of Change and impact pathway framework, which specifically involved an examination of the theory itself and the logic models (impact pathways) derived from the theory (Figure 1). This framework is most conceptually appropriate considering that the key evaluation questions revolve around the need to validate the PW Theory of Change.

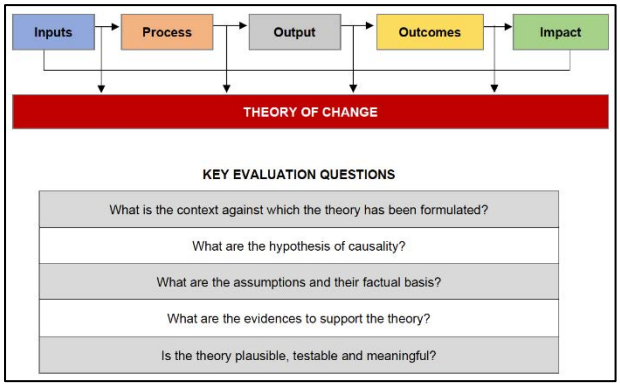



*Figure 1. Theory of Change and impact pathway framework*

A ToC outlines the causal pathways from outputs to outcomes and impact. The changes are mapped as a set of interrelated pathways, with each pathway showing the required outcomes and logical relationships, where each step is a prerequisite for the next. The change processes between outcomes or intermediate states may require certain conditions to hold (or assumptions, which are the conditions that are beyond the control of the project) or may be facilitated by supporting actions (or drivers), which the project can control)

Validating the Theory of Change and impact pathways of PW involved examining the context, assumptions, causalities and most importantly, the outcomes of the intervention.

The PW intended outcomes by strategic approach were shown in Table 1. Among others, the PW aimed at 1) improving knowledge, attitude and behavior toward conservation and wildlife protection and improved management, 2) updating the management plans in protected areas, 3) increasing the investment to PA management, support services and livelihood, 4) enhancing landscape-level policy formulation and management and enforcement as well as the operational capacity of PAMB, LGUs and CSOs and 5) developing the skills and abilities of law enforcement authorities as well as the availability of tools, systems and technologies to prevent wildlife trafficking and reducing illegal and destructive practices.

***Table 1. PW outcomes by strategic approach***

| Strategic Approach | Outputs | Outcomes |
|---|---|---|
| Improving knowledge, behavior and attitude | Science-based information and technology-based tools produced | Foundational knowledge improved; pride of place developed; community, institutional and private sector attitude toward conservation improved; management of biodiversity and natural assets improved |

| | | |
|---|---|---|
| Intensifying conservation financing | Conservation financing arrangements identified and initiated | Investment in PA management, support services and livelihood increased; social and economic and environmental benefits to LGUs, communities and private sector generated from biodiversity-friendly investment; inter-agency collaboration for landscape-level policy management and enforcement increased |
| Strengthening LGU, CSOs and governing institutions' capacity | Number of trainings by type; number of participants | Capacity of PAMB, LGUs and CSOs increased; management plans and tenured areas prepared and updated; improved conservation planning competencies; PAMB and DENR policies on PA management improved; science-based policies and plans for conservation areas implemented by LGUs. |
| Increasing capacity of HEIs | Science-based information and technology-based tools produced | Increased capacity of HEIs to generate knowledge and tools in biodiversity conservation and wildlife protection. |
| Improving capacity for law enforcement | | Skills and abilities of law enforcement authorities improved; new and revised policies in place; tools, systems and technologies to identify and report wildlife crimes implemented; national and local law enforcement improved; enforcement effort and actions against wildlife trafficking increased; illegal and destructive practices reduced. |

## 3.3 Analytical approach

The evaluation employed both quantitative and qualitative tools for a mixed method type of assessment. Descriptive quantitative tools were used to explain certain characteristics and patterns (using mean, percentages, frequency, etc.) of the study population. On the other hand, inferential tools, such as multivariate analysis and mean difference analysis (t-test) were used to infer about relationships of the different variables under investigation. Comparative analysis (i.e., before and after) was done to determine significant changes in the subject variables as a result of the program. The qualitative approach included using the Likert Scale to determine stakeholder's levels of agreement or disagreement to certain probing statements. The evaluation employed the pre-post design, comparing indicators before and with/after the PW.

### 3.3.1 Household income function

The study formulated and estimated a household income function to determine whether the improvement in income, as reported by many of the respondents, has some empirical support. The general specification of the function was as follows, albeit a large number of variants were tested to arrive at the best linear unbiased estimates of the coefficients:

MHHI = f (Educ, Age, Gender, MSI, MemOrg, RTrain, RSeed, HBG, IMPPA, HHS, AWP)

Where MHHI is monthly household income; Educ is number of years of formal education; Age is age in years; Gender is dummy variable (0 if female; 1 if male); MSI is major source of income (0 if farm; 1 if non-farm); MemOrg is membership in organization (0 if not; 1 if member); RTrain is recipient of PW training (0 if no, 1 if yes); RSeed is recipient of seeds or seedling support from PW (0 if no, 1 if yes); HBG is if hired as Bantay Gubat (0 if no, 1 if yes); IMPPA is if with observed improvement in protected area (0 if no; 1 if yes); HHS is household size; and AWP is awareness of PW (0 if unaware; 1 if aware) .

### 3.3.2 Probit models for analysis of adoption behavior of conservation practices

To empirically validate whether the PW has really been instrumental in the reported improvement in the practices of respondents related to biodiversity conservation and wildlife protection, a probit model was formulated and estimated with the following general specification:

ACP = f (Age, Educ, HHS, HBG, RTrain, RSeed, MemOrg, MSI, AWP)

Where ACP is activity change of respondents (0 if no improvement; 1 if with improvement); Age is age of respondents in years; Educ is education of respondents in years; HHS is household size; HBG is = Hired as Bantay Gubat (0 if no; 1 if yes); RTrain is recipient of PW trainings/seminars as part of BBC (0 if no, 1 if yes); RSeed is recipient of PW seed or seedling support (0 if no; 1 if yes); MemOrg is membership in

organization (0 if no; 1 if yes); MSI is major source of income (0 if farm; 1 if non-farm); and AWP is awareness of PW (0 if no; 1 if yes).

## 3.4 Data sources and means of data collection

The evaluation used both primary and secondary data. Primary data were obtained through surveys, key informant interviews (KIIs) and focus group discussions (FGDs). The survey was categorized into two: a survey of beneficiary households and a competency survey for the capacity development component of PW. For the beneficiary household survey, 90 randomly selected respondents per site were personally interviewed using pretested structured questionnaires (Annex 3). The respondents were gathered in batch of 10 in a common venue to comply with the minimum health requirements due to the pandemic, where the questionnaires were administered. For the competency survey, pretested structured questionnaires (Annex 4) were sent to 30 randomly selected participants of PW trainings and retrieved once completed. Finally, one FGD was done per site involving the key stakeholders of PW, including the representatives of beneficiaries and the key implementing partners of the activity. The FGDs were conducted virtually with the evaluation experts and facilitated by the technical evaluation staff on site.

Secondary data were obtained from PW reports and other relevant documents on-site, including all the quarterly progress and annual reports of PW and other monitoring reports. Relevant documents were obtained from some of the key partners of PW, such as the protected area management office on the site. A complete list of documents reviewed is provided in Annex 5.

## 3.5 Limitations

The evaluation was done at the height of the pandemic, which prevented the evaluation experts to personally visit the sites. Nevertheless, the experts were able to virtually join the survey as the field staff was provided with pocket Wi-Fi, enabling the virtual administration of the questionnaires to the respondents. The experts were, therefore, able to clarify and probe certain answers as needed. The KIIs and FGDs were done virtually by the experts with the help of the field staff.

The PW does not have baseline knowledge, attitude and practices (KAP) in the sites covered in the evaluation, except for Palawan. There is also no baseline for the conservation competency component (i.e., trainings). The pre-post design, therefore, had to rely on recall of the situation before PW.

# 4.0 EVALUATION MANAGEMENT

The evaluation was carried out by an interdisciplinary team of experts (Table 2) with excellent knowledge and skills in the conduct of evaluation studies. None of the experts had been involved in any capacity in the implementation of PW to ensure impartiality and integrity of the process. The experts were supported by technical staff with adequate experience in the conduct of the evaluation.

***Table 2. Names, education, specialization and designation of the members of the evaluation team***

| Name | Highest Educational Attainment | Field of Specialization | Designation |
|---|---|---|---|
| Ernesto O. Brown | Ph.D. | Agricultural Economics | Senior Evaluation Specialist and Team Leader |
| Fezoil Luz C. Decena | Ph.D. | Agricultural Economics | Junior Evaluation Specialist |
| Renato L. Lapitan | Ph.D. | Forestry | Technical Specialist |
| Juan Carlos T. Gonzales | Ph.D. | Forestry/Wildlife | Technical Specialist |
| Anita G. Tidon | MSc. | Rural Sociology | Data Management Specialist |
| Rebeka A. Paller | BSc. | Agricultural Economics | Project Assistant |
| Marigold C. Tumamac | BSc. | Biology | Project Assistant |
| Rey Angelo T. De Asis | BSc. | Forestry | Project Assistant |

| | | | |
|---|---|---|---|
| Jack B. Avanceña (August to January) | BSc. | Forestry | Project Assistant |
| John Vincent Colili (February to March) | BSc. | Environmental Science | Project Assistant |
| Maylyn G. Desamparo | BSc. | Admin and Finance | Project Associate |

# 5.0 EVALUATION RESULTS

This section presented the results of the evaluation by key evaluation questions. Following the theoretical framework, however, it would be more systematic to address the evaluation questions related to PW performance before tackling the other evaluation questions, which referred to the validation of the ToC. This meant modifying the original sequence of the evaluation questions provided by USAID as part of the ToR for this evaluation work.

## 5.1 Key evaluation questions 1, 2 and 3: an examination of PW performance

The evaluation carried out the following steps to gauge the performance of PW and to answer the key evaluation questions 1, 2 and 3: 1) tracking the activities carried out by PW to determine whether the nature and magnitude of the activities could logically lead to the reported outputs, 2) tracking the outputs and outcomes and 3) gathering and analyzing evidence that will prove the significance of the outputs and outcomes.

### 5.1. I Strategic approach 1: improved knowledge, attitude and behavior toward biodiversity conservation and wildlife protection in target areas

This strategic approach struck at the root cause of the biodiversity conservation problem as it attempted to address the adverse anthropogenic activities in the protected areas. The PW theorized that improving knowledge, attitude and behavior toward biodiversity conservation and wildlife protection could reduce the adverse practices and strengthen overall support to biodiversity conservation and protection. The package of PW initiatives on this is dubbed Campaigning for Conservation (C4C), which included training on social marketing to enhance the effectiveness of initiatives on conservation campaigns and Behavioral Change Campaign (BCC). The BCC consisted of information, education and communication (IEC) strategies directed mainly at communities and tourists in the protected areas.

Three output indicators were used to track the progress of PW in this strategic approach: 1) number of people trained to lead behavior change campaign, 2) number of behavior change campaigns implemented and 3) number of people reached by the behavior change campaigns. As reported by PW, the activity was able to even exceed its life-of-project (LoP) targets, as shown in Annex Table 3.

#### 5.1.1.1 Outputs or outcomes validation

The activities pursued on C4C and BCC were quite innovative and were designed to catch the attention and interest of the target audience. In SBPS, the PW launched the campaign, "Sarangani Bay: Kayamanan, Kinabukasan, Ating Pangalagaan" during the Sarangani Bay Festival in Glan, Sarangani. It set up a campaign booth where *perya* or country fair games were given a conservation twist. The *perya* games made their rounds in some LGUs to prime audiences on marine species and habitat conservation issues around Sarangani Bay. It also supported the culminating activity of the "Month of the Ocean, Agos ng Buhay Camp" in Sarangani Bay and provided inputs on social marketing to youth campers and gave awards to the best campaign pitches. In MMPL, the PW facilitated BCC write shops and creative clinics together with the PASu, who provided advice on how to execute the campaign plans. It also installed IEC material for tarsier in the municipality of Polomolok, South Cotabato. In MMnPL, it launched and installed new campaigns in Brooke's point and the "Wild and Alive" campaign in Puerto Princesa International Airport.

However, evaluating the effectiveness of the activities pursued to improve knowledge, attitude and behavior toward biodiversity conservation and wildlife protection has been a challenging task due to the absence of baseline data in most of the sites covered in the evaluation. The PW conducted a baseline knowledge,

attitude and practices (KAP) survey only for MMnPL and very limited areas in SBPS (only three barangays). As part of the evaluation, a post PW survey was done involving community households in the sites to derive some indication of PW effectiveness in its behavioral change campaigns, albeit the "before and after" evaluation design relied mostly on the respondent's recollection of the baseline situation.

The survey covered a random sample of 90 household respondents per PW site covered in the evaluation or a total of 450 respondents covering five sites (survey for PPSRNP was not done since PW had very limited interventions in the area). Despite the COVID-19 situation, the survey questionnaires were personally administered (i.e., face to face) by the research assistants by gathering the respondents by batch of 10 respondents in a common venue with an internet connection which enabled the evaluation experts to participate virtually.

The socioeconomic and demographic profile of the survey respondents is shown in Table 3. Almost half of the respondents in CNCH and SBPS reported they live at or very near the core zone of the protected area, while for MMnPL, MMPL and PNP, less than 10 percent reported they live at the core zone. The large majority of respondents in MMnPL and MMPL reside at the multiple use zones, while in PNP, almost all of the respondents reported they are at the buffer zone.

***Table 3. Zone Classification of survey respondents from MMnPL, CNCH, PNP, MMPL, and SBPS (percent reporting)***

| Zone Classification | MMnPL N=90 | CNCH N=90 | PNP N=90 | MMPL N=90 | SBPS N=90 |
|---|---|---|---|---|---|
| Core | 8 | 48 | 1 | 9 | 48 |
| Buffer | 9 | 17 | 98 | 0 | 33 |
| Multiple Use | 68 | 26 | 1 | 91 | 19 |
| Outside Protected Area | 16 | 10 | 0 | 0 | 0 |

The survey respondents were about 44 years of age on average, ranging from 16 to 78 years. Among protected areas, respondents in the SBPS were the oldest, with an average age of 53, which was much higher than the 41 to 43 years average age of respondents in the other protected areas covered in the survey. Except for CNCH, where there was an almost equal number of male and female respondents, most respondents in the protected areas were males. More than three-quarters were married, with elementary to high school education and belonged to a local organization in their areas such as farmers association, tribal association, or religious groups. Farming was the major income source in MMnPL, MMPL and PNP (Table 4). About 44 percent of respondents in CNCH depended on tapping or gathering almaciga resin as a primary income source, while fishing, vending and working in the barangay office were the important income sources for respondents in SBPS. Close to half of the respondents reported gathering plant resources in MMnPL, CNCH and MMPL. About 20 percent of respondents in these areas also reported gathering timber. About 84 percent and 56 percent of respondents gathered firewood in MMPL and PNP, respectively.

