The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2025

Promoting Wise Development to Achieve Conservation and Sustainable Use of Biodiversity

Strategic policy interventions to promote long-term cultural, economic and environmental sustainability through protection of biodiversity

Prepared For:
Ministry of Natural Resources, Environment and Tourism
National Government of the Republic of Palau
November 2016

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Prepared by the Palau Conservation Society,
Policy and Planning Department

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MESSAGE FROM H.E. TOMMY E. REMENGESAU, JR., PRESIDENT OF THE REPUBLIC OF PALAU

As Palauans, we have always known that our wellbeing is directly tied to the health of our environment and biodiversity. As such, we acknowledge that the bounty of our lands and reefs have sustained us from the moment we fist settled these shores, down through the ages until today. Moreover, we appreciate that this rich biodiversity that has shaped our lives and culture, is our natural legacy from the Creator held in trust for us by our ancestors and by us for our descendants. Therefore, we recognize that how we live and interact with our environment today has profound impact on the legacy that we leave behind for all the generations of Palauans who will come after us. This is why I am especially pleased to present Palau's National Biodiversity Strategies and Action Plan (NBSAP).

Palau's NBSAP is a framework that enables us to efficiently and sustainably use our natural resources and biodiversity to meet our development needs today while safeguarding them for future generations. It embraces Palau's commitments to national, regional and global agreements through the alignment of our environmental intentions with our social and economic interests so that we can truly make headway towards sustainable development for Palau. This framework facilitates actions that strengthen the Palau Protected Areas Network, ensures food security through tried and true measures in coastal resource management, promotes sustainable use of our fragile ecosystems in the delivery of economic enterprises, and advances the integration of traditional ecological knowledge with science to drive decision making in support of biodiversity conservation and its sustainable use.

I truly believe that the successful implementation of this NBSAP will ensure that Palau's spectacular ecosystems and biodiversity will continue to thrive and flourish, and benefit the Palauan people today and into the long term

Tommy E. Remengesau, Jr.
President of the Republic of Palau

Table of Contents

1.0 Introduction

1.1 The UN Convention on Biological Diversity

Palau became a signatory to the UN Convention on Biological Diversity (CBD) in 1998, and on January 6, 1999 the National Congress, the Olbiil Era Kelulau (OEK), ratified the treaty. As a signatory to the CBD, the Republic of Palau is committed to taking action to protect its rich biological resources. The provisions of the CBD are set out in 42 Articles. Article 1 identifies the three objectives of the Convention:

- The conservation of biological diversity;
- The sustainable use of its components; and
- The fair and equitable sharing of benefits arising out of the utilization of genetic resources.[1]

Article 6 of the CBD states that each Contracting Party shall:

- Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, *inter alia*, the measures set out in this Convention relevant to the Contracting Party concerned; and
- Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.[2]

In accordance, Palau created a National Biodiversity Strategy and Action Plan (NBSAP) in 2004. The Office of Environmental Response and Coordination (OERC) is currently the agency responsible for coordinating and overseeing implementation of the NBSAP. It is anticipated that prior to the next presidential election in 2016, a government reorganization will lead to the creation of the Bureau of Environment, which will take over responsibility for coordinating and overseeing implementation of Palau's NBSAP.

A product of the 1992 Rio de Janeiro Earth Summit, the CBD is intended to promote sustainable development in signatory nations. The CBD was designed as a practical guideline for developing policies that would support the principles laid out in Agenda 21, which is a non-binding, voluntarily implemented action plan that was also produced during the 1992 Earth Summit. Agenda 21, or Agenda for the 21st Century, is a UN document focused on sustainable development. Agenda 21 addresses a broad range of issues, but can be generally divided into four primary strategic areas[3]:

I) Social and Economic Dimensions;
II) Conservation and Management of Resources for Development;

[1] http://www.cbd.int/convention/articles/default.shtml?a=cbd-01
[2] http://www.cbd.int/convention/articles/default.shtml?a=cbd-06
[3] http://www.unep.org/Documents.Multilingual/Default.asp?documentid=52

III) Strengthening the Role of Major Groups; and
IV) Means of Implementation.

In alignment with the ideals of Agenda 21, the CBD recognizes that biodiversity "is about more than plants, animals and microorganisms and their ecosystems—it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live."[4]

The 42 Articles of the CBD define the scope, objectives and logistical aspects of implementing the Convention. Article 10 of the CBD encourages decision-makers to "integrate consideration of the conservation and sustainable use of biological resources into national decision-making"[5] and to encourage cooperation across all sectors to mainstream sustainability concepts and develop methods for sustainable use of biological resources. Objectives identified in the Articles of the Convention that are most relevant to Palau include:

- Establish general measures for sustainable use of resources;
- Develop systems for protected areas;
- Support rehabilitation of ecosystems and recovery of threatened species;
- Provide systems to address biosafety;
- Mitigate and protect against invasive species;
- Recognize, record and maintain traditional knowledge systems;
- Plan for sustainable use of biological resources;
- Provide incentive measures for conservation of biodiversity;
- Promote research and training regarding biodiversity;
- Address public education and awareness; and
- Ensure access to genetic resources.

NBSAPs function to provide a framework for creating, coordinating and implementing national policies in support of the CBD. The complex challenges of mainstreaming biodiversity conservation, coordinating project implementation, building necessary capacity, and successfully integrating complicated environmental issues into the decision-making process are core obstacles addressed by Palau's NBSAP.

1.2 Decisions of the Conference of the Parties

The Conference of the Parties (COP) is the governing body of the CBD. Since the CBD was produced in 1992, as a mechanism for advancing implementation, improving and clarifying the Convention, the COP has held 11 ordinary meetings and one extraordinary meeting. The First Extraordinary Meeting of the COP in January 2000 produced the Cartagena Protocol, which addressed the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology.[6]

[4] http://www.cbd.int/convention/
[5] http://www.cbd.int/convention/text/
[6] http://bch.cbd.int/protocol/

In October 2010, the Tenth Ordinary Meeting of the COP produced the Nagoya Protocol on Access and Benefit-sharing. The Nagoya Protocol focused on ensuring that the benefits from using genetic resources are shared in a fair and equitable way so that conservation and sustainable use of biodiversity are recognized as valuable endeavors across sectors. At the Tenth Meeting, the COP also adopted the new Strategic Plan for Biodiversity 2011-2020, including the Aichi Biodiversity Targets. The Aichi Targets set forth 20 targets distributed between five strategic goals articulated in the new Strategic Plan for Biodiversity:

Strategic Goal A:	Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
Strategic Goal B:	Reduce the direct pressures on biodiversity and promote sustainable use
Strategic Goal C:	To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
Strategic Goal D:	Enhance the benefits to all from biodiversity and ecosystem services
Strategic Goal E:	Enhance implementation through participatory planning, knowledge management and capacity building[7]

In decision X/2[8], the COP adopted the Strategic Plan for Biodiversity 2011-2020, including the Aichi Targets, which were originally identified in decision IX/9[9]. The COP "urged that Parties review, and as appropriate update and revise, their national biodiversity strategies and action plans, in line with the Strategic Plan and the guidance in decision IX/9, including by integrating their national targets into their national biodiversity strategies and action plans." Among other objectives, decision X/2 calls for continued cross-sectoral engagement to:

- Develop national and regional targets, using the Strategic Plan and its Aichi Targets, as a flexible framework, in accordance with national priorities and capacities and taking into account both the global targets and the status and trends of biological diversity in the country, and the resources provided through the strategy for resource mobilization, with a view to contributing to collective global efforts to reach the global targets, and report thereon to the Conference of the Parties at its eleventh meeting;
- Review, and as appropriate update and revise, their national biodiversity strategies and action plans, in line with the Strategic Plan and the guidance adopted in decision IX/9 including by integrating their national targets into their national biodiversity strategies and action plans, adopted as a policy instrument, and report thereon to the Conference of the Parties at its eleventh or twelfth meeting;
- Use the revised and updated national biodiversity strategies and action plans as effective instruments for the integration of biodiversity targets into national development and poverty reduction policies and strategies, national accounting, as

[7] http://www.cbd.int/sp/targets/

[8] http://www.cbd.int/decision/cop/?id=12268

[9] http://www.cbd.int/decision/cop/default.shtml?id=11652

appropriate, economic sectors and spatial planning processes, by Government and the private sector at all levels;

1.3 Palau's Biodiversity and Its Global Significance

The Republic of Palau is an archipelago in the Pacific Ocean, located approximately 800 km north of Papua New Guinea and 800 km east of the Philippines. The country has an exclusive economic zone (EEZ) of 3,120,000 km^2, and a total land area of 488 km^2. The land area is comprised of over 700 islands, stretching more than 650 km from the atoll of Kayangel in the north to the islet of Helen Reef and Hatohobei in the south. A mini-census conducted in 2012 found the resident population of Palau to be less than 19,000 people, of which approximately 1/3 were resident foreigners. In total, only twelve islands are continuously inhabited, while other islands, particularly in the Rock Islands Southern Lagoon, include some amenities to support picnicking and camping.

Four distinct island types are found in Palau: atoll islands, high limestone islands (the Rock Islands), low platform islands, and volcanic islands. Terrain varies from low coral islands fringed by large barrier reefs to the high mountainous main island of Babeldaob, which has rivers, wetlands, and 10 watersheds. Babeldaob is the largest island in Palau, and, after Guam, the second largest island in Micronesia. Distributed across the hundreds of islands that make up Palau are numerous habitats harboring a wealth of biodiversity. Habitats include:

- Forests—upland forests, swamp forests, limestone forests, atoll forests, and mangrove forests;
- Savanna and grasslands;
- Freshwater habitats—rivers, streams, lakes, swamps, and taro patches;
- Brackish water habitats—wetlands and coastal lagoons;
- Marine lakes;
- Nearshore habitats—mudflats, seagrass beds, sandy beaches; and,
- Coral reefs—barrier reefs, patch reefs, and fringing reefs.

At one time all of Palau was likely covered by forests, but a 2007 forest cover analysis estimated forest cover to be 82%, including agroforestry.[10] A wide range of plant and animal species rely on these native forests for their survival. In addition, the forests provide vital ecosystem services that maintain the quality and ecological integrity of all of the terrestrial and marine ecosystems, such as sediment trapping, temperature stabilization, soil production and conservation, and providing nursery areas for reef fish. Urbanization has resulted in forest loss and other substantial changes to the environment in some areas, especially in and around Koror, the population and economic center of Palau. Near shore ecosystems are heavily influenced by land use decisions in nearby terrestrial areas. As a result, seagrass beds, mudflats,

[10] Kitalong, Ann. 2010. *The Republic of Palau Statewide Assessment of Forest Resources and Resource Strategy*. Bureau of Agriculture, Republic of Palau.

mangroves and reefs located near development are experiencing increased environmental pressures resulting from activities on land.

Palau's geographical and geological characteristics have allowed for extensive development of biodiversity, with over 7,000 terrestrial and 10,000 marine species known to exist in the country. Palau has the most diverse terrestrial biodiversity in the Micronesia region, and one of the most biologically diverse underwater environments globally. Approximately 1,000 endemic species are found in Palau, primarily in terrestrial habitats. Endemic species included nearly 200 plant species, including 60 species of orchids, 300 terrestrial gastropods, 500 insects, 16 birds, 12 amphibians and reptiles, two freshwater fishes, and two species of bat. Palau is on the northeastern margin of the Coral Triangle, a region which has the highest diversity of shallow-water marine species in the world. Although Palau has slightly fewer species than found in the Coral Triangle, the diversity of marine habitats found within the relatively small area of the Palauan archipelago is probably as great as could be found anywhere in the world. Palau supports more than 350 species of hard coral, 200 species of soft coral, over 300 species of sponges and more than 1,300 species of reef fish. Its waters are also home to endangered and vulnerable species such as the dugong, saltwater crocodile, hawksbill and green turtles, and giant clams. Palau also has more than 60 marine lakes, of which five are home to stingless jellyfish that have evolved in these unique ecosystems.

While there are hundreds of known endemic marine and terrestrial species in Palau, it is likely that there are more species that have yet to be described by science. In 2011 a new species of marine eel, *Protanguilla palau*, was discovered in the Rock Islands. The eel species was found in a cave near Ngemelis island, a popular tourist destination. *Protanguilla palau* is a living fossil, representing a previously unknown family of eels and demonstrating characteristics of early eel evolution. Such discoveries underscore the need for further study and conservation of Palau's biological resources.

1.4 Cultural and Development Context

Palauan culture is closely linked with the environment, with biodiversity playing an important role in all facets of traditional Palauan life. Historically, plants and animals provided the natural resources needed for food, shelter, medicine and all other aspects of *Klechibelau*, or "Palauan-ness." Traditional management practices, including institution of *bul* (moratoriums on the harvesting of targeted species), enabled Palauans to create a sustainable balance between conservation and development. Since Palauan communities have traditionally relied on fishing and other near shore activities as a major source of food and economic opportunity, nature conservation efforts have historically focused on managing threats to coastal marine environments. While fishing and other uses of near shore environments continue to be important, changing development trends and the growth of new industries, particularly tourism, are driving shifts in the Palauan way of life. As a result, not only have pressures on the environment increased, the nature and scope of these pressures has changed as well.

Modern development trends and the demands of globalization have outpaced traditional management practices. As a result, current management practices need to be improved in

order to effectively support development into the future. As the society changes from a traditional subsistence-based economy to a westernized commercial economy, and from a village-based management system to one centered in the national government, the culture of care Palauans once had for their natural heritage is being eroded. The loss of traditional knowledge and practices, internal population movement and a growing number of visitors to the country are increasing the demands on a fragile environment.

Construction of the 52-mile long Compact Road around Babeldaob has opened the island up to development and enabled internal population movement. Previously inaccessible areas of relatively undisturbed forest are now at risk of being developed for commercial, agricultural and residential purposes, placing associated ecosystems and biodiversity at risk. Proposals for development have included major resort hotels, golf courses, casinos, a new port, and a free trade zone. These land use activities will also impact adjacent coastal reef areas. Compounding these immediate threats, Palau's reefs suffered high levels of coral bleaching and mortality following the 1998 El Niño Southern Oscillation (ENSO) event. ENSO events are expected to increase in frequency and intensity in the future, posing a serious threat to the biodiversity of coral reefs in Palau.

Global Climate Change compounds local challenges through widespread impacts such as sea level rise, droughts and more frequent storms. Invasive alien species (IAS) brought both intentionally and unintentionally are serious threats to biodiversity. Environmental degradation caused by humans or other factors such as fires or the impacts of Climate Change leave ecosystems open to colonization by invasive species. That Palau's environment is facing both local and global pressures means that protection of the country's biological resources will require substantial coordination and cooperation across all sectors.

Its rich biodiversity and unique environmental features grant global significance to conservation and sustainability efforts in Palau. At the same time, Palau's relatively high standard of living and strong economy in comparison to other small island developing states (SIDS) make conservation and sustainability activities taken here regionally significant. Palau has the capacity to not only adopt policy, but to test its implementation as well. As a result, lessons learned here may be valuable to other SIDS facing similar issues, allowing them to choose proven policies and implementation strategies that are relevant to island settings to address their conservation needs. At a local level, improving knowledge sharing has the potential to promote informed decision making, reduce redundancy and associated resource consumption, and fill information gaps that can interfere with planning processes. Improving data collection, evaluation, reporting, information accessibility, public outreach and participation in international conferences, research and other opportunities for knowledge exchange are elements of improving biodiversity conservation.

Biodiversity is of major importance to the economies of most SIDS.[11] In addition to their value as a source of food and livelihoods, Palau's reef finfish fisheries are especially important to the

[11] http://unohrlls.org/custom-content/uploads/2013/08/SIDS-Small-Islands-Bigger-Stakes.pdf

tourism industry. Tourism contributes roughly 50% of Palau's GDP. Tourists are largely drawn to Palau by the country's natural beauty in general, and by the opportunity to see its biodiversity in particular. Palau is a destination for divers, snorkelers and birdwatchers drawn by the possibility of seeing endemic and rare species, as well as the general richness of species present. Jellyfish Lake is a major tourist destination, and other important tourist areas, such as German Channel, are known for their high potential for seeing iconic species such as manta rays. Continued success of the dive tourism industry is directly dependent on maintaining healthy stocks of large reef fishes including groupers, bumphead parrotfish, Napoleon wrasse, sharks, and rays. Beyond its role in directly providing sustenance, livelihoods and cultural identity for Palauans, biodiversity is arguably the major driver of Palau's economy through its importance to the tourism industry.[12] Achieving long-term cultural, economic and developmental sustainability will require taking a more strategic approach to managing Palau's near shore fisheries.

1.5 Legacy of Palau's First NBSAP

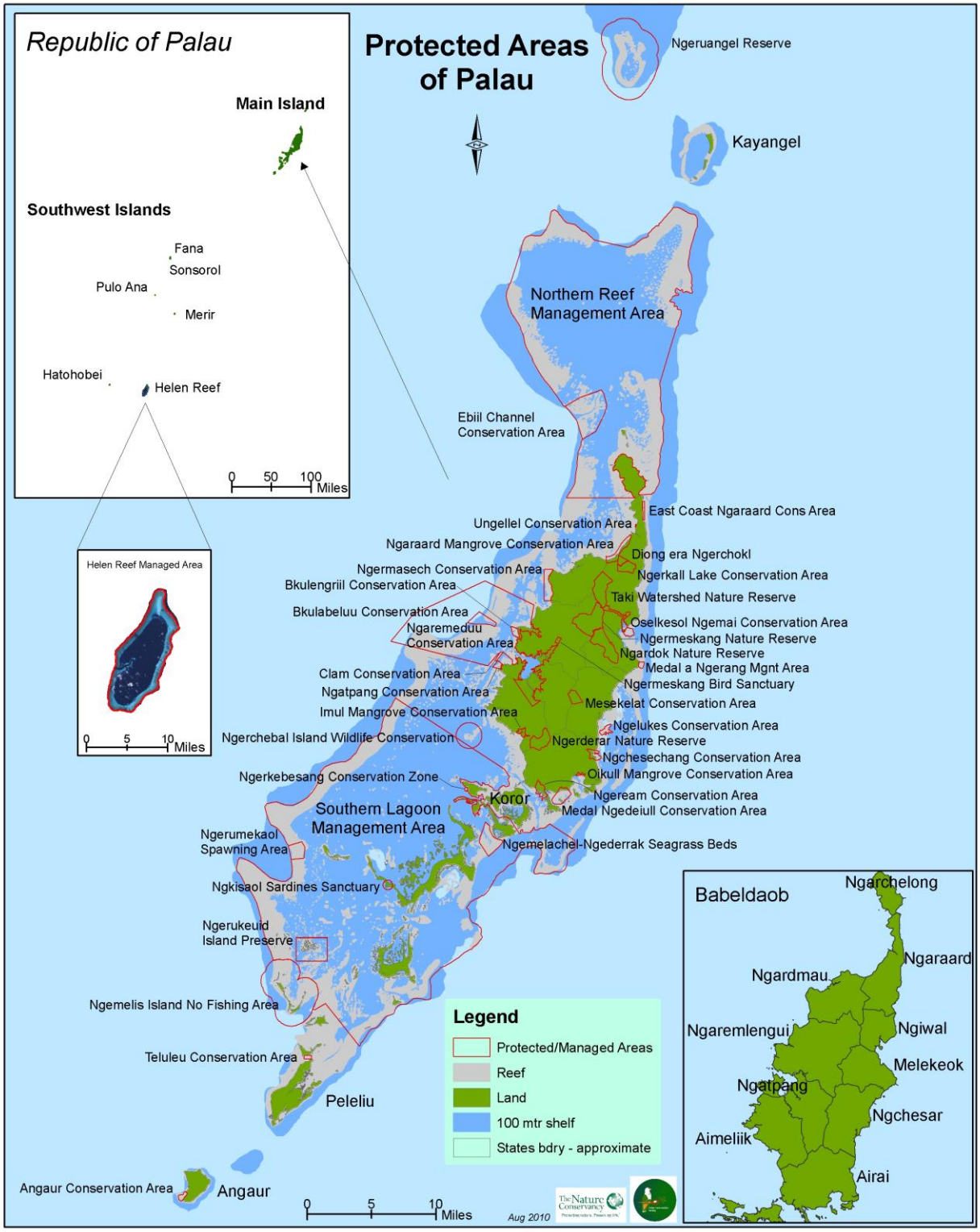
The first NBSAP was a direct output of Article 6 of the CBD. It was meant to function as "the principal instrument for implementing the Convention at the national level."[13] As such, the NBSAP identified key work areas, set objectives and functioned to provide direction to biodiversity management across sectors, in addition to supporting coordination of activities across sectors.

Unsustainable development practices, impacts of Climate Change, overharvesting of biodiversity and other natural resources, and ongoing expansion of tourism represent significant threats to Palau's environmental quality and biodiversity. The geographical scale of SIDS means that ecosystem components are closely linked, and that degradation in one area can rapidly produce repercussions in other areas. As a result, effective natural resource management requires ecosystem-scale strategic planning, and extensive coordination and cooperation between implementing agencies. The NBSAP provides a mechanism for shaping and coordinating policies linked to the conservation and sustainable use of biodiversity. Since the creation of Palau's first NBSAP, progress has been made in some areas of biodiversity conservation. However, on the whole, more effort will be required to achieve conservation goals.

[12] http://www.ccmf-uwi.org/files/publications/conference/2011/8_1-Teelucksingh_Watson-p.pdf

[13] https://www.cbd.int/nbsap/

Figure 1: A map of Palau's protected areas.



Building on traditional management practices, Palau has had great success in designating protected areas to provide for conservation of ecosystems and biodiversity. An overall objective of natural resource management in Palau is to support productive landscapes, whether natural or shaped by humans, and to manage them for sustainable use into the future. The Protected Areas Network (PAN) is intended to support productive landscapes by establishing a nationwide system of areas where biodiversity can flourish, habitats be preserved and ecosystems continue to provide necessary services. With effective management and community support, these protected areas contribute to productive landscapes by ensuring that the natural resources Palauans depend upon have sufficient capacity to regenerate. Ideally, protected areas should help to make sustainable consumption in unprotected areas a realistic possibility.

In addition to designating conservation areas, Palau has made progress in improving planning capacity and overall management of its natural resources. Airai and Melekeok states have been leaders in developing management plans including Master and Land Use Plans, and in 2013, Airai state completed the first state-level watershed management plan in Palau. The development of additional plans to manage natural resources outside of protected areas demonstrates recognition of the importance of ecosystem-based environmental management in SIDS. While protected areas support healthier ecosystems in adjacent non-protected areas, poor management of areas surrounding protected areas can counteract the value of designating a protected area.

This revised NBSAP will build on these successes while also targeting strategic areas for improvement identified through national consultations with stakeholders and subject area experts, review of agency strategic plans, comparative review of existing environmental policy instruments such as the Micronesia Challenge, the Fifth National Report, and other gap analyses related to the conservation and sustainable use of biodiversity. While the overall goal of the NBSAP is to protect biodiversity, it does so by addressing a wide range of issues, in alignment with the broad objectives set forth by Agenda 21 and the CBD. The complex challenges of mainstreaming biodiversity conservation, coordinating project implementation, building necessary capacity, and successfully integrating complicated environmental issues into the decision-making process are core obstacles addressed by Palau's NBSAP.

1.6 The NBSAP Revision Process

In accordance with COP Decision X/2, OERC, with technical support from the Palau Conservation Society (PCS), initiated the process of compiling Palau's Fifth National Report to the Convention on Biodiversity during October 2013. The Report was completed and submitted to the CBD in March of 2014, and made available to local biodiversity management agencies, subject area experts and other relevant stakeholders for review. Based on the Report, it was determined that the NBSAP needed to be updated to address changing conditions in Palau as well as Decisions of the COP, with particular emphasis on supporting the Cartagena and Nagoya Protocols, identifying Palau-specific objectives in alignment with the Aichi Targets, and increasing efforts to mainstream biodiversity issues into the decision-making process.

After allowing time for review, OERC coordinated the formation of an NBSAP Review Steering Committee, including representatives of relevant government agencies, NGOs, private sector organizations, and subject area experts. PCS facilitated a national consultation meeting with the Steering Committee on July 2, 2014, during which the committee reviewed and revised the existing NBSAP strategy, and identified new strategic actions that could be incorporated into the revised NBSAP. Organizations engaged in the NBSAP planning and revision process included the Stakeholder Agencies listed in Annex A.

Following the national consultation meeting, throughout the summer of 2014 PCS conducted additional consultation meetings with individual stakeholder groups to better define policy objectives, obtain commitments from implementing partners, and develop implementation activities, outcomes and outputs. The consultation process enabled development of the core Policy Statement, Guiding Principals, Strategic Areas, Goals, Outcomes, Objectives and implementation activities. PCS developed the initial Action Plan based on the first round of consultations, and conducted a second round of consultations to review and finalize the Action Plan. The first draft of the complete NBSAP based on the Action Plan was completed in November 2014, with further edits and additional supporting documents developed through March of 2015. The full revised NBSAP was completed and submitted to the CBD at the end of March 2015.

2.0 Policy Statement

Biodiversity is a key component of the natural history, culture and economy of Palau. Loss of biodiversity threatens ecosystems and the services they provide, the underpinnings of Palauan culture, and the future food security and economic stability in Palau. The aim of this **Revised National Biodiversity Strategy and Action Plan** is to encourage, guide and coordinate an integrated national process that will engage stakeholders across sectors to achieve the holistic conservation and sustainable use of biodiversity while protecting and enhancing economic opportunity, sustainability of livelihoods, food security, culture and the environment for present and future generations.

2.1 Guiding Principles

The revised NBSAP policy strategies are intended to promote changes that will improve conservation and sustainable use of biodiversity and genetic resources. The following principles guided development of policy strategies:

1. Taking action to conserve biodiversity is more cost effective than doing nothing and suffering the consequences of biodiversity loss;
2. Protecting biodiversity strengthens ecosystems, the economy and culture, ultimately improving resilience to the impacts of Climate Change;
3. Achieving effective conservation and sustainable use of biodiversity will require improving institutional, administrative and legislative capacity, including ensuring that sustainable financing schemes are in place to support ongoing initiatives;

4. Lost biodiversity is irreplaceable, and as such lack of complete scientific certainty and precision of data cannot be an excuse for failure to take action;
5. Public outreach is required in order to create a society that is informed of the risks of biodiversity loss, as well as the opportunities presented by improving the conservation and sustainable use of biodiversity;
6. Promoting sustainable use of biodiversity enables benefit sharing through improving food security, preserving livelihoods, improving land management, and supporting the long-term viability of cultural, economic, and other development endeavors;
7. Approaches that favor ecosystem-based management support biodiversity conservation by protecting ecosystem functions and preserving high quality habitats that provide refuge for maintaining species populations;
8. Management of biodiversity will be most effective when policies are aligned across sectors and implementation is coordinated across agencies in order to maximize benefits and leverage successes;
9. Effective management of biodiversity will require better monitoring and information management which will include adopting new technologies and best practices;
10. The conservation and sustainable use of biodiversity must be mainstreamed into existing as well as new management strategies across all sectors in order to ensure that biodiversity is considered in relevant policy decisions.

2.2 Strategic Areas

This policy will engage stakeholders to improve conservation and sustainable use of biodiversity and genetic resources throughout Palau. The policy will focus on several key strategic areas:

1. **Protected/Managed Areas**—Strengthen the PAN to preserve habitat, protect ecosystem services, provide refuge for biodiversity, improve management and cross-sectoral coordination, increase resilience to impacts of Climate Change, and meet commitments to the Micronesia Challenge;
2. **Species Protection**—Improve knowledge of species present in Palau, including conservation status and survival needs, in order to strengthen decision-making and management;
3. **Biosecurity/Invasive Species and Bio-safety**—Create a National Invasive Species Strategic Action Plan in order to reduce impacts of alien species and promote compliance with biosecurity laws across all sectors;
4. **Integrating biodiversity and ecosystem services into development policies**—Improve awareness of biodiversity conservation and sustainability issues, including knowledge sharing with decision makers, in order to improve existing policies and develop new policies to address legal and regulatory gaps;
5. **Reducing direct pressures on biodiversity through sustainable use**—Improve livelihoods and economic opportunity through development and implementation of

industry-specific best practices that support conservation and sustainable use of biodiversity;

6. **Ensuring food security through maintenance of agricultural biodiversity**—Improve knowledge of agricultural species and varietals present in Palau, and engage the agriculture industry to incorporate best practices that support food security through conservation and sustainable use of ecosystem services; and
7. **Mainstreaming conservation**—Expand public outreach and community engagement in conservation and sustainable use of biodiversity by improving science education, building natural resource management capacity across sectors, and promoting participation in regional and international knowledge sharing.

3.0 Policy Directives

This revised NBSAP is intended to provide a guide for strategic planning for all government, private sector, non-government, and civil society agencies, organizations and industries involved in the management and use of biological resources in Palau in order to promote conservation and sustainable use of biodiversity. The policies laid out in this document should be integrated into the strategic plans of relevant government ministries and departments at both the state and national levels, as well as provide guidance for further policy planning conducted by national committees.

The revised NBSAP sets forth priorities for biodiversity management based on the objectives of the CBD and the Decisions of the COP. It is shaped by the legacy of the first NBSAP, informed by current situational analyses, built around the ideals of the guiding principles, and targeted at key issues as specified by the strategic policy areas. Goals for each strategic area set out the desired impact of executing the NBSAP. Impact Indicators are intended to help track progress toward achieving NBSAP targets by providing feedback on the actual impacts of policy activities. Objectives for each goal represent steps that have been identified as necessary for achieving each goal. Outcomes are concrete, measurable outputs produced by completing project activities. Each strategic area and associated goals, objectives and outcomes are discussed further in the following sections. The complete logical framework, including activities, is included as Annex C.

3.1 Strategic Area 1: Protected/Managed Areas

Policy directives for Strategic Area 1 are intended to promote biodiversity conservation by strengthening and expanding the PAN, which will increase the quality and total area of habitat available in which species can live. Effectively managed protected areas benefit surrounding non-protected areas by providing a refuge where ecosystem services are maintained and organisms can carry out their lifecycles and reproduce, functioning effectively as a source of biological resources for ecosystem and species recovery. Strengthening the PAN supports the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets, particularly Strategic Goal C, “To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.”

Directives will target improving the protected area designation process; building monitoring and evaluation capacity; creating a national PAN management strategy; expanding land and sea

area protected under PAN; enhancing PAN management capacity and coordination; increasing outreach and knowledge sharing; improving PAN financial sustainability; and coordinating PAN policies to support other conservation initiatives such as the Micronesia Challenge.

Goals, Impact Indicators, Objectives and Outcomes:

Goal 1: By 2020, the Palau Protected Areas Network is adequately funded, effectively managed and includes representative areas of all ecosystems and habitats in Palau

Impact Indicators:

- Percentage of PAN sites that meet or exceed funding goals
- Total land and sea area of PAN sites that achieve satisfactory or better management assessment scores
- Total land and sea area of PAN sites, including number and type of ecosystems/habitats represented in each site

Objective 1.1: Identify through scientific and traditional knowledge all areas that should be protected and managed to satisfy biodiversity conservation and resource management objectives

> **Outcome 1.1.1**: Guided by a combination of scientific and traditional knowledge, a comprehensive inventory of candidate areas in need of protection will be developed by January 2017
>
> **Outcome 1.1.2**: At least 75% of PAN sites are managed in accordance with state (when available) or national biodiversity conservation and resource management policies and plans by January 2018 (new protected areas expected to meet this objective within one year of formal recognition)

Objective 1.2: Develop and implement appropriate resource and socio-economic monitoring and evaluation protocols for protected areas.