***Table 4. Socioeconomic and demographic characteristics of survey respondents From MMnPL, CNCH, PNP, MMPL and SBPS***

| Item | | MMnPL | CNCH | PNP | MMPL | SBPS |
|---|---|---|---|---|---|---|
| **Age (Years)** | | | | | | |
| | Average | 43.2 | 42.6 | 41.8 | 41.1 | 52.6 |
| | Range | 18 - 75 | 16 - 74 | 20-76 | 18 - 78 | 25 - 77 |
| Gender (percent reporting) | | | | | | |
| | Male | 58 | 49 | 79 | 79 | 54 |
| | Female | 42 | 51 | 21 | 21 | 46 |
| **Educational Attainment (percent)** | | | | | | |
| | College graduate | 3 | 0 | 2 | 4 | 4 |
| | College undergraduate | 11 | 4 | 4 | 8 | 11 |
| | High school graduate | 8 | 8 | 20 | 26 | 26 |
| | High school undergraduate | 21 | 14 | 6 | 11 | 27 |
| | Elementary graduate | 13 | 9 | 63 | 27 | 13 |
| | Elementary undergraduate | 34 | 64 | 4 | 24 | 19 |
| **Membership in Organization (percent)*** | | | | | | |
| | Farmers' association | 40 | 10 | 70 | 13 | 8 |
| | Tribal association | 25 | 37 | - | 2 | - |
| | Religious organization | 21 | 39 | 18 | 80 | 80 |
| | Women's association | 1 | 0 | 4 | 6 | 14 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Vendors' association | 2 | 3 | - | 0 | 3 |
| | Fishermen's association | - | 6 | - | 0 | 16 |
| | Youth association | - | 2 | 2 | 10 | 2 |
| | Senior citizens' association | - | 3 | 9 | 8 | 29 |
| | Bantay Gubat/Bantay Dagat | - | 3 | 6 | 8 | 29 |
| * with multiple responses | | | | | | |
| **Sources of Income** | | | | | | |
| | Farming | 73 | 26 | 66 | 79 | 7 |
| | Vending/selling/Sari Dagan Store | 3 | 1 | 22 | 1 | 19 |
| | Barangay official/employee | 2 | 1 | - | 2 | 27 |
| | Government employee | 1 | - | - | - | - |
| | Fishing | - | 7 | - | - | 26 |
| | Bantay Dagat | - | - | - | - | 1 |
| | Both farming and fishing | - | - | - | - | 1 |
| | Tapping/gathering almaciga resin | 9 | 49 | - | - | - |
| | Others | 11 | 16 | 12 | 8 | 20 |

The survey respondent's awareness of PW in general and its specific interventions were determined to validate the interventions of PW in the field. Results showed that PW was quite known in all the sites covered in the evaluation (Table 5). The percentage of respondents who were aware of the existence of PW was 94 percent in MMPL, 93 percent in MMnPL, 87 percent in SBPS and 83 percent in CNCH and PNP. This data indicated that PW was highly visible in the various sites that were covered in the study.

***Table 5. Awareness of survey respondents of the existence of PW in their area (percent reporting)***

| Awareness | MMnPL N=90 | CNCH N=90 | PNP N=90 | MMPL N=90 | SBPS N=90 |
|---|---|---|---|---|---|
| Aware | 93 | 83 | 83 | 94 | 87 |
| Not Aware | 7 | 17 | 17 | 6 | 13 |

The respondent's awareness of some of the major interventions of PW in the various protected areas were also measured. In MMnPL, about 30 percent of the respondents were aware of the various promotional activities of PW on conservation and wildlife protection, which included the establishment of signages and distribution of IEC materials. On livelihood support, about 40 percent of respondents claimed they were aware of or have benefited from the seeds or seedling distribution and 24 percent were aware of or have participated in the tree planting activities. On support to enforcement, some respondents said they were trained as WEOs and hope that they will soon be deputized as Bantay Gubat.

In CNCH, about 25 percent of the respondents were aware of the promotional campaigns of PW as they have seen the billboards and signages in several municipalities and barangays. They also received livelihood trainings (from PW and DTI), especially in barangays Aramaywan, Isugod and Sowangan, Municipality of Quezon. In PNP, 70 percent of respondents were aware of the promotional campaigns of PW and almost 50 percent said they have received livelihood support in the form of training on cacao and coffee production and provision of seedlings. On conservation initiatives of PW, the respondents from PNP said that PW involved their communities in validating the current land and resource uses and key species in the protected area.

In MMPL, a much smaller percentage (11 percent) of respondents were aware of the various initiatives of PW to promote biodiversity conservation and wildlife protection in their area. In addition, the livelihood support provided appeared to be limited to the provision of technical assistance to their associations in the packaging of proposals on coffee and cacao production and marketing, which was submitted to another institution for possible funding support. However, about 10 percent of the respondents said they participated in the training of Bantay Gubat and joined the effort of monitoring illegal activities, such as *kaingin*. Some respondents also claimed to have participated in tree planting.

The promotional campaigns of PW on conservation and wildlife protection appeared to be most extensive in SBPS as almost 50 percent of survey respondents in this area were aware of such promotional activities. They reported the various signages and some of them were even able to read a number of IEC materials on wildlife protection. No respondents, however, reported to have received any livelihood support from PW, except perhaps for the mangrove planting and rehabilitation, which eventually could have a positive impact on their fish catch. On the initiative of PW to support enforcement, 20 percent of the respondents said they have participated in the zoning and Bantay Dagat seminars.

Likert scale was used to examine the respondents' level of agreement or disagreement to statements designed to probe the effectiveness of the PW's information campaign on biodiversity conservation and wildlife protection in the protected areas. Results of the analysis showed that regardless of sites, almost all respondents strongly agreed that conservation or protection was very important (Figure 2) and that the communities should be actively involved in managing the protected areas (Figure 3).

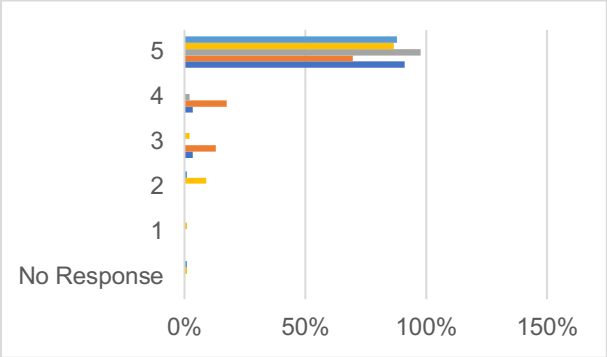



***Figure 2. Survey respondents' rating on the importance of conservation***

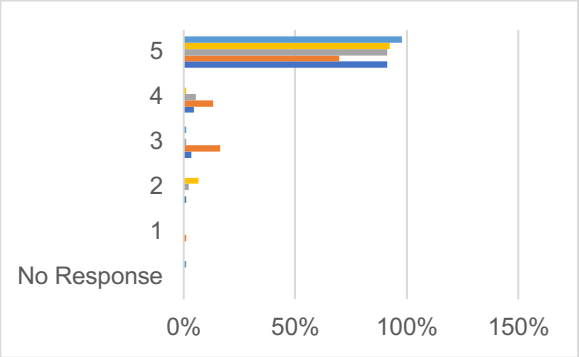



***Figure 3. Survey respondents' rating on the involvement of community in PA management initiatives***

They also agreed or strongly agreed that the PW implemented important activities to conserve biodiversity and protect wildlife and that the activity was able to help the LGUs, PAMB and DENR in the more effective management of protected areas (Annex Table 6). They also agreed that the assistance of the PW harmonized the various efforts of the national and local agencies in managing the protected areas. More importantly, almost all respondents agreed or strongly agreed that the PW effort prevented further deterioration of the PAs. This had a positive impact on their income, thus, the respondents wanted the PW interventions to continue.

The C4C and BCC activities of PW appeared to have gained much traction in imparting conservation knowledge and skills and influencing community behavior as the results of the survey showed a decline already, albeit still modest, in the number of respondents engaged in unsustainable practices or even illegal activities (Figure 4).

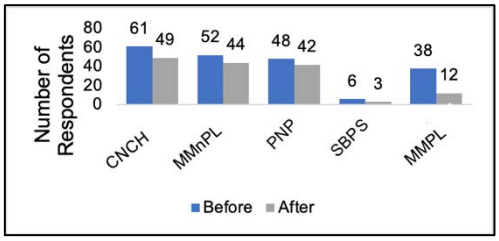



***Figure 4. Survey respondents who practice illegal activities before and after PW***

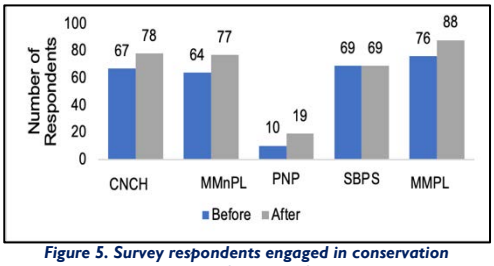



***Figure 5. Survey respondents engaged in conservation practices before and after PW***

This number declined from 61 to 49 in CNCH, 52 to 44 in MMnPL, 48 to 42 in PNP, 6 to 3 in SBPS and 38 to 12 in MMPL. In contrast, the number of respondents who were somehow engaged in conservation practices (e.g., tree planting, serving as Bantay Gubat, etc.) have increased from 67 to 78 in CNCH, 64 to 77 in MMnPL, 10 to19 in PNP and from 76 to 88 in MMPL (Figure 5).

The FGDs carried out in the various sites confirmed the results of the survey. The community household representatives said the seminars conducted by the PW gave them a better understanding on the importance of protecting and conserving biodiversity and wildlife conservation and protection. They have also learned why demarcation and delineation of management zones have to be done, as well as the legal and illegal practices, including the penalties for wildlife crimes. The PAMB, DENR, CSOs and LGU representatives also expressed they have learned so much from the experts tapped by PW in seminars and trainings. They also attested to the support provided by PW in educating the communities on the importance of biodiversity conservation and wildlife protection.

### 5.1.1.2 Validating behavioral change: probit function

To empirically validate whether the PW has been instrumental in the reported improvement in the practices of respondents related to biodiversity conservation and wildlife protection, a probit model was formulated and estimated with the general specification seen in section 3.3.2.

Results of the probit model were shown in Annex Box 1. The training variable turned out to be positive and statistically significant, which meant the attendance to the seminar of PW as part of its C4C or BCC initiatives reduced unsustainable and illegal practices and increased activities that were related to conservation protection. This empirically validated the results presented earlier and confirmed that PW was successful in its behavioral change campaigns.

### 5.1.1.3 Effectiveness and sustainability

The pieces of evidence suggested that PW has been effective in its behavioral change campaigns. Such campaigns were extensive and innovative and designed to create awareness, build interest and improve attitude and behavior toward conservation and wildlife protection. The activity gained much traction in the localities as shown by high community awareness of PW and its interventions, the communities' participation and appreciation of conservation practices, the decline in environmentally unsustainable practices and an increase in sustainable ones. Using the probit model to explain what could have significantly influenced the improvement in behavior, the trainings and seminars provided by PW turned out to be highly significant. This served as a clear empirical proof that the behavioral change (or at least part of it) was attributable to PW.

PW also trained many LGU, DENR, PAMB, CSOs and HEIs staff on C4C and BCC. PW designed the Training of Trainers (ToT) to build a critical mass of local expertise on effective behavioral change campaigns so that local agencies could sustain it even long after the termination of the PW. This ensured the sustainability of the intervention.

**Following its Theory of Change that improvement in knowledge, attitude and behavior toward biodiversity conservation and wildlife protection could reduce the adverse practices and strengthen overall support to biodiversity conservation and protection, the PW carried out extensive and innovative C4Cs and BCCs in the various PAs. The campaigns were successful as evidenced by the fact that PW exceeded its target outputs and outcomes, the communities in the PAs were highly aware of the PW and its initiatives through the signages and other IEC campaigns and many have participated in the BCC trainings and seminars which improved their appreciation of the importance of biodiversity conservation and wildlife protection. The behavioral change campaigns appeared to have gained much traction in all sites such that environmentally unsustainable practices have declined and more sustainable practices have increased. Such change in behavior proved to be attributable to PW as confirmed using the probit model, which showed the highly significant coefficient of the PW training variable as explanatory variable for the said behavioral change. All these suggested the effectiveness of the PW in its behavioral change program. In addition, sustainability of the intervention was ensured as a critical mass of local expertise on designing and delivering effective IEC campaigns has already been established through the ToT training strategy adopted by PW.**

***Box 2. Synthesis of strategic approach 1***

## 5.1.2 Strategic approach 2: conservation financing

The revenue generated from the sale of ecosystem services and public and private investments was difficult to validate as the accounting for such revenue and investment was not clear. On payment for ecosystem services supported, the evaluation examined the activities of PW on this to gauge the significance of support provided by the activity.

There were three main output indicators and two outcome indicators under Strategic Approach 2 (Annex Table 5). The reported accomplishments as of the evaluation period showed the PW exceeded all its output targets. It was able to generate US$609,278, which was much higher than its target of US$500,000; supported 147 PES or ecotourism initiatives, which was higher than its target of 100; and increased global alliance investment in wildlife anti-poaching and anti-trafficking efforts by US$7,544,421, which exceeded its target of US$5,000,000. With regard to increasing the number of people with improved economic benefits derived from sustainable natural resource management, the activity fell short by almost half in terms of its outcome target to increase by 100,000.

### 5.1.2.1 Output or outcome validation: PES and other financing schemes

The revenue generated from the sale of ecosystem services and Global Development Alliance investment were difficult to validate as the accounting for such revenue and investment was not clear. On payment for ecosystem services supported, the evaluation examined the activities of PW on this to gauge the significance of support provided by the activity.

The PW appeared to have carried out significant activities on conservation financing for the PNP, which started as early as 2016. It held discussions with the Zamboanga City Water District to clarify the PES-like scheme that was currently in place for the management of the Pasonanca watershed and how formal agreement with the city LGU, DENR and PAMB could be achieved on a more transparent utilization of its contribution (Annex Table 7). It also conducted consultations to identify the livelihood and community enterprise programs within and near the conservation areas. The effort was sustained in the succeeding years which included the gathering and analysis of cost and revenue data presented to the Zamboanga City Water District (ZCWD) for appropriate consideration in the PES-like scheme. It also explored ecotourism sites where the PES-like scheme could be adopted and continued gathering information on the livelihood and community enterprise programs of government agencies, CSOs and microfinance organizations in Zamboanga City. Another significant support made by the PW was orienting the PNP TWG and PASus on the Integrated Area Fund and other financing schemes that could be applied to protected areas. The PW recommended the inclusion of the funding needs of priority investments identified in the Zamboanga City FLUP, such as the management plans of Pasonanca Natural Park. Moreover, the ZCWD reported during the FGD that it was setting aside P30 M annually for the salaries of Bantay Gubat for the protection of the PNP watersheds.

For MMPL, the PW carried out the PES trainings, especially on cost and revenue analysis, negotiation and ecosystem valuation involving the DENR, LGUs and local water utilities. As part of supporting conservation financing, the PW organized PES orientation activities involving commercial farms and plantations and resorts operating within MMPL, such as the General Santos Rural Waterworks and Sanitation Association, Mt. Matutum Water Utilities and various resorts and commercial plantations (Annex Table 8).

For SBPS, PES trainings were conducted, albeit relatively limited and were carried out only in 2020 (Annex Table 9). According to the PASu in SBPS, the relatively limited activity might have been a result of SBPS' strength in internally generated funds that supported conservation and protection, as it was a recipient of various financing for the conservation of wildlife, such as marine turtles.

The most significant support of PW on conservation financing, especially on PES, was in Palawan. The activity worked with the Brookes Pt. Water System, Brookes Pt. Rural Waterworks and Sanitation, Sofronio Española Water Supply, the LGUs of Rizal, Bataraza, Taytay, El Nido and Puerto Princesa Water District, as well as the Puerto Princesa Subterranean River Park. Some notable accomplishments of PW in Palawan included the development of financial guidelines to plow back revenues and approval of the resolution to collect a PES for watershed management, as well as, the drafting of the PES ordinance in Sofronio Española and Bataraza.

Instituting a PES mechanism was long and difficult and involved political processes to ensure collection, retention, ring-fencing and actual investments for environmental protection. The process started with the advocacy to convince the stakeholders to consider PES, followed by the training on various aspects of PES, providing assistance in analyzing opportunities, valuation, identification of schemes for implementation and formulating policies to implement the PES schemes.

Thus far, the PW successfully laid the groundwork for the eventual adoption of PES in the various sites covered in the evaluation. It would have been more successful if not for the pandemic, which restricted its operation. Nevertheless, it was gathered from the FGDs that success would likely continue once the operation has normalized. In PNP, for instance, the PAMB has already passed a resolution adopting a PES scheme related to eco-tourism (e.g., eco-trekking, canopy walk, prenuptial shoots, etc.) and approved to increase the entrance fee from PHP5 to PHP30 (US$.10 to US$.60) for financing the various conservation efforts in the site.

### 5.1.2.2 Validation of outputs or outcomes: livelihood support

Besides PES, part of the strategic approach to conservation financing was to partner with the private sector for the direct investment and support for wildlife conservation and community livelihood. For direct investment, the PW had an agreement with Abraham Holdings, RD Foundation, SMART Communications and InK E-Magazine. For the livelihood support, it worked with the Lutheran World Relief, FSSI, Abraham Holdings, Sunlight Food Corporation, Conrado and Ladislawa Alcantara Foundation, ECLOF, Frey-Fil Corp., PhilFIDA, PhilMech, PhilCAFE, CSDO and PRDP.

A number of conservation farming arrangements were identified and designed with these partners ranging from production inputs, technical training, capability building for farmer organizations, credit or microfinance and post-harvest facilities. Among the validated support included were 1) in Palawan—purple yam, seaweed production, vegetables, cassava, fruit trees seedlings and vegetable seed distribution, turmeric, microfinance, 2) in Zamboanga—training on cacao, 3) in Region 12—abaca, coffee, cacao, abaca consolidators, microfinance and 4) in Region 3—market scanning for turmeric.

A number of concrete livelihood interventions were provided in Palawan and MPPL PW sites. In PNP, the only livelihood intervention was the training on cacao production, while there was none in the SBPS. Relevant questions were included in the structured questionnaires for the community respondents' survey to gauge the significance of the PW outputs and outcomes related to conservation financing. Results showed that most of the respondents received livelihood assistance related to conservation and protection during the implementation period of the PW (Table 6). Among the sites covered in the study, the highest percentage of respondents (92 percent) who received livelihood assistance was in MMnPL, followed by CNPH at 71 percent. The lowest was in SBPPS (61 percent), although it still constituted the majority of respondents. For PNP and MPPL, 68 percent of respondents reported having received livelihood assistance during PW's time.

***Table 6. Livelihood assistance related to conservation and protection of the PA received by beneficiaries in the last four years (percent reporting, n=90 per site)***

| Livelihood Assistance | PNP | MPPL | SBPS | MMnPL | CNCH | All |
|---|---|---|---|---|---|---|
| Yes | 68 | 68 | 61 | 93 | 71 | 72 |
| No | 32 | 32 | 39 | 7 | 29 | 28 |

For MMnPL, the evaluation showed that 78 percent of the livelihood assistance received by respondents was free seedlings, while 68 percent reported they also received production training (Table 7). For CNCH, 83 percent reported they received production training, while 50 percent claimed they acquired free seedlings. The livelihood assistance for communities in MPPL appeared to be more varied as they received seedlings (79 percent), production training (22 percent), marketing assistance (8 percent) and a few acquired credit (5 percent). In addition, 25 percent of respondents reported they had been hired as Bantay Gubat, which somehow augmented their income. Respondents from PNP reported most of the assistance provided to them was production training (67 percent) and marketing assistance (25 percent). For SBPPS, the assistance provided was on marketing and credit.

***Table 7. Livelihood assistance received by respondents from PW and partners***

| Livelihood Assistance Received | PNP | MMPL | SBPPS | MMnPL | CNCH | All |
|---|---|---|---|---|---|---|
| Number reporting | 61 | 63 | 4 | 85 | 6 | 219 |
| Percent reporting | | | | | | |
| Training/workshops on production | 67 | 22 | - | 66 | 83 | 60 |
| Credit/loan/financial assistance | - | 5 | 50 | - | - | 27 |
| Marketing assistance | 25 | 8 | 50 | | | 27 |
| Provided seedlings | - | 79 | - | 78 | 50 | 69 |
| Hired as Bantay Gubat/Dagat | - | 25 | - | - | - | 25 |

At the beneficiary level, respondents reported their income increased by 25 percent on average as a result of their participation in protection and conservation programs (Table 8). During the FGD in Mt. Matutum, the stakeholders shared that the livelihood intervention for coffee production and marketing and civet cat protection resulted to tripled civet coffee production. Incomes also increased due to the price premium, where ordinary coffee beans sell at only PHP120.00/kg (US$2.50/kg) compared to civet coffee beans that sell at PHP4,000/kg (US$82.60/kg). In Mt. Mantalingahan, Sunlight Food Corporation provided seeds for

purple yam to participating farmers, reportedly in an approximately 2,500-hectare area. The company then bought the products. This arrangement has been ongoing for three years. It was reported that the company plans to improve farmer support and expand the area to boost the livelihood and income of the community while increasing the production for the company.

***Table 8. Increase in income as a result of participation in protection and conservation program during the last four years***

| Items | PNP N=90 | MPPL N=90 | SBPS N=90 | MMnPL N=90 | CNCH N=90 | All |
|---|---|---|---|---|---|---|
| Increased income | | | | | | |
| Yes | 79 | 72 | 61 | 52 | 71 | 67 |
| No | 21 | 35 | 29 | 48 | 29 | 33 |
| HH Income 4 years ago (PHP) | 3,322 | 4,562 | 5,225 | 2,241 | 3,257 | 3,721 |
| Current HH income | 6,381 | 5,746 | 7,926 | 2,684 | 3,457 | 5,238 |
| Percent change | 48% | 34% | 21% | 17% | 6% | 25% |

### 5.1.2.3 Validation of outputs or outcomes: household income function

The study formulated and estimated a household income function to determine whether the improvement in income, as reported by many of the respondents, has empirical support. The general specification of the function was as follows, albeit a large number of variants were tested to arrive at the best linear unbiased estimates of the coefficients, seen in section 3.3.1.

Results were summarized in Annex Box 2. The statistically significant variables were the major source of income, recipient of seeds or seedlings from PW, age, education, household size and awareness of PW. The negative coefficient of the major source of income variable indicated that monthly household income was higher for households with farming as a major income source. In communities at or near a protected area, opportunities for non-farm income were expectedly limited. The positive coefficients for age, education and household size variables were consistent with the a-priori notion. Based on the results, monthly household income increased with age, education and household size. The positive relationship between income and these variables was established in the literature, which investigated the important determinants of household income. The most interesting results, though, were with the variables directly associated with PW, namely the awareness of the PW and the recipients of seeds or seedlings from PW. For the variable on the recipient of seeds or seedlings, results suggested that income significantly increased for those who received seeds or seedling support from PW. This validated the earlier claims of the community respondents that their income has improved as a result of PW intervention. Being aware of PW and its interventions was also associated with increasing income. It was difficult to imagine, though, that mere awareness itself could lead to higher income. Rather, the awareness variable might have served as an indirect proxy to better knowledge on sustainable farming promoted by PW in various sites.

**Premised on the belief that community livelihoods and enterprises were strongly linked to ecosystem goods and services, PW worked to increased public and private sector financing for both community livelihoods as well as for onsite conservation management efforts in the various PAs. It was able to generate US$609,278, which was much higher than its target of US$500,000; supported 147 PES or ecotourism initiatives, which was higher than its target of 100; and increased global alliance investment in wildlife anti-poaching and anti-trafficking efforts by US$7,544,421, which exceeded its target of US$5,000,000. However, it fell short by almost half in terms of its outcome target to increase by 100,000 the number of people with improved economic benefits derived from sustainable natural resource management, albeit it far exceeded its target of mobilizing US$5,000,000 investment for sustainable landscapes, natural resource management and biodiversity conservation.**

**The PW carried out significant activities on conservation financing for the PNP by 1) clarifying with the Zamboanga City Water District the PES-like scheme and gathering and analyzing cost and revenue data 2) exploring ecotourism sites where the PES-like scheme could be adopted, 3) identifying livelihood and community enterprise programs, 4) orienting the PNP TWG and PASus on the Integrated Area Fund and other financing schemes that apply to protected areas and caused the inclusion of the funding needs of priority investments identified in the Zamboanga City FLUP and 5) managing plans of Pasonanca Natural Park as priority investments under the Zamboanga City FLUP. For MMPL and SBPS, the PW carried out the trainings on PES, organized PES orientation activities involving commercial farms and plantations and resorts operating within the PAs. The most significant support of PW on conservation financing especially on PES was in Palawan. The activity worked with the Brookes Pt. Water System, Brookes Pt. Rural Waterworks and Sanitation, Sofronio Espanola Water Supply, the LGUs of Rizal, Bataraza, Taytay, El Nido and Puerto Princesa Water District, as well as the Puerto Princesa Subterranean River Park. Some notable accomplishments of PW in Palawan included the development of financial guidelines to plowback revenues for watershed management following LGU ordinance for Brooke's Point Water System, approval of the resolution to collect a PES for watershed management by the Brooke's Point Rural Waterworks and Sanitation Association and the drafting of the PES ordinance in Sofronio Española and Bataraza. The process of instituting a PES mechanism was long and difficult and involved political processes to ensure collection, retention, ring-fencing and actual investments for environmental protection. Thus far, the PW could only be credited for laying the groundwork for the eventual adoption of PES in the various PAs.**

**The PW also partnered with a number of public and private institutions for the direct investment and support to wildlife conservation and community livelihood. A number of conservation farming arrangements were identified and designed with these partners ranging from production inputs, technical training, capability building for farmer organizations, credit or microfinance and postharvest facilities. Results of the community survey showed that majority of the respondents received livelihood assistance related to conservation and protection during the implementation period of the PW. The respondents reported their income increased by 25 percent on average as a result of their participation in the livelihood programs. The household income function empirically confirmed the income increase and that such could be attributed to the PW intervention.**

**The evaluation concluded that PW was generally effective in its strategic approach on conservation financing, especially in laying the groundwork for PES and partnering with various institutions to increase conservation investment and livelihood support. Sustainability was also ensured as PW established and capacitated local technical working groups (TWGs) who could continue to build on what has been achieved and sustain the effort on conservation financing.**

***Box 3. Synthesis of strategic approach 2***

### 5.1.3 Strategic approaches 3 and 5: improved competency in biodiversity conservation and enforcement of biodiversity conservation-related laws and policies.

This section discussed the results under strategic approaches 3 and 5 as both were about competency improvement through trainings and other support. Strategic approach 3 focused on improving the conservation competency of LGUs and resource managers by capacitating and linking them with NGAs and CSOs and the private sector, who could provide assistance related to policies, budget and people. In complement, strategic approach 5 aimed to assist in assessing the capabilities of NGAs, local authorities and CSOs and providing them with support, tools and regulatory framework needed to identify, report, prosecute and convict violators of habitat land uses and wildlife laws. The target outputs and accomplishments of PW under these strategic approaches were shown in Annex Table 10.

PW appeared to have failed to reach its output targets in both strategic approaches as of the evaluation period. In strategic approach 3, the activity had trained 164 LGU staff in participatory planning, which was short of its target of 200. Also, the activity did not reach its target of educating 2,500 community members with planning and implementing integrated conservation and development as it was able to train 1,498 community members only. In addition, while it targeted to certify and formally deputize 200 LGU staff and 500 community members as Wildlife Enforcement Officers (WEOs), the activity deputized 80 LGU staff and 304 community members only. It should be noted, though, that the evaluation was conducted while PW still had six months left as the activity was extended for three months.

Under strategic approach 5, the PW exceeded by 458 its target of 1,000 to train government staff in combating wildlife and environmental crime. However, the number of new or revised laws and regulations adopted to combat wildlife crimes was only 39, which was still short by 11 compared to the target. As of the evaluation period, the PW reported 700 confiscations, seizures and arrests resulting from capacity building carried out, albeit this was still short by 300 compared to the targeted number.

The evaluation examined the outcomes which may stem from the outputs of these strategic approaches to validate the significance of the PW outputs under strategic approaches 3 and 5. Two key outcomes figured prominently: 1) the formulation or updating of protected area management plans and enforcement protocol and 2) the improvement in the effectiveness of the trained LGU, PAMB and other relevant units in carrying out PA management and law enforcement. The enhanced capacity, especially those involved in planning, was instrumental in updating or formulating the management plan and enforcement protocol. Other than enhancing such capacity, the PW also carried out various activities to facilitate the formulation of PA management plans and enforcement protocol. These activities were reviewed to gauge the significance of the PW interventions in the updating or formulation of the PA management plan and enforcement protocol.

The other important outcome of competency improvement was improving the effectiveness by which PA management and law enforcement were carried out. To validate this, the evaluation surveyed 30 randomly selected participants per site (total of 150 respondents) in the various trainings under strategic approaches 3 and 5 to gauge whether competency has really been enhanced and whether there were indications already that PA management and enforcement have already improved.

### 5.1.3.1 Formulation or updating of protected area management plan and enforcement protocol

One of the key outputs to which the PW made a significant contribution was the formulation or updating of the protected area management plan and enforcement protocol. This was crucial as the plan served as the blueprint in managing the protected area and set the principles and policies governing the conservation or protection and utilization of resources found therein. The key feature of enhancement or updating in the existing management plan was the emphasis on an integrated landscape approach in managing the protected area.

In the Pasonanca Natural Park (PNP), the PW started its assistance in updating the management plan as early as 2016 (Annex Table 11). The activities included participation in the consultations and public hearings on the updated CLUP, zoning ordinance and comprehensive development plan of Zamboanga City. The PW also led the preparation of thematic maps to update the management plan for PNP and organized a joint consultation workshop with DENR Region 9 and other partners to prepare the initial action plan for a landscape approach to conservation planning in Zamboanga City. PW pursued more orientation on the landscape approach in the following year involving the technical working group (TWG) and the members of the academe. The GIS team also compiled geospatial datasets relevant to forest land use planning to generate the initial map on the policy-designated land uses in Zamboanga City and the PNP. The assistance provided by PW proved instrumental for the approval by the Pasonanca Natural Park Management Board of a resolution outlining the zoning and resource use recommendations for the park.

In 2018, the PW assisted in building the information, education and communication component of the management plan and facilitated decisionmaking and planning exercises for the plan's final elements. It also facilitated consultation, orientation, training and boundary-setting exercises for 163 community stakeholders to establish forest and protected area land use plans for Zamboanga City. The year was marked with the completion of the management plan for the protected area as well as the formulation of the initial actions that needed to be taken. In 2019 the PW led the workshops to address the funding gaps and research and extension support needs of the updated PNP management plan and caused the inclusion of the funding needs of PNP in the Executive-Legislative Agenda formulation of the Zamboanga City government. In 2020, the PW conducted consultative meetings with potential partners for the ground delineation and demarcation of the PNP management zones.

The work of PW toward the enhancement of the other management plans, namely those for Mt. Matutum Protected Landscape, Sarangani Bay Protected Seascape and Mt. Mantalingahan Protected Landscape, started much later compared to that of PNP, but might still be considered significant. For Mt. Matutum (Annex Table 12), the assistance of PW started in 2019 with a training workshop on setting the current and projected land and resource uses in forest lands. This was followed by a FLUP training on sectoral, intersectoral and cross-sectoral analysis of FLUP data for the FLUP TWGs of the four LGUs in Mt. Matutum. PW continued the initiative by holding a second workshop to complete the data on the biophysical features, demography and policies of each LGU and the analysis of gathered data. The PW also organized an integrated conservation and development training for the community members from Mt. Matutum and prepared the work and financial plan for the Mt. Matutum Protected Landscape management plan.

For Sarangani Bay Protected Seascape (Annex Table 13), the PW assisted the PAMB in drafting the protected area management plan and organized the TWG workshop for the situational analysis, zoning and determination of management prescriptions (allowed and prohibited uses) for agreed zones. It also hosted the write shop to prepare the Five-Year Work and Financial Plan of Sarangani Bay Protected Seascape and led in refining the zoning of the protected seascape as part of the initial draft of the work and financial plan.

In 2020, the PW organized and facilitated the workshop to develop an enforcement operations protocol for the Sarangani Bay Protected Seascape. For Mt. Mantalingahan (Annex Table 14), the assistance provided by PW on the enhancement of the management plan was relatively limited, albeit may still be considered important.

### 5.1.3.2 Capacity building

The accomplishments of PW on capacity building were undoubtedly impressive. The activity carried out a long list of trainings (Annex 7) covering a broad range of relevant topics toward addressing the complex problems associated with wildlife conservation or protection from planning, enforcement, technical capacity, livelihood support, conservation financing, behavioral change and many others. In addition, the menu of topics was varied by site, which clearly indicated a deliberate effort to address the context-specific capacity needs in the various protected areas. The PW reported having trained a total of 4,404 individuals in the course of its implementation. This number appeared factual based on the long list of trainings conducted and the feedback obtained from the key informant interviews (KIIs), FGDs and the survey of participants in the various trainings.

As mentioned earlier, the capacity enhancement was instrumental in the formulation and updating of the PA management plan. However, another important PA management activity where capacity enhancement may contribute significantly was in the enforcement of the laws and policies governing the PAs. Enforcement duties included securing and protecting the watershed area and its resources, enforcing policies following the enforcement protocols, area management, wildlife and forest protection and other similar activities. On the other hand, monitoring duties involved surveillance and investigation, detection of illegal activities, participation in the BMS and BAMS and other similar activities. Specifically for Mt. Mantalingahan, for instance, this included apprehension, surveillance and investigations, networking and detection of illegal collection of wildlife. In PPRSNP, this included cave management, enforcement, park rangers, research and other fieldwork. In Mt. Matutum, this included project monitoring, planning, apprehensions and enforcement of policies. The specific training topics were validated through the survey of training participants in the various sites (Table 9).