> **Outcome 1.2.1**: Socio-economic, natural resource and other key data needed to improve protected area management decision making process are identified by January 2017
>
> **Outcome 1.2.2**: Socio-economic, natural resource, and other key data monitoring, evaluation and reporting protocols for protected areas are established by January 2018

Objective 1.3: Develop and implement National PAN Management Strategy and Action Plan

> **Outcome 1.3.1**: A comprehensive National PAN Management Strategy and Action Plan that integrates and complements elements of the National Sustainable Land Management Policy is developed by January 2017
>
> **Outcome 1.3.2**: National PAN Management Strategy and Action Plan is implemented by January 2018

Objective 1.4: Target three remaining states without PAN sites to nominate candidate PAN sites so that all 16 states are represented in PAN

Outcome 1.4.1: All 16 states are engaged in PAN by June 2019

Objective 1.5: Develop and implement capacity building program for PAN management support for improving coordination at site, state and national levels

Outcome 1.5.1: PAN management coordination and capacity development program is developed and implemented by January 2017

Objective 1.6: Develop and implement outreach activities for PAN, and develop mechanisms to allow for citizen input into PAN management activities and decision making (citizen science measures). States and local communities are measurably more aware and involved in PAN and are active in management and monitoring processes

Outcome 1.6.1: A communication strategy for building awareness and promoting engagement in PAN is developed by January 2017 and implemented by 2018

Outcome 1.6.2: Develop strategy to engage communities in management and monitoring of PAN (drawing upon data collected in Activity 7.1.1a), including methods to track community participation

Objective 1.7: Review, plan, program and monitor PAN sustainable financing. PAN sustainable Financing needs reviewed, planned and programmed and monitored in implementation

Outcome 1.7.1: By 2017, PAN sustainable financing plan is reviewed and updated, including expected distribution of funds to support PAN programs

Outcome 1.7.2: A monitoring program for the PAN sustainable financing plan is designed and incorporated into the sustainable financing plan by January 2017

Outcome 1.7.3: The monitoring and reporting program for the PAN sustainable financing plan is implemented by January 2018

Outcome 1.7.4: By 2019, an assessment report evaluating the updated PAN Sustainable Financing Plan is created

Objective 1.8: Palau closer to meeting Micronesia Challenge 2020 target goal (20% terrestrial and 30% marine effectively managed PA's)

Outcome 1.8.1: Micronesia Challenge goals (20% of terrestrial area and 30% of marine area are part of effectively managed PA's) are achieved by 2020

3.2 Strategic Area 2: Species Protection

Directives for Strategic Area 2 are focused on improving understanding of conservation needs for species present in Palau, and creating strategies to identify and protect high priority species from extinction. Considering the exceptional biodiversity known to exist in Palau, and the shortage of human and information resources available, improving management will require better understanding of the species present in Palau as well as of the stressors impacting species survival. Improving species protection directly supports the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets, particularly their Strategic Goal C.

Policy directives will improve species protection by creating a comprehensive inventory of species; evaluating conservation priority status; and through the creation of species-specific management strategies for high priority species.

Goals, Impact Indicators, Objectives and Outcomes:

Goal 2: Maintain healthy populations of key species and their habitats

Impact Indicators:

- Populations of key biodiversity indicator species show stable or improving trends relative to current (baseline) conditions in existing ranges
- Ranges of key biodiversity indicator species remain stable or expand relative to current (baseline) conditions

Objective 2.1: Develop a comprehensive inventory of species to identify and prioritize their importance and status.

> **Outcome 2.1.1**: A comprehensive inventory of Palau's biodiversity including species conservation status and conservation priority is developed by January 2017

Objective 2.2: Assess conservation needs of high priority species (ie. Corals, fish, edible macro invertebrates, bats, birds, plant species)

> **Outcome 2.2.1**: Status of high priority species (ie. Corals, fish, edible macroinvertebrates, bats, birds, plants, etc.) and key habitats are assessed by January 2018

Objective 2.3: Develop appropriate and specific management strategies for high priority species

> **Outcome 2.3.1**: A national strategy and action plan for protecting and conserving vulnerable and endangered species emphasizing ecosystem based conservation approaches (ie Ridge to Reef, IWRM, Ecosystem Approach to Fisheries, etc.) is created by 2017
>
> **Outcome 2.3.2**: Appropriate and specific management strategies emphasizing ecosystem based conservation approaches (ie Ridge to Reef, IWRM, Ecosystem Approach to Fisheries, etc.) are developed for at least 50% of high priority species by January 2018

3.3 Strategic Area 3: Biosecurity/Invasive Species and Bio-safety

The policy directives for Strategic Area 3 are aimed at improving biosecurity in support of the Cartagena Protocol, improving public outreach and coordination of biosecurity activities, and mitigating the impacts of invasive alien species already present in Palau. Invasive species are particularly threatening to biodiversity in SIDS. Isolated island ecosystems are prone to invasion by alien species due to a lack of natural competitors and predators that would otherwise control the population of the invasive species.[14] Due to the relatively small geographic areas of SIDS, invasive species can rapidly colonize and displace or cause the extinction of native species.

[14] http://www.cbd.int/island/invasive.shtml

Improving biosecurity will address underlying causes of biodiversity loss, reduce direct pressures on biodiversity, and safeguard ecosystems, actions which support the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets, particularly their Strategic Goals A, B and C.

Conservation of biodiversity will be achieved through development of frameworks to manage existing IAS, prevent introduction of new IAS, and manage living modified organisms; improvement of management capacity; development and implementation of a National Invasive Species Strategic Action Plan; and by working to improve compliance with biosecurity policies across all sectors.

Goals, Impact Indicators, Objectives and Outcomes:

Goal 3: Protect Palau's biological diversity from negative impacts of invasive species and Living Modified Organisms (LMOs) through prevention, mitigation, and management

Impact Indicators:

- Number of target invasive species determined to be eradicated, controlled or otherwise effectively managed
- Number of government agencies that have adopted mechanisms to prevent introduction or release of alien species or LMOs

Objective 3.1: Provide a framework and capacity for ongoing prevention and management of invasive species

> **Outcome 3.1.1**: A framework and capacity development strategy for the management and prevention of colonization by invasive species is developed by January 2017

Objective 3.2: Palau's National Invasive Species Strategic Action Plan (NISSAP) is effectively resourced and implemented so that the introduction and establishment of invasive species is prevented and the impacts of existing invasive species in Palau is reduced.

> **Outcome 3.2.1**: Resources to support Palau's National Invasive Species Strategic Action Plan (NISSAP) are secured by January 2018
>
> **Outcome 3.2.2**: NISSAP is implemented by January 2019
>
> **Outcome 3.2.3**: Mechanisms to prevent introduction and establishment of new invasive species are established by January 2019
>
> **Outcome 3.2.4**: Impacts of existing invasive species are reduced by 2020

Objective 3.3: Establish a national framework to manage LMO's in accordance with the Cartagena Protocol

> **Outcome 3.3.1**: A national framework to manage LMO's in accordance with the Cartagena Protocol is established by January 2019

Objective 3.4: All sectors of Palauan society will support and comply with the appropriate management of invasive species and LMO's

Outcome 3.4.1: Cross-sectoral support of and compliance with the appropriate management of invasive species is improved by 2020

3.4 Strategic Area 4: Integrating Biodiversity and Ecosystem Services Into Development Policies

Strategic Area 4 policy directives are primarily directed at addressing the Nagoya Protocol on Access and Benefit-sharing, and toward supporting Strategic Goals A and D of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets. Improving access to the benefits of conservation and sustainable use of biodiversity can improve support of conservation initiatives by demonstrating concrete economic and cultural benefits of protecting biodiversity.

Directives will support biodiversity conservation through creation of a national access and benefits sharing framework; development and use of management effectiveness tracking tools; review and update of relevant policies in order to address gaps and incorporate consideration of biodiversity into ecosystem function into national development objectives.

Goals, Impact Indicators, Objectives and Outcomes:

Goal 4: Integrate biodiversity conservation and ecosystem services into Palau's sustainable development goals

Impact Indicators:

- Palau's sustainable development goals are reviewed and updated to address conservation of biodiversity and protection/restoration of ecosystem services
- The percentage of Palau's sustainable development goals that address conservation of biodiversity and/or protection/restoration of ecosystem services increases compared to current (baseline) goals
- Economic incentives for conserving and restoring biodiversity and ecosystem services increase compared to current (baseline) conditions (such as increased fines for undersized or out of season catch or hunting)

Objective 4.1: Develop, adopt, and implement a national access and benefits sharing framework for biological resource research and use

Outcome 4.1.1: A national access and benefits sharing framework for biological resource research and use is developed, adopted, and implemented by January 2018

Objective 4.2: Improve decision-making related to ecosystem management through the systematic use of environmental assessment tools and other scientific processes

Outcome 4.2.1: Environmental assessment tools and other scientific information resources are made available to decision-makers by 2017

Outcome 4.2.2: Systematic procedures to provide decision-makers with access to environmental assessment tools and scientific information in the decision-making process are established by 2017

Objective 4.3: Address the gaps in policies, laws and regulations to integrate biodiversity and ecosystem services into Palau's development objectives

> **Outcome 4.3.1**: New and existing biodiversity policies, laws and regulations aligned to reduce management gaps by January 2017
>
> **Outcome 4.3.2**: Palau's development objectives updated to include conservation and sustainable use of biodiversity and ecosystem services by January 2018

3.5 Strategic Area 5: Reducing Direct Pressures on Biodiversity Through Sustainable Use

Policy directives in Strategic Area 5 are aimed at developing guidelines and establishing standards for sustainable practices for important business and food production activities in Palau. Promoting best practices that improve the sustainability of livelihoods empowers communities and individuals to take action in support of the conservation and sustainable use of biodiversity. Supporting sustainable business practices improves the long-term profitability of business, allowing for the sharing of benefits across generations. This Strategic Area supports Strategic Goals A, B and D of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets.

Sustainable use of biodiversity will be achieved by establishing industry-specific guidelines for best sustainability practices, with particular attention paid to the tourism industry, cultivated biological resources (aquaculture, agriculture, agroforestry), and wild-caught biological resources (fisheries, gleaning, hunting, harvesting, marketing).

Goals, Impact Indicators, Objectives and Outcomes:

Goal 5: Establish an enabling framework to support sustainable biodiversity use and biodiversity based livelihoods

Impact Indicators:

- Number of tourism-based businesses (tour operators, hotels, etc.) regularly using best practices or otherwise determined to be meeting guidelines for sustainable tourism
- Number (and land/sea area, where appropriate) of commercial aquaculture, agriculture and forestry operations regularly using best practices or otherwise determined to be meeting sustainability guidelines
- Number of hunters, harvesters, marketers or similar livelihood workers using best practices or otherwise determined to be meeting sustainability guidelines for the use of terrestrial wildlife and plants

Objective 5.1: Establish guidelines and standards to ensure sustainable tourism actions at the national and state levels.

> **Outcome 5.1.1**: Guidelines and standards for sustainable tourism actions are established at national and state levels by January 2017

Objective 5.2: Establish guidelines and standards to ensure sustainable aquaculture, agriculture and forestry development and management

Outcome 5.2.1: Guidelines and standards for sustainable development and management of aquaculture, agriculture and forestry are established by January 2017

Objective 5.3: Establish sustainable management frameworks for fisheries at the local and national levels

Outcome 5.3.1: Sustainable fisheries management frameworks are established at local and national levels by January 2017

Objective 5.4: Establish guidelines for the sustainable utilization of terrestrial wildlife and plants (hunting, harvesting, marketing, etc.)

Outcome 5.4.1: Guidelines for the sustainable utilization of terrestrial wildlife and plants (hunting, harvesting, marketing, etc.) are established by January 2017

3.6 Strategic Area 6: Ensuring Food Security Through Maintenance of Agricultural Biodiversity

Policy directives for Strategic Area 6 are aimed at identifying and preserving locally important agricultural species and varietals. Traditional agricultural practices often included planting a variety of plants in the same plot, while modern imported practices favor monocultures, in which a single variety of a species is planted in a plot. Monocultures are particularly susceptible to environmental disturbances. Maintaining varied agricultural plant lines improves food security by preserving varieties that may be more resistant to drought, disease, pests, flooding or other factors that can result in crop failures. Protecting agricultural biodiversity reduces direct pressure on biodiversity, promotes sustainable use, protects genetic diversity and enhances benefit sharing, which supports Strategic Goals A, B, C and D of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets.

Policy directives will be achieved through creation of a comprehensive inventory of agricultural plants, including varietals within species; evaluation of the conservation status of agricultural species and varietals; and development of a sustainable management and conservation strategy for agro-biodiversity.

Goals, Impact Indicators, Objectives and Outcomes:

Goal 6: To conserve and sustainably manage Palau's agro-biodiversity for the benefit of present and future generations

Impact Indicators:

- Number of agricultural species preserved through seed banks, test plots, or other measures
- Traditional agricultural practices recorded and preserved, and number of training events conducted to promote sharing of traditional knowledge, technology and practices

Objective 6.1: Develop a comprehensive inventory of Palau's agro-biodiversity to identify and prioritize species and varietal importance and status

Outcome 6.1.1: A comprehensive inventory of Palau's agro-biodiversity, including species and varietal conservation status and conservation priority is developed by January 2017

Objective 6.2: Sustainably manage and conserve Palau's agro-biodiversity

Outcome 6.2.1: A sustainable management and conservation strategy and plan for agro-biodiversity is developed and implemented by January 2018

3.7 Strategic Area 7: Mainstreaming Conservation

Policy directives for Strategic Area 7 are aimed at bringing awareness of biodiversity conservation and sustainable use of natural resources into the mainstream of all sectors. Loss of biodiversity is a complicated and multi-faceted issue with root causes that cut across sectors, with similarly broad implications for long-term ecological sustainability. Instituting measures for effective conservation and sustainable use of biodiversity will similarly require broad engagement and support from individuals, communities, businesses, government agencies and other institutions from all sectors. Directives for this strategic area also target capacity development to enable better management of natural resources, such as improving monitoring, evaluation and reporting of conservation actions undertaken by government agencies. Building capacity in administrative areas is key to being able to effectively assess the outcomes of conservation actions, and to identify ways to improve upon existing processes. Better administration promotes more effective policy implementation and management, as well as increasing accountability for meeting commitments. Policy directives in this Strategic Area support Strategic Goals A and E of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets.

These directives will be achieved through promoting public awareness and engagement in environmental decision making; improving biodiversity education in Palau's schools; promoting industry cooperatives and civic associations to enable communities to better participate in conservation initiatives; building institutional capacity to monitor and assess progress toward achieving conservation goals; and enabling better information exchange, locally, regionally, and globally.

Goals, Impact Indicators, Objectives and Outcomes:

Goal 7: Biodiversity conservation and sustainable resource use is integrated into all aspects of government and community planning, development and operations

Impact Indicators:

- Percentage of new local, state and national strategic plans that include components addressing biodiversity conservation and/or sustainable resource use/sustainable development
- Improved public awareness of biodiversity conservation and sustainable use issues compared to current (baseline) conditions

Objective 7.1: Increase biodiversity awareness and public participation in the environmental decision making process

> **Outcome 7.1.1**: Public awareness of biodiversity issues is increased by 30% from baseline by 2018
>
> **Outcome 7.1.2**: Public participation in environmental decision making process is increased by 20% from baseline by 2020
>
> **Outcome 7.1.3**: By 2018, create a national biodiversity/NBSAP website including a mechanism such as a Biodiversity Clearinghouse for sharing reports and other relevant biodiversity information between implementing partners, stakeholders, and the public

Objective 7.2: Successfully integrate biodiversity education into curriculum at all levels through the Ministry of Education

> **Outcome 7.2.1**: Biodiversity education is integrated into all levels of school curriculum by the start of the 2017-2018 school year

Objective 7.3: Strengthen conservation capacity of residents and communities in Palau

> **Outcome 7.3.1**: Sustainable industry cooperatives/associations for individuals and businesses engaged in use of biological resources are established by 2017.

Objective 7.4: Strengthen conservation capacity of government and civil society organizations in Palau

> **Outcome 7.4.1**: On an annual basis, at least 75% of government agencies and civil society organizations involved in conservation work complete organizational capacity reviews, including evaluation of progress in meeting strategic objectives, human resources, capacity for data collection, storage, and review, program monitoring, evaluation, and reporting, regulatory compliance and enforcement (including mandate relevant permit systems), financial sustainability, and review of agency mandate vs. actual agency scope of function
>
> **Outcome 7.4.2**: Strategic actions to improve agency capacity are designed and implemented on an ongoing basis beginning within one year of completion of first annual self-evaluation by at least 75% of organizations that completed evaluations
>
> **Outcome 7.4.3**: By 2017, natural resource management and conservation stakeholder agencies function as central sources for information and advisory services to support sustainable development, management, and conservation of Palau's natural resources and biodiversity.

Objective 7.5: Strengthen local capacity to participate effectively in regional and international conventions and organizations that relate to biodiversity conservation

> **Outcome 7.5.1**: A strategy for promoting improved monitoring of biological resources and cooperative research between agencies within Palau and universities or other research institutions abroad is developed and implemented by 2017

4.0 Legal Implications

The revised NBSAP was designed to incorporate and build upon existing government agency strategic plans, in alignment with other relevant conservation policy initiatives and grant projects. This approach was taken in order to bring agency level policy statements together to create a national level document illustrating the overall biodiversity management strategy in a way that shows the links between agency mandates, international commitments and national development goals. One benefit of incorporating elements of existing agency strategies and conservation initiatives into the plan is that many of the NBSAP directives are in alignment with existing laws. The majority of directives fall within the scope of existing agency mandates, which should facilitate policy implementation.

Objective 4.3 calls for a review of conservation laws, regulations and policies to identify gaps affecting biodiversity management. The review will likely identify additional laws that need to be amended, as well as gaps that will need to be addressed by creating new laws. While it should be possible to achieve the majority of directives within the existing legal system, several directives are likely to require legal changes in order to be successfully implemented.

Objective 1.3 calls for the creation and implementation of a National PAN Management Strategy and Action Plan (NPMSAP). The NPMSAP will require legal approval to come into effect, and may require amendment of the PAN Act itself. Objective 1.4 calls for expansion of the PAN into states that do not currently have PAN member sites. This will require legal recognition at the state level of any new protected areas, and of the PAN member status granted to these sites.

Goal 3 will require amendment of existing laws and creation of new laws to improve biosecurity. Objective 3.2 in particular calls for the creation of a NISSAP, which will require legal approval to come into effect, and may require amendment of existing laws relating to biosecurity. Depending on the contents of the NISSAP, it may be necessary to take legal action to clarify the mandates of agencies involved in implementation of biosecurity policies.

Other aspects of the NBSAP may require additional legal clarification. While laws governing many aspects of natural resource management exist in Palau, as a young country it lacks a long history of legal precedent to clarify potentially contentious elements of these laws. It may be necessary to draft new laws to address some of these issues rather than waiting for cases to set precedents through the judicial system. The national consultation meetings conducted during development of this NBSAP revealed several issues for which it was unclear which agency would ultimately be responsible. In particular, participants were left with uncertainty regarding which agency or agencies might be responsible for developing and implementing species-specific management plans for high priority species.

5.0 Implementation

OERC is the agency responsible for coordinating and overseeing the implementation of the revised NBSAP. Since the policy was designed to incorporate elements of agency strategic plans and conservation initiatives within the policy directives, much of the responsibility for direct

implementation of the NBSAP will fall to the implementing agencies themselves. The NBSAP directives include reporting requirements that are intended to improve management capacity as well as increase accountability for policy implementation. Building the capacity of organizations across all sectors to effectively monitor, evaluate and produce periodic progress reports is an important step in improving natural resource management throughout Palau.

The anticipated Creation of a Bureau of Environment may represent a significant step in improving oversight of and accountability for implementing natural resource management strategies. While OERC has oversight responsibility, the agency has limited capacity to effectively oversee all of the aspects of its own portfolio of responsibilities, much less clear authority to direct policy changes or initiate reforms in other agencies. The NBSAP Steering Committee could share some of the responsibility for overseeing policy implementation and to temporarily address oversight capacity issues. The committee could also aid in the transition of oversight responsibility from OERC upon creation of a Bureau of Environment. A Bureau of Environment with a clear mandate, authority to oversee implementation of environmental policies, and capacity to coordinate subordinate agencies within the national government hierarchy would allow for better coordination and accountability in policy implementation.

Improving the implementation and accountability structure of the NBSAP should be a focus of capacity development initiatives. In order to provide more effective oversight and coordination of the implementation process into the future, the executing agency will need stronger legal and regulatory authority to work with and guide implementing partners. Key areas for capacity development of the executing agency include, among others:

- Establish a clear organizational structure for NBSAP implementation, including roles and responsibilities for individuals/implementing partners;
- Designate a national budget item for NBSAP implementation;
- Draft regulatory framework including necessary provisions for enabling implementation of the NBSAP, including legal authority for executing agency to oversee implementation;
- Address key human and financial resource shortages to provide adequate qualified staff necessary for the executing to provide effective implementation oversight;
- Improve data collection, monitoring, analysis and reporting of biodiversity issues; and
- Establish a national biodiversity/NBSAP website, including a mechanism for sharing knowledge between implementing partners, other relevant organizations, the private sector and the public, such as a Biodiversity Clearinghouse.

6.0 Financing

A major obstacle to implementing the first NBSAP was the lack of dedicated financial resources to pay for implementation. While similar funding constraints continue to persist, the approach taken in this NBSAP is intended to overcome the lack of dedicated funding for its implementation. The NBSAP identifies national priorities for improving biodiversity conservation, but by incorporating existing government agency strategic plans and other relevant conservation policy initiatives and grant projects into the NBSAP, implementation is

decentralized. Aligning NBSAP directives to support agency mandates facilitates funding implementation in two primary ways:

1. Since the NBSAP is aligned with agency strategic plans, a portion of the budget for each stakeholder agency is essentially applied to implementing the NBSAP. Progress toward achieving strategic plan goals aligned with the NBSAP effectively functions as in-kind support.
2. As a national policy document, the NBSAP directives provide clear policy statements that build upon the objectives expressed in individual agency strategic plans, while also supporting objectives of the CBD. As a result, the policy directives should be aligned with long-term government agency mandates while also providing useful guidance for developing future conservation projects to align more closely with the CBD. By incorporating international biodiversity management objectives, the NBSAP directives can be used to support applications for grants or other external funding sources.

While the NBSAP would benefit from a dedicated sustainable financing scheme in support of its implementation, it is not within current capacity to create such a fund. Implementation of policy directives will be funded through agency budgets, grant projects such as the upcoming GEF-5 project ***"Advancing sustainable resource management to improve livelihoods and protect biodiversity in Palau"***, and through other funding mechanisms, such as the PAN Fund or the Micronesia Challenge Trust Fund.

Financial capacity development should be a major focus of capacity development actions taken as part of NBSAP implementation. Implementing partners should seek to improve their individual financial sustainability while also working with the executing agency to improve dedicated support for the NBSAP. Among other things, capacity development should target:

- Establishing ongoing NBSAP implementation as a part of the national budget;
- Creating a budget for the NBSAP as a guidance tool, whether or not implementation is incorporated into the national budget, including projected costs of implementing activities, responsible agencies, expected agency contributions, and the sources and amounts of direct funding;
- Development of a sustainable financing plan for NBSAP implementation.

7.0 Monitoring

OERC is responsible for overseeing implementation of the revised NBSAP. The national government will also periodically review the mandate and terms of reference of the OERC, and make adjustments as needed to enable the agency to more effectively achieve its mandate. OERC will regularly review the policy and monitor implementation of policy activities throughout the life of the revised NBSAP. Should a Bureau of Environment be created, it will take over OERC's role in overseeing and implementing the NBSAP.

OERC will submit yearly reports to the Office of the President through the Ministry of Natural Resources, Environment and Tourism (MNRET) detailing the measures that have been undertaken to implement the NBSAP.

Beginning no later than the fifth year of implementation of the revised NBSAP, OERC will conduct a national, public review of this document. Through the review process, OERC will evaluate the effectiveness of implementation, including success in achieving the goals and objectives of the NBSAP, and update the Policy to reflect the findings of the review and to incorporate any new best practices. The report of this review will be presented to the Office of the President through MNRET within one year of completion of the review.

Annexes

Annex A: Stakeholders

Stakeholder Agencies			
#	Agency	Description	Role
1	Palau Conservation Society	Conservation non-government organization	Implementation, Community specialists, conservation technical assistance
2	The Nature Conservancy	International conservation NGO – Palau field office	Advisory, Conservation technical assistance
3	Palau International Coral Reef Center	Research Institution	Implementation, Technical assistance for coral reef conservation/management
4	Natural Resources Conservation Ser vice	United States federal agency-locally based.	Advisory, Conservation Technical Assistance
6	Belau National Museum	Semi Gov't agency	Implementation, Repository for terrestrial biodiversity (herbarium and collections)
7	Palau Environmental Quality Protection Board	Environmental regulatory agency	Implementation, Technical assistance for water quality and other regulatory controls
8	Ministry of Natural Resources, Environment and Tourism	Gov't agency	Implementation, all sectors (Forestry, Agriculture, and Marine Resources)
9	Palau Council of Chiefs	Civil Society Organization	Advisory, Facilitate community support and engagement of project
10	Palau Chamber of Commerce	Civil Society Organization	Advisory, Facilitate private sector support and engagement
11	Palau Visitors Authority	Gov't agency	Advisory, Facilitate private sector support and engagement
12	Belau Tourism Association	Membership organization	Advisory, Facilitate private sector support and engagement
13	Palau Water & Sewer Corporation	Gov't agency	Advisory, Technical assistance for water use issues
14	Palau National Communications Corporation	Semi-government agency	Advisory, Technical support for project coordination
15	Belau Watershed Alliance	Membership organization	Implementation, Facilitate state support and engagement

16	Male & Female community based groups	Civil society organization	Advisory, Facilitate community support and engagement
17	The Environment, Inc. / Island-SEAS	Local consultants	Implementation, Technical advisors
18	Palau Protected Area Office and PAN Board, Committees	Gov't office	Implementation, Technical support for PAN related activities
19	Office of the Palau Automated Land and Resources Information Systems	Gov't agency	Implementation, Provide planning and GIS support for project
20	Bureau of Land and Survey	Gov't agency	Advisory, Technical support for land resources issues.
21	Oceania Television/Roll E'm Productions	Media company	Implementation, Outlet for communication and outreach for project
22	Coral Reef Research Foundation	Non profit organization /research organization	Advisory, Provide conservation/technical assistance
23	Palau Public Lands Authority (PPLA)	Government agency	Advisory, technical assistance
24	State Governments	Political jurisdiction	Advisory, Owners, users, managers, stewards

Annex B: Abbreviations

CBD:	United Nations Convention on Biological Diversity
COP:	Conference of the Parties
EEZ:	Exclusive economic zone
ENSO:	El Niño Southern Oscillation
IAS:	Invasive Alien Species
LMOs:	Living Modified Organisms
MNRET:	Ministry of Natural Resources, Environment and Tourism
NBSAP:	National Biodiversity Strategy and Action Plan
NISSAP:	National Invasive Species Strategy and Action Plan
NPMSAP:	National PAN Management Strategy and Action Plan
OEK:	Olbiil Era Kelulau
OERC:	Office of Environmental Response and Coordination
PAN:	Protected Areas Network
SIDS:	Small island developing states

The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2020

Action Plan

Activities and indicators for achieving the goals, objectives and outcomes of The Republic of Palau Revised National Biodiversity Strategy and Action Plan.

Prepared by: Palau Conservation Society

Annex C: The NBSAP Action Plan

1.0 Introduction

The following Action Plan is designed to facilitate implementation of The Republic of Palau Revised National Biodiversity Strategy and Action Plan 2015-2020 (NBSAP). Policy actions are grouped by the Strategic Area they are intended to support. For each Strategic Area, a set of Goals, Impact Indicators, Objectives and expected Outcomes are defined. The Action Plan table includes columns that specify:

- The expected Outcomes for each Strategic Area;
- Recommended Activities for achieving the Outcomes;
- Implementation Indicators to show completion of Activities; and
- Responsible Agencies for designing, implementing, monitoring and reporting on the Activities, Indicators, and Outcomes.

The proposed activities are not meant to be prescriptive or exclusive. Rather, they are illustrative of the kinds of core activities that would need to be undertaken, as appropriate, in order to achieve the desired results by 2020. The Action Plan is meant to complement other relevant initiatives and plans, including the Micronesia Challenge. When more than one agency is listed in the Responsible Agencies column, the first agency listed is considered the lead implementing partner for the relevant activity.

1.1 Strategic Area 1: Protected/Managed Areas

Goals, Impact Indicators, Objectives and Outcomes:

Goal 1: By 2020, the Palau Protected Areas Network is adequately funded, effectively managed and includes representative areas of all ecosystems and habitats in Palau

Impact Indicators:

- Percentage of PAN sites that meet or exceed funding goals
- Total land and sea area of PAN sites that achieve satisfactory or better management assessment scores
- Total land and sea area of PAN sites, including number and type of ecosystems/habitats represented in each site

Objective 1.1: Identify through scientific and traditional knowledge all areas that should be protected and managed to satisfy biodiversity conservation and resource management objectives

> **Outcome 1.1.1**: Guided by a combination of scientific and traditional knowledge, a comprehensive inventory of candidate areas in need of protection will be developed by January 2017
>
> **Outcome 1.1.2**: At least 75% of PAN sites are managed in accordance with state (when available) or national biodiversity conservation and resource management policies and

plans by January 2018 (new protected areas expected to meet this objective within one year of formal recognition)

Objective 1.2: Develop and implement appropriate resource and socio-economic monitoring and evaluation protocols for protected areas.

Outcome 1.2.1: Socio-economic, natural resource and other key data needed to improve protected area management decision making process are identified by January 2017

Outcome 1.2.2: Socio-economic, natural resource, and other key data monitoring, evaluation and reporting protocols for protected areas are established by January 2018

Objective 1.3: Develop and implement National PAN Management Strategy and Action Plan

Outcome 1.3.1: A comprehensive National PAN Management Strategy and Action Plan that integrates and complements elements of the National Sustainable Land Management Policy is developed by January 2017

Outcome 1.3.2: National PAN Management Strategy and Action Plan is implemented by January 2018

Objective 1.4: Target three remaining states without PAN sites to nominate candidate PAN sites so that all 16 states are represented in PAN

Outcome 1.4.1: All 16 states are engaged in PAN by June 2019

Objective 1.5: Develop and implement capacity building program for PAN management support for improving coordination at site, state and national levels

Outcome 1.5.1: PAN management coordination and capacity development program is developed and implemented by January 2017

Objective 1.6: Develop and implement outreach activities for PAN, and develop mechanisms to allow for citizen input into PAN management activities and decision making (citizen science measures). States and local communities are measurably more aware and involved in PAN and are active in management and monitoring processes

Outcome 1.6.1: A communication strategy for building awareness and promoting engagement in PAN is developed by January 2017 and implemented by 2018

Outcome 1.6.2: Develop strategy to engage communities in management and monitoring of PAN (drawing upon data collected in Activity 7.1.1a), including methods to track community participation

Objective 1.7: Review, plan, program and monitor PAN sustainable financing. PAN sustainable Financing needs reviewed, planned and programmed and monitored in implementation

Outcome 1.7.1: By 2017, PAN sustainable financing plan is reviewed and updated, including expected distribution of funds to support PAN programs

Outcome 1.7.2: A monitoring program for the PAN sustainable financing plan is designed and incorporated into the sustainable financing plan by January 2017

Outcome 1.7.3: The monitoring and reporting program for the PAN sustainable financing plan is implemented by January 2018

Outcome 1.7.4: By 2019, an assessment report evaluating the updated PAN Sustainable Financing Plan is created

Objective 1.8: Palau closer to meeting Micronesia Challenge 2020 target goal (20% terrestrial and 30% marine effectively managed PA's)

Outcome 1.8.1: Micronesia Challenge goals (20% of terrestrial area and 30% of marine area are part of effectively managed PA's) are achieved by 2020

Strategic Area 1: Protected/Managed Areas			
Goal 1: By 2020, the Palau Protected Areas Network is adequately funded, effectively managed and includes representative areas of all ecosystems and habitats in Palau			
Objective 1.1: Identify through scientific and traditional knowledge all areas that should be protected and managed to satisfy biodiversity conservation and resource management objectives			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.1.1: Guided by a combination of scientific and traditional knowledge, a comprehensive inventory of candidate areas in need of protection will be developed by January 2017	1.1.1a: Develop standardized PAN criteria and ranking system for determining appropriate protection status of nominated areas, taking into consideration cultural importance, scientific value, needs of species present, ecosystem representativeness, value of ecosystem functions provided, and regulatory and management capacity of the site among other characteristics of the area	Standardized criteria and scoring rubric created	PAN
	1.1.1b: Work with state resource managers to develop and implement standard nomination procedures to identify candidate protected areas	Standardized nomination processes established	PAN
	1.1.1c: Evaluate nominated sites using standardized criteria and ranking system	Completed nominations evaluated	PAN

	1.1.1d: Compile inventory of candidate areas including priority rankings based on evaluations from Activity 1.1.1c	Inventory completed	PAN
1.1.2: At least 75% of PAN sites are managed in accordance with state (when available) or national biodiversity conservation and resource management policies and plans by January 2018 (new protected areas expected to meet this objective within one year of formal recognition)	1.1.2a: Site management strategy and action plans reflective of state and national environmental policies will be developed for each protected area	At least 75% of PAN sites have developed a management strategy and action plan	PAN
	1.1.2b: Site management strategy and action plans developed in Activity 1.1.2a are implemented	At least 75% of PAN sites have implemented a management strategy and action plan	PAN
	1.1.2c: Existing protected area management strategy and action plans will be reviewed and aligned as necessary to reflect state and national environmental policies	Existing strategy and action plans reviewed	PAN
Objective 1.2: Develop and implement appropriate resource and socio-economic monitoring and evaluation protocols for protected areas.			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.2.1: Socio-economic, natural resource and other key data needed to improve protected area management decision making process are identified by January 2017	1.2.1a: Identify socio-economic, natural resource, and other data needs required to improve management of protected areas	Data needs identified	PAN
1.2.2: Socio-economic, natural resource, and other key data monitoring, evaluation and reporting protocols for protected areas are established by January 2018	1.2.2a: Identify obstacles to data collection, evaluation and reporting	Obstacles to data collection, evaluation, and reporting identified	PAN
	1.2.2b: Included with the PAN National Strategy (Activity 1.3.1a), develop a	A monitoring strategy is developed and	PAN

	strategy and plan of implementation for data collection and ongoing monitoring of data needs identified in Activity 1.2.1a taking into consideration obstacles identified in Activity 1.2.2a	implemented	
	1.2.2c: Procedures created for evaluating data collected in Activity 1.2.2b, including identification of parties responsible for evaluation and reporting	Data evaluation procedures created	PAN
	1.2.2d: Establish procedures and timetable for periodic reporting of monitoring and evaluation results	Monitoring and reporting requirements developed	PAN
Objective 1.3: Develop and implement National PAN Management Strategy and Action Plan			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.3.1: A comprehensive National PAN Management Strategy and Action Plan that integrates and complements elements of the National Sustainable Land Management Policy is developed by January 2017	1.3.1a: Work with stakeholders to develop a National PAN Management Strategy and Action Plan that incorporates elements of the National SLM Policy	A National PAN Management Strategy and Action Plan is developed	PAN
1.3.2: National PAN Management Strategy and Action Plan is implemented by January 2018	1.3.2a: Implement National PAN Management Strategy and Action Plan	National PAN Management Strategy and Action Plan is incorporated into PAN site management plans	PAN
Objective 1.4: Target three remaining states without PAN sites to nominate candidate PAN sites so that all 16 states are represented in PAN			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.4.1: All 16 states are engaged in PAN by June 2019	1.4.1a: Using candidate protected area inventory	Highest priority	PAN

	from Activity 1.1.1d, identify top priority candidate protected areas in each state, and evaluate capacity for achieving protected area status (advantages, barriers, community support/partnerships, etc.)	candidate PA's for each state identified	
	1.4.1b: Prioritize recognition of candidate protected areas in states that do not currently have PAN sites	Formal recognition of PAN sites in states currently without PAN sites initiated by January 2019	PAN
	1.4.1c: Assist states not currently represented in PAN with nomination of possible sites if no candidate sites are identified in Activity 1.4.1a	At least one candidate PA nominated in states currently without PAN sites by January 2018	PAN
Objective 1.5: Develop and implement capacity building program for PAN management support for improving coordination at site, state and national levels			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.5.1: PAN management coordination and capacity development program is developed and implemented by January 2018	1.5.1a: As part of National PAN Strategy and Action Plan (Activity 1.3.1a), establish procedures for knowledge sharing and cooperation between PAN sites	A knowledge sharing and cooperation component is included in the National PAN Strategy and Action Plan	PAN
Objective 1.6: Develop and implement outreach activities for PAN, and develop mechanisms to allow for citizen input into PAN management activities and decision-making. States and local communities are measurably more aware and involved in PAN and are active in management and monitoring processes			
Outcomes	Activities	Implementation	Responsible

		Indicators	Agencies
1.6.1: A communication strategy for building awareness and promoting engagement in PAN is developed by January 2017 and implemented by 2018	1.6.1a: Develop a communication strategy	Communication strategy created	PAN
	1.6.1b: Implement communication strategy	Communication strategy implemented	PAN
1.6.2: Programs for promoting community participation in management and monitoring are designed and implemented by January 2018	1.6.2a: Develop strategy to engage communities in management and monitoring of PAN (drawing upon data collected in Activity 7.1.1a), including methods to track community participation	Community engagement strategy developed	PAN
	1.6.2b: Implement community engagement strategy	Community engagement strategy implemented	PAN
	1.6.2c: Use data collected from community engagement program to establish baseline participation, monitor ongoing engagement and evaluate effectiveness of strategy	Community participation baseline established	PAN
Objective 1.7: Review, plan, program and monitor PAN sustainable financing. PAN sustainable Financing needs reviewed, planned and programmed and monitored in implementation			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.7.1: By 2017, PAN sustainable financing plan is reviewed and updated, including expected distribution of funds to support PAN programs	1.7.1a: Commission a formal review of the PAN Sustainable Financing Plan and actual funding conditions including the Micronesia Challenge Fund to assess long term PAN funding viability, identify income generation streams and their sources, and expected funding requirements for PAN	A reviewed and updated version of the PAN sustainable financing plan is completed	PAN

	programs (baseline conditions)		
1.7.2: A monitoring program for the PAN sustainable financing plan is designed and incorporated into the sustainable financing plan by January 2017	1.7.2a: Using the results of Activity 1.7.1a, update the PAN Sustainable Financing Plan to improve funding sustainability and include a monitoring and reporting program for the PAN Sustainable Financing Plan	A monitoring and reporting program is incorporated into the PAN sustainable financing plan	PAN
1.7.3: The monitoring and reporting program for the PAN sustainable financing plan is implemented by January 2018	1.7.3a: Implement the updated PAN Sustainable Financing Plan, including the monitoring and reporting program	The monitoring and reporting program is implemented	PAN
1.7.4: By 2019, an assessment report evaluating the updated PAN Sustainable Financing Plan is created	1.7.4a: Using data from the monitoring and reporting program developed in Activity 1.7.2a, create an assessment report of the updated PAN Sustainable Financing Plan, including evaluation of fundraising and diversification of funding sources implemented as part of the plan	PAN Sustainable Financing Plan assessment report completed	PAN
Objective 1.8: Palau closer to meeting Micronesia Challenge 2020 target goal (20% terrestrial and 30% marine effectively managed PA's)			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
1.8.1: Micronesia Challenge goals (20% of terrestrial area and 30% of marine area are part of effectively managed PA's) are achieved by 2020	1.8.1a: Identify percentages of Palau's terrestrial area and marine area that are currently part of effectively managed protected areas	Analysis of land/sea area in protected areas completed	BLS, PALARIS, PAN
	1.8.1b: Using the inventory of candidate protected areas created in Activity 1.1.1d, and including areas identified in Activity 1.4.1b, prioritize recognition of a combination of candidate	Land/sea area within protected areas represents 20% and 30% of Palau's total	BLS, PALARIS, PAN

	PAN sites, or proposed expansion of existing PAN sites, to reach overall percentages of terrestrial and marine protected area, as well as achieve engagement of all 16 states in PAN	land/sea area, respectively	

1.2 Strategic Area 2: Species Protection

Goals, Impact Indicators, Objectives and Outcomes:

Goal 2: Maintain healthy populations of key species and their habitats

Impact Indicators:

- Populations of key biodiversity indicator species show stable or improving trends relative to current (baseline) conditions in existing ranges
- Ranges of key biodiversity indicator species remain stable or expand relative to current (baseline) conditions

Objective 2.1: Develop a comprehensive inventory of species to identify and prioritize their importance and status.

> **Outcome 2.1.1**: A comprehensive inventory of Palau's biodiversity including species conservation status and conservation priority is developed by January 2017

Objective 2.2: Assess conservation needs of high priority species (i.e. Corals, fish, edible macro invertebrates, bats, birds, plant species)

> **Outcome 2.2.1**: Status of high priority species (i.e. Corals, fish, edible macroinvertebrates, bats, birds, plants, etc.) and key habitats are assessed by January 2018

Objective 2.3: Develop appropriate and specific management strategies for high priority species

> **Outcome 2.3.1**: A national strategy and action plan for protecting and conserving vulnerable and endangered species emphasizing ecosystem based conservation approaches (i.e. Ridge to Reef, IWRM, Ecosystem Approach to Fisheries, etc.) is created by 2017
>
> **Outcome 2.3.2**: Appropriate and specific management strategies emphasizing ecosystem based conservation approaches (i.e. Ridge to Reef, IWRM, Ecosystem Approach to Fisheries, etc.) are developed for at least 50% of high priority species by January 2018

Annex C: The NBSAP Action Plan

Strategic Area 2: Species protection			
Goal 2: Maintain healthy populations of key species and their habitats			
Objective 2.1: Develop a comprehensive inventory of species to identify and prioritize their importance and status.			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
2.1.1: A comprehensive inventory of Palau's biodiversity including species conservation status and conservation priority is developed by January 2017	2.1.1a: Consult subject experts and local naturalists to compile a comprehensive inventory of Palau's terrestrial, aquatic and marine biodiversity	Inventory of Palau's biodiversity completed	BMR, BNM, PICRC, Fish and Wildlife, NRCS
	2.1.1b: Develop a standard rubric for evaluating conservation status and priority of biodiversity	Standardized rubric for determining species status created	BMR, BNM, PICRC, Fish and Wildlife, NRCS
	2.1.1c: Identify species and sub-species conservation status and conservation priority using rubric from Activity 2.1.1b (H/M/L/Insufficient Data)	Each species in inventory assigned a conservation priority (H/M/L)	BMR, BNM, PICRC, Fish and Wildlife, NRCS
Objective 2.2: Assess conservation needs of high priority species (ie. Corals, fish, edible macro invertebrates, bats, birds, plant species)			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
2.2.1: Status of high priority species (i.e. Corals, fish, edible macro invertebrates, bats, birds, plants, etc.) and key habitats are assessed by January 2018	2.2.1a: Using results from Activities 2.1.1a and 2.1.1c, evaluate conservation needs of high priority species and their habitats	Assessments of all high priority species from Activity 2.1.1c completed	MNRET, OERC, EQPB, BNM, PICRC, NRCS
Objective 2.3: Develop appropriate and specific management strategies for high priority species			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
2.3.1: A national strategy and action plan for protecting and conserving vulnerable and endangered species emphasizing ecosystem based conservation approaches (i.e.	Using results of Activity 2.2.1a, develop a national strategy and action plan for protecting and conserving vulnerable and endangered species	A national strategy and action plan is developed	MNRET, OERC, EQPB, BNM, PICRC, NRCS

Ridge to Reef, IWRM, Ecosystem Approach to Fisheries, etc.) is created by 2017			
2.3.2: Appropriate and specific management strategies emphasizing ecosystem based conservation approaches (i.e. Ridge to Reef, IWRM, Ecosystem Approach to Fisheries, etc.) are developed for at least 50% of high priority species by January 2018	2.3.2a: Using results from Activity 2.2.1a, develop targeted sustainable management and conservation strategies and action plans for managing high priority species that leverage existing ecosystem based management practices	Management strategies and action plans developed for at least 50% of high priority species	MNRET, OERC, EQPB, BNM, PICRC, NRCS

1.3 Strategic Area 3: Biosecurity/Invasive Species and Bio-safety

Goals, Impact Indicators, Objectives and Outcomes:

Goal 3: Protect Palau's biological diversity from negative impacts of invasive species and Living Modified Organisms (LMOs) through prevention, mitigation, and management

Impact Indicators:

- Number of target invasive species determined to be eradicated, controlled or otherwise effectively managed
- Number of government agencies that have adopted mechanisms to prevent introduction or release of alien species or LMOs

Objective 3.1: Provide a framework and capacity for ongoing prevention and management of invasive species

> **Outcome 3.1.1**: A framework and capacity development strategy for the management and prevention of colonization by invasive species is developed by January 2017

Objective 3.2: Palau's National Invasive Species Strategic Action Plan (NISSAP) is effectively resourced and implemented so that the introduction and establishment of invasive species is prevented and the impacts of existing invasive species in Palau is reduced.

> **Outcome 3.2.1**: Resources to support Palau's National Invasive Species Strategic Action Plan (NISSAP) are secured by January 2018
>
> **Outcome 3.2.2**: NISSAP is implemented by January 2019
>
> **Outcome 3.2.3**: Mechanisms to prevent introduction and establishment of new invasive species are established by January 2018
>
> **Outcome 3.2.4**: Impacts of existing invasive species are reduced by 2020

Objective 3.3: Establish a national framework to manage LMO's in accordance with the Cartagena Protocol

Outcome 3.3.1: A national framework to manage LMO's in accordance with the Cartagena Protocol is established by January 2018

Objective 3.4: All sectors of Palauan society will support and comply with the appropriate management of invasive species and LMO's

Outcome 3.4.1: Cross-sectoral support of and compliance with the appropriate management of invasive species is improved by 2020

Strategic Area 3: Biosecurity/Invasive Species and Bio-safety			
Goal 3: Protect Palau's biological diversity from negative impacts of invasive species and Living Modified Organisms (LMOs) through prevention, mitigation, and management			
Objective 3.1: Provide a framework and capacity for ongoing prevention and management of invasive species			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
3.1.1: A framework and capacity development strategy for the management and prevention of colonization by invasive species is developed by January 2017	3.1.1a: Develop a National Biosecurity Plan and Strategy for managing existing invasive alien species, including Living Modified Organisms (LMO), and preventing the introduction and successful colonization of new invasive species	Framework strategy is created	NISC
	3.1.1b: Identify capacity development needs for improving biosecurity and management of invasive species	An inventory of capacity development needs is created	NISC
	3.1.1c: Develop a strategy for addressing capacity development needs (to be included in framework strategy from Activity 3.1.1a)	Capacity development strategy is included in strategic framework	NISC
Objective 3.2: Palau's National Invasive Species Strategic Action Plan (NISSAP) is effectively resourced and implemented so that the introduction and establishment of invasive species is prevented and the impacts of existing invasive species in Palau is reduced.			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
3.2.1: Resources to support Palau's National Invasive Species Strategic Action Plan	3.2.1a: In conjunction with Activities 3.1.1b and 3.1.1c, develop a strategy for	A sustainable financing strategy for	NISC, MNRET, OERC, EQPB

(NISSAP) are secured by January 2018	sustainably financing the NISSAP	NISSAP is created	
	3.2.1b: Implement the NISSAP sustainable financing strategy	The sustainable financing strategy is implemented	NISC, MNRET, OERC, EQPB
3.2.2: NISSAP is implemented by January 2019	3.2.2a: Implement the NISSAP	The NISSAP is implemented	NISC, MNRET, OERC, EQPB
3.2.3: Mechanisms to prevent introduction and establishment of new invasive species are established by January 2018	3.2.3a: Prioritize implementation of biosecurity elements of NISSAP, including movement of species within Palau as well as international exchanges	Biosecurity components of NISSAP are in effect	NISC, MNRET, OERC, EQPB
3.2.4: Impacts of existing invasive species are reduced by 2020	3.2.4a: Initiate components of NISSAP that target current high priority invasive species	NISSAP components addressing existing invasive species are implemented	NISC, MNRET, OERC, EQPB
	3.2.4b: Develop and implement an invasive species monitoring, evaluation and reporting strategy (this may be a component of Activity 3.1.1a)	A monitoring, evaluation and reporting strategy is developed and implemented	NISC, MNRET, OERC, EQPB
	3.2.4c: Using data from Activity 3.2.4b, identify baseline conditions and set targets for invasive species reduction	Baseline conditions and targets are established	NISC, MNRET, OERC, EQPB
Objective 3.3: Establish a national framework to manage LMO's in accordance with the Cartagena Protocol			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
3.3.1: A national framework to manage LMO's in accordance with the Cartagena Protocol is established by January 2018	3.3.1a: Address LMO's in framework strategy and capacity development considerations in Activities	LMO's are included in framework strategy	NISC

	3.1.1a, 3.1.1b, and 3.1.1c	developed in Activity 3.1.1a	
Objective 3.4: All sectors of Palauan society will support and comply with the appropriate management of invasive species and LMO's			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
3.4.1: Cross-sectoral support of and compliance with the appropriate management of invasive species is improved by 2020	3.4.1a: Develop a communication strategy (may be a component of Activity 1.6.1a) to raise awareness of invasive species and LMO's and the potential threats to the environment, economy and human wellbeing	Invasive species and LMO's are included in communication strategy	NISC, MNRET, OERC, EQPB
	3.4.1b: Track awareness and support for control of invasive species and LMO's as part of the surveys in Activities 7.1.1a and 7.1.1c	Questions regarding invasive species and LMO's are included in surveys	NISC, MNRET, OERC, EQPB
	3.4.1c: Incorporate monitoring, evaluation and reporting of cross-sectoral compliance with NISSAP in Activity 3.2.4c	Cross-sectoral compliance with NISSAP is monitored, evaluated and reported	NISC, MNRET, OERC, EQPB

1.4 Strategic Area 4: Integrating Biodiversity and Ecosystem Services Into Development Policies

Goals, Impact Indicators, Objectives and Outcomes:

Goal 4: Integrate biodiversity conservation and ecosystem services into Palau's sustainable development goals

Impact Indicators:

- Palau's sustainable development goals are reviewed and updated to address conservation of biodiversity and protection/restoration of ecosystem services
- The percentage of Palau's sustainable development goals that address conservation of biodiversity and/or protection/restoration of ecosystem services increases compared to current (baseline) goals

- Economic incentives for conserving and restoring biodiversity and ecosystem services increase compared to current (baseline) conditions (such as increased fines for undersized or out of season catch or hunting)

Objective 4.1: Develop, adopt, and implement a national access and benefits sharing framework for biological resource research and use

> **Outcome 4.1.1**: A national access and benefits sharing framework for biological resource research and use is developed, adopted, and implemented by January 2018

Objective 4.2: Improve decision-making related to ecosystem management through the systematic use of environmental assessment tools and other scientific processes

> **Outcome 4.2.1**: Environmental assessment tools and other scientific information resources are made available to decision-makers by 2017
>
> **Outcome 4.2.2**: Systematic procedures to provide decision-makers with access to environmental assessment tools and scientific information in the decision-making process are established by 2017

Objective 4.3: Address the gaps in policies, laws and regulations to integrate biodiversity and ecosystem services into Palau's development objectives

> **Outcome 4.3.1**: New and existing biodiversity policies, laws and regulations aligned to reduce management gaps by January 2017
>
> **Outcome 4.3.2**: Palau's development objectives updated to include conservation and sustainable use of biodiversity and ecosystem services by January 2018

Strategic Area 4: Integrating biodiversity and ecosystem services into development policies			
Goal 4: Integrate biodiversity conservation and ecosystem services into Palau's sustainable development goals			
Objective 4.1: Develop, adopt, and implement a national access and benefits sharing framework for biological resource research and use			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
4.1.1: A national access and benefits sharing framework for biological resource research and use is developed, adopted, and implemented by January 2018	4.1.1a: Create an inventory of known research, economic, cultural and other uses and associated benefits of terrestrial, marine and aquatic biological diversity in Palau	Inventory of uses and benefits of biological resources created	MNRET, OERC
	4.1.1b: Using inventory developed in Activity 4.1.1a, develop a framework strategy for improving sharing of	Framework strategy is created	MNRET, OERC

	benefits of use of biological resources in Palau		
	4.1.1c: Implement framework strategy for improving sharing of benefits from use of biological resources	Framework strategy is implemented	MNRET, OERC
Objective 4.2: Improve decision-making related to ecosystem management through the systematic use of environmental assessment tools and other scientific processes			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
4.2.1: Environmental assessment tools and other scientific information resources are made available to decision-makers by 2017	4.2.1a: As part of the communication strategy developed in Activity 1.6.1a, develop communication strategies targeted specifically at decision makers with a view to raising their awareness of issues and improving access to assessment tools and other information that can guide evidence-based decision making (coordinate with Activities 7.1.3)	The communication strategy includes components targeting decision-makers	MNRET, OERC, State and National Legislatures
4.2.2: Systematic procedures to provide decision-makers with access to environmental assessment tools and scientific information in the decision-making process are established by 2017	4.2.2a: State and national government agencies and non-government stakeholders will develop necessary internal procedures to compile documents, create executive summaries, prepare documents for electronic archival, and submit documents including descriptions of ongoing research, completed research results, technical reports, current agency conditions, and other documents detailing current natural resource	Procedures for reporting of current natural resource management conditions to the virtual library on at least an annual basis are established by government and other stakeholders	MNRET, OERC, State and National Legislatures

	management conditions in Palau to the virtual library at least once per year		
	4.2.2b: In conjunction with agency self-evaluations (Activity 7.4.1a), agencies will create advisory committees as needed to provide decision makers with leadership and guidance for assessment of issues and development of relevant policies related to agency mandates (for example, BMR's Palau Coastal Fisheries and Aquaculture Committee)	Advisory committees identified or created	MNRET, OERC, State and National Legislatures
Objective 4.3: Address the gaps in policies, laws and regulations to integrate biodiversity and ecosystem services into Palau's development objectives			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
4.3.1: New and existing biodiversity policies, laws and regulations aligned to reduce management gaps by January 2017	4.3.1a: Conduct a desktop review of national, state and local level natural resource management policies, laws and regulations to identify gaps and inconsistencies between management practices laid out in these documents	Gaps and inconsistencies in policies, laws and regulations identified	MNRET, OERC, State and National Legislatures
	4.3.1b: Work with appropriate policy makers to update and bring management strategies into alignment with higher level policy statements	Policies, laws and regulations updated and aligned	MNRET, OERC, State and National Legislatures
	4.3.1c: Work with key political entities to develop new legislation, regulations or other policy statements to address gaps in natural resource and biodiversity	Action taken to address at least 20% of gaps identified in Activity 4.3.1a	MNRET, OERC, State and National Legislatures

	management laws and policy		
	4.3.1d: The NBSAP Steering Committee will work with key organizations to target regulatory gaps to be addressed, creating a prioritized inventory of legislative objectives	A prioritized inventory of regulatory gaps is created	NBSAP Steering Committee, MNRET, OERC, PCS
	4.3.1e: Draft legislation to clarify agency mandates and adopt guidelines, frameworks, best practices, and other conservation and sustainable use policy statements into enforceable regulations targeting prioritized inventory created in Activity 4.3.1d	At least one piece of legislation addressing at least one priority conservation and sustainable use gap is drafted and introduced to relevant legislative body per year	NBSAP Steering Committee, MNRET, OERC, PCS
4.3.2: Palau's development objectives updated to include conservation and sustainable use of biodiversity and ecosystem services by January 2018	4.3.2a: Review current development objectives and identify natural resource management and biodiversity conservation gaps	Objectives reviewed; gaps in objectives identified	MNRET, OERC, State and National Legislatures
	4.3.2b: Work with decision-makers to update development objectives to include conservation and sustainable use of biodiversity and ecosystem services	Development objectives updated to include consideration of conservation and sustainable use of biodiversity and ecosystem services	MNRET, OERC, State and National Legislatures

1.5 Strategic Area 5: Reducing Direct Pressures on Biodiversity Through Sustainable Use

Goals, Impact Indicators, Objectives and Outcomes:

Goal 5: Establish an enabling framework to support sustainable biodiversity use and biodiversity based livelihoods

Impact Indicators:

- Number of tourism-based businesses (tour operators, hotels, etc.) regularly using best practices or otherwise determined to be meeting guidelines for sustainable tourism
- Number (and land/sea area, where appropriate) of commercial aquaculture, agriculture and forestry operations regularly using best practices or otherwise determined to be meeting sustainability guidelines
- Number of hunters, harvesters, marketers or similar livelihood workers using best practices or otherwise determined to be meeting sustainability guidelines for the use of terrestrial wildlife and plants

Objective 5.1: Establish guidelines and standards to ensure sustainable tourism actions at the national and state levels.

> **Outcome 5.1.1**: Guidelines and standards for sustainable tourism actions are established at national and state levels by January 2017

Objective 5.2: Establish guidelines and standards to ensure sustainable aquaculture, agriculture and forestry development and management

> **Outcome 5.2.1**: Guidelines and standards for sustainable development and management of aquaculture, agriculture and forestry are established by January 2017

Objective 5.3: Establish sustainable management frameworks for fisheries at the local and national levels

> **Outcome 5.3.1**: Sustainable fisheries management frameworks are established at local and national levels by January 2017

Objective 5.4: Establish guidelines for the sustainable utilization of terrestrial wildlife and plants (hunting, harvesting, marketing, etc.)

> **Outcome 5.4.1**: Guidelines for the sustainable utilization of terrestrial wildlife and plants (hunting, harvesting, marketing, etc.) are established by January 2017

Annex C: The NBSAP Action Plan

Strategic Area 5: Reducing direct pressures on biodiversity through sustainable use			
Goal 5: Establish an enabling framework to support sustainable biodiversity use and biodiversity based livelihoods			
Objective 5.1: Establish guidelines and standards to ensure sustainable tourism actions at the national and state levels.			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
5.1.1: Guidelines and standards for sustainable tourism actions are established at national and state levels by January 2017	5.1.1a: Develop guidelines for sustainable development and management of tourism	Guidelines are created	MNRET, BOT, OERC, BTA, Palau Chamber of Commerce
	5.1.1b: Establish best management guidelines for sustainable development and management of tourism to be used in related industries	Guidelines are incorporated into at least 50% of state and national land use management plans or other relevant management plans written after completion of the guidelines	MNRET, BOT, OERC, BTA, Palau Chamber of Commerce
	5.1.1c: Provide guidelines to state and national planning committees	State and national planners receive copies of guidelines	MNRET, BOT, OERC, BTA, Palau Chamber of Commerce
Objective 5.2: Establish guidelines and standards to ensure sustainable aquaculture, agriculture and forestry development and management			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
5.2.1: Guidelines and standards for sustainable development and management of aquaculture, agriculture and forestry are established by January 2017	5.2.1a: Develop guidelines for sustainable development and management of aquaculture, agriculture and forestry	Guidelines are created	MNRET, BMR, PICRC, Bureau of Ag, NRCS, Fish and Wildlife,
	5.2.1b: Establish guidelines for sustainable development and	Guidelines are incorporated into at least	MNRET, BMR, PICRC, Bureau of Ag, NRCS, Fish

	management of aquaculture, agriculture and forestry as best management practices to be used in these industries	50% of state and national land use management plans or other relevant management plans written after completion of the guidelines	and Wildlife,
	5.2.1c: Provide guidelines to state and national planning committees	State and national planners receive copies of guidelines	MNRET, BMR, PICRC, Bureau of Ag, NRCS, Fish and Wildlife,
Objective 5.3: Establish sustainable management frameworks for fisheries at the local and national levels			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
5.3.1: Sustainable fisheries management frameworks are established at local and national levels by January 2017	5.3.1a: Develop a framework for sustainable management of fisheries including components that address community, state and national level issues	Framework is created	MNRET, BMR, PICRC, Fish and Wildlife
	5.3.1b: Establish the framework for sustainable management of fisheries as best management practices to be used in the fishing industry	Framework is incorporated into at least 50% of local, state, and national marine resource management plans or other relevant management plans written after completion of the framework	MNRET, BMR, PICRC, Fish and Wildlife
	5.3.1c: Provide the	State and	MNRET, BMR,

	framework to state and national planning committees	national planners receive copies of the framework	PICRC, Fish and Wildlife
Objective 5.4: Establish guidelines for the sustainable utilization of terrestrial wildlife and plants (hunting, harvesting, marketing, etc.)			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
5.4.1: Guidelines for the sustainable utilization of terrestrial wildlife and plants (hunting, harvesting, marketing, etc.) are established by January 2017	5.4.1a: Develop guidelines for sustainable utilization of terrestrial wildlife and plants	Guidelines are created	MNRET, NRCS, Bureau of Ag
	5.4.1b: Establish guidelines for sustainable utilization of terrestrial wildlife and plants as best management practices to be used in related industries	Guidelines are incorporated into at least 50% of state and national land use management plans or other relevant management plans written after completion of the guidelines	MNRET, NRCS, Bureau of Ag
	5.4.1c: Provide guidelines to state and national planning committees	State and national planners receive copies of guidelines	MNRET, NRCS, Bureau of Ag

1.6 Strategic Area 6: Ensuring Food Security Through Maintenance of Agricultural Biodiversity

Goals, Impact Indicators, Objectives and Outcomes:

Goal 6: To conserve and sustainably manage Palau's agro-biodiversity for the benefit of present and future generations

Impact Indicators:

- Number of agricultural species preserved through seed banks, test plots, or other measures
- Traditional agricultural practices recorded and preserved, and number of training events conducted to promote sharing of traditional knowledge, technology and practices

Annex C: The NBSAP Action Plan

Objective 6.1: Develop a comprehensive inventory of Palau's agro-biodiversity to identify and prioritize species and varietal importance and status

> **Outcome 6.1.1**: A comprehensive inventory of Palau's agro-biodiversity, including species and varietal conservation status and conservation priority is developed by January 2017

Objective 6.2: Sustainably manage and conserve Palau's agro-biodiversity

> **Outcome 6.2.1**: A sustainable management and conservation strategy and plan for agro-biodiversity is developed and implemented by January 2018

Strategic Area 6: Ensuring food security through maintenance of Agricultural Biodiversity			
Goal 6: To conserve and sustainably manage Palau's agro-biodiversity for the benefit of present and future generations			
Objective 6.1: Develop a comprehensive inventory of Palau's agro-biodiversity to identify and prioritize species and varietal importance and status			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
6.1.1: A comprehensive inventory of Palau's agrobiodiversity (AgBD), including species and varietal conservation status and conservation priority is developed by January 2017	6.1.1a: Consult subject experts and local farmers to compile a comprehensive inventory of Palau's AgBD	Inventory of Palau's AgBD completed	Bureau of Ag, BNM, PCCCRE, NRCS
	6.1.1b: Develop a standard rubric for evaluating conservation status and priority of AgBD	Standardized rubric for determining species status created	Bureau of Ag, BNM, PCCCRE, NRCS
	6.1.1c: Prioritize species and varietal conservation status and conservation priority (H/M/L)	Each species and varietal in inventory assigned a conservation priority (H/M/L)	Bureau of Ag, BNM, PCCCRE, NRCS
Objective 6.2: Sustainably manage and conserve Palau's agro-biodiversity			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
6.2.1: A sustainable management and conservation strategy and plan for AgBD is developed and implemented by January 2018	6.2.1a: Develop a sustainable management and conservation strategy and action plan for AgBD	Sustainable management and conservation strategy and action plan for AgBD created	Bureau of Ag, BNM, PCCCRE, NRCS

	6.2.1b: Implement sustainable management and conservation strategy and action plan for AgBD	Sustainable management and conservation strategy and action plan for AgBD implemented	Bureau of Ag, BNM, PCCCRE, NRCS

1.7 Strategic Area 7: Mainstreaming Conservation

Goals, Impact Indicators, Objectives and Outcomes:

Goal 7: Biodiversity conservation and sustainable resource use is integrated into all aspects of government and community planning, development and operations

Impact Indicators:

- Percentage of new local, state and national strategic plans that include components addressing biodiversity conservation and/or sustainable resource use/sustainable development
- Improved public awareness of biodiversity conservation and sustainable use issues compared to current (baseline) conditions

Objective 7.1: Increase biodiversity awareness and public participation in the environmental decision making process

> **Outcome 7.1.1**: Public awareness of biodiversity issues is increased by 30% from baseline by 2018
>
> **Outcome 7.1.2**: Public participation in environmental decision making process is increased by 20% from baseline by 2020
>
> **Outcome 7.1.3**: By 2018, create a national biodiversity/NBSAP website including a mechanism such as a Biodiversity Clearinghouse for sharing reports and other relevant biodiversity information between implementing partners, stakeholders, and the public

Objective 7.2: Successfully integrate biodiversity education into curriculum at all levels through the Ministry of Education

> **Outcome 7.2.1**: Biodiversity education is integrated into all levels of school curriculum by the start of the 2017-2018 school year

Objective 7.3: Strengthen conservation capacity of residents and communities in Palau

> **Outcome 7.3.1**: Sustainable industry cooperatives/associations for individuals and businesses engaged in use of biological resources are established by 2017.