Results of the survey of participants in the various PW trainings were summarized in Annex Figures 1 to 7. Almost all participants viewed the trainings they attended as relevant and appropriate (Annex Figure 1) and improved their knowledge about wildlife conservation, particularly the methods and tools that could be used (Annex Figure 2), improved their individual capacity on law enforcement (Annex Figure 3) and more importantly led to more enforcement actions in all sites. The participants also believed that the trainings were effective (Annex Figure 4) and that these could be sustained (Annex Figure 5) by the relevant agencies as the PW has already capacitated them.

*Table 9. Topics covered by the trainings conducted by PW as answered by the training participants, PNP, MMPL, SBPS, MMnPL and PPSRNP*

| Site | Training Topic | |
|---|---|---|
| **PNP** | - Wildlife and environmental law<br>- Wildlife and environmental law enforcement<br>- Enforcement coaching and operation<br>- Environment and natural resources policies and laws | - Wildlife conservation and management: species identification, handling and management technique<br>- Pilot testing of the integration of BMS in the LAWIN forest and biodiversity protection system<br>- Enforcement protocol and manual of operations, development for Pasonanca Natural Park |
| **MMPL** | - Building capacity of forestry and wildlife enforcement<br>- Basic and advanced GIS training | - Wildlife/environmental enforcement training<br>- Development of log framework<br>- MPPL AMS/AMP reporting |
| **SBPS** | - Coastal resource assessment protocol<br>- Protected area law enforcement training<br>- Assessment and capacity building for marine turtle conservation<br>- Enforcement operation protocol | - Capability building for fish, wildlife and environmental law enforcement<br>- SBPS AMS, Zoning<br>- Sarangani wildlife conservation<br>- Marine mammal stranding |
| **MMnPL** | - Capability building for forestry and wildlife law enforcement<br>- Log frame and management focus<br>- Integrated area landscape<br>- MPPL AMS, Zoning and ICD<br>- Land use community validation | - WEO paralegal<br>- GIS<br>- MPPL management plan<br>- Digital profiling and capacity assessment of community producers |
| **PPSRNP** | - Environmental law enforcement trainings for PA rangers<br>- Environmental law enforcement | - Legal coaching<br>- Wildlife forensics |

### 5.1.3.3. Improved enforcement leading to reduction in wildlife crimes

The PW baseline assessments of wildlife crime incidence, particularly trafficking, involving mammals and birds in various PW sites detailed the movement or route from source to destination and species. The PW life of project (LoP) target on confiscations, seizures and arrests resulting from the capability provided might be viewed as a proxy indicator to show evidence of a reduction in wildlife crimes as a result of improved enforcement. PW indicator for staff trained in combatting wildlife and environmental crime showed they have trained 50 percent more staff than targeted (1,458 trained out of 1,000 target) as of the fourth year of project implementation. The survey of community beneficiaries showed their observation on the reduction of incidence of wildlife crime in the protected area (Table 10). The respondents observed a reduction in poaching, illegal activities, destructive practices and wildlife crimes, across all sites.

*Table 10. Observed reduction in incidence of crimes in the protected area by beneficiaries (percent reporting)*

| Wildlife Crimes | PNP N=90 | MMPL N=90 | SBPS N=90 | MMnPL N=90 | CNCH N=90 | All N=450 |
|---|---|---|---|---|---|---|
| Poaching | 68 | 80 | 38 | 36 | 10 | 46 |
| Illegal activities | 57 | 70 | 64 | 76 | 33 | 60 |
| Destructive practices | 59 | 53 | 58 | 66 | 20 | 51 |
| Wildlife crimes | 54 | 49 | 32 | 50 | 49 | 47 |

### 5.1.3.4. Identifying and expanding wildlife law enforcement through multi-LGU, regional or national partnerships

The management of protected areas is the responsibility not only of one institution. Due to its ecosystem services and functions, PAs generate a lot of interest from various stakeholders that transcend political jurisdictions and boundaries. Wildlife trafficking, for instance, means that the species will move from its origin to its transshipment points to its destination. Inter-agency and multi-LGU partnerships are needed to holistically address this problem.

PW was able to address this concern. Among these initiatives included 1) SBPS Multi-level Bay Wide Law Enforcement Group, which encompassed the five LGUs that has jurisdiction of the SBPS, 2) the MPPL Resource Protection Group, also a multi-LGU initiative, 3) the 25 Year Action Plan for the Conservation and Management of the Palawan Pangolin and 4) the Wildlife Law Enforcement Manual of Operations. The survey from the community beneficiaries showed that they were involved in the efforts of various agencies in their PA in the identification and reporting of wildlife crimes (Table 11). Except in SBPS, less than half of the respondents reported involvement in identifying and reporting wildlife crimes. Community involvement was important in environmental activities and thus, even with these numbers, this could still be considered significant.

***Table 11. Respondent's involvement in the efforts of DENR, PAMB and LGU to identify and report wildlife crimes (percent reporting)***

| Involvement | PNP N=90 | MMPL N=90 | SBPS N=90 | MMnPL N=90 | CNCH N=90 |
|---|---|---|---|---|---|
| Yes | 21 | 48 | 68 | 27 | 40 |
| No | 79 | 52 | 32 | 73 | 60 |

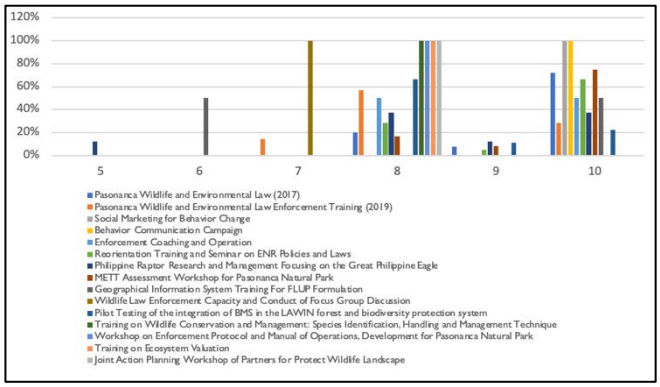
### 5.1.3.5 Enforcement monitoring to determine the effectiveness of PW assistance.

Confiscations and arrests were indicators of PW assistance's effectiveness. PW has monitored enforcement actions in the various task forces or groups that they assisted in forming. These confiscations and arrests were key PW indicators. The PW has monitored 816 confiscations (as of Y4) out of the targeted 1,000 LoP target. These were enforcement actions by the Zamboanga City Composite Fisheries Law Enforcement Team due to IUU in fishing, involving seizures of boats and gears and wildlife products, dried sea horse, corals and shells. In addition, the PCSD contributed by apprehending illegal loggers and IUU fishers, involving confiscations of chains saw, lumber/timber (i.e., Ipil, Kamagong, Apitong), talking munah, blue-naped parrot, mangroves, charcoals, pangolin scales and dried pangolin scales.

### 5.1.3.6 National and local enforcement capacity to detect, investigate, prosecute and adjudicate improved

In improving capacities, PW focused on policies, tools and technical skills. One of the concrete outputs for tools was the development and adoption of the Biodiversity Resources Access Information Network (BRAIN). This system provided support to PCSD in its enforcement efforts. BRAIN was a digital system that provided a solution to coordination and management challenges that beset enforcers' capacity to enforce laws in Palawan. It has three main modules: 1) Rapid Enforcement Support, Planning, Operation and Network, System Enhancement (RESPONSE). This space was intended for the WEO, WTMOs and the Palawan Environmental Enforcement Network (PALAWEEN) so that they could coordinate, plan and execute enforcement actions, monitor permits and develop and file administrative complaints; (2) Online Permitting System, which was designed for permit holders. BRAIN was designed for online submission of permit applications and replaced the document-driven process. It is intended to expedite and streamline permit processing and approval, promote transparency, achieve the government's no-contact policy and 3) a public reporting platform for general public reporting on wildlife and environmental crime incidence.

PCSD Memorandum Circular No. 01, Series of 2020: Operationalization of the Online Permitting Mechanism Established under the BRAIN System was issued for the adoption of the system within PCSDS. The FGD with the Council Secretariat revealed that PCSD was currently using the BRAIN; its timely development greatly eased the permitting system, especially during the pandemic. According to PCSDS, the online permitting module has reduced the processing time of permit application and approval from as long as two weeks to within one day.

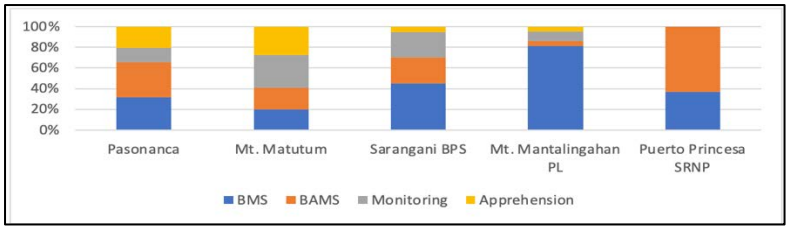



*e trained by PW in*

On technical skills, respondents of the survey of people trained by PW were asked to provide ratings to indicate the impact of the trainings on their work related to wildlife conservation. In PNP, most of the seminars were rated 8 and 10, with 10 being the highest. There was no rating below 5 (Figure 6). All respondents rated the trainings related to behavioral change campaigns as having an impact of 10. For the training related to research and management focusing on the Philippine Eagle, the respondents have differing ratings from 5 to 10.

Respondents indicated that the key lessons learned during these activities include 1) learning how to record and monitor wildlife in the area, 2) knowledge on wildlife protection policies, enforcement, corresponding penalties of crimes as embodied in RA 9147, wildlife conservation, enforcement, laws of the forest, 3) skills about enforcement strategies and protocols, dos and don'ts, how to properly address wildlife crimes and 4) assessment of the protected area. The trainings also served as refresher courses on protecting the environment; enhanced knowledge on key species and importance of biodiversity; additional skill on monitoring, tracking tools and assessment, recording and monitoring of wildlife, biodiversity monitoring, mapping of protected areas; and ideas and tools to use for conservation. Others also indicated additional knowledge in terms of laws and guidelines on FLUP and its preparation, different approaches in campaigning for the environment and jurisdictions. For enforcement policies, examples were enumerated in the previous sections. PW also provided substantive inputs for revising and advocating national and local policies (Annex Table 15). At the community level, the beneficiary respondents perceived the changes in policies and regulations to have improved the effectiveness in managing the protected areas.

### 5.1.3.7 Institutionalization of training programs at the national level to provide continuing support to regional field teams




There are no indications in the reports and FGDs that agencies are replicating the trainings conducted. The survey, however, looked into the team memberships of the trainees (Figure 7).

The teams were Biodiversity Monitoring System, Biodiversity Assessment and Monitoring System, Team Monitoring Illegal Wildlife Trade and Team Apprehending Poached Wildlife. The trainees were also asked about the key topics that could be applied to their work within these teams. These were shown in Table 12.

***Table 12. Key topics applicable to work as identified by respondents trained by the Protect Wildlife***

| Team Membership | Percent reporting | Key topic applicable to work |
|---|---|---|
| Biodiversity Monitoring System Team | | |
| PNP | 31 | Wildlife enforcement policies<br>Enhancement of knowledge in biodiversity monitoring<br>Refresher course |
| MMPL | 18 | RA 9147, 11038, 705, 9175, PD 953, RA 8371 (look for complete titles of these laws<br>Apprehensions and seizures processes |
| SBPS | | Marine mammal stranding response |
| MMnPL | 82 | Coral reef survey, fish visual census, mangrove and seagrass monitoring, coral reef mapping<br>BMS monitoring standard<br>Zoning, carrying capacity<br>Sampling of fruit trees to be delivered |

| Team Membership | Percent reporting | Key topic applicable to work |
|---|---|---|
| PPSRNP | 16 | Prohibitions in the park |
| Biodiversity Assessment and Monitoring System Team | | |
| PNP | 34 | How to assess species richness of wildlife in an area/how to assess biodiversity in the watershed/physical assessment of flora and fauna/tree identification<br><br>Methods in transect line and BAMS establishment<br>Biodiversity monitoring |
| | | How to enforce/apprehend illegal activities/enforcement strategies<br>Laws and regulations |
| MMPL | 19 | Development of key strategies in the protection and conservation of wildlife species in Polomolok |
| SBPS | | Marine mammal stranding response<br>Coral reef survey, fish visual census, mangrove and seagrass monitoring, coral reef mapping |
| MMnPL | 5 | Conservation and social marketing |
| Team Monitoring illegal wildlife trade | | |
| PNP | 14 | Wildlife enforcement policies<br>Recording and monitoring of wildlife<br>Strategies in wildlife protection |
| MMPL | 28 | Wildlife enforcement policies |
| MMnPL | 9 | Development of key strategies in the protection and conservation of wildlife species in Polomolok |
| PPSRNP | 84 | |
| Team apprehending poached illegal wildlife | | |
| PNP | 20 | Wildlife laws, rules and regulations<br>Enforcement of wildlife laws, rules and regulations<br>Enforcement strategies |
| MMPL | 25 | Wildlife laws, rules and regulations<br>Identification of multiple use zone and SPZ |
| MMnPL | 5 | |
| PPSRNP | 84 | |

### 5.1.3.8 National or local coordination mechanisms of enforcement authorities are strengthened

Coordination mechanisms may also be viewed in the complementarity of programs and activities, particularly if implemented in one common area. The creation of the various multi-agency task forces in the protected areas covered by PW served as an evidence of this. Table 13 has shown that communities have observed efforts of agencies in wildlife crime prevention at the community level. In fact, many of them were involved in many ways, such as being an informant to the enforcer in PNP. In Mt. Mantalingahan, the involvement also included reporting and monitoring of illegal activities, as a Bantay Gubat. Of those reporting, they opined that this was an effective effort because it has lessened illegal activities and people were following the rules. In SBPS, these involved reporting crimes to Bantay Dagat; and also as their capacity as Bantay Dagat and fish warden, barangay official such as chief *tanod*, sanitary inspector; as concerned citizen; reporting to the police, PAMB and DENR. In Mt. Matutum, the involvement was reporting to authorities as concerned citizens, as Bantay Kalikasan, barangay councilor and forest protection officer.

The people trained by PW were also asked what they thought were the three most important concerns and whether these were addressed by PW or by other programs by other agencies. Their responses in table 13 showed that there were complementary efforts in the different sites, as other programs also worked on the problems addressed by PW.

***Table 13. Most significant concerns and interventions in wildlife conservation addressed by PW***

| Wildlife conservation problem | Addressed by PW (percent reporting) | Average rating for PW effort in addressing the problem | Addressed by other programs (percent reporting) | Average rating for other programs effort in addressing the problem |
|---|---|---|---|---|
| PNP | | | | |
| Lack of information | 29 | 10 | 29 | 10 |
| Lack of equipment | 29 | 8 | 29 | 8 |
| Lack of personnel or lack of personnel focus on wildlife management | 34 | 5 | 29 | 5 |
| MMPL | | | | |
| Poaching, hunting, trading and trafficking of threatened species | 28 | 7 | 28 | 6 |
| Habitat destruction, *kaingin*, conversion of forests | 11 | 8 | 15 | 7 |
| Lack of wildlife rehabilitation center | 12 | 8 | 6 | 5 |
| SBPS | | | | |
| Hunting, poaching of bats and *pawikan* | 20 | 8 | 6 | 6 |
| Insufficient IEC, BCC and community involvement | 4 | 10 | 4 | 7 |
| Lack of policies for wildlife conservation | 12 | 10 | 4 | |
| MMnPL | | | | |
| Enforcement capability | 9 | 10 | 9 | 10 |
| Poaching | 18 | 7 | 18 | 4 |
| Wildlife trafficking | 9 | 8 | 9 | 7 |
| PPSRNP | | | | |
| Lack of training | | | | |
| Illegal logging | | | | |
| *Kaingin* | 20 | 8 | | |

### 5.1.3.9 Effectiveness and sustainability

Strategic approach 3 was focused on improving the conservation competency of LGUs and resource managers by capacitating and linking them with NGAs and CSOs and the private sector, which could provide assistance related to policies, budget and people. In complement, strategic approach 5 aimed to assist in assessing the capabilities of NGAs, local authorities and CSOs and providing them with support, tools and regulatory framework needed to identify, report, prosecute and convict violators of habitat land uses and wildlife laws.

PW appeared to have failed to reach its output targets in both strategic approaches as of the evaluation period, mainly due to the movement restrictions caused by the pandemic. However, the PW might still be considered successful and effective in strategic approaches 3 and 5, considering the magnitude of accomplishments despite the pandemic problem. One of the very significant accomplishments of PW was in the formulation or updating of PA management plans. The assistance included the facilitation of consultations, public hearings, GIS data compilation, zoning and mapping, training the community stakeholders on boundary setting, building the information, education and communication component of the management plan, facilitation of decision making and planning exercises for the plan's final elements and leading the technical working groups assigned to prepare the plans.

The accomplishments of PW on capacity building were undoubtedly impressive. The activity carried out a long list of training covering a broad range of topics relevant to addressing the complex problems associated with wildlife conservation or protection from planning, enforcement, technical capacity, livelihood support, conservation financing, behavioral change and among others. The PW also focused on policies, tools and technical skills. One of the concrete outputs for tools was the development and adoption of the Biodiversity Resources Access Information Network (BRAIN).

**Strategic approach 3 was focused on improving the conservation competency of LGUs and resource managers by capacitating and linking them with NGAs and CSOs and the private sector which could provide assistance related to policies, budget and people while strategic approach 5 complemented this by assisting in the assessment of the capabilities of NGAs, local authorities and CSOs and providing them with support, tools and regulatory framework needed to identify, report, prosecute and convict violators of habitat or land uses and wildlife laws.**

**As of the evaluation period, PW appeared to have failed to reach its output targets in both strategic approaches. This is due mainly to the movement restrictions brought about by the pandemic. In strategic approach 3, the activity had trained 164 LGU staff in participatory planning, which was short of its target of 200. It was also short of reaching its target of 2500 community members trained in planning and implementation of integrated conservation and development as it was able to train only 1498 community members. In addition, while it targeted to train, certify and formally deputize 200 LGU staff as Wildlife Enforcement Officers (WEOs) and 500 community members trained certified as WEOs, it was only able to cover 80 LGU staff and 500 community members, respectively. Under strategic approach 5, the PW exceeded by 458 its target of 1,000 to train government staff in combating wildlife and environmental crime. However, the number of new or revised laws and regulations adopted to combat wildlife crimes was only 39, which was still short by 11 compared to the target. The PW reported 700 confiscations, seizures and arrests resulting from capacity building carried out, albeit this was still short by 300 compared to the targeted number. It should be noted though that the evaluation was conducted while PW still had one more year left as the activity was extended for another year.**

**One of the very significant accomplishments of PW was in the formulation or updating of PA management plans. The assistance include the facilitation of consultations, public hearings, GIS data compilation, zoning and mapping, training the community stakeholders on boundary setting, building the information, education and communication component of the management plan, facilitation of decision making and planning exercises for the plan's final elements and leading the technical working groups assigned to prepare the plans.**

**The accomplishments of PW on capacity building are undoubtedly impressive. The activity carried out a long list of trainings covering a broad range of topics that are relevant toward addressing the complex problems associated with wildlife conservation or protection from planning, enforcement, technical capacity, livelihood support, conservation financing, behavioral change and many others. The PW also focused on policies, tools and technical skills. For tools, one of the concrete output is the development and adoption of the Biodiversity Resources Access Information Network (BRAIN).**

**Results of the survey of participants in the various PW trainings showed that almost all viewed the trainings as relevant and appropriate, that these improved their knowledge about wildlife conservation, particularly the methods and tools that can be used, improved their individual capacity on law enforcement and more importantly led to more enforcement actions in all sites. They also believed the trainings were effective and that these could be sustained by the relevant agencies as they have already been capacitated by the PW. The communities have already been observing reduction of incidence of wildlife crime in the PAs.**

***Box 4. Synthesis of strategic approaches 3 and 5***

### 5.1.4 Strategic approach 4: enhance capacities of universities to advance biodiversity conservation education, research, monitoring and innovation

This strategic approach theorized that if higher education institutions (HEIs) have increased technical know-how to conduct research, source and mobilize research funds enrich conservation curriculum and syllabus, then these institutions would be able to produce tools and knowledge products that would enhance the capacities of LGUs, CSOs, government agencies, local communities and other stakeholders to address the direct threats to habitats and biodiversity focal interest. Students and trainees availing of HEIs programs and courses, as well as non-degree training program, would enhance their capacity to design, implement and monitor conservation programs or projects, thereby, a pool of local experts would be accessible.

There are only two target indicators under this strategic approach: 1) university-supported research initiatives implemented in target sites and 2) universities developing conservation curricula with support from PW. As shown in Annex Table 16, the PW exceeded its targets for both indicators. It supported 27 research initiatives against its target of 25 and there were 14 reported cases of universities developing its conservation curricula as against the target of 10.

### 5.1.4.1 Validation of outputs or outcomes

Research initiatives supported

Figure 8 showed that six were national in scope out of the 27 supported research initiatives. There were six each in Palawan and Region 12, four in Zamboanga-Tawi-Tawi, two in North Luzon and one each in Regions 3, 13 and Davao City. However, the validation revealed that only 15 out of the 27 research initiatives were completed, primarily due to the pandemic.

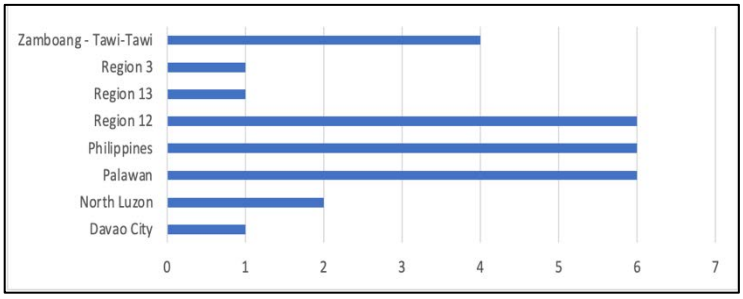



*Figure 8. Distribution of implemented biodiversity conservation research initiatives supported by Protect Wildlife (n=27)*

It was also learned that while the original criteria required that research should be done in the target site, 17 of the 27 reported research initiatives were confined to just four designated target sites of Palawan, Zamboanga City, Tawi-Tawi, Region 12 and Region 3.

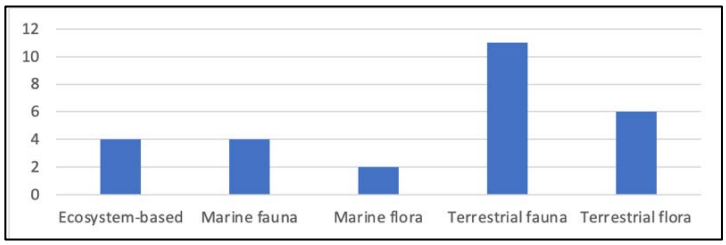



*Figure 9. Summary of implemented biodiversity conservation research initiatives supported by Protect Wildlife based on Research foci (n=27)*

The PW project was designed to contribute to the reduction of threats to biodiversity in the Philippines, with particular emphasis on poaching and the use of illegally harvested wildlife and wildlife products. University-supported research was initially implemented to address these conservation-based concerns. Hence, studies focused on the Philippine pangolin, sandfish and medicinal plants, covering both terrestrial and marine wildlife. Succeeding projects redirected the focus on partner initiatives for species-specific conservation and innovative studies by graduate students. The largest number of PW-supported research initiatives were on terrestrial fauna (11) and flora (6). There were four studies on marine fauna, two on marine flora and four studies that were ecosystem-based (Figure 9).

All three conservation-focused researches had to pause due to the unexpected lockdown, representing 60 percent of PW support on partner's initiatives. Fortunately, both the Sulu Hornbill Study at Upper Malum Watershed in Tawi-Tawi and the Philippine Eagle Study at PNP were able to modify and complete their research by the end of Year 4, given that much of the fieldwork had been done before the hold. All the species-focused studies were completed, except for the Philippine Tarsier Study. The University of the Philippines, Diliman and MSU GSC had done an initial recce on MMnPL but could not conduct any further fieldwork due to COVID-19 and was later canceled. Only two were university-led and not student-led from all the 12 ongoing projects placed on hold during the lockdown.

Further scrutiny of the 10 student-led research placed on hold indicated that all had not completed their thesis or dissertation as of January 2021 (or even changed status). Thus, like the other uncompleted PW projects, they were presumed to have been canceled. Unless completed, these 12 studies cannot translate their results to effectively contribute to the ToC.

Putting aside the impacts of the pandemic, if the evaluation strictly followed the strategy for ToC on accomplishing targets based on indicators for research initiatives, then the actual completed projects must take into account the following criteria: (a) implementation in target sites (Palawan, Region 12, Zamboanga City-Tawi-Tawi); conduct of research with PW support (b) through mobilization of research funds; and emphasis on students and trainees (c) availing of HEIs' degree programs such as post-graduate studies (MSc, PPh.D. The strategy did not indicate that researches must be completed to qualify but rather for PW to mobilize the funds, of which 27 were awarded. Hence 12 paused studies pending completion are acceptable accomplishments. Target sites were also referred to as pilot areas, thus implemented projects were not restricted by location. Hence, 10 studies implemented outside the target sites were acceptable

accomplishments. However, for students to avail of the degree program, their studies must be completed, defended and their MSc thesis or Ph.D. dissertation accepted by the HEI. Hence, 10 student-led research deemed incomplete or canceled might not be acceptable as accomplishments. Therefore, the total cumulative accomplished targets for SA4 (n=17) was less than the target LOP of 25 and represented 68 percent of the actual accomplishments.

Altogether, about 44 percent of the total conservation research program was put on hold (Figure 10A). No updates from PW were available to determine the status of these 12 research projects awaiting completion. Two additional student projects were completed in January 2021. The importance of the 27 research initiatives implemented with support by PW could be founded on the conservation status of the focal wildlife or ecosystem being studied (Figure 10B). As such, the majority of the studies approved by PW were focused on threatened species (57 percent) or derived from a conservation strategy (29 percent), thereby addressing the need for conservation-oriented studies. Some of the research approved by PW were expert-led and based on the partner's initiative, often conducted in collaboration with a local university within the target sites such as the Philippine Pangolin Study, Philippine Eagle Study and the Sulu Hornbill Project. As of January 2021, six online published articles and reports were derived from the completed researches.

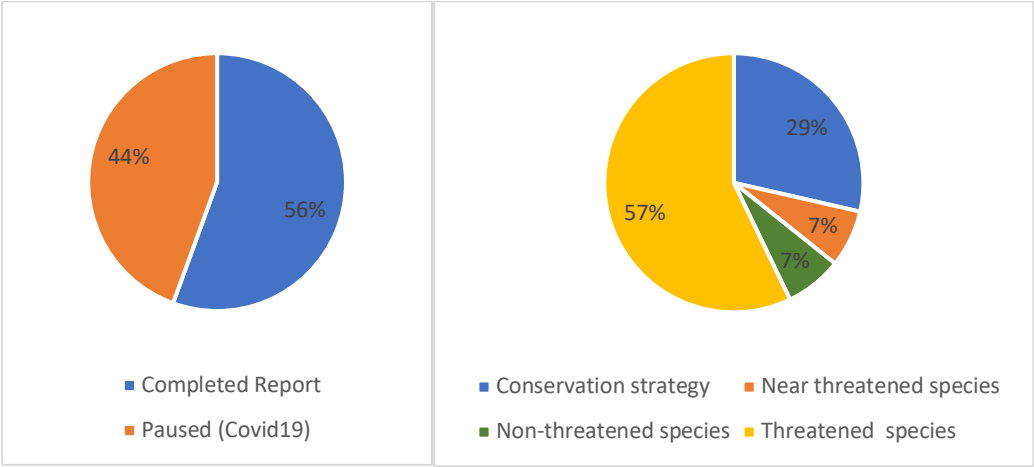



***Figure 10. Summary of implemented biodiversity conservation research initiatives supported by PW based on (A) completion before COVID-19 pandemic (B) Conservation status of focal species (n=27)***

The institutions supported by PW included both educational and non-educational institutions. The number of supported research initiatives by institution was shown in Figure 11. Among HEIs, the highest number of supported researches went to the University of the Philippines (UP) with eight PW-supported researches followed by Mindanao State University (MSU) with four and Western Philippine University (WPU) with two. There were four research studies by non-educational institutions supported by PW, particularly those carried out by the Philippine Eagle Foundation, Katala Foundation in Palawan and the Philippine Biodiversity Foundation, Inc. The evaluation noted that there were cases of multiple studies under one project, such as that on the Philippine pangolin and the sandfish projects. These projects had a significant impact, especially in Palawan, as they focused on threatened species affected by the exotic animal trade. Moreover, the evaluation noted that some projects had multiple target sites, such as the research project on pangolin and the perception study of Dr. Moretto, who did community surveys in Palawan and Sarangani Bay.

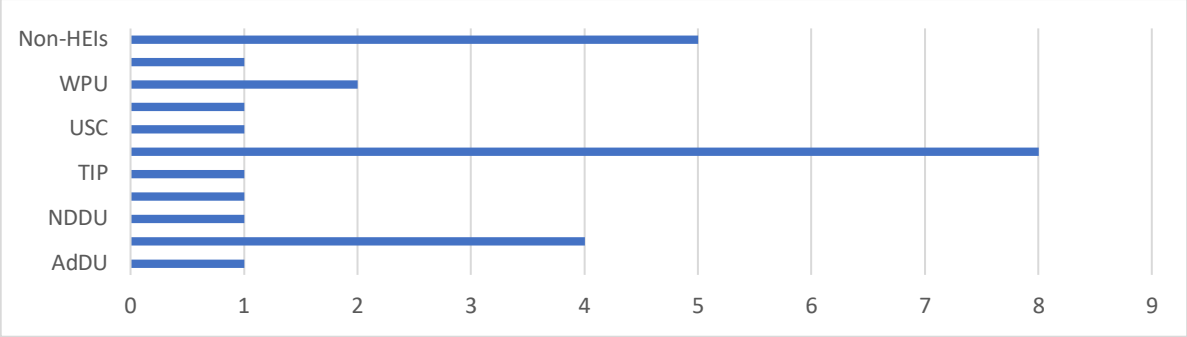



***Figure 11. Distribution of implemented biodiversity conservation research initiatives supported by Protect Wildlife by institution (n=27)***

More than half of the 27 reported PW research supports were conducted by graduate students as part of a graduate assistance program. Overall, there were 15 graduate student-led researches awarded as thesis support. However, only five graduate students completed their theses as the other 10 were adversely affected by the pandemic.

From the six PAs, a total of 68 FDGs and 15 KIIs were interviewed, distributed as follows (Table 14): For FDG, SBPS (14), MMPL (15); PNP (15); CNCH (11); PPSRNP (11) and MMnPL (11); and for KII, SBPS (2), MMPL (2); PNP (5); CNCH (2); PPSRNP (2) and MMnPL (2). Collectively, for both FDG and KII, the following respondents were noted for each PA: SBPS (15), MMPL (16); PNP (11); CNCH (12); PPSRNP (12) and MMnPL (12). The percentage reporting for each two sets of respondents was as high as 53.33 to as low as zero reporting. The highest percentage of reporting was noted for FDGs, particularly for MMPL and zero reporting noted for all three Palawan PAs, wherein none of them reported that research initiatives were significantly present in all three PAs. However, there is a limited number of FDG respondents for PNP (n=6), whereas MMPL had most respondents (n=15). Nearly all of the six sites had only two KII respondents noted for strategic approach 4, except for PNP with five. Altogether (FDG + KII), MMPL had the most respondents (n=17) and PNP had the least (n=11). Comparison on the percentage of reporting between respondents from FDGs and KIIs, more researches done in their PAs were reported during the KIIs than in the FGDs, at 28 percent and 18 percent, respectively. Indicating their greater familiarity with university-supported research initiatives implemented in their target sites. The combined percentage of reporting for respondents from both FDGs and KIIs was 19.28 percent, suggesting that roughly 20 percent of the respondents were aware that research initiatives were implemented in their respective PAs supported by PW. Among the PAs, respondents were more aware of researches conducted in PNP at 45.45 percent and MMPL at 52.94 percent (Table 14).