Objective 7.4: Strengthen conservation capacity of government and civil society organizations in Palau

Outcome 7.4.1: On an annual basis, at least 75% of government agencies and civil society organizations involved in conservation work complete organizational capacity reviews, including evaluation of progress in meeting strategic objectives, human resources, capacity for data collection, storage, and review, program monitoring, evaluation, and reporting, regulatory compliance and enforcement (including mandate relevant permit systems), financial sustainability, and review of agency mandate vs. actual agency scope of function

Outcome 7.4.2: Strategic actions to improve agency capacity are designed and implemented on an ongoing basis beginning within one year of completion of first annual self-evaluation by at least 75% of organizations that completed evaluations

Outcome 7.4.3: By 2017, natural resource management and conservation stakeholder agencies function as central sources for information and advisory services to support sustainable development, management, and conservation of Palau's natural resources and biodiversity.

Objective 7.5: Strengthen local capacity to participate effectively in regional and international conventions and organizations that relate to biodiversity conservation

Outcome 7.5.1: A strategy for promoting improved monitoring of biological resources and cooperative research between agencies within Palau and universities or other research institutions abroad is developed and implemented by 2017

Strategic Area 7: Mainstreaming conservation			
Goal 7: Biodiversity conservation and sustainable resource use is integrated into all aspects of government and community planning, development and operations			
Objective 7.1: Increase biodiversity awareness and public participation in the environmental decision making process			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
7.1.1: Public awareness of biodiversity issues is increased by 30% from baseline by 2018	7.1.1a: Conduct a statistically significant survey of residents of Palau to identify baseline awareness of biodiversity issues by January 2017	Baseline survey completed	MNRET, OERC, OPS
	7.1.1b: Using survey data, identify issues to be targeted in the communications campaign to raise awareness of critical biodiversity issues, the value and importance of PAN and improving SLM in Palau, including	Communication strategy created	MNRET, OERC, OPS

	individual and community level actions that can be taken to improve biodiversity, support PAN and implement SLM, including the potential for crowdsourcing aspects of monitoring (in conjunction with Activity 1.6.1a)		
	7.1.1c: Conduct periodic surveys of residents of Palau to track changes in awareness of biodiversity issues	Additional surveys completed	MNRET, OERC, OPS
7.1.2: Public participation in environmental decision making process is increased by 20% from baseline by 2020	7.1.2a: Either through survey data (Activity 7.1.1a), analysis of public participation in past environmental ballot issues and public meetings, or other mechanisms identified by the NBSAP Steering Committee, establish baseline for public participation in environmental decision making process	Baseline public participation identified	MNRET, OERC, OPS
	7.1.2b: In connection to the survey in Activity 7.1.1a, identify barriers and disincentives to public participation in environmental management decision making processes, as well as environmental issues of particular public concern	Barriers and disincentives to participation identified; Baseline public interest in environmental issues identified	MNRET, OERC, OPS
	7.1.2c: Develop and implement a strategy for empowering members of the public to participate in environmental management decision making (more voter	Strategy to promote public participation created	MNRET, OERC, OPS

	referendums, town hall meetings with legislators, etc.)		
	7.1.2d: Using the same method used to determine baseline public participation in environmental decision making as in Activity 7.1.2a, analyze changes in public participation the decision making process	Public participation in decision making is monitored	MNRET, OERC, OPS
7.1.3: By 2018, create a national biodiversity/NBSAP website including a mechanism such as a Biodiversity Clearinghouse for sharing reports and other relevant biodiversity information between implementing partners, stakeholders, and the public	7.1.3a: Identify a mechanism for sharing reports and other biodiversity information electronically 7.1.3b: Create a national biodiversity/NBSAP website 7.1.3c: Establish responsibility and schedule for updating website/electronic knowledge sharing mechanism	Website created, percent of agencies uploading information, number of visitors accessing site, number of report downloads, improved public awareness of biodiversity issues	OERC, All agencies for creating and uploading reports and other relevant content
Objective 7.2: Successfully integrate biodiversity education into curriculum at all levels through the Ministry of Education			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
7.2.1: Biodiversity education is integrated into all levels of school curriculum by the start of the 2017-2018 school year	7.2.1a: Using survey results from Activity 7.1.1a, develop curriculum standards, benchmarks and objectives that address key issues of biodiversity in Palau and that support better science education in general	New curriculum standards, benchmarks and objectives created	MOE, OERC
	7.2.1b: Incorporate new	New	MOE

	standards, benchmarks and objectives into national curriculum	standards, benchmarks and objectives integrated into national curriculum	
	7.2.1b: Develop standard biodiversity-related educational materials for each grade level	Biodiversity-related materials developed to meet new standards, benchmarks and objectives for each grade level	MOE
	7.2.1c: Make biodiversity education support materials available to schools and teachers	Support materials are provided to all public schools (and interested private schools)	MOE
	7.2.1d: Develop workshops and participate in the annual MOE convention to provide teachers with training necessary to effectively implement biodiversity education in the classroom and make effective use of biodiversity education support materials	Training workshops conducted and made available to all public school teachers in Palau	MOE
Objective 7.3: Strengthen conservation capacity of residents and communities in Palau			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
7.3.1: Sustainable industry cooperatives/associations for individuals and businesses engaged in use of biological resources are established by	7.3.1a: Establish sustainable cooperatives/associations for relevant tourism-related businesses to encourage stakeholder input and	National and/or state level industry cooperatives/associations are	MNRET, OERC

2017.	participation in the sustainable development and co-management of tourism activities in Palau	created	
	7.3.1b: Establish sustainable cooperatives/associations for farmers, foresters, and other users of cultivated terrestrial biological resources to encourage stakeholder input and participation in the sustainable development and co-management of agriculture, forestry, and other terrestrial biological resources in Palau	National and/or state level industry cooperatives/associations are created	MNRET, OERC
	7.3.1c: Establish sustainable cooperatives/associations for fishers to encourage stakeholder input and participation in the sustainable development and co-management of coastal fisheries and aquaculture in Palau	National and/or state level industry cooperatives/associations are created	MNRET, OERC
	7.3.1d: Establish sustainable cooperatives/associations for hunters, marketers, and other groups that benefit from the harvesting of wild biological resources to encourage stakeholder input and participation in the sustainable development and co-management of terrestrial biological resources in Palau	National and/or state level industry cooperatives/associations are created	MNRET, OERC
Objective 7.4: Strengthen conservation capacity of government and civil society organizations in Palau			
Outcomes	Activities	Implementation Indicators	Responsible Agencies

7.4.1: On an annual basis, at least 75% of government agencies and civil society organizations involved in conservation work complete organizational capacity reviews, including evaluation of progress in meeting strategic objectives, human resources, capacity for data collection, storage, and review, program monitoring, evaluation, and reporting, regulatory compliance and enforcement (including mandate relevant permit systems), financial sustainability, and review of agency mandate vs. actual agency scope of function	7.4.1a: Perform and report on agency self-evaluation of capacity to: meet strategic objectives, maintain necessary human resources, collect, store, and review data, perform ongoing monitoring and evaluation of programs, issue and enforce permits, report on agency outputs, determine compliance and enforce regulations, maintain sustainable financing, and meet agency mandates (including determination of whether agency mandate is sufficient to achieve agency objectives)	At least 75% of government and civil society organizations engaged in conservation work produce annual reports evaluating organizational performance and capacity	All government and civil agencies engaged in conservation work
	7.4.1b: Submit reports to agency directors as well as to lead agency organizing conservation and sustainable use activities in Palau (NBSAP Steering Committee to identify lead agency--MNRET, OERC, hypothetical Bureau of Environment)	Agency internal evaluations submitted on a yearly basis	All government and civil agencies engaged in conservation work
7.4.2: Strategic actions to improve agency capacity are designed and implemented on an ongoing basis beginning within one year of completion of first annual self-evaluation (Activity 7.4.1a) by at least 75% of organizations that completed evaluations	7.4.2a: Agencies will develop strategic plans to improve organizational capacity needs identified in Activity 7.4.1a	At least 75% of agencies with self-evaluations complete strategic plans to improve capacity	All government and civil agencies engaged in conservation work
	7.4.2b: Agencies will implement strategic plans to improve organizational capacity needs that were developed in Activity 7.4.2a	Capacity development strategic plans created in Activity 7.4.2a are	All government and civil agencies engaged in conservation work

		implemented	
7.4.3: By 2017, natural resource management and conservation stakeholder agencies function as central sources for information and advisory services to support sustainable development, management, and conservation of Palau's natural resources and biodiversity.	7.4.3a: In the initial agency self-evaluation (Activity 7.4.1a), agencies will evaluate capacity to establish and maintain an efficient and professional information and data management function, including data collection, analysis and reporting on natural resource and biodiversity management issues relevant to agency mandates	Annual reports evaluate data management capacity	All government and civil agencies engaged in conservation work
	7.4.3b: As part of the strategic plan developed in Activity 7.4.2a, agencies will work to build necessary capacity to establish and maintain an efficient and professional information and data management function, including data collection, analysis and reporting on natural resource and biodiversity management issues relevant to agency mandates	Agency strategic plans address data management	All government and civil agencies engaged in conservation work
	7.4.3c: Agencies will produce and disseminate educational and outreach materials to build public awareness and capacity to engage in conservation program, in support of Activity 1.6.1a	Educational and outreach materials created	All government and civil agencies engaged in conservation work
Objective 7.5: Strengthen local capacity to participate effectively in regional and international conventions and organizations that relate to biodiversity conservation			
Outcomes	Activities	Implementation Indicators	Responsible Agencies
7.5.1: A strategy for promoting	7.5.2a: Develop a strategy	Strategy	MNRET, OERC

improved monitoring of biological resources and cooperative research between agencies within Palau and universities or other research institutions abroad is developed and implemented by 2017	for improving monitoring of biological resources through cooperative research between Palauan agencies as well as with research institutes abroad	developed	

The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2020

Biodiversity Indicators

Using biological indicators to monitor and evaluate the status and trends of the biodiversity conservation and sustainable use in Palau.

Prepared by: Palau Conservation Society

Annex D: Biodiversity Indicators

I: Terrestrial Monitoring: Biodiversity Indicators, Monitoring and Technical Implementation

Biodiversity Indicators

Palau's forests and coastal wetlands (mangrove forests with associated sea grass meadows and tidal flats) provide valuable ecosystem services in terms of food security, conservation of threatened species and mitigation of the impacts of Climate Change. Occasional measurements of vegetation coverage and coastal water quality by local organizations provide sporadic broad-scale information on coastal wetlands, which is of limited use for systematic fine-scale monitoring of these ecosystems. Bird diversity is a reliable index of overall biodiversity and is routinely used as an indicator of ecosystem health in conservation programs around the world. Several activities included in the Revised NBSAP will work to improve monitoring capacity through the use of biodiversity indicators.

The NBSAP approach to monitoring biodiversity requires:

- Initial biodiversity surveys to establish baseline data;
- Periodic biodiversity monitoring to detect changes from the baseline data; and
- Sharing of results with stakeholders, managers and strategic planners.

Biodiversity surveys will take stock of the species richness of the various ecosystems and habitats found in Palau. The primary tool for conducting surveys will be species richness assessments, consisting of multiple visits to individual sites to sample the number of species. The cumulative number of species will be tabulated after each sample, with sampling continuing until a statistically precise estimate of species richness is achieved.

Baseline biodiversity surveys are normally conducted by experts in the field-identification of the group of species under surveillance. Local sources of expertise include the Belau National Museum, Coral Reef Research Foundation, Palau Department of Forestry and Palau International Coral Reef Center. These institutions collaborate with off-island experts in cases where expertise in a species group is not available locally. Non-governmental conservation organizations such as Belau Watershed Alliance, Palau Conservation Society and The Nature Conservancy play an important role in coordinating the planning and implementation of biodiversity surveys.

Biodiversity survey results provide a valuable resource for informing decision makers and stakeholders. Surveys enhance awareness of environmental conditions by providing insights for setting conservation priorities, informing strategic planning decisions, assessing taxonomic needs through the Global Taxonomy Initiative, assembling range maps and other databases for species of concern, contributing to the enforcement of environmental regulations, promoting in-depth studies of biodiversity and developing sustainable eco-tourism opportunities. Biodiversity surveys also generate valuable input for regional and global conservation initiatives conducted under the auspices of the Convention on Biological Diversity, Ramsar Convention on Wetlands, UNESCO World Heritage Centre and other international conservation organizations.

Annex D: Biodiversity Indicators

Identification of biodiversity indicators and the institution of ongoing biodiversity surveys will be used to improve conservation priority ranking of terrestrial and coastal wetland PAN sites. The terrestrial PAN site priority index will be based on objective criteria in key categories including:

- Biological diversity;
- Socioeconomic factors;
- Ridge to reef watershed management; and
- Site comparability.

Monitoring Biodiversity

Environmental conditions including biological components change over time. As a result, to ensure that maximum value is gained from identifying bioindicators and conducting biodiversity surveys, it is of key importance that NBSAP activities also establish regular biodiversity monitoring practices. Biodiversity monitoring is the ongoing sampling, on a regular basis, of one or more components of the biodiversity of a sample area. Effective monitoring will require development of standardized monitoring protocols, training of personnel to identify species and apply monitoring protocols, and establishment of regular site monitoring schedules. Biodiversity monitoring on a regular basis provides timely feedback on field conditions for informed decision-making by conservation managers and NBSAP strategic planners.

Revised NBSAP activities will expand and strengthen existing monitoring practices. MNRET has established protocols for monitoring terrestrial, coastal and marine biodiversity built around a menu of biomonitoring procedures for individual PAN sites. These biomonitoring procedures could be adapted for use in other managed areas as well. Implementation of periodic monitoring at PAN sites using the MNRET system will require inclusion of biomonitoring activities in site management plans and training of site personnel in the selection, application and oversight of protocols most appropriate for each site. PCS has an active program to facilitate the development of PAN site management plans that encourages the inclusion of appropriate biodiversity monitoring. BNM, with support from BWA, successfully conducted a pilot training course for monitoring forest sites. The pilot project produced a standardized curriculum and a suite of educational materials for training additional personnel. BNM also offers on-site field training for conservation officers.

Technical Implementation

BNM currently monitors bird diversity on a state and national level through the National Program for Monitoring Forest and Coastal Birds. The program encompasses statewide and nationwide surveys as well as monitoring of bird diversity, bird indicator species, migratory birds and endangered/threatened species. Museum scientists are also evaluating other species for potential as indicator species:

- Functional groups of leaf-litter ants and aquatic macroinvertebrates as forest and coastal wetland indicators;

- Sesarmid crabs as indicators of change in mangroves and coastal wetlands;
- Fruit bats as keystone species for monitoring forest ecosystems;
- Forest canopy trees, such as mangrove trees, as indicators of forest health;
- The Palau Fruit-Dove and Micronesian Imperial-Pigeon as primary indicator species for terrestrial forests; and
- Rufous Night-Herons as a primary indicator species for monitoring sea grass meadows and mangroves.

PCS coordinates two additional programs to monitor populations of species of concern: The endangered Palau Megapode and the Hawksbill Sea Turtle. These species share common nesting ground habitat along beach strands. Results from the megapode program led to creation of a Megapode Conservation Action Plan developed in collaboration with the IUCN Megapode Specialists Group. Full implementation of the monitoring of ants, aquatics, crabs, forest trees, bats and species of concern such as sea turtles and megapodes will eventually require an expanded national framework modeled on the National Program for Monitoring Forest and Coastal Birds.

The most basic form of biodiversity monitoring is to sample species richness in an area at regular intervals and then compare results with a database from a prior biodiversity baseline survey of the area. A common practice is to monitor an indicator species or suite of indicator species as a supplement or alternative to monitoring species richness. In many cases, monitoring indicator species provides comparable results yet requires less time and fewer resources. In terrestrial and coastal ecosystems, keystone species such as canopy trees, frugivores (fruit eating species such as doves, pigeons and fruit bats) and apex predators often make excellent indicator species.

The established coastal bird-monitoring stations operated by BNM for the National Program for Monitoring Forest and Coastal Birds provide the only fine-scale systematic monitoring of coastal wetlands in the region. NBSAP activities will expand the museum's program by validating supplementary wetland biological indicators and by training conservation officers in the use of these biological indicators for monitoring coastal wetlands. The increased capacity will facilitate the inclusion of these important coastal wetlands in the fine-scale monitoring strategies of the PAN and other local and regional programs.

Revised NBSAP activities will improve biomonitoring by merging the results of scientific field surveys of biodiversity with the results of crowdsourced citizen-scientist observations. The outcome will be an innovative fusion of traditional science and citizen-science for the ridge to reef monitoring of birds and other bioindicators of the health of island ecosystems. Two technical advancements in the process of full implementation will enable coordination of scientific field surveys with citizen-science observations:

- Citizen-scientist participation in the monitoring of bird diversity through eBird; and
- Creation of a locally-controlled Palau Bird Records Committee.

Annex D: Biodiversity Indicators

In partnership with the Koror State Rangers, BNM has launched a three-year initiative to generate participation in the crowd-sourcing of bird monitoring data on the eBird website, which hosts a global database of field observations contributed by citizen-scientists from around the world. The website is administered by the Department of Ornithology at Cornell University in partnership with BirdLife International. BNM will conduct training for local citizen-scientists and establish internet connectivity hubs to enable reporting of observations. PCS has also developed an interactive internet application, the iBird app, that can be used to aid in identification of the birds of Palau. Data collected from Palau and submitted to eBird is expected to:

- Draw international attention to Palau's biodiversity;
- Provide access to a global database that can inform the decisions of conservation managers and planners; and
- Reduce reliance on outside expertise for biodiversity monitoring.

A bird records committee is an official body responsible for authenticating records of bird sightings within the committee's review area. A committee is composed of an administrative section to process field observation reports, such as eBird submissions, and a panel of expert ornithologists to review and authenticate submissions. The committee produces an official, annotated, area-specific checklist of bird sightings that is updated periodically. Advances in internet connectivity in Palau have enabled BNM to assemble an international panel of local and off-island experts who will collaborate virtually to form a permanent Palau Bird Records Committee as a component of the museum's National Program for Monitoring Forest and Coastal Birds.

The committee will create and maintain a Checklist of the Birds of Palau. The checklist will be used as a resource for biomonitoring, implementing NBSAP strategies and promoting eco-tourism. Further, as a stopover in the East Asian-Australasian Flyway for migratory birds, Palau's improved monitoring capacity will support international monitoring of migratory bird species that visit Palau, including several threatened or endangered species. The Palau Bird Records Committee will be fully functional by January 2015 and the committee's findings will be shared by publication in the museum's annual *State of Palau's Birds* report and in *Western Birds*, the journal of the Western Field Ornithologists scientific society.

II: Marine Monitoring: Monitoring Protocols, Indicators and Technical Implementation

Monitoring Protocols[1]

Marine protected areas (MPAs) are an important tool for conserving coral reef and other marine resources in Palau as well as the rest of the world. As a key component of nutritional, cultural and economic stability throughout Palau, marine biodiversity and ecosystems generally

[1] For the full monitoring protocol see: PICRC. (2012). Protocol for Monitoring Marine Protected Areas: Protected Areas Network

have established histories of monitoring and management going back to traditional conservation practices such as *bul*. However, these practices have not necessarily been standardized or systematic.

The 2003 Protected Areas Network (PAN) Act created a national system of protected areas and established a framework to improve the financial and technical capacity of state governments necessary to effectively support and coordinate the management of protected areas. Further, in 2006, the 5 jurisdictions within the Micronesian region, including Palau, launched the Micronesia Challenge, a commitment to "effectively conserve 30% of near-shore marine and 20% of the forest resources across Micronesia by 2020." In 2012, with support from MNRET, PICRC completed an MPA monitoring protocol. The protocol includes monitoring methodologies and indicators, requirements for initial preparation of site surveys, and best practices for reporting results. The protocol was approved as the official protocol for coral reef monitoring of PAN sites by the Minister of MNRET in April 2012.

An essential component of resource management, monitoring provides science-based information to guide management decisions like prioritizing conservation strategies, allocating resources and determining whether or not management practices are meeting objectives. PAN MPAs are required to develop management plans that include monitoring and evaluation components. The MPA monitoring protocol is intended to provide technical guidance to state governments in developing site-based monitoring plans to complement new and existing management plans. The protocol serves to standardize monitoring across MPAs by providing guidance on monitoring objectives, sampling design, indicators, and methodology.

The monitoring protocol includes both ecological and socioeconomic components. While ecological monitoring provides information on resources, socioeconomic monitoring provides information on how people are affected by protected areas. Periodic ecological monitoring produces data used to determine the status of coral reef and other marine resources that can be used to evaluate the effectiveness of management measures. Socioeconomic monitoring provides information that can improve understanding of links between protected area management and impacts on the socio-cultural, economic and political well-being of individuals, households, communities, groups, and organizations associated with the protected areas. Monitoring data collected can be used to produce annual reports and annual action plans on a site-by-site basis. At larger scales, the data can be used to assess MPAs across the nation or the region.

Coral reef monitoring has two objectives:

- To assess how successful and efficient management strategies are in improving resource conditions; and
- To provide information to managers to help them promote adaptive management of MPAs.

Annex D: Biodiversity Indicators

Coral reef monitoring is also expected to answer questions relating to the condition of resources and the views and behavior of people using the resources. Questions include:

- Ecological and socioeconomic conditions of a designated monitoring site;
- Differences in ecological conditions inside and outside of an MPA as well as differences between MPAs;
- Ecological and socioeconomic characteristics of an MPA over time compared with conditions outside the MPA;
- The role of stakeholders in resource extraction and effective enforcement of an MPA; and
- The role of stakeholders in the management of MPAs and associated resources.

Indicators
The MPA monitoring protocol establishes an array of ecological and socioeconomic indicators, including monitoring procedures and evaluation criteria. Essentially, the indicators describe **what** is to be measured during site monitoring. Ecological indicators include:

a. Fish Size and Abundance: Target fish species are those that local people consume or that have economic and ecological importance.
b. Coral Cover: Photographs taken during surveys will be analyzed in the laboratory. Coral will be identified to the genus level.
c. Coral Recruitment: All recruits or young hard coral colonies ≤ 5cm in diameter will be identified and recorded.
d. Invertebrate Size and Abundance: Invertebrates will be identified, measured and recorded.
e. Sea Grass Survey: Each species present will be identified and their percent cover will be recorded.
f. Sedimentation Study: Sedimentation rate studies will be conducted on MPAs that are close to watershed drainage areas and are affected by land-use changes.
g. Visibility: Measurement of horizontal visibility near the seabed will be taken.
h. Temperature: Temperature data will be logged at each MPA.

Socioeconomic indicators are selected based on the assessment objectives and need to be identified by the assessment team. The selected indicators will provide the basis for choosing survey methods and the exact nature of targeted information will guide creation of survey questions. Socioeconomic indicators include:

a. Demographics;
b. Coastal and marine activities;
c. Threats and opportunities; and
d. Management practices.

Annex D: Biodiversity Indicators

Site managers may identify other indicators to measure depending on site-specific objectives. Such indicators may include salinity around river mouths, nutrient levels, coral predators such as Crown-of-Thorns starfish, and the level of compliance with laws and regulations. For MPAs that are established to support fishermen's income, catch or catch per unit of effort is another important indicator to measure. Collection of catch date is valuable for identifying socioeconomic benefits of MPAs. Demonstrating connections between MPAs and improved catches can be used to secure long-term support for MPAs from resource users.

Technical Implementation

The MPA monitoring protocol also specifies procedures for how monitoring is to be conducted, including timeframes for monitoring specific indicators. The technical implementation aspects of the protocol describe how the monitoring is to be conducted. Understanding the characteristics of target MPAs before making a monitoring plan is essential. Before monitoring begins, it is necessary to clearly define:

- Site location and area to be surveyed;
- Management objectives;
- Relevant managing bodies (including key sociocultural structures, jurisdictions, legislation, and types of management practices present);
- Types of resources and resource uses to be monitored; and
- Existing information on ecological and socioeconomic conditions, including cultural and traditional values.

Monitoring methods are linked with the indicators to be monitored. Ecological indicators and associated surveying methods are:

General Indicator	Measurable Indicator	Survey Method
Reef fish	• Species density • Species biomass	Underwater visual census by snorkel or SCUBA
Benthic community	• % Coral cover • % Benthic cover • Coral recruitment • Size of individual recruits	• Photo quadrat method by snorkel or SCUBA • Underwater visual census by SCUBA
Invertebrates (high value for commercial and subsistence)	• Species density • Size of individual invertebrate	Underwater visual census by snorkel or SCUBA
Sea grass community	Species cover	Quadrat method by snorkel or SCUBA

Annex D: Biodiversity Indicators

Sediment	Organic and inorganic sediment weight	Sediment traps
Visibility	Horizontal or vertical visibility in meters at seabed	Use of Secchi disc
Temperature	Water temperature	Data logger deployed at the site that records every 20 minutes

Methods for conducting a socioeconomic studies include:

- Review of secondary data: Analysis of documents, reports, or any collected information that can be helpful in identifying gaps in existing knowledge in preparation for the assessment.
- Key informant interviews: Conducting interviews of experienced or knowledgeable individuals who can provide information regarding larger populations.
- Focus group discussions: Semi-structured interviews of small groups of people that can produce qualitative data regarding topics of interest.
- Household surveys: Questionnaires with specific questions targeted at households that can produce mostly quantitative data.

Collection methods for socioeconomic monitoring data have greater variability for each indicator. The general guide for socioeconomic survey methods is:

General Indicators	Indicators	Suggested Methods
Demographics	Number of people in household	Household survey
	Number of visitors	Key informants
	Age	Household survey
	Marital status	Household survey
	Occupation	Household survey
	Sources of household income	Household survey
Coastal and Marine Activities	Number of males and females who fish or harvest	Household survey
	Types of important fish and invertebrates for household use, consumption, sale and cultural value	Household survey
	Average frequency of fishing and harvesting by household members	Household survey
Threats and Opportunities	Perceived conditions of marine resources	Household survey, Key informant interview

Annex D: Biodiversity Indicators

	Perceived threats to/Opportunities to improve MPA	Household survey, Key informant interview, Focus group discussion
	Perceived solutions to threats to MPA	Household survey, Key informant interview, Focus group discussion
Management Practices	Benefits of MPA to households and communities	Household survey, Key informant interview, Focus group discussion
	Number of MPA supporters	Household survey
	Awareness of rules and regulations	Household survey
	Management effectiveness	Household survey, Key informant interview, Focus group discussion
	Level of enforcement	Household survey, Key informant interview

The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2020

Technology Needs Assessment

How development and transfer of high-impact technologies can support implementation of the NBSAP and improve the conservation and sustainable use of biodiversity in Palau.

Prepared by: Palau Conservation Society

Annex E: Technology Needs Assessment

1.0 Introduction

Article 16 of the UN Convention on Biological Diversity (CBD) calls for Contracting Parties to the Convention to "facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment."[1] Access to technology and the transfer of technology between Contracting Parties are essential to achieving the goals of the CBD. The CBD includes the idea of technology transfer because international consensus holds that the development, transfer and adaptation of technologies and associated capacity building are critical aspects of achieving sustainable development.[2]

With regard to the CBD, the term "technology" refers to "hard" and "soft" technology, as well as the traditional technologies used by indigenous and local communities. Hard technologies consist of physical machines and other hardware like remote sensing equipment or fish ladders. Soft technology is generally technological information and know-how, such as methods for conducting integrated water resources management or sustainable forest management. Traditional technologies may fall into either the hard or soft technology categories.

This technology needs assessment is a critical component of ongoing efforts to guide implementation of The Republic of Palau's Revised National Biodiversity Strategy and Action Plan (NBSAP) in order to improve conservation and sustainable use of biodiversity in Palau. The assessment will help provide the NBSAP executing agency and implementing partners with a direction in which to focus resource allocation to build technical capacity in biodiversity management. It is intended to present a pathway to develop and utilize economically viable, innovative and scalable technologies to address technical challenges to effective biodiversity management.

This technology needs assessment identifies key technical and non-technical challenges to implementing and achieving the objectives of the NBSAP. The technical challenges fall into five technology areas: ecosystem technologies, biodiversity sound technologies, thematic work programs, ecosystem approach and cross-cutting technologies. This assessment proposes and discusses nine high-impact technology advancement needs as potential solutions to the key technical challenges. The technology needs identified in the assessment are primarily capacity development-related soft technologies. The non-technical challenges fall into five major themes: policy implementation, enforcement, externalities, money/funding, and data collection/knowledge sharing. While these challenges are critical to the success of the NBSAP and its objectives, this assessment does not address these non-technology-related issues.

2.0 Goals for the Management of Biodiversity

NBSAPs function to provide a framework for creating, coordinating and implementing national policies in support of the CBD. The provisions of the CBD are set out in 42 Articles. Article 1 identifies the three overall objectives of the Convention:

[1] http://www.cbd.int/convention/articles/default.shtml?a=cbd-16

[2] http://www.unep.org/delc/portals/119/TechnicalTransferCBD.pdf

- The conservation of biological diversity;
- The sustainable use of its components; and
- The fair and equitable sharing of benefits arising out of the utilization of genetic resources.[3]

The core policy statement of Palau's NBSAP incorporates the objectives of the CBD while also setting out the philosophical approach of the policy as a whole. The policy statement is:

> Biodiversity is a key component of the natural history, culture and economy of Palau. Loss of biodiversity threatens ecosystems and the services they provide, the underpinnings of Palauan culture, and the future food security and economic stability in Palau. The aim of the Revised NBSAP is to encourage, guide and coordinate an integrated national process that will engage stakeholders across sectors to achieve the holistic conservation and sustainable use of biodiversity while protecting and enhancing economic opportunity, sustainability of livelihoods, food security, culture and the environment for present and future generations.

The NBSAP provides further principles for guiding policy design and implementation strategies. These principles were considered when identifying technology needs for implementing the policy and achieving its objectives. The following principles should be used to guide the development and implementation of technological solutions to implementation challenges:

1. Taking action to conserve biodiversity is more cost effective than doing nothing and suffering the consequences of biodiversity loss;
2. Protecting biodiversity strengthens ecosystems, the economy and culture, ultimately improving resilience to the impacts of Climate Change;
3. Achieving effective conservation and sustainable use of biodiversity will require improving institutional, administrative and legislative capacity, including ensuring that sustainable financing schemes are in place to support ongoing initiatives;
4. Lost biodiversity is irreplaceable, and as such lack of complete scientific certainty and precision of data cannot be an excuse for failure to take action;
5. Public outreach is required in order to create a society that is informed of the risks of biodiversity loss, as well as the opportunities presented by improving the conservation and sustainable use of biodiversity;
6. Promoting sustainable use of biodiversity enables benefit sharing through improving food security, preserving livelihoods, improving land management, and supporting the long-term viability of cultural, economic, and other development endeavors;

[3] http://www.cbd.int/convention/articles/default.shtml?a=cbd-01

7. Approaches that favor ecosystem-based management support biodiversity conservation by protecting ecosystem functions and preserving high quality habitats that provide refuge for maintaining species populations;
8. Management of biodiversity will be most effective when policies are aligned across sectors and implementation is coordinated across agencies in order to maximize benefits and leverage successes;
9. Effective management of biodiversity will require better monitoring and information management which will include adopting new technologies and best practices;
10. The conservation and sustainable use of biodiversity must be mainstreamed into existing as well as new management strategies across all sectors in order to ensure that biodiversity is considered in relevant policy decisions.

Finally, the NBSAP is divided into seven strategic areas, each of which defines multiple management objectives and target outcomes. The strategic areas, along with a brief description, are:

1. **Protected/Managed Areas**—Strengthen the PAN to preserve habitat, protect ecosystem services, provide refuge for biodiversity, improve management and cross-sectoral coordination, increase resilience to impacts of Climate Change, and meet commitments to the Micronesia Challenge;
2. **Species Protection**—Improve knowledge of species present in Palau, including conservation status and survival needs, in order to strengthen decision-making and management;
3. **Biosecurity/Invasive Species and Bio-safety**—Create a National Invasive Species Strategic Action Plan in order to reduce impacts of alien species and promote compliance with biosecurity laws across all sectors;
4. **Integrating biodiversity and ecosystem services into development policies**—Improve awareness of biodiversity conservation and sustainability issues, including knowledge sharing with decision makers, in order to improve existing policies and develop new policies to address legal and regulatory gaps;
5. **Reducing direct pressures on biodiversity through sustainable use**—Improve livelihoods and economic opportunity through development and implementation of industry-specific best practices that support conservation and sustainable use of biodiversity;
6. **Ensuring food security through maintenance of agricultural biodiversity**—Improve knowledge of agricultural species and varietals present in Palau, and engage the agriculture industry to incorporate best practices that support food security through conservation and sustainable use of ecosystem services; and
7. **Mainstreaming conservation**—Expand public outreach and community engagement in conservation and sustainable use of biodiversity by improving science education, building natural resource management capacity across sectors, and promoting participation in regional and international knowledge sharing.

3.0 Key Challenges

As a signatory to the CBD, the national government of Palau recognizes the importance of promoting the conservation and sustainable use of biodiversity. However, an array of obstacles, both technical and non-technical, has prevented full implementation of the NBSAP.

Through consultations with implementing agencies, including development and review of draft logical frameworks for the NBSAP, several capacity improvement goals were consistently identified. Personnel from multiple agencies and across sectors stated that in order to achieve NBSAP objectives, it would be necessary to:

- Improve resource management planning;
- Improve coordination between agencies and across sectors;
- Strengthen results based management through improvement of data collection/monitoring; and
- Build public support by linking biodiversity conservation with economic sustainability, improved livelihoods, increased food security, and improved resilience to the effects of climate change.

3.1 Technical Challenges

The key technical challenges that currently inhibit effective implementation of the NBSAP can be grouped into the following five technology areas.

Ecosystem Technologies

Ecosystem technologies use soft technology such as technical processes and management practices as well as hard technology like equipment, machinery and building construction to improve management of ecosystems. Ecosystem technology practices are based on thorough understanding of ecosystem functions. These approaches are generally designed to simultaneously minimize the cost of management measures while also reducing harmful consequences to the environment resulting from development.

Most of Palau's states lack the technical and financial resources that would be required to address natural resource management issues using hard technology. For example, in areas experiencing rapid real estate development along with associated deforestation and road construction, erosion and sedimentation have become serious problems in streams and associated near shore areas. The process of erosion and sedimentation is well understood, as are the specific factors that increase erosion and sedimentation rates given the predominant climate and soil conditions in Palau. Management practices exist to prevent or reduce erosion and sedimentation using ecosystem knowledge and application of specific management planning. However, at present, there is a gap between knowledge of preventive management practices and the ability to apply soft technology solutions to development sites.

Biodiversity Sound Technologies

Biodiversity sound technologies are related to environmentally sound technologies, as defined in Agenda 21. Biodiversity sound technologies should serve to protect biodiversity, produce less

pollution, use biological resources in a more sustainable manner, recycle more components, produce less waste, or handle waste in a more acceptable manner than the technologies for which they substitute.

Unsustainable biodiversity management practices persist across sectors throughout Palau. Some practices persist in part because of deep historical and cultural roots, such as the illegal hunting of pigeons or poaching of sea turtle eggs. Often however, the driving force behind ongoing unsustainable practices is financial. For example, young men with few job prospects can make US$ 20-30 per bird by hunting and selling pigeons on the black market. Pigeon is considered a delicacy, and is a high value exchange item in traditional Palauan customs. Effective implementation of the NBSAP will require the design of planning models that link conservation of biodiversity with economic opportunity and poverty alleviation.

Thematic Work Programs

Thematic work programs include technologies that specialize in addressing issues affecting specific types of ecosystems. Each thematic work program establishes a vision for future work, defines guiding principles and key issues, identifies potential outputs and suggests timetables. Thematic programs often employ a mixture of biodiversity management technologies.

Traditional cultural practices and skills along with deep knowledge of the natural environment are being lost as older generations pass on. With approximately 70% of the population living in the two most developed states, few younger Palauans have the opportunity to acquire knowledge of traditional practices or have enough access to nature to develop practical understanding of the environment. While fishing and agriculture continue to be important livelihoods, practitioners typically employ new technologies and practices in unsustainable ways.

Palau has been inhabited for thousands of years, much of that time with virtually no outside trade or access to materials or technologies that could not be produced on island. For at least some of their history, the Palauans were able to use traditional practices to sustain a population at least three times as large as the population today without outstripping the carrying capacity of the environment. It is likely that there is still potential to adapt traditional cultural practices to support more effective natural resource management in Palau. However, greater efforts must be made to preserve traditional knowledge.

Ecosystem Approach

The ecosystem approach is a strategy for the integrated or holistic management of resources within a particular eco-region. In many cases, the ecosystem approach may combine modern scientific adaptive management practices with traditional approaches to resource management. The ecosystem approach often links ecosystem management practices with economic, social and cultural output. It is the fundamental paradigm for activities under the CBD.

Natural resource managers in Palau are increasingly shifting toward ecosystem approaches to

management. However, there is a shortage of technical capacity to collect and analyze data, as well as technical knowledge to allow managers to use data to shape effective ecosystem-scale management strategies. Ecosystem approaches depend on the technical capacity to collect information, provide meaningful analysis and apply that understanding to the development of innovative solutions. Current lack of capacity to evaluate the status of ecosystem fragments within the context of larger eco-region trends is a barrier to effective development and implementation of ecosystem-based and results-based management approaches. Identifying relationships between the ecological and economic effects of land use can significantly improve decision-making capacity and make the planning process more inclusive. It can also enable policy makers to demonstrate links between conservation actions and improvements in food security, economic opportunities and social conditions, which can improve public support for management actions.

Cross-Cutting Technologies

Cross-cutting technologies are of relevance for all thematic areas of the CBD as they tend to impact overarching management and planning processes. The overarching nature of cross-cutting technologies serves to bring cohesion to the work of the CBD and provide substantive links between the thematic programs.

Beyond the specific needs in ecosystem technologies, biodiversity sound technologies, thematic work programs and ecosystem approaches, several cross-cutting challenges currently affect implementation of the NBSAP.

- **Technologies for managing protected areas are generally inconsistent, not clearly defined, or absent.** Protected areas are required to have site management plans, but there are no clear guidelines for required content, data collection, data analysis, determining conservation priorities, or procedures for decision-making. A set of Palau-focused best management practices for protected areas has not been established. There is no systematic mechanism for identifying and establishing potential new protected areas, or for evaluating priority status between protected areas.
- **Technologies to regulate or control the risks associated with the introduction of alien species are limited.** There is currently no nation-wide strategy for dealing with invasive alien species or living modified organisms. Little technology is available to support border control agents in identifying or preventing alien species from entering Palau. Technical capacity to eliminate or control known, highly invasive species such as the macaque monkeys in Angaur is not available.
- **Technologies for monitoring biodiversity are limited.** Few organizations currently have technology to maintain regular monitoring and data collection of biodiversity. For management to be most effective, it needs to be results-based. Limited monitoring capacity is a barrier to implementing results-based management practices.

3.2 Non-Technical Challenges

The key non-technical challenges that currently inhibit effective implementation of the NBSAP can be grouped into the following five areas.

Policy Implementation
The first NBSAP was adopted in 2004 but the policy was never fully implemented. While Palau has successfully adopted a range of natural resource management policies, lack of financial resources has often been a barrier to successful policy implementation and capacity development.

Enforcement
Enforcement of environmental management policies and laws is difficult in Palau. Few states have the financial capacity to adequately police or prosecute violators, and because of close kinship ties and the small population, officers may be unwilling or socially unable to fully enforce laws. Lack of human resources can also contribute to failure to enforce policies if there are not enough qualified personnel to at an agency to perform oversight duties in a timely manner.

Externalities
Biodiversity conservation runs the risk of being perceived as an obstacle to maintaining livelihoods. A large proportion of Palauans still make their livings through fishing, hunting or otherwise harvesting biological resources. Increasing costs of fuel, food or other necessities can drive people to ignore harvesting bans or limits. Poor public understanding can contribute to failure to understand or appreciate the severity of the situation or the ultimate consequences of biodiversity loss.

Money/Funding
The benefits of biodiversity conservation are often difficult to predict, or may take years to become apparent. As a result it can be challenging to obtain funding for biodiversity conservation projects, particularly when faced with more immediate issues that require expenditure of resources.

Data Collection/Knowledge Sharing
Data collection throughout the country is often challenging, particularly on remote islands or in difficult to reach wilderness areas. In some instances when data has been collected, it has not been conserved properly, or quality may be dubious due to insufficient training of data collectors. Information has traditionally been considered a valuable trade item, and individuals are still sometimes reluctant to freely share knowledge. Communication between organizations is sometimes inconsistent, which also limits knowledge sharing.

4.0 Technology Advancement Needs
The technology needs identified in this assessment provide the groundwork for further technology mapping in support of the NBSAP. NBSAP implementation should work toward technological capacity development of the nine identified high-impact research areas. There are more technology needs than just those described below. The targeted needs are considered to have the greatest potential to improving NBSAP implementation and promote achievement of the biodiversity conservation and sustainable use goals. Many of the technology needs call

for the development of soft technologies, such as the development of resource management plans. The development of such technologies will be shaped by the specific management needs identified during the development process. As a result, some of the technology maps set less specific targets to allow for more flexible technology development.

Technology Area	Technology Targets
Ecosystem Technologies	• Environmental management plans
Biodiversity Sound Technologies	• Biodiversity technologies for poverty alleviation
Thematic Work Programs	• Preserving traditional technical and management practices
Ecosystem Approach	• Functional relationships and processes within ecosystems • Development of ecosystem-based management practices • Ensuring cross-sectoral cooperation
Cross-Cutting Technologies	• Technologies for protected areas • Technologies to regulate or control invasive alien species • Technologies for monitoring biodiversity

Annex E: Technology Needs Assessment

4.1 Technology Needs Maps

Ecosystem Technologies

Ecosystem Technologies: Environmental Management Plans	
From what? – Current State	**To what? – End State**
• Few states/agencies have the capacity to design and implement management plans without contracting off-island • Development of management plans requires additional funding/resources beyond state/agency payrolls • Local managers have a better understanding of environmental and socioeconomic conditions in Palau; locally developed plans more likely to address key issues effectively	• Palau has on-island technical capacity to develop a variety of natural resource management plans • At least 5 pilot management plans for a variety of resource types/management issues have been designed, implemented and evaluated by 2017 • At least 5 management plans for a variety of resource types/management issues have been designed and implemented by 2020
How do we get to the end-state?	
What are the benefits? Environmental management plans could be used to address a wide range of conservation challenges; costs of contracting off-island to develop plans could be repurposed to support implementation	**What are the risks to success?** Lack of data for plan design, insufficient human resources, insufficient financial/technical capacity to implement plan components
Who benefits? Resource managers, planners, biodiversity, managed resources, end users	**Who are the participants/partners?** All natural resource management agencies, resource managers
How soon can success be achieved? Developing plans for all states, key resources, protected areas, key species is a long term goal Development of technical capacity to create plans on island: 1-3 years	**Comments?** Some types of management plans have been developed entirely on-island. This technology should require a relatively small amount of input to be achieved.
Technology Readiness Level	
Pilot management plans have been implemented for several types of management plan. This technology mostly requires capacity development to be able to design plans entirely on-island. Plan implementation should be possible for most resources types.	

Annex E: Technology Needs Assessment

Biodiversity Sound Technologies

Biodiversity Sound Strategies: Biodiversity Technologies for Poverty Alleviation	
From what? – Current State	**To what? – End State**
• Unsustainable biodiversity management practices persist across sectors throughout Palau • Some practices have strong cultural roots, like pigeon hunting and sea turtle egg poaching • Poor economic opportunity is likely a driver behind many practices • Having to travel farther to catch fewer and smaller fish, or declining soil productivity resulting from unsustainable farming practices disproportionately affect the poor	• Biodiversity sound strategies for replacing unsustainable practices are identified by 2017 • Strategies may include technologies such as: Improving regional planning, identifying best management practices for biodiversity use, and providing training to resource users among others • Implementing strategies will likely require demonstration of the benefits of the technologies, particularly showing links for improving economic opportunity and food security
How do we get to the end-state?	
What are the benefits? Employing biodiversity technologies at various levels can improve the quality and sustainability of biological resources. Used appropriately, they should also improve economic stability and food security, which can help build support for further conservation.	**What are the risks to success?** Public resistance to change, some unsustainable practices may not have alternative practices that can be applied given other constraints, failure to spread message effectively
Who benefits? Resource users, resource managers, biodiversity	**Who are the participants/partners?** Resource management agencies, local communities
How soon can success be achieved? This is likely to be a long-term, ongoing process. Some approaches may see results in relatively short timeframes (i.e. identifying best management practices, 1-2 years) others will take more time (i.e. buy in to public outreach, 3-5 or more years)	**Comments?**
Technology Readiness Level	
Particular technology strategies need to be identified and evaluated for application in Palau. Pilot studies will need to be conducted for the majority of technologies.	

Annex E: Technology Needs Assessment

Thematic Work Programs

<table>
<tr><th colspan="2">Thematic Work Programs: Preserving Traditional Technical and Management Practices</th></tr>
<tr><th>From what? – Current State</th><th>To what? – End State</th></tr>
<tr><td>• Traditional cultural practices and skills along with deep knowledge of the natural environment are being lost as older generations pass on.
• Some traditional livelihoods remain important, such as fishing and agriculture, but new technologies and practices may be unsustainable</td><td>• Plan developed to preserve traditional knowledge targeting traditional technical and natural resource management knowledge
• Particular areas of interest: fishing equipment and practices, agricultural practices, tools and crop varieties, horticultural knowledge of medicinal plants, and forestry and agroforestry techniques
• Identify synergies between traditional and modern technologies
• Develop best management practices incorporating traditional techniques
• Traditional knowledge could be invaluable in developing more efficient and sustainable agriculture, fishing and forestry techniques, improving food security and economic opportunity, tools to aid in environmental restoration projects</td></tr>
<tr><th colspan="2">How do we get to the end-state?</th></tr>
<tr><td>What are the benefits?
Preserving traditional technical and management practices can provide value across ecosystems and sectors.</td><td>What are the risks to success?
Traditional practitioners die before knowledge can be recorded, people unwilling to adopt traditional practices</td></tr>
<tr><td>Who benefits?
Resource users, ecosystems, biodiversity</td><td>Who are the participants/partners?
Resource users, regulating agencies, natural science/conservation organizations</td></tr>
<tr><td>How soon can success be achieved?
To some extent, recording of knowledge is already occurring. Development of programs to share traditional technology could take 1-2 years.</td><td>Comments?
Traditional knowledge is well refined specifically for Palau’s environmental conditions, is a cornerstone of Palauan identity and culture</td></tr>
<tr><th colspan="2">Technology Readiness Level</th></tr>
<tr><td colspan="2">Traditional technologies are well established. Results based evaluation of traditional methods will need to be conducted.</td></tr>
</table>

Annex E: Technology Needs Assessment

Ecosystem approach

Ecosystem Approach 1: Functional Relationships and Processes Within Ecosystems	
From what? – Current State	**To what? – End State**
• There is a shortage of technical capacity to collect and analyze environmental data • Insufficient technical knowledge to use data to shape effective ecosystem scale management strategies • Lack of capacity to evaluate the status of ecosystems within the context of larger eco-region trends is a barrier to effective development and implementation of ecosystem-based management approaches • There are comparatively few resources for small island scale ecosystem management	• Standardized data collection protocols developed to address information gaps • Develop data evaluation standards for data review and analysis • Use functional relationships between ecosystem management actions and socioeconomic effects to guide policy management • Develop scalable management plans for small island ecosystems • Provide an ecological basis for regional landscape planning, in order to promote the persistence and regeneration of the typical biodiversity within regions
How do we get to the end-state?	
What are the benefits? Identifying relationships between the ecological and economic effects of land use can improve decision-making; policy makers can demonstrate links between conservation actions and improvements in food security, economic opportunities and social conditions, which can improve public support for management actions	**What are the risks to success?** Resistance to change, lack of capacity to design and implement data collection/analysis components
Who benefits? Resource managers, resource users, lower socioeconomic groups, biodiversity, ecosystems	**Who are the participants/partners?** Resource management agencies, business/industry
How soon can success be achieved? Some technologies that fit in this category already exit and are being implemented (IWRM, for example). Expanding and tailoring policies to fit Palau could take time, possibly 3-5 years	**Comments?** Plans should draw on other technologies, including traditional technologies, Sustainable economic development, food security and resilience to climate change should be functionally linked to ecosystem management
Technology Readiness Level	
Some technologies are in place, but need more development for broader applicability.	

Annex E: Technology Needs Assessment

Ecosystem Approach 2: Development of Ecosystem-Based Management Practices	
From what? – Current State	**To what? – End State**
• There is not currently a set of best management practices available for policy makers and resource managers to use • Ecosystem-based management is complicated, effective implementation requires detailed understanding of processes	• Management practices to maintain/restore ecosystem functions developed • Develop adaptive management protocols describing suites of best management practices to be used in a variety of situations • Develop best management practices that are scaled to suit the needs of SIDS • Training modules developed to educate managers in the effective application of ecosystem-based management practices
How do we get to the end-state?	
What are the benefits? Best management practices can be used to address a wide array of resource management challenges and to achieve consistent management between sites.	**What are the risks to success?** Resistance to change, lack of capacity to effectively communicate best practices, failure to provide adequate training in their use
Who benefits? Resource managers, resource users, ecosystems, biodiversity	**Who are the participants/partners?** Resource managers, business/industry, decision makers
How soon can success be achieved? Practice could be developed in 1-2 years, Testing could take 2 or more years, Implementation could take 1 or more years	**Comments?** Best management practices should incorporate traditional technologies and support conservation while also enabling food production and economic activity
Technology Readiness Level	
Best practices need to be developed and tested before implementation	

Ecosystem Approach 3: Ensuring Cross-Sectoral Cooperation	
From what? – Current State	**To what? – End State**
• Coordination between agencies and across sectors is inconsistent • Knowledge sharing between agencies and across sectors is inconsistent • Lack of communication leads to inefficient resource use, overlapping of efforts, gaps in natural resource management	• Identify and demonstrate cross-sectoral links between protection of biodiversity and economic development • Develop mechanisms and protocols for communication and knowledge sharing between agencies and across sectors • Identify opportunities to promote interdisciplinary cooperation and research • Develop strategies to integrate traditional knowledge, new technology, scientific understanding and other public and private sector process to support sustainable development practices
How do we get to the end-state?	
What are the benefits? Cross-sectoral engagement is required to effectively implement ecosystem-based management strategies. Better coordination between agencies and across sectors will improve implementation and outcomes.	**What are the risks to success?** Resistance to change, agency disinterest in cooperation
Who benefits? Resource managers, private sector, resource users, ecosystems, biodiversity	**Who are the participants/partners?** Agencies and organizations engaged in resource use/management across all sectors
How soon can success be achieved? Basic improvements can occur within 1 year, systematic improvements may take longer	**Comments?**
Technology Readiness Level	
Communication strategies need to be developed and implemented, a model for interagency communication and coordination needs to be developed	

Annex E: Technology Needs Assessment

Cross-Cutting Technologies

Cross-Cutting Technologies 1: Technologies for Protected Areas	
From what? – Current State	**To what? – End State**
• Technologies for managing protected areas are generally inconsistent, not clearly defined, or absent • Protected areas are required to have site management plans, but there are • No clear guidelines for required content of site management plans, data collection, data analysis, determining conservation priorities, or procedures for decision-making • There is no systematic mechanism for identifying potential new protected areas or for establishing conservation priority	• A set of Palau-focused best management practices for protected areas established • Guidance created for site management plan requirements • System for identifying and evaluating new protected areas developed • Conservation priority ranking system established for protected areas
How do we get to the end-state?	
What are the benefits? Improved management of protected areas, consistent management across PAN system	**What are the risks to success?** Resistance to change, lack of technical capacity for plan development, lack of resources for implementation
Who benefits? Resource managers, site users, biodiversity, ecosystems	**Who are the participants/partners?** PAN, resource managers
How soon can success be achieved? Planning: 1-3 years Implementation: 2-5 years	**Comments?**
Technology Readiness Level	
Prototype testing/proof of concept	

Annex E: Technology Needs Assessment

Cross-Cutting Technologies 2: Technologies to Regulate and Control Alien Species	
From what? – Current State	**To what? – End State**
• Technologies to regulate or control the risks associated with the introduction of alien species are limited • There is currently no nation-wide strategy for dealing with invasive alien species or living modified organisms • Little technology is available to support customs agents in identifying or preventing alien species from entering Palau • Technical capacity to eliminate or control known, highly invasive species such as the macaque monkeys in Angaur is not available	• Technologies are identified and evaluated for suitability for use in Palau by 2017 • A National Invasive Species Strategy and Action Plan is designed by 2018 • Technology to regulate and control invasive species is available for use by customs agents • Strategies for eliminating or controlling key invasive species are developed and implemented if possible by 2020
How do we get to the end-state?	
What are the benefits? Palau would have the capacity to prevent introduction of alien species and control existing alien species	**What are the risks to success?** Lack of financial support, failure to develop NISSAP, failure to implement NISSAP
Who benefits? Food security, public health, members of the public, resource managers, native species	**Who are the participants/partners?** Biodiversity managers, researchers, border security
How soon can success be achieved? Plan development: 1-2 years Control and regulation of alien species: Depends on implementation timeframe	**Comments?**
Technology Readiness Level	
Strategic plans and other technologies to control alien species exist in other parts of the world. A plan needs to be developed and technologies identified that are suitable for Palau.	

Cross-Cutting Technologies 3: Technologies for Monitoring Biodiversity	
From what? – Current State	**To what? – End State**
• Few monitoring plans have been established and resourced • Few organizations currently have technology to maintain regular monitoring and data collection of biodiversity • Crowdsourcing pilot project through BNM and Koror State Rangers—eBird for reporting bird sightings • Pilot project through PCS in support of eBird—iBird an app to aid bird identification	• Biodiversity monitoring plans established for 80% of PAN sites by 2020 • Crowdsourcing approach to monitoring tested and evaluated by mid-2019 • Other potential crowd sourced biodiversity monitoring opportunities identified and evaluated for applicability in Palau by 2018
How do we get to the end-state?	
What are the benefits? Improved planning, management strategy design, project outcomes	**What are the risks to success?** Poor internet connectivity, reliant on public participation
Who benefits? Resource managers, policy makers.	**Who are the participants/partners?** Current Partners: BNM, Koror State Rangers, PCS Participants: Anyone interested in birdwatching
How soon can success be achieved? Pilot projects: 1-3 year; Other projects: Dependent on technology solution identified	**Comments?** Limited monitoring capacity is a barrier to implementing results based management practices. Utilizing new technologies could improve monitoring.
Technology Readiness Level	
Prototype testing/proof of concept	

The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2020

Resource Mobilization Plan

How implementing bodies will secure funding and distribute resources in order to effectively implement NBSAP activities and achieve its objectives for the conservation and sustainable use of biodiversity

Prepared by: Palau Conservation Society

Annex F: Resource Mobilization Plan

1.0 Introduction

This Resource Mobilization Plan supports the Republic of Palau Revised National Biodiversity Strategy and Action Plan 2015-2020 (NBSAP) and seeks to identify mechanisms by which resources can be allocated to ensure that the NBSAP can execute its mandate and achieve its objectives. The Plan is divided into four main sections: (1) contributions and budgets; (2) mobilizing resources; (3) predictability of funding; and, (4) management, allocation and disbursement of resources. Each section includes strategies and resource targets to achieve.

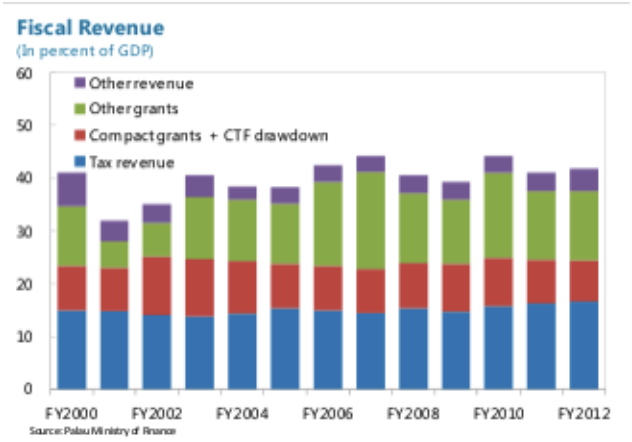
The Resource Mobilization Plan is based on estimated resource requirements to the end of 2020. The plan assumes that: the executing agency will be able to facilitate full implementation of the NBSAP at least through 2020; the partnership of implementing agencies either already have or will use resources to build the capacity and knowledge base necessary to fully implement NBSAP activities; and that changes in national and global economic conditions will not result in a significant readjustment in public investment and development cooperation.

1.1 Contributions and Budgets

Recent national revenue and expenditure statistics provide the required background information to determine appropriate strategies and targets for resource mobilization.

1.2 Trends in Contributions[1]

Palau's national government relies heavily on external grants to finance spending, including implementation of natural resource management programs such as the NBSAP. A major source of grant funding is the Compact of Free Association between Palau and the United States. Compact grants along with other grants included in the national budget averaged 21% of GDP and represented 52¾% of total fiscal revenues during the fiscal years FY2000–2012. As a result, the majority of funding available to support implementation of the NBSAP is drawn from grants.

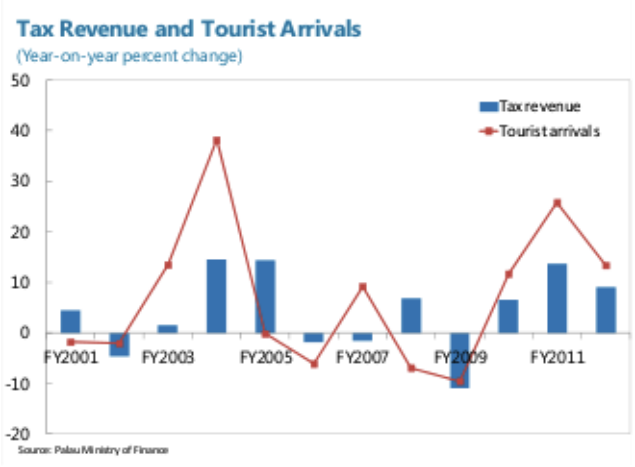


However, Compact grants are scheduled to end in FY2024. The decline in Compact grant assistance will require growing reliance on government domestic revenue and deposits and on withdrawals from the Compact Trust Fund (CTF) to finance government spending. Domestic revenue is volatile as it is largely dependent on tourism, and current spending, particularly the wage bill, is high compared to other Pacific Island Countries (PICs).

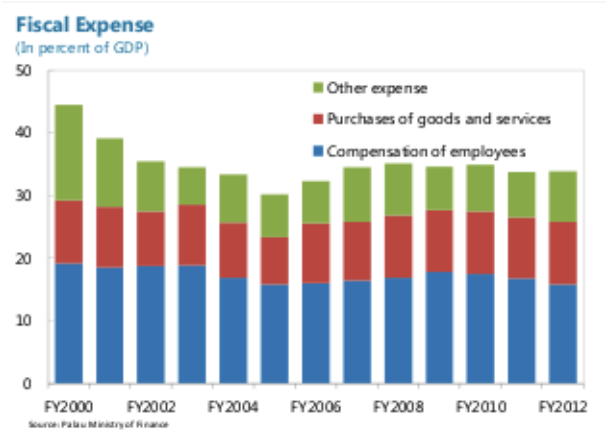
The volatility of revenue from other sources makes it difficult to rely on those avenues as a

[1] Section 1.1, including charts, is largely drawn from: IMF Country Report No. 14/111: Republic of Palau. http://www.imf.org/external/pubs/ft/scr/2014/cr14111.pdf

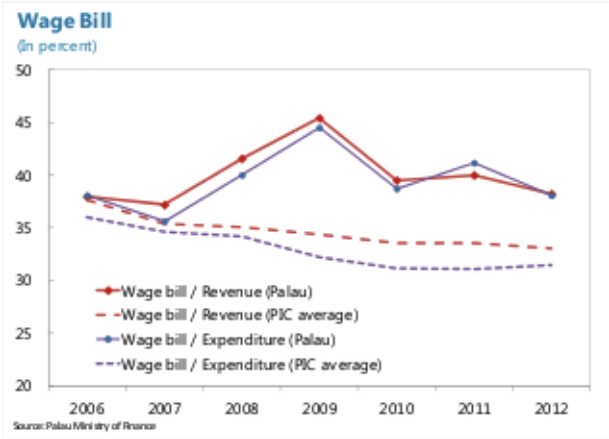
source of funding for project implementation. Although Palau's tax-to-GDP ratio is close to the mid-range of selected small island states, this is largely due to greater departure-tax collections. Continued and increased reliance on tourism-related taxes is contributing to revenue volatility and vulnerability to external shocks.



During FY2000–2012, the ratio of wage bill to revenue was high at 43¾% of total revenue and 92½% of total revenue excluding grants. Nearly half of government expenditure goes to the wage bill. This could become unsustainable once Compact assistance expires. The high wage bill may be difficult to decrease in the short term. It represents family incomes, and in a country with a population of less than 19,000, decision makers may be reluctant to cut wages when it is likely that family and friends will be affected.



To address these challenges and achieve fiscal self-sufficiency by the time the Compact grants expire, it will be necessary for the government to find solutions to alter revenue and expenditure patterns. This has negative implications for the potential of the national government to increase spending in support of NBSAP implementation during the 2015-2020 time period.



1.3 Budgets

A rough estimate of the level of funding required to fully implement the NBSAP through 2020 is US$ 35-40 million. This estimate is based on funding requests cited in Palau's GEF-5 project *"Advancing sustainable resource management to improve livelihoods and protect biodiversity in Palau"*, which was designed to incorporate some activities and objectives of the NBSAP.

While the national government recognizes the importance of conservation and sustainable use of biodiversity, in light of other spending obligations, it currently lacks the capacity to fully fund NBSAP implementation through budgetary means. Given that current funding from the national

government is insufficient for full NBSAP implementation, and that fewer resources will be available as the government prepares for the end of the Compact grants in FY2024, the NBSAP executing agency will need to seek out new strategies to meet funding targets for 2020.

Target:

- Secure a combination of direct and in-kind commitments of at least US$ 35 million for implementation of the NBSAP for the period 2015-2020.

2.0 Mobilizing Resources

While the NBSAP would benefit from a dedicated sustainable financing scheme in support of its implementation, it is not within current capacity to create such a fund. Multiple strategies will be required to raise the level of funding for NBSAP implementation. Strategies include increasing the proportion of in-kind contributions; broadening cooperation with other multilateral environmental agreements (MEAs) to expand funding access; and mobilizing resources and support from the private sector.

2.1 Increase Proportion of In-kind Support

Multiple NBSAP implementation activities depend on the logistical, technical, research and human resources provided by implementing partners. The NBSAP calls for the executing agency to actively engage with partners including the national and state governments, non-governmental organizations (NGOs), academic and technical institutions, and the private sector to generate in-kind resources in support of the NBSAP. While the NBSAP identifies national priorities for improving biodiversity conservation, it does so in part by incorporating existing government agency strategic plans, aspects of other related MEAs and other aligned grant projects planned for Palau. As a result, implementation is largely decentralized and dependent on implementing partners achieving strategic goals.

Aligning NBSAP directives to support agency mandates facilitates funding implementation in two primary ways:

3. Since the NBSAP is aligned with agency strategic plans, a portion of the budget for each stakeholder agency is essentially applied to implementing the NBSAP. Progress toward achieving strategic plan goals aligned with the NBSAP effectively functions as in-kind support.
4. As a national policy document, the NBSAP directives provide clear policy statements that build upon the objectives expressed in individual agency strategic plans. As a result, the policy directives should be useful in guiding future conservation projects. NBSAP directives can be used to support implementing partner agencies when applying for grants or other external funding sources.

Targets:

- Obtain a direct and/or in-kind contribution commitment from each implementing partner in support of NBSAP implementation by the end of 2015.

- At least 25% of contributions for implementation of the NBSAP are obtained through direct or in-kind contributions from implementing partners by 2017 and 45% by 2020.