***Table 14. University supported research initiatives reported by FDG and KIIs at six evaluated protected areas in PW target sites, indicating percentage reporting***

| University research reported from six evaluated PAs | % reporting |
|---|---|
| FDG only (12 of 68) | 17.65% |
| KII only (4 of 15) | 26.67% |
| FDG and KII (16 of 83) | 19.28% |
| SBPS (2 of 16) | 12.5% |
| MMPL (9 of 17) | 52.94% |
| PNP (5 of 11) | 45.45% |
| CNCH (0 of 13) | 0% |
| PPSRNP (0 of 13) | 0% |
| MMnPL (0 of 13) | 0% |

Among the notable completed research projects supported by the PW was the Philippine Eagle survey in Pasonanca National Park and the Sulu hornbill study in Tawi-Tawi. The pandemic put the Philippine tarsier research in Mt. Matutum on hold.

Noteworthy observations and questions derived from both proposed and awarded engagements for university-led and student-led biodiversity conservation research initiatives supported by PW were presented below. These included projects implemented in collaboration with key experts or partner

organizations (CSOs or NGOs) in the target sites. All 27 awarded research initiatives supported by PW were enumerated in Annex Table 17.

- Multiple studies in one main project. Were these studies awarded as separate initiatives or counted as one umbrella research with separate component studies? Two funded initiatives were notable from Palawan; both the Philippine Pangolin Study and the Sandfish Pilot Sea Ranching Study had two-three sub-studies, each with a lead biologist. Both research initiatives significantly impacted Palawan, each focusing on threatened species affected by exotic trade. In this evaluation, each sub-study was recognized as an individual research based on the awarded funding reported by PW and the associated implementing institution.
- Collaboration between universities and partners. University-led research initiatives were implemented in collaboration with another HEI, key experts, government agencies or other partner institutions focused on biodiversity conservation in the target sites, such as civil society organizations (CSOs) and non-government organizations (NGOs). Notable collaborations included the Philippine Pangolin Study, implemented through the cooperation of Katala Foundation Inc. (KFI) with Palawan State University (PSU) and the Palawan Council for Sustainable Development (PCSD); and the Tarsier Sanctuary Study implemented in cooperation by the University of the Philippines Diliman (UP Diliman) and Mindanao State University General Santos City (MSU-GSC).
- Multiple target sites in one project. Some research initiatives supported by PW covered more than two protected areas, such as the Philippine Pangolin Study, which had done camera trapping arrays across south-central Palawan but all within a single target site. However, some projects had multiple target sites, such as the Ranger and Community Perception Studies in protected areas (PAs) by Dr. William Moretto. This expert-led research initiative conducted surveys for Palawan and Region 12, particularly in Sarangani Bay Protected Seascape (SBPS). After completing this study, initial planning was done to expand the study on two additional PAs, namely Apo Reefs Natural Park and Agusan Marsh Wildlife Sanctuary.
- Projects facilitated but not awarded or implemented. Several topics and titles of proposals for studies were often reported by PW as research initiatives engaged with an HEI but was still undergoing negotiation, or represented approved engagements. But these were never awarded or implemented by an HEI, or represented proposed studies that await engagement by an HEI at the target site. Some initiatives were discussed extensively in the PW reports but were never awarded or reported to have been fully implemented by the partner university. One of which was the Almaciga Resin and Tonkat-Ali Nut Studies, which were discussed widely in the PW reports from Year 1 to Year 3. However, it never materialized as an awarded project. The same case was observed for the Blue-naped Parrot and Talking Myna Population Study mentioned in year 3 to year 4, but no HEI was distinctly associated with this project. However, PW had highlighted the importance of engagement with the University of the Philippines Los Baños concerning PW research initiatives. A compiled list of PW-initiated researches mentioned in the reports and respondents who underwent planning or engagement but never implemented was enumerated in Annex Table 18.
- Other research interventions on target sites not supported by PW. An inquiry included in the FDG and KII questionnaires deployed as part of the ToC evaluation of PW was focused on other independent programs that were either ongoing or recently completed studies in the PAs and targeted sites but were not associated with PW support or collaboration. These research programs simultaneously implemented in the target sites may influence the generation of results from FDG and KII responses. As such, the calculated impacts of PW may not be exclusive on certain PAs and target sites. For example, research initiatives implemented at Pasonanca National Park (PNP) included the Philippine Eagle Study supported by PW. Still, respondents also mentioned that other biodiversity inventories were previously done on PNP by Western Mindanao State University (WMSU) and by Ateneo de Zamboanga University (ADZU) just before PW interventions. Respondents from Cleopatra's Needle Critical Habitat (CNCH) mentioned studies that used camera-trapping methods for wildlife, which refered to research on mammals conducted in 2015 by the Center for Sustainability, Philippines and PCSD, prior to PW (Marler et al. 2019). KFI and PCSD had conducted camera-trapping for Philippine Pangolin in Palawan supported by PW but did not implement on CNCH.
- University research implemented beyond target sites and by external HEIs. A key descriptor for the 1st SA4 indicator was the restriction of awarded university research in the four key target sites and emphasis on engaging HIEs within these target sites. Apparently, not all HEI partners were successful in proposed engagements with PW and some studies were implemented with either Non-HEI partners or with HEIs from outside the target sites. The criteria had also expanded to accommodate graduate research beyond the target sites and on topics of special significance (examples: innovative methods, other traded wildlife). Of the 27 studies supported by PW, five were awarded to non-HEIs and 10 awarded to HEIs outside the target sites, including eight for the University for the Philippines (Figure 10).

Emphasis on Graduate Student Research Assistance

As an indicator for strategic approach 4.1 of the ToC, the targeted 25 university-supported research initiatives supported by PW were surpassed within the LOP and successfully funded initiatives are enumerated in Annex Table 17. The majority of these biodiversity conservation research initiatives were approved by PW at the middle of the project duration (between four and five years) and implemented mostly (n=14) in the 3rd Year (Figure 12). By the 4th quarter of Year 3, the surge in research activities led to 20 ongoing studies managed by PW simultaneously, but with five to six studies due for completion. Hence the addition of four to seven projects toward the 4th Year.

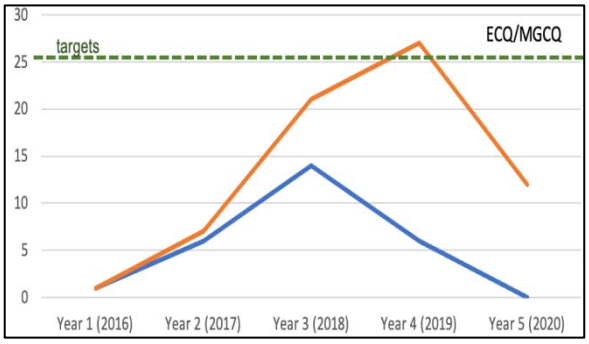



*Figure 12. Distribution of implemented biodiversity conservation research initiatives supported by PW based on Year of implementation [blue] and Ongoing researches [orange] (n=27)*

More than half of the total 27 were studies awarded as postgraduate research scholarships and represent student-led research (Figure 13A), even more than the combined experts-led and university-led researches. These 15 student-led projects were mainly awarded as student scholarships and comprised largely of master's students and doctoral candidates (Figure 13B). However, only five (one-third) were able to submit their completed thesis or dissertation within the LOP (end of Year 4) or up to the 2nd quarter of 2020.

All five student researchers were able to complete the defense of their thesis or dissertation and even published one to two papers prior to the project's terminus. Two of these are Ph.D. graduates and three are Master of Science graduates. However, the 10 remaining student-led research had to pause and faced an unexpected lockdown. Eventually, all fieldwork had to stop entirely and further travels were canceled, limiting access to study areas within or around the PAs and target sites. PW had encouraged the remaining studies on hold to modify their approach and identify options to complete and attain objectives amid limitations posed by the COVID-19 pandemic.

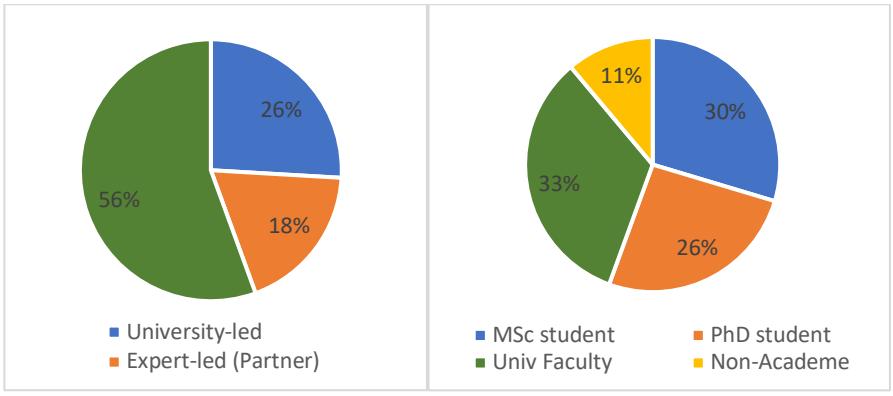



***Figure 13. Summary of implemented biodiversity conservation research initiatives supported by PW based on [A] Lead proponent (Award type) and [B] University level (n=27)***

In retrospect, more than half (56 percent) of the biodiversity conservation initiatives supported by PW are student researches, but most non-student-led projects were led by university faculty. Only two of these faculty-led studies were put on hold by the pandemic and all remaining were completed before the project's end. Therefore, the success rate for completion of projects was higher in faculty-led studies (77 percent) than student-led studies (33 percent). Student research performed poorly due to the impacts of the COVID-19 pandemic, wherein 67 percent of the post-graduate projects were put on hold due to Community Quarantine restrictions for travel and fieldwork (ECQ or MGCQ). Only five out of the 15 student research scholarships were completed before June 2020. Despite modifications suggested by PW to adjust the research methods for completion, the status of 10 student projects remains unresolved.

Research initiatives implemented in target sites:
The final performance evaluation of PW accomplishments for SA4.1 was based on the compiled responses of beneficiary-respondents for each project or program site derived from FDGs and KIIs conducted remotely (via Zoom, Google Meet) for PAs in key target sites. Here we highlight the six PAs surveyed for PW engagements and interventions at three target sites. A list of research initiatives is enumerated in Annex Table 17.

Region 12 (MMPL and SBPS): Respondents indicated that PW had limited intervention through university-supported researches in the region, given the limited response from the HEIs for engagement. Four initiatives were approved by PW for MMPL and SBPS, which are substantial and represent 15 percent of the total research initiatives of PW. This includes (1) an MSc student-led study conducted at SBPS by Notre Dame of Dadiangas University, particularly in Glan, Cotabato; (2) a Ph.D. student-led study on Giant ferns and other Pteridophytes of MMPL by Christine Dawn Obemio of UPLB, wherein collected fern vouchers helped establish a Pteridophyte Herbarium; (3) one university-led research on folklore and medicinal plants of MMPL by MSU-GSC; and another university-led research on the Philippine Tarsier Sanctuary of Mt. Matutum by UP Diliman. MSU-GSC served as HEI partner to DENR and PAMO for MMPL, which conducted inventories of medicinal plants in Mt. Matutum. During the FDG, PAMO mentioned that their office didn't have baseline data; thus, this partnership was very important. The PAMO mobilized university research teams to the sampling sites and document the different medicinal plants used by the indigenous people and evaluate their medicinal uses.

The regional program for MSU (Region 12) considered MMPL an important venue for collaborative research and invited partners to fill in the PA's management plan gaps. Multiple inventories of MMPL have been completed by MSU (GSC & IIT) prior to PW engagement at the PA, including bryophytes, birds, amphibians, etc. Apart from the two PW-supported studies (Medicinal plants and Ferns inventory), there was no additional support on inventory since the partner universities have done it on Region 12. The conduct of research initiatives is important for the established tarsier sanctuary at MMPL. Studies will be able to confirm the taxonomic status of the tarsier from Mt. Matutum and document its habitat preferences. Unfortunately, the tarsier study was canceled due to the pandemic and travel restrictions affected implementation by the field team from UP Diliman. Also, prior to PW engagement, the PAMO assisted Born to be Wild, where Dr. N. Donato made a documentary about tarsiers of Mt. Matutum.

Zamboanga City & Tawi-Tawi (PNP): Respondents explained that WMSU conducted the resource program assessment of the PNP before PW engagement. Biodiversity assessment of PNP can be completed with help from BSc Biology students conducting their thesis within the park boundaries. There were no engagements with PW for university and student-led research from the regional HEIs, but one NGO/CSO developed a research (partner's initiative) and training combo for Philippine Eagles in the Zamboanga peninsula. Despite the lack of HEI research, the CENRO pointed out that academic institutions had benefited from the assistance provided by PW, being involved in training and curricular review. But we still need to prioritize research in biodiversity conservation and management. Other interventions done on PNP prior to PW included research done by WMSU and ADZU, although these studies did not focus on environmental programs but rather allied to medicine. ZCWD reported the highlight of research done on the Philippine Eagle in PNP was the confirmed active nesting site that warrants protection, thus training on raptor management was also conducted by PEFI.

Palawan (MMnPL, CNCH and PPSRNP): Although PSU solicited technical assistance from PW on curricular development, engagement on conservation research between PW and local HEIs in Palawan was facilitated but no studies were approved until June 2020. Prior to PW, various inventories of flora and fauna have been conducted on the three PAs of Palawan. Many discoveries of plants and animals help strengthen the importance of the recently established MMnPL (declared in 2009) and CNCH (classified in 2016).

Development of curricula
The PW targeted only 10 HEIs to develop conservation curricula obviously since the development of standard curricula takes time and so much effort. Nevertheless, PW exceeded its target by actually supporting 14 HEIs, which developed conservation curricula. PW's engagement with the various HEIs to develop a conservation curricula started as early as the PW's inception year. Still, the approval of the curricula was at a very slow pace, but hastened starting the third year by facilitating the adoption by HEIs

of the Environmental Law and Protection (ELP) syllabus endorsed for use by the Commission on Higher Education (CHED) and the Philippine Society of Criminologists and Criminal Justice Practitioners (PSCCJP).

Through the assistance of PW, a number of HEIs approved and adopted the ELP syllabus (Table 15). The CHED Region 11 is also set to endorse the syllabus to 24 other HEIs in Region 11. The syllabus is intended to enhance the Cybercrime and Environmental Laws and Protection subject under the BS Criminology, BS Marine Biology, BS Agroforestry and BS Environmental Science.

***Table 15. Partnership developed and adoption of the ELP syllabus***

| Target site | HEI | Partnership developed |
|---|---|---|
| Palawan | WPU | Approved by university council on ELP |
| Palawan | HTU | Approved by university council on ELP |
| Zamboanga City-Tawi-Tawi | WMSU-CCJE | Revision of BS Criminal Justice Educ. |
| Zamboanga City-Tawi-Tawi | MIT | Approved by university council use ELP |
| Palawan | PSU | Engaged use if ELP syllabus via CHED |
| Zamboanga City-Tawi-Tawi | UdZ | Adopted ELP syllabus BS Criminology |
| Zamboanga City-Tawi-Tawi | WMSU-CCJE | Organized BS Environmental Science |
| Zamboanga City-Tawi-Tawi | ZSCMST | Enhance marine biology & criminology |
| Zamboanga City-Tawi-Tawi | AdZU | Engaged use if ELP syllabus via CHED |
| Region 12 | MSU-GSC | Teaching tools for marine biology |
| Region 3 | PSAU | Support BS Agroforestry program |
| Region 3 | MGC | Adopted the ELP syllabus care of PW |
| Quezon | MEUF | Adopted the ELP syllabus care of PW |
| Cebu | RCC | Adopted the ELP syllabus care of PW |
| Quezon | CEFI | Adopted the ELP syllabus care of PW |

The percentage reporting of the two sets of respondents was as high as 50 percent to as low as 6.6 percent. The highest percentage of reporting was noted for KIIs (50 percent) as reported in all six PAs except PNP, which had 40 percent reporting, given the limited number of KII respondents for PNP (n=6). By contrast, PNP has the highest reported curricula for FDGs from PNP at 33.33 percent, whereas all other PAs had percentages ranging from 6.67 percent to 9.09 percent. Nearly all the six sites had only two KII respondents noted for Strategic Approach 4, except for PNP with five. Altogether (FDG + KII), MMnPL had the most respondents (n=17) and PNP had the least (n=11) for a total of 83 reports (Table 16). The percentage reporting for PW assisted curricular development was 16.87 percent.