2.2 Broadening Cooperation with Other MEAs

Several other MEAs that are in the process of being implemented in Palau closely align with aspects of the NBSAP mandate. The NBSAP design includes activities that directly support capacity development and implementation of the national Protected Areas Network (PAN), the regional Micronesia Challenge (MC), and the international Integrated Watershed Resource Management (IWRM) Ridge-to-Reef program.

The NBSAP benefits from alignment with other MEAs in several ways. For example, the PAN was created by the PAN Act, which guarantees the continued existence of the PAN by force of law. In addition, the PAN is guaranteed funding from the Green Fee, a departure tax paid by visitors. The Green Fee supports not only day-to-day operation of the PAN, but also payments to the PAN Fund, which will be used in the long-term to provide sustainable financing for management of the PAN. By aligning NBSAP activities with relevant aspects of the PAN, those activities will essentially be resourced by the Green Fee through cooperation with the PAN. Further, alignment of the MEAs effectively creates opportunities for sharing of technical, human, logistical and other resources. Cooperation between MEAs also provides more opportunities to mainstream the NBSAP and build political support for conservation and sustainable use of biological resources.

Alignment of the NBSAP with the MC and IWRM similarly function to increase NBSAP access to other funding streams. Aspects of the GEF-5 project *"Advancing sustainable resource management to improve livelihoods and protect biodiversity in Palau"* are aligned with both the MC and IWRM. Through implementation of the Palau GEF-5 project, a portion of the project's roughly US$ 20 million budget will effectively be contributed to support NBSAP implementation as well.

While components of the NBSAP were designed to align with existing strategic plans, resource managers and planners can use the NBSAP to guide development of future plans in order to access additional funding sources in the future. For example, Palau's GEF-6 project is currently in development; by incorporating relevant NBSAP activities into the project design, resources can be obtained to continue funding NBSAP implementation through 2020 and beyond.

Targets:

- The number of grants or other external funding sources applied at least in part to implementation of the NBSAP is increased by at least 25% above baseline conditions by 2020.
- At least 25% of total contributions for implementation of the NBSAP are obtained through coordination with other MEAs by 2017 and 45% by 2020.

2.3 Expand Support from the Private Sector

The tourism industry is the single largest private sector contributor to Palau's GDP. Tourists are

drawn to Palau by its incredible natural beauty, including its rich, diverse and unique biodiversity. Tourism accounts for nearly 50% of GDP, contributing to funding for natural resource management. As a result, the tourism industry and natural resource managers have a shared interest in supporting biodiversity conservation and sustainable tourism development. Several NBSAP activities target strengthening the working relationship between natural resource managers and the tourism sector, with the goals of improving the sustainability of the industry while also diversifying tourist attractions in order to increase the reliability of revenue derived from tourism. Implementing partners should aim to build private sector partnerships and secure corporate sponsorship in support of NBSAP implementation. The executing agency should intensify its work with the private sector to generate additional resources for implementation of the NBSAP.

Target:

- Financial contributions for implementation of the NBSAP from private sector entities of at least US$ 500,000 by the end of 2017 and US$ 1 million by the end of 2020.
- At least 10% of total contributions for implementation of the NBSAP are obtained from private sector entities by 2020.

3.0 Predictability of Funding

Successful implementation of the NBSAP is contingent upon more predictable funding. Most NBSAP activities will require long-term commitment to be successful, which means that funding will need to be consistent and delivered on time. Implementing agencies will aim to implement several strategies to improve the predictability of funding including: improving the timeliness of payments and written pledges; increasing the number of multi-year funding agreements; and seeking out opportunities to improve financial sustainability.

3.1 Improve Timeliness of Payments and Written Pledges

For the NBSAP activities to be implemented on schedule, maintained, and ultimately produce desired outputs, it is crucial that payments and written pledges of financial and in-kind support are received as early as possible before activities are to scheduled to be initiated. In previous years there have been lag periods between agency commitment to support activities and projects and the actual receipt of contributions. Biodiversity management activities frequently depend on seasonal events (for example, seasonal bird migrations or fish spawning events), and failure to receive resource commitments at the appropriate time may delay actions by a season or more, potentially making it impossible to achieve stated goals within the project timeframe.

Implementing partners will need to make arrangements with the Ministry of Finance to ensure that payments are delivered prior to the quarter in which they will be needed, and to develop work schedules that ensure delivery of written commitments to the executing agency on the same time frame. While the executing agency is responsible for overseeing its implementation, the NBSAP is decentralized, with no cash reserves to cover lag periods and few other resources specifically dedicated to implementing project activities. As a result, there is enormous pressure to initiate project activities and produce outputs within the required time. In order to implement the NBSAP, earlier and timely payments and written pledges will be required.

Target:

- By 2017, at least 50% of annual requirements received in October of the previous year, and 80% of annual requirements received by February.
- By 2017, at least 50% of non-annual (such as quarterly) requirements received by the first month of the quarter prior to when the resources are needed, and 80% of non-annual requirements are received by the second month of the quarter in which they are needed.

3.2 Increase Number of Multi-year Commitments

The ability to maintain long-term program activities through to their desired outcome requires long-term funding commitments. Obtaining multi-year grants, or partner agency commitments to multi-year payments and in-kind support is preferable to having to repeatedly secure shorter term funding. Commitment to multi-year funding reduces administrative expenses and improves capacity to schedule resources for effective program delivery. It is recognized that not all supporting agencies can provide annual agreements and contributions. However, it should be a priority to work with partners to increase the number of multi-year funding agreements.

Target:

At least half of contribution commitments are made with a multi-year funding agreement by the end of 2017.

3.3 Improve Sustainable Financing

While it is not within current capacity to create a dedicated sustainable financing scheme for the NBSAP as a whole, implementing partners can take action to improve the sustainability of their own financing arrangements. Improving the sustainability of financing arrangements should serve to improve timeliness of payments and capacity to commit to multi-year funding arrangements. Funding requirements and flexibility to make changes will vary between organizations, but it is likely that sustainability improvements could be made in all partner agencies. Actions could include diversifying funding sources in order to reduce reliance on volatile revenue streams, or developing plans to adapt to the projected end of Compact grant support.

Target:

By 2017, at least 50% of partner agencies will develop a plan to attain financial sustainability, and at least 80% by 2020.

4.0 Management, Allocation and Disbursement of Resources

The executing agency is responsible for overseeing implementation of the NBSAP, but because of the current solution to funding the policy, individual implementing agencies will be largely responsible for managing the disbursement of resources. Management can be improved through application of results based management practices across implementing partners. Agencies will need to enhance capacity to monitor resource use and track outputs and implement systematized program evaluation to enable results based management and oversight by the executing agency. Commitment to monitoring and assessing results will help to

prioritize resource delivery and enable strategic adjustments to improve project implementation and planning into the future.

4.1 Improve Monitoring Capacity

NBSAP implementing partners receive funds from numerous sources, ranging from local private sector donors to the national government and international NGOs. To ensure that resources are being applied to the greatest effect, implementing agencies should maintain records funds and commitments received, how resources are allocated, and notes regarding project implementation and outcomes. Doing so will enable evaluation of project activities and improve capacity for planning future policies.

Targets:

- By 2017, 50% of implementing agencies are able to produce records of project implementation for at least the previous year, and by 2020 at least 80% of implementing agencies are able to produce records of project implementation for at least the previous year.

4.2 Utilize Results Based Management System

Applying a Results Based Management System (RBMS) will strengthen NBSAP implementation, work planning, budget and programmatic monitoring and reporting. The RBMS is built into the NBSAP logical framework. It includes performance management and capacity building systems for implementing agency personnel to deliver on work plan targets as well as reporting requirements to track implementation.

Target:

- Systematically utilize the results based management framework to guide the distribution and expenditure of resources for the NBSAP from 2015-2020.

Appendices

The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2020

Communication Strategy

How implementing bodies will communicate the NBSAP in order to mainstream conservation and sustainable use of biodiversity at local, state and national levels.

Prepared by: Palau Conservation Society

Appendix A: Communication Strategy

Contents

Appendix A: Communication Strategy

1.0 Background

Palau's first National Biodiversity Strategy and Action Plan (NBSAP) was a direct output of Article 6 of the UN Convention on Biological Diversity (CBD). It identified key work areas, set objectives and provided direction and coordination to biodiversity management across sectors. In response to decisions made by the Conference of the Parties (COP), The Office of Environmental Response and Coordination (OERC) with support from Palau Conservation Society (PCS) conducted a review and evaluation of the first NBSAP and its implementation during 2013-2014. Local experts on biodiversity were called upon to evaluate the current status of biodiversity in Palau, identify trends since the implementation of the first NBSAP, and provide recommendations to improve management of biological resources in the future. The results of the consultation were used to produce the Republic of Palau Fifth National Report to the Convention on Biodiversity[1].

In decision X/2[2], the COP adopted the Strategic Plan for Biodiversity 2011-2020, including the Nagoya Protocol and the Aichi Targets, which were originally identified in decision IX/9[3]. The COP "urged that Parties review, and as appropriate update and revise, their national biodiversity strategies and action plans, in line with the Strategic Plan and the guidance in decision IX/9, including by integrating their national targets into their national biodiversity strategies and action plans."

The Revised NBSAP is the response to the Strategic Plan for Biodiversity 2011-2020. The Fifth National Report and the Strategic Plan for Biodiversity provided guidance for redefining the objectives of the NBSAP. It is built around seven key strategic objectives designed to support the Strategic Plan for Biodiversity and management issues identified in the Fifth National Report. The key strategic objectives addressed in the Revised NBSAP are:

1. **Protected/Managed Areas**—Strengthen the PAN to preserve habitat, protect ecosystem services, provide refuge for biodiversity, improve management and cross-sectoral coordination, increase resilience to impacts of Climate Change, and meet commitments to the Micronesia Challenge;
2. **Species Protection**—Improve knowledge of species present in Palau, including conservation status and survival needs, in order to strengthen decision-making and management;
3. **Biosecurity/Invasive Species and Bio-safety**—Create a National Invasive Species Strategic Action Plan in order to reduce impacts of alien species and promote compliance with biosecurity laws across all sectors;
4. **Integrating biodiversity and ecosystem services into development policies**—Improve awareness of biodiversity conservation and sustainability issues, including knowledge

[1] Office of Environmental Response and Coordination. 2014. *Republic of Palau Fifth National Report to the Convention on Biodiversity*. Koror, Republic of Palau.
[2] http://www.cbd.int/decision/cop/?id=12268
[3] http://www.cbd.int/decision/cop/default.shtml?id=11652

sharing with decision makers, in order to improve existing policies and develop new policies to address legal and regulatory gaps;

5. **Reducing direct pressures on biodiversity through sustainable use**—Improve livelihoods and economic opportunity through development and implementation of industry-specific best practices that support conservation and sustainable use of biodiversity;
6. **Ensuring food security through maintenance of agricultural biodiversity**—Improve knowledge of agricultural species and varietals present in Palau, and engage the agriculture industry to incorporate best practices that support food security through conservation and sustainable use of ecosystem services; and
7. **Mainstreaming conservation**—Expand public outreach and community engagement in conservation and sustainable use of biodiversity by improving science education, building natural resource management capacity across sectors, and promoting participation in regional and international knowledge sharing.

The Revised NBSAP also incorporates goals set by:

- **The Cartagena Protocol**, which addresses the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology;
- **The Nagoya Protocol**, which promotes fair and equitable sharing of the benefits resulting from the use of genetic resources; and
- **The Aichi Targets**, which set strategic goals for the conservation and sustainable use of biological resources.

Achievement of the strategic objectives will require broad support, education and participation from across all sectors. Considering the large number of implementing partners, it will be necessary to consolidate and streamline communications efforts. As a result, a new communication strategy is necessary to support implementation of the Revised NBSAP.

2.0 Guiding Principles

The overall purpose of the communication strategy is to effectively communicate the core policy statement of the Revised NBSAP:

> Biodiversity is a key component of the natural history, culture and economy of Palau. Loss of biodiversity threatens ecosystems and the services they provide, the underpinnings of Palauan culture, and the future food security and economic stability in Palau. The aim of the Revised NBSAP is to encourage, guide and coordinate an integrated national process that will engage stakeholders across sectors to achieve the holistic conservation and sustainable use of biodiversity while protecting and enhancing economic opportunity, sustainability of livelihoods, food security, culture and the environment for present and future generations.

Appendix A: Communication Strategy

The Revised NBSAP provides further guiding principles that should be considered when developing and implementing aspects of the communication strategy. The following principles should guide development of communication actions:

1. Taking action to conserve biodiversity is more cost effective than doing nothing and suffering the consequences of biodiversity loss;
2. Protecting biodiversity strengthens ecosystems, the economy and culture, ultimately improving resilience to the impacts of Climate Change;
3. Achieving effective conservation and sustainable use of biodiversity will require improving institutional, administrative and legislative capacity, including ensuring that sustainable financing schemes are in place to support ongoing initiatives;
4. Lost biodiversity is irreplaceable, and as such lack of complete scientific certainty and precision of data cannot be an excuse for failure to take action;
5. Public outreach is required in order to create a society that is informed of the risks of biodiversity loss, as well as the opportunities presented by improving the conservation and sustainable use of biodiversity;
6. Promoting sustainable use of biodiversity enables benefit sharing through improving food security, preserving livelihoods, improving land management, and supporting the long-term viability of cultural, economic, and other development endeavors;
7. Approaches that favor ecosystem-based management support biodiversity conservation by protecting ecosystem functions and preserving high quality habitats that provide refuge for maintaining species populations;
8. Management of biodiversity will be most effective when policies are aligned across sectors and implementation is coordinated across agencies in order to maximize benefits and leverage successes;
9. Effective management of biodiversity will require better monitoring and information management which will include adopting new technologies and best practices;
10. The conservation and sustainable use of biodiversity must be mainstreamed into existing as well as new management strategies across all sectors in order to ensure that biodiversity is considered in relevant policy decisions.

3.0 Objectives

There are several over-arching, long-term objectives for the NBSAP that require an active communication component in order to be achieved:

- To promote NBSAP implementation, and improve coordination across all sectors in the conservation and sustainable use of biodiversity.
- To promote biodiversity conservation by strengthening and expanding the PAN, increasing the quality and total area of habitat available in which species can live.

- To improve understanding of conservation needs for species present in Palau, and create strategies to identify and protect high priority species from extinction.
- To protect Palau's biological diversity from negative impacts of invasive species and Living Modified Organisms (LMOs) through prevention, mitigation, and management.
- To build support for conservation and sustainable use of biodiversity by demonstrating the economic and cultural benefits of protecting biodiversity, and by improving access to the benefits derived from biological resources.
- To empower individuals, communities and other organizations to support biodiversity conservation by establishing best sustainability practices for key businesses, food production and common livelihoods.
- To conserve and sustainably manage Palau's agro-biodiversity for the benefit of present and future generations.
- To bring awareness of biodiversity conservation and sustainable use of natural resources into the mainstream of all sectors.
- To build administrative, monitoring, financial and technical capacity in order to improve policy implementation and track effects.
- To improve knowledge sharing on local, state, national and regional scales.

4.0 Strategic Approach

Numerous communications efforts have been undertaken since the creation of the first NBSAP ranging from facilitation of high-level events at regional meetings, through to mass media efforts, species-specific conservation campaigns, and the production of biodiversity focused educational materials. The new strategy will utilize existing successful strategies, identify opportunities to improve communications, and provide a coordinating mechanism to target messages, reduce redundancy and streamline communications across implementing partners.

The NBSAP provides a mechanism for coordinating biodiversity management policy and implementation across sectors. The design of the NBSAP is intended to further develop and expand links and synergies between implementing partner agencies at state, national and regional levels. NBSAP activities are intended to coordinate and support achievement of existing partner agency strategic goals. The NBSAP also functions to guide long-term strategies so that the partnership will be aligned and integrated as much as possible with the CBD. The executing agency, is positioned to coordinate not only the development and implementation of biodiversity conservation and sustainable use policies, but also the communications necessary to mainstream biodiversity issues. The communication strategy will strengthen the executing agency's position by providing guidance on how to work with implementing partners to reach target audiences in order to build momentum for biodiversity conservation.

The Revised NBSAP will primarily act as a bridge between the implementing partners, decision makers and the end users. Therefore, the basic approach to implementing the communication strategy will be to rely on partners to reach out to decision makers and users. The executing agency will facilitate communication activities of partners by seeking to coordinate the overall communication strategy. Coordination by the executing agency should minimize competition

for attention of the same audiences, make the flow of information to end users as clear and strategic as possible, and ensure that NBSAP related information is generally perceived as highly credible and legitimate. Implementing agencies should work with the executing agency to develop key messages based on target group interests, biodiversity management needs, and agency mandates.

The Revised NBSAP is designed to link not only with the strategic plans of implementing agencies, but also with other multi-lateral environmental agreements (MEAs) such as the national Protected Areas Network (PAN) and the regional Micronesia Challenge (MC). Through capacity building activities, the NBSAP will work to improve implementation of natural resource management policies on a broad scale. Capacity improvements will likely extend beyond strictly biodiversity related issues, possibly drawing additional organizations into future NBSAP activities. Ideally, Palau's NBSAP partnership will expand its sphere of influence by engaging with sectors previously not involved (i.e. business and industry) or neglected (i.e. other MEAs), and with emerging key international processes (e.g. Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), NBSAP forum). The communication strategy will support NBSAP activities intended to mainstream biodiversity by promoting cross-sectoral engagement beyond the implementing partners. It will encourage managers to seek opportunities to coordinate NBSAP activities with other MEAs by supporting active communication and knowledge sharing between implementing partners as well as outreach to potential new partner organizations.

While this document outlines the new communication strategy to support implementation of Palau's Revised NBSAP, it is expected that conditions will change during the course of policy implementation. As a result, this communication strategy should be used as a flexible framework and adapted or updated as necessary to reflect changing needs.

Appendix A: Communication Strategy

5.0 Target Audiences

Stakeholder	What actions	How to frame the process	Means of engagement	When and who
Executing Agency	•Provide administrative support, coordination and oversight to implementing partners •Work with implementing partners to coordinate communication/messages •Implement NBSAP activities •Monitor implementation and report outcomes •Encourage communication flow, knowledge sharing, monitoring and reporting •Mainstream NBSAP at national level •Enhance state and local engagement in NBSAP •Organize Steering Committee •Create and maintain list of contacts in implementing partners •Communicate NBSAP implementation progress to implementing agencies	•Create issue factsheets •Newsletters, websites, other digital media •Workshops and learning materials •Workshops reports •NBSAP publications •Facilitate state level or agency mandate related meetings •Conduct follow-ups on prior actions	•Email, telephone, website, Skype, teleconference •Technical partnership meetings, national forums •Participate in state, national, regional and international workshops and meetings •Update agency websites and media •Newsletters	•Periodic newsletters and agency reports •Minimum quarterly communication with NBSAP partners coordinating officers •More frequent communication as required when updating/developing policies •Communication before and after CBD meetings •Provide information regarding progress toward outputs/results of actions •Capacity building reports and assessments
Implementing Partners	•Implement NBSAP activities •Monitor implementation and report outcomes •Encourage communication flow, knowledge sharing, monitoring and reporting •Mainstream NBSAP at national level •Enhance state and local engagement in NBSAP	•Create issue factsheets •Newsletters, websites, other digital media •Workshops and learning materials •Workshops reports •NBSAP publications	•Email, telephone, website, Skype, teleconference •Technical partnership meetings, national forums •Participate in state, national, regional and international workshops and meetings	•Periodic newsletters and agency reports •Minimum quarterly communication with executing agency •More frequent communication as required when updating/developing policies •Communication before and after CBD meetings •Provide information

Appendix A: Communication Strategy

		•Facilitate state level or agency mandate related meetings •Conduct follow-ups on prior actions	•Update agency websites and media •Newsletters	regarding progress toward outputs/results of actions •Capacity building reports and assessments
Stakeholder	**What actions**	**How to frame the process**	**Means of engagement**	**When and who**
NBSAP Steering Committee	•Provide administrative and technical support to the executing agency •Channel Steering Committee advice and guidance into NBSAP work	•Meeting agendas, minutes, reports	•Email, telephone, Skype, teleconference, website, newsletters •Steering Committee meetings (3-4 per year)	•Communication of relevant information at least once before and after meetings
Civil Society Organizations (NGOs, community organizations)	•Mainstream NBSAP work, biodiversity issues	•Explore opportunities for mainstreaming cross-sectoral biodiversity management and sustainable development	•Publications, newsletters, websites, present information of likely interest to target audiences •Participate in forums, conferences, community meetings	•When NBSAP outputs are launched •On selected occasions (to be determined jointly with partners)
Business and Industry	•Expand the sectoral scope of the NBSAP partnership •Engage with new sectors to increase participation in NBSAP activities and promote sustainable economic activities	•Explore opportunities for mainstreaming cross-sectoral biodiversity management and sustainable development	•Cross-sectoral forums and participation in planning •Thematic storylines on links between economic activity and biodiversity (to understand different sectoral issues) •Include storylines	•Participate in periodic biodiversity/conservation forums •Include business/industry in planning process •Thematic storylines developed by industry/implementing partners

Appendix A: Communication Strategy

			in relevant newsletters, websites and other publications	
Stakeholder	**What actions**	**How to frame the process**	**Means of engagement**	**When and who**
MEAs and International Processes (i.e. CBD, Ramsar, CMS, UNCCD, UNFCCC, IPBES, NBSAP Forum)	•Identify opportunities to increase engagement with UN Conventions and other MEAs •Increase national engagement in NBSAP revision process •Identify opportunities for synergy with other conventions, international processes	•Review MEAs and develop materials to illustrate synergies •Encourage partners to engage with MEA stakeholders and share information •Engagement with UN Conventions, COPs, process meetings to increase profile of issues affecting SIDS	•Email, telephone, teleconference, Skype •Websites and other digital communication •Issue-specific publications/reports •Attend MEAs and other international meetings	•On selected occasions (to be determined jointly with partners) •Focus on technical advisory bodies, National Focal Points and COPs •Provide timely reports to Conventions, updates to international processes on progress, planned activities and new resources
Mass Media	•Mainstream NBSAP work, biodiversity issues	•Key messages, graphics and products, interesting stories/case studies	•Press releases •Press packs	•On selected occasions (to be determined jointly with partners)

Appendix A: Communication Strategy

6.0 Actions and Proposed Activities

Evaluation of environmental conservation community outreach strategies conducted in Palau provided guidance for developing this communication strategy. The following actions are based on successful communication strategies used in other campaigns in Palau.

a. **Branding**. Other natural resource management programs have developed brands to link communication initiatives and conservation outcomes with the overall project. It may be valuable to consider developing an NBSAP brand to tie activities together, particularly since there are numerous implementing agencies. Establishing a brand would provide a clear, consistent identity across all communication initiatives at all levels, enabling implementing partners to share resources, consolidate all materials developed, and guide the development of future materials. A consistent branding, with supporting guidelines, could also simplify building the NBSAP into other existing or future resource management initiatives.

b. **Face-to-Face Activities**. Telephone, digital and other means of electronic communication is still limited across much of Palau. As a result, face-to-face events are still the preferred and often most effective method of communication within Palau. Face-to-face activities include meetings, presentations, and consultations that allow dialog and discussions. Such meetings should provide opportunities for spreading messages in support of NBSAP activities. Face-to-face activities also provide opportunities to monitor and assess perceptions of NBSAP outputs as well as the efficacy of communication strategies.

c. **Publications**. Publications are an important part of delivering messages and include scientific reports related to NBSAP efforts, fact sheets, brochures, and newspaper articles. Palau has a small community of researchers that regularly publish scientific papers regarding Palau's environment in peer-reviewed journals. Outreach to find funding for more research could lead to increases in technical knowledge and capacity to monitor and assess changes in the environment and biodiversity. Implementing agencies will likely benefit from developing fact sheets, brochures, signs and other educational materials to provide to resource users to educate them about NBSAP activities. Submitting articles to local newspapers about NBSAP activities and the value of biodiversity could improve general understanding of and build long-term support for biodiversity conservation and sustainable development.

d. **Electronic Technologies**. Electronic technologies include websites, social media, email, power points, dvds, and other electronic mechanisms of communication. While Palau's internet access is still behind much of the rest of the world, it is still possible to have a digital presence. Developing an NBSAP website or adding an NBSAP page to an existing website would create an outlet for providing information and updates about Palau's biodiversity, issues affecting biodiversity and the environment in Palau, NBSAP activities, implementation, and outcomes. Agency sites could be used to create digital libraries of NBSAP related reports for use by decision makers, the public, or other SIDS in the process of developing NBSAPs. E-newsletters could be produced periodically and

inexpensively distributed to participants via email. Agencies should establish work plans to ensure that websites are updated regularly.

e. **Social Media**. The use of social media (e.g. Facebook, Twitter) has become a key tool for communication. Social media could be an effective way to mainstream particular events or campaigns, such as Earth Day or the UN Biodiversity Decade. Social media has great potential to reach large audiences both quickly and inexpensively, but agencies must be sure to implement work plans that include regularly updating these resources. The use of social media and other digital resources could also improve technical capacity by providing alternative methods for monitoring biodiversity. In partnership with the Koror State Rangers, Belau National Museum (BNM) has launched a three-year initiative to generate participation in the crowd-sourcing of bird monitoring data on the eBird website, which hosts a global database of field observations contributed by citizen-scientists from around the world. BNM will conduct training for local citizen-scientists and establish internet connectivity hubs to enable reporting of observations. PCS has also developed an interactive internet application, the iBird app, that can be used to aid in identification of the birds of Palau. There is potential for other similar databases and apps to be used to overcome technical capacity gaps in monitoring other types of organisms.

f. **Third Party Endorsement**. Community leaders such as traditional chiefs, elders and community groups still play an important role in the cultural and political life of Palau. In past conservation campaigns, it has been important to identify respected groups or individuals who were not directly invested in the effort but could advocate on behalf of the value of proposed changes. Identifying possible allies in the community and reaching out to gain their support could be invaluable in successfully implementing the NBSAP and achieving its goals.

g. **Promotional Materials**. A number of promotional materials will need to be developed and disseminated at key meetings and events and through implementing partner activities. Materials might include: leaflets, flyers, postcards, posters, banners, brochures, and business cards. Their frequency and content will be determined in accordance with the schedule of relevant meetings and may vary across time.

h. **Reports**. NBSAP work will be mainstreamed through implementing agency reports, yearly progress reports and presentations at conferences as well as through required CBD outputs and other reports submitted to other international processes.

i. **Governance Bodies**. The NBSAP needs to be regularly reviewed and updated by the executing agency and the steering committee to ensure strategic direction and implementation of work is being achieved. Resource user input should also be considered in order to ensure that the needs of key users are taken into account when shaping NBSAP activities and outputs. Communication should be established at least 3-4 times per year, coinciding with the schedule of the steering committee meetings. At each meeting, members should review and discuss outreach plans and their specific communication commitments for any given period in addition to NBSAP activities. Newsletters and other publications developed by implementing partners should be

made available to the steering committee and members in order to provide them with opportunity to be aware and up-to-date with NBSAP implementation.

j. **List of Contacts**. A key condition for success is the ability to communicate with the right people. It is essential that the executing agency creates and continues to update as necessary the following distribution lists:

- Implementing partners
- Steering committee
- National agencies/National contacts
- Relevant mass media/press
- MEAs, national focal points and technical advisory bodies contacts
- Other relevant UN bodies
- Business and industry

7.0 Monitoring

Achievement of the proposed Communication Strategy will be challenging due to a number of factors, including the following:

1. It relies heavily on outreach by partners;
2. It aims to target a wide scope of audiences, with different needs and messages;
3. Lack of community awareness or knowledge of biodiversity issues;
4. Resistance to or mistrust of new ideas;
5. Lack of awareness about environmental issues;
6. Relevance of biodiversity conservation, sustainable development, or the NBSAP unclear;
7. Inertia in some government natural resource management agencies;
8. Changes in government and key players during course of implementation;
9. Increasing economic pressures such as fuel costs can lead to increasing pressure on natural resources, increasing resistance to implementation;
10. Poor communication between implementing partners or uncertainty regarding roles and responsibilities.

For these reasons it is important to establish a monitoring system early in implementation that will provide feedback to individual implementing agencies. The executing agency will also need access to monitoring systems to assess the effectiveness of communication activities in order to work with implementing partners to modify strategies accordingly. The implementing agencies will need to monitor communication flow, both internally and externally between agencies and target audiences. Monitoring internal communications and communications between implementing partners will help to ensure that partners are well informed, engaged and able to perform the communication activities that have been agreed upon. Monitoring communications with target audiences will serve to ensure that NBSAP information is well received by the wide range of audiences.

Appendix A: Communication Strategy

For some of the external communication monitoring, it is likely that implementing agencies will need to develop tools to assess progress towards achieving communication goals and results that are tailored to the specific communication strategy. Proposed indicators and means of verification for monitoring are presented and clustered by area of action in the tables below:

Agency Internal Communications		
Area of Action	**Indicator**	**Means of Verification**
Branding (if pursued as a strategy)	•NBSAP brand identity created	•Brand templates for publications/reports developed
Face-to-Face Activities	•Meetings held	•# of meetings held •# attending meetings
Publications	•Newsletters produced	•Quarterly/Yearly newsletters regularly produced
Electronic Technologies	•Website created	•Website exists •# of website posts •# of website visitors
Social Media	•Agency social media accounts created	•Account exists •# of posts
Third Party Endorsement	•Third party endorsement candidates identified	•Records of endorsement agreements maintained
Promotional Materials	•Promotional materials developed	•# and type of materials produced •Copies of materials maintained in records
Reports	•Required reports produced on time	•Copies of reports kept in agency records
Governance Bodies	•Steering committee created	•# of meetings held •Meeting agendas, minutes
Lists of Contacts	•Lists of contacts created/maintained	•Lists of contacts on file •Records kept of quarterly review and update of contact lists •Lists used to share publications, reports

Appendix A: Communication Strategy

Communication Between Partners		
Area of Action	**Indicator**	**Means of Verification**
Branding (if pursued as a strategy)	•NBSAP branded materials utilized	•# of branded resource materials generated •Copies of materials kept in records
Face-to-Face Activities	•Meetings held	•# of meetings held •# attending meetings
Publications	•Media releases •Newsletters shared with other agencies	•# of media releases •Newsletter distribution lists retained in records
Electronic Technologies	•TV/Radio spots •Websites are maintained	•# of TV/Radio spots •# of posts •Frequency of updates
Social Media	•Agency social media accounts maintained	•# of posts •Frequency of posts
Third Party Endorsement	•Third party endorsements cultivated	•Endorsers invited to participate in meetings
Promotional Materials	•Promotional materials developed	•# and type of materials produced •Copies of materials maintained in records
Reports	•Required reports produced on time •Participate in conferences	•Copies of reports kept in agency records •# of representatives attending conferences off island •# of conferences facilitated in Palau/# of conference attendees
Governance Bodies	•Participation in steering committee	•# of meetings attended by agency representative •Copies of meeting reports kept in records
Lists of Contacts	•Update list managers when contacts change	•Contacts updated with executing agency •Lists used to share publications, reports

Appendix A: Communication Strategy

Communication with Target Audiences		
Area of Action	**Indicator**	**Means of Verification**
Branding (if pursued as a strategy)	•Public awareness of NBSAP/biodiversity improves	•Survey results
Face-to-Face Activities	•Meetings conducted •Surveys conducted	•# of meetings held •# attending meetings •Survey results
Publications	•Media releases •Newsletters shared with the public	•# of media releases •Newsletter distribution lists retained in records
Electronic Technologies	•TV/Radio spots •Websites are engaging to public	•# of TV/Radio spots •# of visitors •# of "likes" or similar •Visitor statistics
Social Media	•Social media is engaging to public	•# of visitors •# of "likes" or similar •Visitor statistics
Third Party Endorsement	•Third party endorsers participate in public outreach	•# of outreach events attended by endorser •# of attendees at events
Promotional Materials	•Promotional materials made available to public	•# of promotional items distributed
Reports	•Reports made available to the public	•Digital copies of reports available on websites
Governance Bodies	•Decision making process is transparent	•Steering committee agendas and minutes available on executing agency website
Lists of Contacts	•The public can request to receive updates on NBSAP activities, receive electronic copies of newsletters	•Websites are designed to allow interested people to signup to receive newsletters •Signup lists made available at meetings for interested people to receive newsletters

The Republic of Palau
Revised National Biodiversity Strategy and Action Plan 2015-2020

Capacity Development Framework and Action Plan

Strategies for developing necessary capacity to successfully implement Palau's NBSAP in order to improve the conservation and sustainable use of biodiversity.