***Table 16. Universities developing environment-related curricula and conservation-related courses with support from PW, as reported from protected areas***

| **University developing curricula by institution** | **Research per PA** |
|---|---|
| Western Philippines University<br>Palawan State University<br>Holy Trinity University<br>Universidad de Zamboanga<br>Western Mindanao State University<br>Zamboanga State College of Marine Science and Technology<br>Ateneo de Zamboanga University<br>Mindanao State University-Tawi-Tawi College of Technology. Oceanography<br>Tawi-Tawi Regional Agricultural College<br>Maharlika Institute of Technology<br>Mindanao State University-General Santos City<br>Pampanga State Agricultural University<br>Manuel Gallego College, Cabanatuan City<br>Manuel S. Enverga University Foundation | 1 MMnPL, 1 CNCH,<br>1 PPSRNP<br>1 PNP<br>1 PNP<br>1 MMPL, 1 SBPS |
| N=14 (5 HEIs on 6 PAs reported) | 36% |

Comparing the percentage reporting between respondents from FDGs and KIIs, KIIs reported curricula being developed by HEIs at 46.67 percent and only 10.29 percent for FDGs—indicating that there is little difference reported between university-supported research initiatives and curricular development that were gradually implemented in target sites. The combined percentage of reporting for respondents from

both FDGs and KIIs was 16.87 percent, suggesting that roughly 15-20 percent of the respondents were aware that their HEIs implemented curricular development initiatives on the respective PAs supported by PW. In the PAs, respondents were convened to form the FDGs. Awareness for curricular development facilitated by PAW was notably higher for PNP at 36.36 percent and lowest at MMnPL at 11.76 percent from the combined respondents (Table 17).

***Table 17. University curricula reported by FDG and KIIs at six evaluated protected areas in PW target sites, indicating percentage reporting***

| University curricula reported from six evaluated PAs | % reporting |
|---|---|
| FDG only (7 of 68) | 10.29% |
| KII only (7 of 15) | 46.67% |
| FDG and KII (14 of 83) | 16.87% |
| SBPS (2 of 16) | 12.5% |
| MMPL (2 of 17) | 11.76% |
| PNP (4 of 11) | 36.36% |
| CNCH (2 of 13) | 15.38% |
| PPSRNP (2 of 13) | 15.38% |
| MMnPL (2 of 13) | 15.38% |

Curricular initiatives implemented in target sites:

The final performance evaluation of PW accomplishments for SA4.2 was based on the compiled responses of beneficiary-respondents for each project or program site derived from FDGs and KIIs conducted remotely (via Zoom, Google Meet) for PAs in key target sites. Here we highlight the six PAs surveyed for PW engagements and interventions at three target sites. The list of universities and colleges engaged with PW to develop conservation-related curricula are enumerated in Annex Table 18.

Region 12 (MMPL and SBPS): Respondents indicated that PW had limited academic intervention through university-supported researches and curricular development in the region, given the limited response from the HEIs for engagement. Based on responses from combined FDG and KII interviews, the percentage reporting for awareness of PW supported curricular development with HEIs was only 12.5 percent for Sarangani Bay Protected Seascape (SBPS) and 11.76 percent for Mt. Matutum Protected Landscape (MMPL). MSU-GSC was among the four local university partners of PW for Region 12 and had several engagements with PW, particularly in MMPL. MSU-GSC plans to develop a conservation-based curriculum for Marine Biology under their existing BS Biology program. Partnership with HEIs and PW for conservation initiatives conducted around SBPS encouraged MSU-GSC to expand their successful field studies on terrestrial biodiversity at MMPL and expand academic coverage to the marine environment. With support from PW, MSU-GSC requested assistance on teaching tools for marine biology studies.

Zamboanga City & Tawi-Tawi (PNP): Respondents noted that both WMSU and AdMU had conducted biodiversity assessments at the Pasonanca Natural Park (PNP) prior to PW engagement. They had completed field surveys with assistance from BS Biology students conducting thesis research. There were no known engagements with PW for conservation research from any of the regional HEIs. As a result of limited academic programs centered on biodiversity conservation, the CENRO mentioned that academic institutions benefited from PW assistance through training workshops (ex. Raptor research and management) and curricular reviews. However, CENRO did not mention which among the five HEIs from Zamboanga City-Tawi-Tawi target sites was engaged in curricular reviews. Altogether, there are seven initiatives made with five HEIs for curricular development. Respondent's awareness of academic interventions at PNP was highest among the target sites, with 36.36 percent reporting from combined FDG and KII interviews. PW was comparatively successful in engaging the HEIs from the Zamboanga City-Tawi-Tawi target site to embrace curricular development, particularly through using the standardized ELP syllabus announced via a CHED Memorandum. WMSU-CCJE plans to use the ELP syllabus in their revision of the BS Criminal Justice Education program. Also benefiting from the ELP is the review and reorganizing of the BS Environmental Science program.

Similarly, AdMU agreed on an engagement with PW to use the ELP syllabus following the CHED Memo. ZSCMST also consulted with PW regarding plans to enhance their Marine Biology program and

Criminology program. Likewise, UdZ has adopted the ELP syllabus as a supporting curriculum for BS Criminology. Lastly, on the use of the ELP syllabus at MIT following approval by the university council.

Palawan (MMnPL, PPSRNP and CNCH): Respondents explained that PW had several academic interventions on protected areas (PAs) within Palawan. PW had several approved and unresolved initiatives for university-supported researches and curricular development with HEIs in the Palawan island group. There was a lenghty planning session between PW and some HEIs in finalizing engagements. Only WPU and PSU were awarded with PW projects. Based on the responses from combined FDG and KII interviews, the percentage reporting on awareness of PW academic support on MMnPL was 15.38 percent, which is the same percentage reported for both PPSRNP and CNCH. This generally revolves around reports of respondents on PSU and WPU engaging with PW in Palawan, such as the Pangolin Study with PSU and Sandfish Study with WPU. PSU was among the few universities in Palawan developing environment-related curricula and conservation-related courses with support from PW. PSU had solicited technical assistance from PW in enhancing the curriculum of their BS Criminology program, such as the addition of environmental law through the CHED-endorsed ELP syllabus. PSU also plans to develop the curriculum for the BS Environmental Science program. Although reported by respondents, no official engagements for curriculum review were done by PW with PSU. Agreements for academic activities between PW and universities in Palawan have been slow to evolve and until recently, not all proposed engagements are approved. As noted in the PW reports and not by respondents, WPU's university council approved their curricular review using the ELP syllabus. The same is true for HTU, wherein the university council approved the use of the CHED endorsed syllabus in curricular enhancements.

Effectiveness and sustainability

There are only two target indicators under this strategic approach and PW exceeded its targets for both indicators. It supported 27 research initiatives against its target of 25 and there were 14 reported cases of universities developing its conservation curricula as against the target of 10. While only 15 out of the 27 supported research initiatives were completed, PW can still be considered effective as the uncompleted researches were due mainly to the pandemic and can be expected to be completed soon. The fact that more than half of the research projects were done by graduate students should be viewed positively as they have access to technical advisers who can assure the quality of the research output. The thesis support provided to students may also be viewed as part of the PW's support to capacity building. Among the notable completed research projects supported by the PW was the Philippine Eagle survey in Pasonanca National Park and the Sulu hornbill study in Tawi-Tawi.

On curriculum development, the PW targeted only 10 HEIs to develop conservation curricula, obviously since the development of standard curricula takes time and so much effort. Nevertheless, it was reported to exceed its target by supporting 14 HEIs, which developed conservation curricula. The PW was instrumental in facilitating the adoption by HEIs of the Environmental Law and Protection (ELP) syllabus endorsed for use by the Commission on Higher Education (CHED) and the Philippine Society of Criminologists and Criminal Justice Practitioners (PSCCJP). Sustainability is ensured as the enhanced curriculum becomes an integral part of the relevant courses, such as BS Criminology, BS Forestry, etc.

**This strategic approach theorizes that if higher education institutions (HEIs) have increased technical know-how to conduct research, source and mobilize research funds and enrich conservation curriculum and syllabus, then these institutions will be able to produce tools and knowledge products that will enhance the capacities of LGUs, CSOs, government agencies.**

**There were only two target indicators under this strategic approach and PW exceeded its targets for both indicators. It supported 27 research initiatives as against its target of 25 and there were 14 reported cases of universities developing its conservation curricula as against the target of 10. While only 15 out of the 27 supported research initiatives were completed, PW can still be considered effective as the uncompleted researches were due mainly to the pandemic and can be expected to be completed soon. The fact that more than half of the research projects were done by graduate students should be viewed positively as they have access to technical advisers who can assure the quality of the research output. Five student-led scientific articles have been published in peer-reviewed journals, including DNA Barcodes and Genetic diversity of Philippine Fruit bats, Mangrove Crown Measurement using Airborne Lidar and Hamraz Technique and Rediscovery of Guttman's Stream Frog in the mountains of southern Mindanao. The research scholarships awarded to MS & PhD students may also be viewed as part of the PW support to enhance capacities to innovate, design and generate scientifically rigorous evidence. Among the notable completed research projects supported by the PW were research centered on threatened Philippine endemic species such as the Philippine Pangolin study in southern Palawan, Philippine Eagle survey in Pasonanca National Park and the Sulu Hornbill study in Upper Malum Watershed of Tawi-Tawi. Also noteworthy were completed research that**

*Box 5. Synthesis of strategic approach*

## 5.2 Key evaluation questions 4, 5 and 6: Validity of overall ToC, causal links and programmatic approaches

Having validated the outputs and outcomes of PW, it is now possible to validate its Theory of Change, causal links and programmatic approaches, which is a more logical approach in carrying out a ToC-based evaluation. Essentially, the evaluation strategy is to determine first what happened (i.e., examining performance) before figuring out how it actually happened (i.e., examining the ToC and implementation strategies). The three key evaluation questions related to the ToC validation are as follows:

1. What evidence(s) supported and proved that key causal links hypothesized in the original overall Theory of Change remained valid?
2. Which contextual factors and assumptions posited during the design of the activity were shown to have enhanced the validity of the Theory of Change?
3. Were the programmatic approaches and corresponding implementation strategies able to showcase adequately and appropriately the validity of the Theory of Change?

### 5.2.1 PW's ToC, causal links and strategic approaches

In a nutshell, Protect Wildlife targets wildlife trafficking hotspots and works with local stakeholders to improve local capacities, incentivize communities and LGUs, leverage financing support and deepen knowledge, attitudes and behaviors for effective management, regulation and enforcement of wildlife habitats and wildlife trafficking transshipment points. To achieve this, PW formulated an overall ToC from which five strategic approaches were derived. A ToC was also formulated for each strategic approach to guide the implementation of the activity. The overall ToC diagram is provided in Annex Figure 8, while the overall narrative is given as follows:

IF communities, local government units, research and training institutions, regulatory bodies and enforcers, private sector, civil society organizations and environmental ties, local government units, research and training institutions, regulatory bodies and enforcers, private sector, civil society organizations and environmental groups understand the true economic value and sociocultural significance of habitats and wildlife species, including their ecosystem functions and goods and services they provide as a combined result of:

- **Improved** and positively changed communities' knowledge, attitudes and behaviors toward wildlife and biodiversity conservation;
- **Increased** public and private sector investments and increased revenues from environment and natural resources-related enterprises to finance conservation, expansion and diversification of biodiversity-friendly and sustainable livelihoods and enterprises for local communities in priority sites;

- **Improved** conservation competencies of LGUs, CSOs and LRMUs in formulating and executing policy- and science-based integrated land use and local development plans; and in managing natural resources, including habitats of wildlife;
- **Improved** universities' capacity to generate scientifically rigorous evidence and knowledge essential for conservation and for enriching their curricula and outreach programs; and
- **Enhanced** capacities of national and local enforcement entities to identify, capture, prosecute and adjudicate wildlife crimes and habitat losses,

**Then** Protect Wildlife can significantly contribute to reduction of threats to habitats and to wildlife species, **Thereby**, directly and indirectly enhancing capacities of various threatened habitats of wildlife species, as part of larger ecosystems and landscapes-seascapes, to supply and provide ecosystem goods and services that benefit human well-being.

The ToC per strategic approach is provided in Annex Figure 8. The following section will attempt to answer the evaluation questions 4,5 and 6 regarding the outputs and outcomes validated in the earlier section.

### 5.2.2 Strategic approach 1: Improved attitude and behavior toward biodiversity and its conservation in target areas

The ToC under this strategic approach states that "If communities have increased awareness and improved knowledge about wildlife laws, the value and benefits of biodiversity to their traditions, their livelihood and their continued survival, then they will develop an attitude of "better alive and free" and "pride of place". This understanding will evoke a powerful emotion of interconnectedness to species and habitats, thereby transforming their behaviors as both consumer and steward, leading to reduction in destructive gathering practices and trafficking and increased commitment to enforcement, resulting in improved biodiversity."

Evidence(s) supporting or proving that key causal links hypothesized remained valid

The hypothesized causal link is that awareness and knowledge lead to improved attitude and behavior toward conservation and wildlife protection manifested in reducing destructive practices and wildlife trafficking. The evaluation was able to validate that the behavioral change campaigns gained much traction in all sites. The activities pursued on C4C and BCC were extensive and quite innovative and were designed to catch the attention and interest of the target audience. The communities within or near the protected areas were quite aware of the PW and its interventions. PW's campaigns to promote wildlife protection and seminars/training on this have reached many people. The success of PW's BCCs can be directly linked with the improvement in attitude and behavior as evidenced by the decline, albeit still modest, in the number of people engaged in unsustainable practices or even illegal activities and an increase in the number of those who started to engage in more sustainable practices. This behavioral change, empirically established using multivariate analysis, have been caused by the PW's interventions, especially the trainings and seminars on conservation and wildlife protection conducted in the various sites.

Contextual factors and assumptions enhancing the validity of the Theory of Change

There were at least three contextual factors found to have enhanced the validity of the Theory of Change for the strategic approach on behavioral change: (1) social, (2) economic and (3) institutional.

Social

Behavior is a manifestation of knowledge and attitude and has a deep sociocultural root. In the case of biodiversity conservation and wildlife protection, the challenge is to affect a shift from how people view themselves and their communities in relation to wildlife and its habitat. Making a profound influence on behavior necessitates addressing its cognitive and affective roots.

The PW employed a proven and effective approach to behavioral change by first creating awareness through its various information campaign strategies, building interest through seminars and trainings and deepening appreciation and internalization by involving the communities themselves, especially the IPs, in conservation and protection activities. The initiatives of PW on behavioral change easily gained traction in the various sites, considering that the communities within or near the PAs, where IPs are known to have a long-established sense of connectedness with their environment. The knowledge they gained from PW's

various trainings and seminars must have further reinforced that sense of connectedness. For instance, in the FGDs, the community representatives expressed that they initially viewed the zonation and imposed restrictions as a threat to their livelihood. However, they now have a better appreciation of why these need to be done as they realize that their communities will eventually bear the brunt of environmental degradation. The community participatory approach employed by the PW, such as in zoning and mapping, led to a sense of co-ownership and collective responsibility and enabled the integration of indigenous knowledge in the process.

Economic

The success of PW in its behavioral change approach would not have been possible if not for the livelihood support provided to the communities. As shared by one of the CENROs in one of the FGDs, "no PA management will succeed without any tenure and livelihood for the community surrounding it. The stakeholders will inevitably use the resources. Without management, livelihood will become the biggest threat in the protected area because hunger will always push the inhabitants to gather resources. Without management, this will become unsustainable".

As shown earlier, many beneficiaries have benefited from the livelihood support provided by the PW and its various partners. In Mt. Matutum, for instance, one of the major interventions is for the Tupi Coffee Growers Association, where the PW partner provided support for coffee production and the establishment of a coffee shop. PW was instrumental in declaring the civet cat as a flagship species for Tupi. This effort helped protect the civet cat and the prohibition of cutting the trees to protect its habitat. In return, civet coffee production has increased. Given the premium price for this type of coffee, members of the association are reaping the benefits of the increased production and income. There is no doubt that this and many other similar examples have helped improve community behavior toward conservation and wildlife protection.

Institutional

The PW built on existing institutional capacity in its behavioral change campaigns. As a result, it was able to achieve a considerable reach. The PW's institutional partners, which it capacitated, helped carry out the C4Cs and BCCs. This information highlights the link between the behavioral change strategic approach and strategic approaches 3 and 5 on capacity building.