Prepared by: Palau Conservation Society*

* Design and language drawn extensively from:
Secretariat of the Convention on Biological Diversity. *Framework and Action Plan for Capacity-Building for the Effective Implementation of the Cartagena Protocol on Biosafety*. 2013. Montreal, Quebec, Canada. www.cbd.int

Appendix B: Capacity Development Framework and Action Plan

1.0 Introduction

As a signatory to the UN Convention on Biological Diversity (CBD), the Republic of Palau is committed to taking action to protect its rich biological resources. The provisions of the CBD are set out in 42 Articles. Article 1 identifies the three objectives of the Convention:

- The conservation of biological diversity;
- The sustainable use of its components; and
- The fair and equitable sharing of benefits arising out of the utilization of genetic resources.[1]

Article 6 of the CBD states that each Contracting Party shall:

- Develop national strategies, plans or programs for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programs which shall reflect, *inter alia*, the measures set out in this Convention relevant to the Contracting Party concerned; and
- Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies.[2]

In accordance, Palau created its first National Biodiversity Strategy and Action Plan (NBSAP) in 2004.

The CBD is intended to promote sustainable development in signatory nations. The CBD was designed as a practical guideline for developing policies that would support the principles laid out in Agenda 21, which is a non-binding, voluntarily implemented action plan. Agenda 21, or Agenda for the 21st Century, is a UN document focused on sustainable development. It addresses a broad range of issues, but can be generally divided into four primary strategic areas[3]:

I) Social and Economic Dimensions;
II) Conservation and Management of Resources for Development;
III) Strengthening the Role of Major Groups; and
IV) Means of Implementation.

In alignment with the ideals of Agenda 21, the CBD recognizes that biodiversity "is about more than plants, animals and microorganisms and their ecosystems—it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live."[4]

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[1] http://www.cbd.int/convention/articles/default.shtml?a=cbd-01
[2] http://www.cbd.int/convention/articles/default.shtml?a=cbd-06
[3] http://www.unep.org/Documents.Multilingual/Default.asp?documentid=52
[4] http://www.cbd.int/convention/

2.0 Situational Analysis and Basis for Action

The first NBSAP was a direct output of Article 6 of the CBD. It was meant to function as "the principal instrument for implementing the Convention at the national level."[5] As such, the NBSAP identified key work areas, set objectives and functioned to provide direction to biodiversity management across sectors, in addition to supporting coordination of activities across sectors. Since the creation of Palau's first NBSAP, progress has been made in some areas of biodiversity conservation. However, on the whole, more effort will be required to achieve conservation goals.

The effective implementation of the NBSAP continues to be hampered by lack of capacity in many implementing partners. Through national consultation meetings, most implementing partners expressed a need for capacity development in resource assessment, management planning, biodiversity monitoring, public awareness and participation, and in regulatory compliance. Many implementing partners also expressed the need for institutional capacity development; human resources development; scientific, technical and institutional collaboration; and information exchange and data management.

This revised NBSAP will build on the successes of the first NBSAP while also targeting strategic areas for improvement identified through national consultations with stakeholders and subject area experts, review of agency strategic plans, comparative review of existing environmental policy instruments such as the Micronesia Challenge, the Fifth National Report, and other gap analyses related to the conservation and sustainable use of biodiversity. While the overall goal of the NBSAP is to protect biodiversity, it does so by addressing a wide range of issues, in alignment with the broad objectives set forth by Agenda 21 and the CBD. The NBSAP also needed to be updated to reflect new developments, particularly with regard to the Cartagena and Nagoya Protocols, identifying Palau-specific objectives in alignment with the Aichi Targets, and increasing efforts to mainstream biodiversity issues into the decision making process. The complex challenges of mainstreaming biodiversity conservation, coordinating project implementation, and successfully integrating complicated environmental issues into the decision-making process are core obstacles addressed by Palau's NBSAP.

In order to successfully implement the revised NBSAP and achieve its goals, implementing partners and other relevant organizations will need to engage in cohesive, coordinated capacity development efforts. This Capacity Development Framework and Action Plan is divided into two many parts:

1. A framework for capacity development, which serves as a reference and guidance tool; and
2. A results-based action plan consisting of prioritized actions, specific expected results/targets and a limited set of measurable indicators.

[5] https://www.cbd.int/nbsap/

Appendix B: Capacity Development Framework and Action Plan

This Capacity Development Framework and Action Plan is intended to support implementation of the capacity development components of the NBSAP and to assist implementing partners to address their capacity development needs. In particular, it seeks to guide and assist implementing partners and other relevant organizations to develop, implement and evaluate biodiversity management capacity development activities in a strategic, systematic, and forward-looking manner. The framework and action plan sets the overall vision; provides basic guiding principles; proposes strategic steps and tasks that implementing and other relevant organizations could take at the national, state, agency and international levels; and presents a results-oriented action plan to translate the ideas in the strategic plan into concrete actions and results.

In the context of this framework and action plan, capacity development is described as the process of developing, strengthening and maintaining the capabilities needed to elaborate and implement measures to ensure the conservation and sustainable use of biodiversity. This encompasses development of capacities at:

1. The individual level—including the knowledge, skills, and competencies of individuals;
2. The organizational level—including institutional structures, processes and procedures;
3. Infrastructure—including facilities, equipment and materials, inter-institutional networks and partnerships, and human resources; and
4. The systemic level—including the enabling policy and legal frameworks, governance systems, external partnerships and externalities that affect the effectiveness and sustainability of capacity development efforts.

3.0 Framework for Capacity Development

This framework has been developed within the context of The Republic of Palau Revised National Biodiversity Strategy and Action Plan 2015-2020 (NBSAP). It is designed to serve as a strategic document to guide capacity development as a part of NBSAP implementation. It sets the overall vision, direction, objectives and scope of capacity development under the NBSAP, including key areas requiring urgent action.

The framework is relevant to a wide range of individuals and organizations involved in the design, implementation and funding of NBSAP capacity development initiatives. It is intended to provide a loose framework to allow flexibility for adaptation to many situations and contexts so that specific capacity development needs can be addressed more effectively. It is a living document that should be updated as necessary based on experiences gained, lessons learned and changing conditions over the course of policy implementation. It is expected that the Framework and Action Plan will foster a coordinated approach to capacity development for the implementation of the NBSAP; guide the identification and prioritization of capacity development needs; and catalyze the development and implementation of targeted capacity development initiatives for the conservation and sustainable use of biodiversity throughout Palau.

Appendix B: Capacity Development Framework and Action Plan

3.1 Vision

By 2020 all implementing partners will have in place the requisite human resources and institutional capacities to ensure at least a minimum level of NBSAP policy implementation in support of the conservation and sustainable use of biological diversity, while also taking into account the necessity of sustainable socioeconomic development.

3.2 Objectives

The objective of the capacity development framework is to further develop and strengthen the capacity of implementing partners to implement the NBSAP. The purpose of the framework is to guide, catalyze and facilitate the capacity development initiatives of implementing partners, including supporting capacity development in other relevant organizations, by providing a strategic framework aiming to:

a. Promote a common understanding of the key issues, priorities, guiding principles and approaches regarding capacity development for the effective implementation of the NBSAP;
b. Foster a strategic, focused, coherent and coordinated approach to capacity development in the conservation and sustainable use of biodiversity;
c. Guide the identification and prioritization of capacity development needs by implementing partners, and catalyze the development and implementation of targeted, synergistic and integrated biodiversity management capacity building initiatives at the state, national, regional and international levels;
d. Facilitate the engagement of public and private sector organizations in order to improve the coordinated design, implementation, technical capacity and sustainable financing of biodiversity management and sustainable economic development activities throughout Palau;
e. Facilitate the mobilization and leveraging of financial, technical and technological resources and expertise;
f. Promote regional and international cooperation and coordination with other multilateral environmental agreements (MEAs) to foster synergy and complementarity between initiatives as a means to leverage biodiversity management capacity development actions.

3.3 Guiding Principles

Building on the operational experience and lessons learned from previous capacity development processes and programs, capacity development initiatives undertaken in line with this framework should, as appropriate:

a. Be based on the needs and priorities identified by affected communities themselves, from local to state and national levels, depending on the scale of activities;
b. Ensure national ownership and leadership, including the setting of priorities and the design, implementation and evaluation of the initiatives;
c. Ensure broad, informed and timely participation of implementing partners and relevant stakeholders in the design, implementation and evaluation of capacity development

interventions;

d. Recognize that capacity development is a dynamic, progressive and long-term process, applying an adaptive and learning-by-doing approach;
e. Maximize synergy and complementarity among biodiversity management and sustainable economic development initiatives;
f. Apply a results-based approach, focusing on achieving specific capacity development results and outcomes;
g. Promote greater policy dialogue between implementing partners and encourage the participation of civil society and the private sector in such dialogue;
h. Apply a holistic approach, integrating biodiversity management activities with relevant sectoral, state and national policies, strategies and programs;
i. Encourage the development and implementation of community-based and resourced activities that address the specific needs and priorities of each community;
j. Promote cooperation and coordination with regional approaches to capacity development; and
k. Build the political will and commitment for the implementation of the NBSAP.

3.4 Focal Areas for Capacity Development

In line with the objectives of the NBSAP, the priority focal areas for capacity development for the period 2015-2020, in the context of this Capacity Development Framework and Action Plan, will be:

1. National biodiversity management frameworks;
2. Biodiversity resource assessment, management and monitoring;
3. Improvement of interagency and cross-sectoral communication and information sharing;
4. Public awareness, education, and participation; and
5. Biodiversity education and training.

Capacity development needs vary from agency to agency. Further, some of the focal areas may not be priorities for all implementing partners. As a result, the prioritization of specific capacity needs must be an agency-driven process. Implementing partners may wish to determine specific priority needs in addition to or instead of the focal areas listed above.

3.5 Strategic Actions

The activities listed here are generic strategic tasks that may be undertaken at the national, state, agency and international levels to facilitate effective design, implementation and evaluation of the capacity development initiatives across the various focal areas of the NBSAP. The tasks are not listed in any order of priority. The specific activities relating to the priority focal areas are outlined in the Action Plan described in section 4.0 below.

3.5.1 National Level

Tasks that may need to be undertaken at the national level include:

a. Assessment of existing human resource and institutional capacity, including existing tools and mechanisms as well as completed and ongoing projects to identify the capacity needs and gaps;
b. Development of a national biodiversity management capacity development strategy and action plan, prioritizing the capacity development needs and defining specific objectives based on the key elements provided above, including development of timelines, outputs, and targets;
c. Development of a resource mobilization strategy to guide national efforts to mobilize existing capacities and ensure their effective utilization;
d. Establishment and/or strengthening of a national coordination mechanism in order to promote synchronized and synergistic implementation of capacity development activities and the harmonized use of external financial and technical assistance at the national level;
e. Assessment of existing funding from national, bilateral and multilateral sources and assessment of short-term and long-term funding needs;
f. Integration the conservation and sustainable use of biodiversity into broader national development strategies and plans, including country assistance strategies and other similar instruments and relevant sectoral policies and programs.
g. Establishment of national advisory mechanisms; and
h. Establishment and strengthening of national centers of excellence and training.

3.5.2 State and Agency Level

Tasks that may need to be undertaken at the state and agency level include:

a. Establishment of state and agency websites and databases;
b. Establishment of mechanisms for state and agency coordination on biodiversity regulatory framework implementation, as appropriate;
c. Development of state- or agency-level mechanisms for human-resources development and training in biodiversity management, including through state and national courses, staff exchanges, and joint research;
d. Development of infrastructure and administrative mechanisms for the assessment and management of biodiversity status;
e. Establishment of an interagency forum for the exchange of information on public awareness, education and participation; and
f. Promotion of regional, national, state and agency collaborative initiatives on biodiversity management;

3.5.3 International Level

Tasks that may need to be undertaken at the international level include:

a. Develop a Biodiversity Clearinghouse for sharing reports and other knowledge gained through implementation of the NBSAP;
b. Enhance the mobilization of financial resources from multilateral, bilateral and other sources to assist implementing partners;
c. Identification and maximization of opportunities for collaborative initiatives and partnerships to enhance synergies, leverage resources and achieve greater impact;

d. Establish and utilize resources for sharing regional expertise, technologies, strategies and traditional knowledge, including maintaining lists of contacts and rosters of subject area experts;
e. Strengthen partnerships and cooperation in the Micronesia and greater Pacific regions;
f. Develop and update resources for managers and policy makers regarding international guidance on various technical issues; and
g. Development of indicators for evaluating capacity development measures at different levels.

3.6 Strategic Approaches to Capacity Development

a. Ensure that the design of capacity development initiatives is based on systematic stocktaking and needs assessments in order to ensure that they are strategic, demand-driven and cost-effective;
b. Diversify approaches to human resources development beyond seminars and workshops to include formal education and training programs, as well as learning-by-doing activities;
c. Promote formal academic training in biodiversity at graduate and post-graduate levels in order to develop biodiversity experts in various fields at the national level;
d. Broaden the scope and depth of training activities in specific areas of professional responsibilities (including risk assessment, risk management, living modified organism (LMO) detection and others);
e. Adopt a systematic approach to training in biodiversity management, including, methods for conducting training needs assessments, setting of clear training objectives, using a range of customized training methods and tools, and systematic evaluation and follow-up of training activities;
f. Promote the "training-of-trainers" approach to ensure that the trained trainers have the necessary instructional skills, institutional support, structures, facilities and resources to be able train others;
g. Institutionalize short-term biodiversity trainings, including seminars and workshops, which are currently offered on an ad hoc one-off basis by various government departments and organizations, under designated national or regional training institutions, to facilitate their delivery in a systematic, integrated and efficient manner;
h. Review the criteria for selection of target audiences for training and other capacity-building activities to ensure that a wide range of participants (from both government and non-government organizations), who are in most need, have the requisite background and are in a position to readily apply the acquired knowledge and skills, are given due consideration;
i. Adopt a long-term and phased approach to capacity development within the context of the NBSAP, national capacity development strategies and other resource management plans;
j. Adopt a national or interagency approach to capacity development in biodiversity to facilitate the sharing of information and technical resources, enhance coherence and synergy of capacity development activities, and maximize the use of existing institutional, technical and human resources;

k. Incorporate sustainability measures in all biodiversity capacity development projects, including strategies for the retention of knowledge and capacity as well as continued use of project outputs, once the external funding and other support ends;
l. Ensure that all biodiversity capacity development projects are systematically tracked and evaluated based on prior agreed indicators, and share evaluation reports through the Biodiversity Clearinghouse.

3.7 Sustainability Strategies and Measures

Sustainable capacity development is achieved when implementing partners have gained lasting capabilities to fulfill their obligations under the NBSAP after policy implementation is completed. Implementing partners and other relevant organizations are encouraged to incorporate strategies and measures into capacity development design that would foster ongoing action, sustainable results and long-term impact of the initiatives beyond the lifespan of the current NBSAP. Sustainability plans should be developed at the design stage, not in the final months of implementing capacity development activities.

Among other things, Parties, other governments and relevant organizations are encouraged to:

a. Set realistic objectives for their capacity development initiatives;
b. Ensure active involvement of relevant stakeholders to foster a sense of ownership and commitment to long-term action;
c. Create effective linkages between different sectors and establish strategic partnerships to leverage and maximize resources;
d. Build strong institutions and coordination mechanisms that involve relevant stakeholders;
e. Mainstream biodiversity into broader development plans and relevant sectoral programs;
f. Adopt modes of delivery such as “training of trainers” that create a “multiplier effect” by enabling organizations build internal training capacity;
g. Incorporate biodiversity management costs into the national budget;
h. Ensure that the design of capacity development initiatives is based on realistic assessments of the domestic resources available to sustain the activities; and
i. Diversify the sources of funding and technical support.

Another important strategy to promote sustainability is to institutionalize the implementation of capacity development activities to ensure that the knowledge, skills and other capacities developed as part of capacity development interventions are retained and integrated into existing institutional programs. It is important to ensure that the institutions selected to implement initiatives are well managed and appropriately resourced to takeover and sustain the initiatives’ activities. It is also crucial to ensure that the institutions selected are recognized in the national regulatory frameworks, have permanent staff and supportive leadership, rely on local personnel and resources to implement the activities and have strong support from the government. The latter may require deliberate awareness-raising and outreach to senior management and political leadership to help muster the necessary political will and

commitment.

In addition, a consistent and objective approach to monitoring and evaluation would help to ensure the sustainability of initiatives by enabling implementing partners and other relevant organizations to determine adjustments that need to be made during the implementation process.

Finally, promotion of regional cooperation and cooperation with other MEAs, establishment of interagency partnerships and networks, establishment or strengthening of national centers of excellence, and the development of adaptable capacity development products, such as online training modules or e-learning courses and online databases or virtual libraries, are important strategies that could facilitate sustained access to technical support and assistance and ongoing knowledge-sharing and learning.

4.0 Results-based Capacity Development Action Plan

The Capacity Development Action Plan is designed to facilitate the implementation of the capacity development components of Palau's revised NBSAP. It includes activities to be implemented, as appropriate, by implementing partners and other relevant organizations at the national, state, agency and international levels to contribute to capacity development for the effective implementation of the NBSAP in a strategic and focused manner. The Action Plan also defines expected results and indicators associated with capacity development activities. The proposed activities are not meant to be prescriptive or exclusive, but to illustrate the kinds of core activities that would need to be undertaken, as appropriate, in order to achieve the desired results by 2020.

4.1 Objectives, Activities and Expected Results

Focal Area 1: National biodiversity management frameworks

Operational Objective 1
To further support the development and implementation of national regulatory and administrative systems.

Outcomes

- National and agency biodiversity management frameworks developed and implemented, including species management plans, a biosecurity plan, and protected area management plans, among others;
- Functional biodiversity management systems in place.

Appendix B: Capacity Development Framework and Action Plan

Indicators	Results/Outputs	Activities
• Number of organizations with operational regulatory frameworks (biodiversity management laws and regulations) • Number of organizations with functional administrative arrangements	a) National biodiversity policies, laws and regulations in place and being implemented b) National institutions and administrative systems for managing biodiversity in place c) Standard operating procedures for resource management activities in place d) Provisions made in the national annual budget for operation of biodiversity management e) Trained staff in place to administer the national biodiversity management system f) Biodiversity is mainstreamed into broader development plans and sectoral policies and programs	1.1 Development and implementation/enforcement of national biodiversity management policies and laws and the implementing regulations or guidelines 1.2 Development of a best practices guide on: i. Implementation of national biodiversity frameworks; ii. Enforcement of national biodiversity laws and regulations; iii. Establishment and management of administrative systems; and iv. Mainstreaming of biodiversity into relevant policies/plans 1.3 Development of training modules based on elements of the above guide 1.4 Organization of training-of-trainers workshops on the elements of the best practices guide 1.5 Organization of training courses and on-the-job training programs for personnel responsible for administering the biodiversity regulatory systems

Appendix B: Capacity Development Framework and Action Plan

Focal Area 2: Biodiversity resource assessment, management and monitoring

Operational Objective 2
To enable implementing partners to assess and evaluate resources, and to apply assessments to development and implementation of resources management plans to regulate, manage and monitor the conservation and sustainable use of biodiversity.

Outcomes

- Training materials and technical guidance on resource management and management planning developed and used by implementing partners;
- Infrastructure and administrative mechanisms established for resource assessment at local, state, national and international levels.

Appendix B: Capacity Development Framework and Action Plan

Indicators	Results/Outputs	Activities
• Number of people trained on biodiversity resource assessment, monitoring and management, including management planning • Number of implementing partners that have infrastructure for monitoring and management of biodiversity • Number of implementing partners using the training materials and technical guidance developed • Number of implementing partners that are of the opinion that the training materials and technical guidance are sufficient and effective	a) Parties have trained experts in fields relevant to resource assessment and management b) Guidance on biodiversity assessment and management is readily available and being used by implementing partners c) Local experts conducting resource assessments and audits as part of management decision process d) Parties sharing resource assessments with other implementing partners via Biodiversity Clearinghouse or other mechanism e) Baseline data on biodiversity relevant for management decisions available f) Implementing partners have the necessary infrastructure for biodiversity management g) Implementing partners using science-based assessment/management methods h) Implementing partners have biodiversity monitoring programs based on defined protection goals and assessment endpoints	2.1 Establishment of institutional arrangements (e.g., technical and advisory committees or other arrangements) for conducting or reviewing assessments 2.2 Organization of training-of-trainers workshops on biodiversity assessment and management 2.3 Development of guidance documents on biodiversity assessment and management 2.4 Development or strengthening of technical infrastructure for biodiversity assessment and management 2.5 Conducting scientific biodiversity research 2.6 Review of existing data and conducting new research to acquire data on biodiversity for specific ecological areas (e.g., botanical files, consensus documents, national inventories, etc.) relevant to biodiversity assessment and management 2.7 Establishment and maintenance of user-friendly databases to facilitate easy access to data on biodiversity relevant to assessment and management 2.8 Development of biodiversity monitoring frameworks and programs

Appendix B: Capacity Development Framework and Action Plan

Focal Area 3: Improvement of interagency and cross-sectoral communication and information sharing

Operational Objective 3
To develop an electronic National Biodiversity Clearinghouse to ensure that relevant information is readily and easily accessible to all implementing partners.

Outcomes

- Increased sharing and access to information through the development of a National Biodiversity Clearinghouse (NBC);
- Tools to facilitate implementation of the NBSAP are easily accessible through the NBC;
- Information on the NBC is easily accessible to stakeholders, including the general public.

Appendix B: Capacity Development Framework and Action Plan

Indicators	Results/Outputs	Activities
• Number of submissions to the NBC from implementing partners • Amount of traffic from users to the NBC from implementing partners	a. Implementing partners able to register mandatory information in the NBC b. Implementing partners, other organizations and stakeholders are able to post non-mandatory information to the NBC c. Improved coordination and sharing of experiences on the NBC at national, state, agency and international levels d. Increased awareness and capacity of implementing partners, stakeholders and general public to access information through the NBC e. National systems set up to gather, manage and upload onto the NBC all information required under the NBSAP	3.1 Establishment and maintenance of NBC 3.2 Establishment and maintenance of national, state, agency and international capacity to access NBC 3.3 Development of national, state and agency systems for gathering/managing information for submission to the NBC 3.4 Creation of national website 3.5 Organization of NBC training for specific target groups 3.6 Enhancement of cooperation between relevant organizations on the further development and population of the NBC to maximize use of existing resources, experiences and expertise and to minimize duplication of activities 3.7 Organization of training for information management experts on NBC and putting in place mechanism to facilitate use of NBC by stakeholders 3.8 Establishment of mechanisms to enable implementing partners to monitor use of NBC and address gaps 3.9 Continuation of NBC capacity development projects at all levels

Focal Area 4: Public awareness, education and participation

Operational Objective 4
To enhance capacity at the national, state, agency and international levels that would facilitate efforts to raise public awareness, and promote education and participation concerning the conservation and sustainable use of biodiversity.

Outcomes

- Implementing partners have access to guidance and training materials on public awareness, education and participation concerning the conservation and sustainable use of biodiversity;
- Implementing partners are enabled to promote and facilitate public awareness, education and participation in the conservation and sustainable use of biodiversity.

Appendix B: Capacity Development Framework and Action Plan

Indicators	Results/Outputs	Activities
• Percentage of implementing partners having in place mechanisms for ensuring public participation in decision making concerning biodiversity • Percentage of implementing partners that inform the public about existing modalities for participation • Number of parties having in place national websites and searchable archives, national resource centers or sections in existing national libraries dedicated to biodiversity education materials	a. Programs for promoting public awareness are being implemented b. Guidance materials and toolkits including methodologies and best practices for promoting public awareness, and promote education and participation in place and being used by implementing partners c. Improved mechanisms for public awareness, and promote education and participation d. Effective implementation of public awareness, and promote education and participation at national, state, agency and international levels	4.1 Collection of information on legal frameworks in place and actual experiences on public awareness, education and participation 4.2 Development and dissemination of training packages, guidance materials and other tools for different target groups 4.3 Organization of national, state, agency and international workshops on the implementation of the above guidance or toolkit in order to strengthen or establish national mechanisms for public awareness 4.4 Organization of training-of-trainers workshops for biodiversity educators, communicators and other government and non-government personnel at national, state and agency levels 4.5 Establishment of mechanisms to inform the public about existing opportunities and modalities for participation 4.6 Establishment of national biodiversity websites, searchable databases and resource centers 4.7 Development and implementation of biodiversity public awareness programs

Focal Area 5: Biodiversity education and training.

Operational Objective 5
To promote education and training of biodiversity management professionals through greater coordination and collaboration among academic institutions and relevant organizations.

Outcomes

- A sustainable pool of biodiversity professionals with various competencies available at the national level;
- Improved biodiversity education and training programs;
- Increased exchange of information, training materials, and staff and students among academic institutions and relevant organizations.

Appendix B: Capacity Development Framework and Action Plan

Indicators	Results/Outputs	Activities
• Number of courses, training programs, and on-the-job biodiversity education opportunities in Palau/regionally • Number of paper/online biodiversity training materials and modules available	a. Improved identification of training needs and target audiences b. Information on the current situation with regard to existing biodiversity-related education and training initiatives available c. Relevant documentation (including real-life dossiers and assessment reports) made available for biodiversity education and education purposes d. Compilations of existing biodiversity training and education initiatives and trainers are made available e. E-learning courses and other distance education and training programs on biodiversity are available f. Scientific and professional conferences and workshops support exchange of information and experiences g. Biodiversity managers continuously trained through on-the-job and off-the-job training programs	5.1 Undertaking of periodic training needs assessments to determine the demand for biodiversity education program, and to ID target audiences 5.2 Development and strengthening of biodiversity education and training programs at national, state and agency levels 5.3 Exchange of information on existing biodiversity education and training courses and programs through the NBC 5.4 Integration of biodiversity into the curricula of existing relevant academic programs and courses 5.5 Establishment of national, state, agency and international coordination mechanisms or networks for institutions involved in biodiversity education to facilitate knowledge sharing 5.6 Exchange of biodiversity training and research materials among academic institutions 5.7 Development of academic exchange and fellowship programs to facilitate sharing of experience 5.8 Strengthening the capacity of existing institutes to deliver biodiversity education and training

4.2 Roles and Responsibilities

The primary responsibility of implementing this Action Plan rests with the implementing partners and other relevant organizations. Other entities will play a supporting role, including providing financial and technical assistance. Among other things, implementing partners and other relevant organizations will be responsible for:

a. Identifying and communicating their capacity development needs to the NBC;
b. Designing and implementing specific capacity development interventions;
c. Mobilizing local resources and availing themselves of financial and technical support available through bilateral and multilateral channels;
d. Providing reports to the NBC on their capacity development activities;
e. Providing an enabling environment and leadership to encourage the development of capacity development initiatives by other entities; and
f. Providing direction to and coordination for capacity development activities of other entities, within the framework of the NBSAP.

5.0 Monitoring and Evaluation

Monitoring and evaluation of implementation of the Action Plan will be done by the executing agency. The executing agency will prepare, on the basis of submissions by implementing partners and other relevant organizations, a report on the status of implementation of the Action Plan and on how the framework is being used by implementing partners and other relevant organizations in the planning, implementation and monitoring of their biodiversity management capacity development activities or in supporting of financing biodiversity programs. The report will be submitted with the next National Report on the Status of Biodiversity to be completed after the NBSAP timeframe (2015-2020) to the Conference of the Parties serving as the meeting of the Parties to the CBD for its consideration and guidance on measures for improvement.

The reports on the status of implementation of the Action Plan will outline the activities implemented and the key results achieved in order to provide a clearer sense of the overall progress made at different levels. In this regard, governments and relevant organizations would be requested to make submissions on both their activities and the results achieved. This would serve as a good measure of the outcomes for the capacity development focal area of the NBSAP. The indicators provided in the Action Plan will be used to monitor and evaluate the progress made.

Republic of Palau Fifth National Report to the Convention on Biodiversity

2014

Koror Rock Island Southern Lagoon

Office of the Environment, Response and Coordination

Republic of Palau

3/31/2014

OERC

Appendix C: Republic of Palau Fifth National Report to the Convention on Biodiversity

Executive Summary

The Palau Islands, located in Western Micronesia, contain some of the most diverse and pristine ecosystems in the world. These diverse habitats are home to an extraordinarily high number of marine and terrestrial species that are essential to the culture, economy and livelihoods of the Palauan people. Many species and ecosystems are endemic or rare and conserving Palau's resources is important globally.

Palau's efforts to conserve its biodiversity and manage its natural resources are greatly aided by the fact that there is an enabling environment for biodiversity conservation. Since the drafting of Palau's NBSAP (2005) almost 10 years ago, biodiversity conservation in general and community-based conservation activities in particular have grown considerably in Palau. Local communities have designated protected areas throughout the country in order to protect species and sites important to them. The number of these protected areas in Palau has more than doubled in the past 10 years. A national framework for protected areas now exists in Palau: the Palau Protected Areas Network (PAN). PAN's goal is to provide national level support for protected area management activities at the local level. Protected areas are recognized at the regional and international level through the Micronesia Challenge.

Additionally, there are more organizations involved in conservation and resource management than there were 10 years ago. Many of the groups and people working on conservation in Palau recognize the importance of sharing limited human and other resources and often work in collaborative partnerships. Some of these partnerships aim to improve resource management by integrating activities among a variety of organizations.

This Fifth National Report describes the existing context of Palau's biodiversity and outlines the current and proposed actions needed to ensure the successful conservation and management of that biodiversity.

Part I: Assessing the status, trends and threats of biodiversity and implications for human well-being

1.0 Introduction

The Republic of Palau is a Small Island Developing State (SIDS) located in the tropical north Pacific. The main island group lies approximately 800 km north of New Guinea and 800 km east of the Philippines. Only 9 of the more than 340 islands which make up the country are inhabited. The inhabited islands are: Angaur, Babeldaob, Hatohobei, Helen Reef, Kayangel, Koror, Peleliu, Pulo Anna, and Sonsorol. Palau has a total land area of approximately 490 km^2, and a total marine area of approximately 616,000 km^2. Palau is divided into 16 states, including 10 states on the island of Babeldaob. Babeldaob is the largest island with more than 80% of the total land area of the country. Approximately 70% of the population is concentrated in Koror state and Airai state, which is located at the southern end of Babeldaob.

Beginning in the late 19th century, Palau has experienced several waves of foreign political control, most recently as part of the U.S. Trust Territory of the Pacific Islands following World War II. The nation gained independence in 1994 after the adoption of the Compact of Free Association (COFA) with the United States. The Compact Agreement is a major source of revenue for the national government and also provides for ongoing technical and material assistance throughout the nation. In the years since the creation of the Palau National Biodiversity Strategy and Action Plan (NBSAP), the Compact Road, a national highway encircling the island of Babeldaob has been completed. The Compact Road has significantly altered internal travel and opened the way to greater development potential throughout Babeldaob. Following completion of the Compact Road, the national capitol was moved from Koror to Melekeok state on the central eastern coast of Babeldaob in order to encourage development on the big island.

In 1998, the Republic of Palau signed the United Nations Convention on Biological Diversity (UNCBD) which was adopted at the Earth Summit in Rio de Janeiro in 1992. Article 1 of the UNCBD set forth three objectives of the Convention:

- The conservation of biodiversity;
- The sustainable use of its components; and
- The fair and equitable sharing of benefits of the utilization of genetic resources.

Palau completed its first National Biodiversity Strategy and Action Plan in 2004 (NBSAP, 2004). The NBSAP provided a description of the state of biodiversity and its importance to Palau, as well as conditions affecting management of those resources. Following consultations with national, state and local governments, non-government organizations and the private sector, the NBSAP was developed around eight thematic areas. The themes of the NBSAP were intended to provide a focus for plan objectives in order to build capacity, promote sustainable development and improve biodiversity management. The themes of the NBSAP are:

1. Protected/Managed Areas
2. Species Protection

3. Biosecurity – Invasive Species and Biosafety
4. Sharing Benefits of Genetic Resources
5. Sustainable Economic Development
6. Prevent or Minimize Waste
7. Agricultural Biodiversity
8. Mainstreaming of Biodiversity Conservation

Actions taken in support of the UNCBD have largely grown out of efforts to strengthen the legislative, regulatory and policy framework protecting Palau's environment as a whole. The protection of biodiversity has been a valuable motivator for driving the development of more effective resource management tools, as well as a point of engagement for improving public awareness of environmental issues in Palau. In order to build consensus, promote greater strategic coordination, and improve institutional capacity, the national government has continued to work closely with state and local governments, traditional leaders, and civil society, including NGOs and the private sector.