The efforts of the PW to build the capacity of people in PA management and law enforcement is crucial in sustaining the improvement in community attitude and behavior toward conservation and wildlife protection. The community would instantly revert to its old attitude and behavior if it sees that the institutions mandated to lead biodiversity conservation and wildlife protection are ineffective and the efforts on enforcement of laws against wildlife crimes are not sustained. The success of PW in strategic approaches 3 and 5 is crucial in sustaining the achievement in strategic approach 1. For instance, in combating wildlife crimes, the communities even participated in DENR, PAMB and LGUs by reporting such crimes.

Programmatic approaches and implementation strategies

The programmatic approach pursued by PW was thematic in nature and was designed to address the various thematic challenges in biodiversity conservation and wildlife protection. Behavioral change, conservation financing, capacity in PA management and enforcement and science-based support through the HEIs were the thematic areas covered. The thematic approach was designed to provide focus and complementation among the various thematic strategies to achieve synergy and influence sector-wide development.

The benefit of the programmatic approach is clearly demonstrated in the strategic approach on behavioral change or SA1. This strategic approach is closely linked with the other strategic approaches, especially conservation financing and competency improvement. However, treating SA1 as a distinct theme with its own ToC as well as output and outcome targets enabled a clear demonstration of the pathway, causal links and context within which behavioral change can be achieved. This strategic approach focused on the communities within the PAs as well as other users of the natural assets (e.g., tourists) who, by behavioral change, can also serve as the stewards of the PAs. Despite treating SA1 as a distinct theme, however, the synergy achieved with the other themes was quite prominent in realizing the ultimate outcome of improved attitude and behavior toward biodiversity conservation and wildlife protection.

### 5.2.3 Strategic approach 2: Conservation financing

The ToC for this strategic approach states that if available financing is realigned to support conservation, while improving productivity consistent with LGU plans and if new opportunities for conservation financing are designed and identified with the government, then new commercial ventures are initiated and existing grant funds are established for business ventures supporting biodiversity conservation. As a result, the CSO value chains for livelihoods and enterprises are improved and new value chains are created. It also assumes that if the enterprises generate revenues from the sale of ecosystem goods and services, the stakeholders will benefit from these financing arrangements and a portion of the proceeds can be reinvested for more conservation initiatives. LGUs will also be in a better position to finance conservation activities. Agreements, whether in cash or kind, among LGUs, CSOs, foundations and the private sector will help reduce habitat loss and combat poaching and illegal wildlife trade.

Evidence(s) supporting or proving that key causal links hypothesized remained valid
The hypothesized links involve partnerships with key stakeholders for conservation financing and livelihood support and the design and implementation of conservation financing schemes such as PES to plow back payment for ecosystem services to finance conservation efforts. These causal links were valid, as evidenced by the large number of partnerships forged with LGUs, CSOs and the private sector. The partnerships supported various livelihood initiatives, which, as shown in the strategic approach on behavioral change (SA1), contributed to the improved household income, the decline in environmentally unsustainable practices and an increase in sustainable ones.

The evaluation also found that PW partnered with several institutions for direct conservation financing. Among these are partnerships with Abraham Holdings to protect marine habitats in SBPS and CLAFI for mangrove and marine turtles' conservation programs in SBPS and SMART communication for app development. The FGD in Sarangani Bay indicated support for the conservation of marine turtle nesting sites.

There were also partnerships with LGUs, CSOs and the private sector to combat poaching and illegal activities through direct financing, cash or in kind contributions, leading to a decrease in illegal activities. Among the partners engaged were the civil society organizations such as the Foundation for a Sustainable Society, Inc. (FSSI), private companies such as Sunlight Foods and government entities like PhilFIDA.

The hypothesized link on capacitating LGUs and other institutions to identify opportunities and formulate policies that will lead to the implementation of conservation financing arrangements, such as PES or PES-like schemes, was also found to remain valid. These schemes were expected to generate resources to be used for resource management and conservation. PW has substantive accomplishments in this area, where a number of PES interventions in the project sites have been implemented. These activities ranged from raising awareness on the importance of PES, training on various aspects of PES, providing assistance in analyzing opportunities, valuation, identifying schemes for implementation and formulating policies to implement these schemes.

Contextual factors and assumptions enhancing the validity of the Theory of Change
There were three contextual factors and assumptions that showed evidences to have enhanced the PW Theory of Change for SA2. These are enumerated hereunder:

1) Presence of viable opportunities for community livelihoods and enterprises. There were many viable livelihood opportunities in the various PAs identified as a result of an assessment conducted by the PW, including existing and new opportunities, which then became the subject of livelihood support provided by the PW and its various partners. Examples of these are vegetables, coffee, cacao, purple yam and seaweeds. These opportunities enhanced the success of PW in its livelihood support as the commodities already have good market potential. The situation would have probably been more difficult had there been very limited livelihood opportunities in the area, as dependence on the PA's flora and fauna would be difficult to alleviate.

2) Income-generating activities by communities and private sector benefit the environment. The PW reported outcomes on the amount of investment mobilized for conservation. Examples of private sector investments supporting conservation are the investments in agroforestry in the Tigpalan Watershed;

procurement and distribution of fruit tree seedlings and vegetables in Palawan; seaweed drying facilities sponsored by the LWR for the coastal households in Quezon, Palawan; and the yam production supported by Sunlight Foods in various parts of Palawan.

On PES, the project sites, particularly in the watersheds of Mt. Matutum, Mt. Mantalingahan and Pasonanca Park, provided ecosystem services, particularly to water utility providers. Based on FGDs, PES-like schemes were already existing before PW. These schemes were strengthened to provide for sustained sources of internally-generated funds for conservation. One of the concrete examples was in Brooke's Point, Palawan, where the LGU has ring-fenced the PES revenues to reinvest in conservation, livelihood and sanitation for communities in Mt. Mantalingahan watersheds.

3) Planning and conservation financing is important and that partnerships generate financial returns to support conservation efforts, including PES activities. The PW reports indicated that investments mobilized as counterpart funds for capacity building for LGUs, DENR, PCADS and national governments for the formulation and/or updating of FLUPs and PA planning, management training and law enforcement trainings amounted to US$8,473,146. These plans included PES schemes such as increases in entrance fees and demarcation of zones, including production and multiple-use zones where residents can generate livelihoods.

With clear land and resource plans, social enterprises and livelihood-oriented partners were tapped to support income generating activities. The PW helped in the formulation and/or updating of the land use or the PA management plans, including those in Mt. Mantalingahan, Sarangani Bay and Pasonanca Park. In Mt. Mantalingahan, PW determined the zones in the forest and ancestral domains where communities adopted biodiversity-friendly social enterprises. These efforts paved the way for the PW partners such as LWR and ECLOF to provide production loans for crop farming and seaweed farming.

Programmatic approaches and implementation strategies

Like SA1, the programmatic approach demonstrated the validity of the Theory of Change in SA2. This strategic approach involved sub-themes with public and private institutional partnerships as the centerpiece. The study validated at least three pillars of success, which the programmatic approach clarified, including:

1) Design, valuation, legitimization, the establishment of PES, PES-like, or tourism fees with government, communities and private sector. The PW accomplishments on PES varied from awareness-raising advocacy and actual establishments of the scheme and its implementation. It formulated its approach to support LGUs and private sector service providers in establishing PES schemes. This approach encompasses resource valuation, cost and revenue analysis of current and proposed ecosystem service, formulation of policy instruments to legitimatize PES and formulation of mechanism to ensure that PES revenues are reinvested for conservation and support the communities' livelihoods.

Related to this, the PW conducted a cost and revenue analysis of existing PES-like schemes in Brooke's Point and Zamboanga for the sale and extraction of water from the Mt. Mantalingahan and Pasonanca Natural Park watersheds. This analysis resulted to recommendations to have the PES fund utilization be agreed upon by the PAMB, DENR, LGU and the water utility providers and regular reporting of the collection and utilization of PES funds. In terms of legitimization, the following are the examples of PW efforts: (1) Brooke's Point LGU Executive Order No. 08, Series of 2020: creation of the Municipal PES Board in the Municipality of Brooke's Point and Prescribing its Composition and Functions; (2) Brooke's Point LGU Amended Revenue Code (2019), Article J on Payment for Ecosystem Services, Sections 4J.01-04, imposition of fees, time of payment, surcharges for late payment and administrative provisions; (3) Pasonanca National Park Management Board Resolution No 06-2019 recognizing the budget allocation and utilization of ZCWD for protection, conservation, management and development of protected areas as payment for ecosystem services; and (4) Sta. Cruz Islands PAMB resolution dated August 8, 2019, endorsing to the Zamboanga City Mayor the implementation of the increase in the entrance fees from PHP20 to PHP100.

2) Facilitating partnerships and co-investments with the private sector to invest in biodiversity conservation and support for community livelihoods and enterprises. A number of partnerships and co-investments resulted in investments in biodiversity conservation and support for community livelihoods and enterprises.

Examples were the technical and financial support for cassava production in Palawan, the LWR and ECLOF, production loans for short-term crops in Mt. Mantalingahan, support to improve coffee production in Mt. Matutum and others.

3) Identification and assistance in setting up institutional mechanisms for better planning, allocation, leveraging or sourcing and managing funds for conservation. This factor was clearly demonstrated in all the PES and PES-like assistance provided by PW and was also part of the capacitation provided to the various TWGs. A good example was the assistance provided by PW in identifying the funding gaps in the various PA management plans and helping determine possible sources of funding support. For instance, the PW caused the inclusion of the funding needs of the Pasonanca Natural Park in the Executive-Legislative Agenda formulation of the Zamboanga City government.

### 5.2.4 Strategic approaches 3 and 5

Strategic approach 3 delved on improving the conservation competency of LGUs and resource managers by capacitating and linking them with NGAs and CSOs and the private sector, which can provide assistance related to policies, budget and people. In complement, strategic approach 5 sought to assist in assessing the capabilities of NGAs, local authorities and CSOs and provide them support, tools and regulatory framework needed to identify, report, prosecute and convict violators of habitat or land uses and wildlife laws.

Evidence(s) supporting or proving that key causal links hypothesized remained valid
The key causal links under SA3 states that enhanced competency leads to improvement in PA planning, management and enforcement. At the same time, SA5 empowered the enforcement by providing support on policies and tools, among others. The evaluation found that the outputs and outcomes from these two strategic approaches clearly indicate the validity of the causal links. In both strategic approaches, the accomplishments of PW were already appreciable despite the pandemic. The targets have not been fully achieved yet as of the evaluation period, but there were strong indications that these can be achieved during the PW extension period.

One of the very significant accomplishments of PW was in the formulation or updating of PA management plans. In addition, the accomplishments in the capacity building were undoubtedly impressive. The activity carried out a long list of trainings covering a broad range of topics relevant to addressing the complex problems associated with wildlife conservation or protection. These include planning, enforcement, technical capacity, livelihood support, conservation financing, behavioral change and many others. The PW also catered on policies, tools and technical skills. The survey of community households, training participants and FGDs with various stakeholders confirmed the effectiveness of the PW in SA3 and SA5. The assistance provided on the formulation or updating of PA management plans and the extensive trainings and seminars figured prominently among those appreciated by the various stakeholders.

Contextual factors and assumptions enhancing the validity of the Theory of Change
There were a number of contextual factors and assumptions enhancing the validity of the theories of change in SA3 and SA5. One important contextual factor was the limited competency in planning, management and enforcement. During its first year, the slow progress of PW was due to the slow pace by which local stakeholders were able to fully understand the landscape approach and piece together and appreciate the theories of change for the whole biodiversity conservation and wildlife protection program. The training on GIS mapping was also appreciated because there was limited local expertise on this. Given the low level of competency, training (as was pursued under PW) appeared to be one of the most logical interventions.

An important technological contextual factor is the absence of a tool that can enhance the monitoring and reporting of wildlife crimes. The development of BRAIN addressed this issue, which proved to be an enormous success. This information validates the Theory of Change that introducing new tools and technologies will enhance wildlife protection. On the institutional contextual factor, an interesting example was the one shared by a participant in one FGD. Accordingly, the LGUs and DENR hardly worked together before the PW, which was ironic since while the LGUs might have the money for PA management, it does not have the technical capacity. While the DENR might have the technical capacity, its financial capacity is

always limited. The PW was able to bridge the "institutional divide" through its facilitative role and the various partnerships forged.

Almost all of the sites have clearly demonstrated the link between competency enhancement and PA management. The TWGs capacitated by PW was instrumental in the drafting or updating of PA management plans and enforcement protocols. It is interesting to note,that some PAs did not even have updated management when PW started. There were no enforcement protocols. Therefore, the ToC was correct in its assumption that PA management could improve if the conservation competency of the LGUs and resource managers is enhanced.

Programmatic approaches and implementation strategies
The synergy between SA3 and SA5 was quite apparent, which suggests that the thematic program approach is appropriate for demonstrating the ToC's validity. While the two themes are distinct, complementarity in strategies is imperative to generate the desired outcomes.

### 5.2.5 Strategic approach 4: Enhancing the capacity of education institutions to advance biodiversity conservation education, research, monitoring and evaluation

This strategic approach theorized that if higher education institutions (HEIs) have increased technical know-how to conduct research, source and mobilize research funds and enrich conservation curriculum and syllabus, then these institutions can produce tools and knowledge products that will enhance the capacities of LGUs, CSOs and government agencies.

Evidence(s) supporting or proving that key causal links hypothesized remained valid
There are only two target indicators under this strategic approach and PW exceeded its targets for both indicators. It supported 27 research initiatives against its target of 25 and there were 14 reported cases of universities developing its conservation curricula as against the target of 10. The KIIs and FGDs conducted validated these accomplishments. The accomplishments in this strategic approach constitute clear evidence of the validity of the ToC and the hypothesized links.

The key causal links hypothesized include increased technical know-how in all aspects of research, from sourcing and mobilizing funds to the actual conduct of the study. All the 27 supported research initiatives were actually implemented, although only 15 were completed due to the pandemic. Nevertheless, the research support provided by the PW allowed the researchers to gain more experience in the various aspects of research. Many of the researchers were actually graduate students; thus, the experience gained surely formed part of their foundational knowledge and skills.

On curriculum development, the PW targeted only 10 HEIs to develop conservation curricula but actually supported 14 HEIs on this. The adoption of these curricula as the key causal link was already realized with the adoption by HEIs of the Environmental Law and Protection (ELP) syllabus endorsed for use by the Commission on Higher Education (CHED) and the Philippine Society of Criminologists and Criminal Justice Practitioners (PSCCJP).

Contextual factors and assumptions enhancing the validity of the Theory of Change
Among the notable completed research projects supported by the PW was the Philippine Eagle survey in Pasonanca National Park and the Sulu hornbill study in Tawi-Tawi. Institutions and other stakeholders could already use the information generated from these studies to improve the conservation and protection of these species. This fact would validate the ToC, that support to HEIs would generate knowledge products useful for LGUs and resource managers in managing biodiversity and protecting wildlife.

On curriculum development, the adoption by HEIs of the ELP syllabus endorsed by CHED and PSCCJP will lead to enhancement in the curricula of BS Criminology, BS Agroforestry, BS Marne Biology and other relevant courses. This will, in turn, improve the knowledge and skills of students, many of whom may be the future managers of PAs.

Programmatic approaches and implementation strategies

HEIs are the sources of science-based information and tools on biodiversity conservation and wildlife protection. The inclusion of this theme (i.e., science-based PA management) in the programmatic approach of PW is therefore crucial if a truly integrated landscape approach is to be achieved.

### 5.2.6 Validation of the Overall PW ToC

The programmatic approach pursued by PW was thematic in nature and was designed to address the various thematic challenges in biodiversity conservation and wildlife protection. Behavioral change, conservation financing, capacity in PA management and enforcement and science-based support through the HEIs were the thematic areas covered. The thematic approach was designed to provide focus and complementation among the various thematic strategies to achieve synergy and influence sector-wide development.

The benefit of the programmatic approach was clearly demonstrated in all the strategic approaches. Treating each strategic approach as a distinct thematic concern enabled a clear demonstration of the pathway, causal links and context resulting from which, the PW was able to achieve its desired change. The overall ToC, however, weaved the strategic approaches together to achieve cross-reinforcement and synergy.