In 2010, the initial UNCBD goals were revisited and expanded by the Parties to the Convention on Biological Diversity in Nagoya, Japan. The Aichi Biodiversity Goals are:

1. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society;
2. Reduce the direct pressures on biodiversity and promote sustainable use;
3. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity;
4. Enhance the benefits to all from biodiversity and ecosystem services; and
5. Enhance implementation through participatory planning, knowledge management and capacity building. (Aichi, 2010)

In response to the shift in focus toward community engagement set forth by the Aichi Goals, the national government began emphasizing state- and community-level conservation actions. As a result of improved institutional capacity built through working toward the initial UNCBD goals, the national government has been able to provide technical support to state agencies and local organizations in planning and implementing community-based initiatives.

Lessons learned during the last decade suggest that such community-based initiatives are effective in improving public support for and commitment to conservation goals, ultimately increasing the long-term sustainability of management actions (PCS, 2013). Monitoring and data collection continue to be persistent challenges throughout Palau. As a result, community members' often extensive anecdotal knowledge of local environmental conditions can be valuable in bridging some information gaps. Including traditional leaders and community organizations in the planning process may also represent an alternative pathway for improving compliance with conservation initiatives by empowering traditional authority. Further, consideration of community economic development objectives is a key component of promoting sustainability and improving buy-in in Palauan communities.

1.1 Methodology

This Biodiversity and Stock Assessment (BSA) was developed following literature review and consultation with local experts and conservation managers during the months of December 2013 and January and February of 2014. Contributors were asked to review the status of biodiversity in Palau, assess the legal, regulatory, and policy frameworks currently in place, and identify gaps or other areas that could be targeted for future action. Information in this BSA is drawn substantially from other state and national assessments, completed conservation action plans and personal correspondence with local subject area experts.

1.2 Overview of Current Conditions Affecting Biodiversity

In the years since the NBSAP was created, Palau has put considerable effort into improving natural resource management at all levels of society, from national legislation to community-driven initiatives. Taking into consideration the limited resources available, these actions have typically been designed to address multiple issues at once. Palau is facing a number of developmental and environmental challenges that are likely to impact biodiversity. The causes of and relationships between these issues are complex, but can generally be grouped into several primary issues:

1. Climate Change
2. Economic Development
3. Population Growth and Urbanization
4. Water Quality and Quantity
5. Conservation and Protection
6. Sustainable Use
7. Cultural Preservation
8. Data Gaps

1.2.1 Climate Change

SIDS like Palau are particularly susceptible to ecological disturbances related to global climate change. Climate change impacts affect both marine and terrestrial ecosystems and the organisms that depend on them. Climate change contributes to increased seawater temperature, increased air temperature, sea level rise, climate extremes, and changes in weather and precipitation patterns. These factors resulting from climate change lead to ecosystem level impacts that can directly affect biodiversity.

Past extreme climate events have demonstrated Palau's susceptibility to the effects of climate change. An El Niño event in 1998 led to significant ecosystem damage in both marine and terrestrial environments in Palau. Elevated seawater temperatures contributed to massive coral bleaching and decline of sea life in near shore areas. Some areas have yet to recover fully from the event. At the peak of the El Niño during the month of March 1998, Palau received the lowest amount of rainfall in over 100 years of records. The resulting drought led to depletion of water supplies, crop failures, and uncontrolled wildfires on some islands. (ADB, 2007)

Although Palau is generally considered outside of the typhoon belt, the country has been hit by two major typhoons in the last two years. In December 2012 Palau was hit by Typhoon Bopha and in November 2013 by Typhoon Haiyan. Both typhoons went on to cause substantial death

and destruction in the Philippines. In Palau these typhoons caused significant wind damage to homes and trees, storm surge flooding in coastal areas, heavy rains, and alterations in lagoon channels. Typhoon Haiyan caused particularly severe damage in Kayangel state. Nearly all structures in the state were destroyed, the vast majority of trees were toppled by high winds, taro patches were inundated with seawater, and the drinking water supply was contaminated with saltwater. As a result of damage to the state, all residents have been evacuated.

Table 1: Climate Change Effects, Implications, and Possible Impact on Biodiversity (adapted from Abujabal et al., 2009, ADB, 2009, and Kitalong 2010)

Effect	Implications	Possible Impacts on Biodiversity
Increased seawater temperature	• Coral bleaching • Decline of fisheries	• Loss of coral species, organisms dependent on corals • Habitat loss • Fish nursery decline
Increased average air and ocean temperatures	• Increased energy consumption • More severe weather events • Changes in water quality	• Destruction and alteration of habitat by storms • Coral bleaching • Import of petroleum to power air conditioning
Increase in sea-surface temperature	• Increased frequency and severity of tropical storms and typhoons	• Coral bleaching • Habitat loss due to storms
Sea level rise	• Flooding • Coastal erosion • Salt intrusion in taro fields • Damage to low-lying hamlets and infrastructure	• Loss of terrestrial habitat • Loss of agricultural area • Contamination of freshwater lenses
Climate extremes	• Droughts, storms and floods	• Increased susceptibility to invasive species
Changes in precipitation	• Decreased reliability of water supply	• Wild fires • Agricultural decline

1.2.2 Economic Development

Palau's economy is largely driven by foreign aid and tourism, with significant additional income generated through fishing. A 2012 International Monetary Fund report indicated that on average tourism accounts for 50% of Palau's GDP, and that foreign aid through the COFA and other grants accounts for an additional 25% of GDP. (IMF, 2012) In combination with its dependence on imported food and fuel, the reliance on tourism and foreign aid leaves Palau vulnerable to global economic shifts. Given the country's small population base and limited economic activity, tax revenues in Palau are comparatively lower than in other nations in the region, leaving government agencies highly dependent on grant funds in order to function. In particular, state governments have very few options for raising revenue, leaving them dependent on yearly distributions of block grant funds from the national government. As a result of limited ability to raise revenues, regulatory and policy mandates may not receive adequate funding in order to be fully implemented.

Promoting private sector economic development is important to the long-term financial viability of the nation. However, increasing local economic development will by necessity require greater exploitation of Palau's natural resources, which may negatively impact biodiversity. The OEK has passed the National Petroleum Revenue Management and Sharing Act and the Petroleum Act opening the way for development of possible off-shore petroleum reserves in Palau's EEZ. (IMF, 2012) While petroleum development would diversify the national economy, it would also create a whole new set of environmental issues to be addressed. Current economic activities such as tourism and fishing also impact biodiversity. Tourists are drawn to Palau by extraordinary natural beauty and the abundance and diversity of wildlife. However, the number of visitors acts to effectively increase the demands on infrastructure, ecosystem services, and natural resources, including biological resources. Overfishing and the taking of undersized fish have led to anecdotal observations of general decline in the quality and quantity of catch size throughout Palau.

1.2.3 Population Growth and Urbanization

The National Action Plan to Combat Desertification identified land degradation due to population growth as the second greatest threat to sustainability in Palau. The plan identified nine major causes of land degradation in Palau (ADB, 2007):

1. Lack of land use planning
2. Development following completion of the Compact Road
3. Drought
4. Sea-level rise
5. Loss of soil fertility
6. Watershed degradation
7. Invasive Species
8. Uncontrolled fires
9. Unsustainable development practices

Population growth contributes to increased pressure on ecological systems by raising the demand for natural resources and by driving development of land and water areas. Urbanization represents a shift from traditional fishing and agricultural values toward greater reliance on new

technology and imported materials in order to meet the needs of a growing population. Until a mini-census completed in 2012, following World War II the national population had consistently increased at each measurement. Bucking historical trends, from the previous census in 2005, the 2012 census indicated that total population declined from 19,907 to 17,501, a decrease of over 12%. (OPS, 2012) It is likely that the population decline is primarily the result of emigration as residents seek economic opportunities elsewhere. While the total population of residents has declined, the number of visitors has increased since 2005, with an estimated 100,000 visitors per year in 2011. (IMF, 2012)

Population has also continued to remain largely concentrated in the Koror/Airai region, resulting in greater infrastructure development and stress on ecosystems in those areas. Airai in particular has experienced significant development along with a 75% increase in population in the last 25 years. (Kitalong, 2010) Since the early 1980's, major development in Airai has included construction of the airport, portions of the Compact Road and service roads, commercial agricultural operations, and construction of large housing developments. These activities coincided with loss of forested areas, including upland and mangrove forest areas, increased erosion in Airai's watersheds, and elevated sedimentation in marine waters fed by associated watersheds. The loss of ecosystem services in Airai's watersheds provided by biological components represents a serious threat to both human activity and biodiversity in the area. The Ngerikiil Watershed is the primary source of drinking water for approximately 75% of the population of the country, and includes areas that have undergone major development. The Ngerikiil River empties into Airai Bay. As a result of increased sediment loads and decreased capacity for natural features such as mangrove forests to filter suspended particles, the reefs in Airai bay have been smothered, and the once productive fishery has collapsed. (PCS, 2013)

Koror remains the economic center of Palau, even after completion of the Compact Road and relocation of the national capital to Ngerelmuud hamlet in Melekeok state. Rather than relocating to Melekeok or other nearby states, many lawmakers and government workers simply commute from their homes in Koror and Airai to work. Greater economic development in the Melekeok area will be required in order to promote relocation to the state. While relocation of the national capital has not yet stimulated large scale population movement that might reduce development pressure in the Koror/Airai region, the centralization of the economy has had unintended benefits for biodiversity in other regions in Palau. Babeldaob is sparsely inhabited compared to the Koror/Airai region. As a result, significant areas of Palau's forests are relatively untouched, leaving large terrestrial and marine areas available for designation as protected areas.

Beyond simple population increase, Palau has become increasingly urbanized with the majority of the national population residing in the urban Koror/Airai region. Further, the high standard of living enjoyed by the people of Palau has led to increased consumption of foreign goods and adoption of new technologies in all aspects of society. Greater consumption of foreign goods has increased the amount of solid, non-compostable waste produced, pushing the boundaries of the nation's capacity to deal with waste. When applied to traditional industries such as fishing, new technology like motorboats and more efficient fishing equipment has improved the capacity of local fishermen to catch fish. However, improved efficiency and intensity of fishing may allow fishermen to outstrip the capacity of fisheries to support the industry.

1.2.4 Water Quality and Quantity

Overall, Palau receives abundant rainfall throughout the year and water quality is generally high. However, water storage and distribution is an ongoing challenge. Per capita, Palau has a high rate of water consumption compared to other countries. (PCS, 2013) With approximately 75% of the population relying on one watershed, the Ngerikiil, the freshwater supply is highly sensitive to declines in water quality or quantity. During periods of drought, water blackouts are sometimes employed in the Koror/Airai region. Blackouts serve a dual purpose—reduction of consumption during certain times and a method for identification of leaks in the distribution system. Blackouts are only a stopgap measure; eventually additional water storage capacity will be required.

As mentioned in section 1.2.1 above, droughts in Palau can be sudden and severe. Diversion of water to meet human needs during droughts can lead to decreased flows, which may potentially interfere with the lifecycles of aquatic organisms. Considering the agriculture sector's reliance on rainfall for water, without irrigation systems in place, it is difficult for farmers to sustain crops through droughts. Drought conditions increase the danger of fire, particularly in open savanna areas, which are often subjected to deliberately set fires. Palau currently lacks sufficient infrastructure and resources to effectively respond to most wilderness fires, meaning that uncontrolled fires are left to burn out on their own. Forests abutting savanna areas that are subjected to frequent fires are whittled away over time by repeated exposure to fire along the edges. (Kitalong, 2010) Due to Palau's generally highly weathered acidic soils, vegetation in burn areas is slow to recover. Burn areas are left at a greater risk of erosion and impairment of water quality in associated bodies of water.

Water quality has also been affected by agricultural development. Downstream from large-scale piggeries, water samples have shown elevated levels of coliform bacteria. The presence of coliforms indicates contamination from animal waste. Although the current scale of use is unknown, use of chemical fertilizers and pesticides may contribute to contamination of agricultural runoff, further impacting biodiversity in aquatic and marine environments. In addition, with increased urbanization and consumption of foreign goods, untreated effluent containing detergents may contribute to excess nutrients in aquatic and marine systems, potentially leading to eutrophication. (PCS, 2013)

1.2.5 Conservation and Protection

Palau has had great success in enacting legislation to protect ecosystems and biodiversity as well as designate conservation areas. Already recognized as the world's first shark sanctuary, President Tommy Remengesau has recently proposed that Palau become a marine sanctuary, which would lead to greater protection of the country's fisheries. Other notable conservation and protection successes include ongoing maintenance and expansion of the Protected Areas Network (PAN), designation of the Koror State Rock Islands Southern Lagoon as a UNESCO World Heritage Site, designation of the Ngardok Nature Reserve as a RAMSAR site, and recognition of the Ngermeduu Biosphere for its enormous importance to biodiversity.

In addition to designating conservation areas, Palau has made progress in improving planning capacity and overall management of its natural resources. Airai and Melekeok states have been

leaders in developing management plans including Master and Land Use Plans and in 2013, Airai state completed the first state-level watershed management plan in Palau. These plans have included sections addressing management of individual species as well as general issues related to conservation of biodiversity.

Palau is home to hundreds of known endemic marine and terrestrial species, likely with many more species that have yet to be described by science. In 2011 a new species of marine eel, *Protanguilla palau*, was discovered in the rock islands of Palau. The eel species was discovered in a cave on Ngemelis island, a popular tourist destination. The species is a living fossil, representing a previously unknown family of eels and demonstrating characteristics of early eel evolution. Such discoveries underscore the need for further study and conservation of Palau's biological resources.

Considering the lack of quantitative data and monitoring capacity for many environmental processes and species in Palau, effort has been made to identify qualitative indicators of ecosystem health. It is hoped that using qualitative indicators can be used to improve environmental until local capacity for qualitative data collection and management improves. Some progress has been made in improving understanding of possible indicators of ecosystem health. The Belau National Museum, in cooperation with the Palau Conservation Society and the Palau International Coral Reef Center, has completed preliminary studies to identify bird species that can be used to indicate near shore environmental quality. More research and analysis is needed to improve understanding of the conservation needs facing Palau as well as to improve the ability to monitor and analyze the outcomes of conservation initiatives.

1.2.6 Sustainable Use

Sustainable development and use of natural resources has been another major focus of policy and planning design. Sustainable use represents an approach to conservation that allows for the controlled use of resources in ways that do not exceed environmental capacity. Since the creation of the NBSAP, the country has made progress in developing both national and state level policies to promote sustainable use across development sectors. In order to increase funding for environmental management, the country has instituted a $30 Green Fee that visitors to Palau must pay before leaving Palau. Money collected through the Green Fee supports the Protected Areas Network (PAN). Other national-level initiatives include Palau's participation in the Micronesia Challenge, a regional agreement intended to support environmental conservation, protection of biodiversity, sustainable development and climate change preparedness throughout Micronesia. A national recycling program has also been implemented in order to reduce the amount of non-compostable solid waste entering Palau's landfills.

State-level and protected area-specific management plans have been implemented across Palau. In general, these plans are designed to allow for long-term sustainable use of the resources, ecosystem services and biodiversity that falls within the scope of the management plan. Taking into consideration the economic needs of managed areas, their ongoing importance to tourism, agriculture and other industries, and the intrinsic value of biological resources, management plans have been designed to promote implementation of best management practices (BMPs) as a method for achieving sustainability. BMPs include both generally accepted management

solutions as well as Palau-specific practices based on traditional knowledge of the local environment.

While progress has been made in improving sustainable management in Palau, there is much work still to be done. National guidelines need to be established for developing state and protected area-specific management plans. While some states have created land and water management plans, and some protected areas have implemented management plans, in order to provide for consistent and adequate protection across political boundaries, all states and management areas need to establish comprehensive management plans. Since the NBSAP was created, institutional and human resource capacity has improved. Provided adequate funding support during the planning stage, it is likely that sufficient local expertise exists to meet the demands of developing management plans. Ongoing capacity development will still be necessary to adequately implement and enforce these management plans.

1.2.7 Cultural Preservation

Palauan culture is deeply linked to the environment. Palauan legends are filled with references to the importance of plants and animals in providing for the needs of the Palauan people. Medicinal plants and certain prized species of animals play important roles in traditional customs; timber is used for firewood, construction and carving; and activities like taro cultivation, fishing and collection of marine invertebrates are still significant sources of food and income for many Palauan families. The long history of human habitation in Palau combined with the generally high quality of the environment and the impressive diversity of biological resources provides a testament to the effectiveness of traditional management practices. Prior to significant influence from foreign powers, it is estimated that Palau supported a maximum population of as many as 80,000 people. Considering the current population and contribution of resources from outside sources, it is likely that with proper management strategies, Palau could establish sustainable industries that would allow for ongoing environmental health while also supporting economic development needs.

While Palauan culture in general prizes a high quality environment, some cultural practices coupled with improved technology have contributed to declines in biodiversity. Pressures on Palau's coastal resources arise not only from large-scale phenomenon such as elevated ocean temperatures and coral bleaching, but also from local-scale activities such as overfishing and tourism overuse. People are now collecting resources, especially in the marine environment, with new and more effective gear. Traditional methods that tended to limit the harvest are rarely employed as methods for hunting and fishing. In addition people are increasingly collecting or harvesting resources for monetary income rather than solely for local subsistence uses. In addition, projects such as road building, mangrove filling, and dredging are altering habitats in many areas to such a degree that once abundant marine species are now hard to find. Taro patches are also not as productive as they once were. (ADB, 2007)

Traditional values continue to play an important role in Palauan society. A council of traditional chiefs function as advisors to the president, and councils of chiefs and other traditional organizations still wield authority at various levels in society. There is significant potential for merging traditional and modern practices into management policies that are well suited to meet the specific development and conservation needs of Palau.

1.2.8 Data Gaps

Across all sectors, the lack of quantitative data and analysis is a major hindrance to developing effective policies and monitoring any effects that management programs may produce. Without more and better data and data analysis, agencies are severely limited in their ability to design, implement, and monitor the effectiveness of environmental policies. Anecdotal observations made by fishermen and other individuals with regular interaction with the environment provide valuable information for shaping policy decisions, but systematic, quantitative data is necessary to improve the quality of environmental management. Some progress has been made in filling in some data gaps through research supported by partnerships between government, NGOs and the private sector. However, considerable capacity development is needed in order to establish and maintain ongoing data collection, monitoring, reporting and analysis systems.

1.3 Status of the Legislative and Regulatory Framework

Legal authority in Palau is established through the Constitution of the Republic of Palau. The Olbiil er a Kelulau (OEK) is the premier body responsible for creating and promulgating national legislation. Ownership of marine resources is established in Article I, Section 2 of the Constitution, stating that each state "has exclusive ownership of all living and nonliving resources, except highly migratory fish, from the land to twelve nautical miles seaward of the baseline." (NBSAP, 2004) Land can be owned by individual Palauan citizens, clans, or by state and national governments, in which case lands are often administered by designated government agencies.

Currently, the majority of the States lack zoning regulations. Zoning is primarily a responsibility of each State. Airai state and Melekeok state have made progress toward creating effective zoning regulations through development of land use plans. While most States lack sufficient expertise and other necessary resources to complete comprehensive, long-term plans, there is a general willingness to take on more responsibility for land use planning and implementation. Planning Commissions could be created to share resources and facilitate the development of zoning and land use plans, including preparation and implementation of state zoning regulations and building codes that are consistent with national provisions. Zoning regulations are needed to ensure that developments are not detrimental to critical habitat areas. In addition, zoning may provide for a more uniform development structure, such as specifying residential, tourism and industrial areas. (ADB, 2007)

1.3.1 Natural Resource-related Legislation

While still a member of the Trust Territories of the Pacific Islands, Palau began to control its own internal governance in 1980. In 1981, the government passed the Environmental Quality Protection Act. This law established the Environmental Quality Protection Board (EQPB), mandating that EQPB be responsible for regulating earthmoving and development of structures, water quality, public water systems, solid waste management, toilet facilities, pesticides, environmental impact statements, and air pollution. (ADB, 2007) While the Environmental Quality Protection Act created EQPB and set forth its responsibilities, with few statutes to provide specific direction to management priorities, the EQPB was granted little authority to manage environmental consequences of development. (ADB, 2007) In addition, as established by the constitution, states have ownership of natural resources, which can further complicate the

question of which body, the state government or EQPB, has authority over environmental management issues.

Since 1992, through legislation and traditional conservation practices, the states and traditional leaders have protected over 458 km^2 of natural reserves through a system of conservation areas, marine preserves, fish spawning areas, wildlife preserves, and sanctuaries. All ecosystems are represented in these managed areas including more than 17% of all mangroves, the inner reef areas in eight states, two of the three atolls, twelve major channels or passes, and the two largest watersheds in Palau, including its only freshwater lake. (ADB, 2007)

In November 2003, the Republic of Palau passed legislation to establish a Palau Protected Areas Network (PAN). The PAN has led to improvements in managing natural resources by linking all of Palau's marine and terrestrial protected areas, coordinating efforts of many states in protecting Palau's ecosystems, and supporting local resource management issues by promoting cooperation between stakeholders. States also have access to assistance from the national government through the Ministry of Natural Resources and Environment. This includes technical assistance to states seeking to protect areas of significant biodiversity and unique habitats by allowing improved access to grant money and other management support programs. (ADB, 2007)

The term "protected" is defined in the legislation as "maintained, intact, preserved, conserved, or otherwise managed in a sustainable manner." Individual states are responsible for nominating areas within their borders to be eligible for the PAN network, applying for financial aid and technical support to manage the nominated areas, and developing and implementing management plans. Responsibilities of the national government include providing rules and regulations outlining the process for designating an area to become part of the PAN. It also assists with the enforcement of regulations and develops mechanisms for sustainable financing of the protected areas in PAN. The national government, through the MNRET is also responsible for standardizing the collection of information, record keeping, monitoring and reporting. (ADB, 2007)

Each State has a traditional system of resource management as well as legislation to manage their resources. The list below includes management plans but it is by no means an exhaustive list.

- Koror State Rock Islands Management Plan
- Management Plan for the Ngaremeduu Conservation Area
- Management Plan for the Ngardok Nature Reserve
- Ngeruangel Management Plan
- Helen Reef Surveillance and Deterrence Plan
- Melekeok State Land Use Plan
- Airai State Master and Land Use Plan
- 5-Year Airai State Watershed Management Plan

All of these management regimes have integrated legislation and traditional management into a management plan. Beyond creating management plans, the greatest challenge for most states is to effectively implement and enforce their management plans. (ADB, 2007) Criminal and civil penalties have been established for individuals who violate regulations set forth for the protected areas. Many of the marine protected areas have restricted seasons for fishing and harvesting of

certain species or have traditional moratoriums called *bul* in place. National and state governments are responsible for enforcing the regulations; however, Some of the states do not have full time conservation staff or enforcement officers and only one has a full time legal counsel. As a result, states have limited capacity to plan and implement programs and continue to need technical assistance and further funding support from national government agencies and NGOs to effectively implement conservation programs. Lack of enforcement of conservation laws in general is also a problem in Palau due to enforcement agencies having human and institutional capacities to adequately enforce the laws. (ADB, 2007)

1.4 Status of the Institutional Framework

Multiple national institutions contribute to environmental management and biodiversity protection, including government organizations, semi-government organizations and non-government organizations (NGO).

1.4.1 Government Organizations

Government organizations involved in management of Palau's biodiversity include:

Ministry of Natural Resources Environment and Tourism

MNRET is responsible for oversight of government initiated agricultural, forestry, fisheries and energy programs and activities. The Ministry is also responsible for all infrastructure maintenance and improvement at the national level, including road maintenance, sewer system operations and capitol improvement projects. MRD includes:

- The Bureau of Lands and Surveys
- The Office of the Palau Automated Land and Resource Information System (PALARIS)
    - Provides mapping and geographic information systems services.
- The Palau Fisheries Advisory Committee
    - Provides recommendations to the Minister of Resources and Development and the President regarding national fisheries policies and implementation of the Palau National Tuna Fisheries Management Plan. (ADB, 2007)

Office of Environmental Response and Coordination (OERC)

OERC is responsible for ensuring compliance with Palau's obligations under the UN conventions on climate change, biodiversity, ozone, and desertification as well as facilitating coordination of national level responses to environmental degradation, protection, and rehabilitation of natural habitats. (ADB, 2007)

Ministry of Justice

The Ministry of Justice is responsible for overseeing the courts, law enforcement, and enforcing laws in Palau. The Bureau of Public Safety is the primary enforcement arm of the Ministry of Justice. Included in the Bureau of Public Safety are:

- The Division of Fish and Wildlife Protection (DFWP)
    - DFWP is the primary authority for enforcing criminal laws protecting the environment inside of the reef. DFWP also plays a role in community relations and education regarding environmental issues.

- The Division of Marine Law Enforcement (DMLE)
    - DMLE is the primary authority for enforcing foreign fishing laws, which largely concern marine areas outside of the reef. (ADB, 2007)

Palau Public Land Authority (PPLA)
PPLA administers, manages, and regulates the use of lands and any resulting income. It also establishes the basic guidelines and procedures for the operation of state public land authorities in each state, and provides technical assistance as appropriate. Each state in turn uses the authority granted to it by the PPLA to administer, manage and regulate public lands within its geographical boundaries. (ADB, 2007)

National Environmental Protection Council (NEPC)
NEPC is a is a high level policy council that focuses on improving coordination of environmental initiatives in order to ensure that Palau fulfills its obligations to international environmental agreements and treaties that have been ratified by the OEK. (ADB, 2007)

1.4.2 Semi-Government Organizations

Environmental Quality Protection Board (EQPB)
EQPB regulates all development activities involving earthmoving and structural development in Palau. The agency is also responsible for regulating environmental impact statements (EIS), marine and freshwater quality, air quality, public water systems, solid waste management, toilet facilities and pesticides. Major development projects are required to conduct an environmental assessment (EA). Depending on the scale of the project and its possible environmental impacts based on the initial EA, a full EIS may be required for projects that are likely to have significant negative impacts on the environment. (ADB, 2007)

Palau Community College Cooperative Research and Extension (PCC-CRE)
PCC-CRE programs mainly focus on agriculture and conservation of agricultural biodiversity resources. This agency is staffed with well-qualified agronomists and entomologists. The PCC-CRE Research and Development station in Ngaremlengui state has laboratory facilities for reproducing taro seedlings through tissue culture. They are also working on a germ plasm collection for varieties of banana, sweet potato and taro. As part of their comprehensive conservation management plan, they have planted hundreds of trees to serve as windbreaks and to stabilize soils in riparian areas. The trees also serve as educational displays for Outdoor Science Classes for local high school students. (ADB, 2007)

Palau International Coral Reef Center (PICRC)
PICRC is the result of a Common Agenda for Cooperation between Palau, Japan and the United States. The partnership was formed in order to address global issues related to health, population, environmental degradation and natural disasters. The Coral Reef Center itself was established by the Palau International Coral Reef Center Act of 1998. PICRC plays an important role in supporting coral reef studies, research and education, with the ongoing objectives of improving environmental management, sustainable use and conservation of Palau's marine resources. (ADB, 2007)

Palau Community Action Agency (PCAA)
The PCAA was established during the Trust Territory period under the U.S. Economic Opportunity Act of 1964. The PCAA is a nonprofit private and public organization intended to work toward reducing poverty and developing means for people to help themselves gain self-sufficiency. Promoting sustainable economic activities is a key component of improving environmental sustainability.

Belau Watershed Alliance (BWA)
BWA is an organization comprised of representatives from government organizations, NGOs, and the private sector with the mission of improving watershed management throughout Palau. The BWA promotes cooperation between various stakeholders in order to make the best possible use of available knowledge and resources to protect water quality and quantity, ecosystem services and biodiversity within watersheds. In September 2013 the BWA hosted a regional watershed management summit in Koror which included attendees from throughout Micronesia.

1.4.3 Non-Government Organizations

NGOs have come to play an important role in conservation and protection of the environment in Palau. NGOs have supported a broad range of activities affecting environmental management and conservation of biodiversity, including building organizational and human resources capacity, working to promote environment-friendly legislation, reaching out to the public, and working with stakeholders to develop management policies that address environmental issues while also reflecting community interests.

The Nature Conservancy (TNC)
TNC has been working in Palau since 1990, initially in partnership with the national government, primarily with the Division of Marine Resources. TNC assisted in establishing the Palau Conservation Society and has continued to provide ongoing collaboration, support and services to local partner organizations. (ADB, 2007)

Palau Conservation Society
Since 1994, PCS has worked with Palauan communities to protect natural resources by establishing locally managed conservation areas, developing watershed management strategies and increasing awareness about all aspects of conservation and protection of natural resources. PCS has worked with several states to create, monitor and manage many marine protected areas. In 2002, PCS began to focus more effort on working with communities and partner agencies on conservation and awareness projects on Babeldaob, where much of the new development in Palau is occurring. (ADB, 2007) Working with Airai state government and EQPB, in 2013 PCS completed the 5-Year Airai State Watershed Management Plan, the first state-level watershed management plan in Palau.

1.5 Country Biodiversity Information

Palau contains some of the most diverse and pristine ecosystems in the world. These diverse habitats are home to an extraordinarily high number of marine and terrestrial species that are

essential to the culture, economy and livelihoods of the Palauan people. Many species and ecosystems are endemic or rare and conserving Palau's resources is important globally.

Palau is home to the greatest area of continuous native forest in Micronesia. There are over 303.51 km^2 of forest cover throughout the islands. With more than 1200 species of plants, of which over 860 are native, Palau's forests are the most species-diverse in Micronesia. In addition to their direct biodiversity values the forests provide vital ecological services that help to maintain the health and ecological integrity of all of the terrestrial and marine ecosystems (e.g. sediment trapping, climate stability, nurseries for reef fish, soil production and conservation, etc.). Nine types of forest are found throughout Palau including; Upland Native Forest, Low Coastal Island Forest, Raised Limestone Island Forest, and Mangrove Forest. Agro-forest covers 10.92 km^2 and is dominated by coconut stands. Palau's forests are highly valued as watershed areas, for preventing soil erosion, as sources of firewood, medicines, building materials, and as areas to forage and hunt for food.

1.5. Palau's Terrestrial and Coastal Biodiversity (2004-2014)

Conservation is a cause that has no end. There is no point at which we say "Our work is finished." *Rachel Carson*

1.5.1 The Diversity of Palau's Vascular Plants

Palau has 724 known species of native vascular plants including at least 194 endemic species. The total number of terrestrial plant species in Palau is estimated to be approximately 1,200 with an estimated 25% rate of endemism. At least ten of the known endemic species are categorized as endangered, threatened or vulnerable.

Endemic Plant Species of Concern		
Botanical Group	**Scientific Name**	**Status**
Annonaceae	*Goniothalamus carolinensis*	Near-Threatened
Arecaceae	*Ponapea palauensis*	Critically Endangered
Arecaceae	*Hydriastele palauensis*	Near-Threatened
Orchidaceae	*Nervilia trichophylla*	Near-Threatened
Orchidaceae	*Peristylus palawensis*	Near-Threatened
Pandanaceae	*Pandanus kanehirae*	Near-Threatened
Pandanaceae	*Pandanus peliliuensis*	Vulnerable
Apocynaceae	*Rauvolfia insularis*	Vulnerable
Fabaceae	*Parkia parvifoliola*	Endangered
Rubiaceae	*Maesa canfieldiae*	Vulnerable

Endangered Tree Species

Ponapea palauensis (Chesebuuch) (Critically Endangered): The most important stands of this endemic palm tree are found in the Rock Island Southern Lagoon World Heritage Site. Observations that an introduced bird species, the Sulphur-crested Cockatoo (*Cacatua galerita),* feeds in the crowns of this species have led to the suspicion that the bird poses a threat to the palm's survival. Koror State Government, which manages the world heritage site, is actively monitoring birds and trees to assess the situation.

Parkia parvifoliola (Kmekumer) (Endangered): Once widespread and prized for the quality of its lumber, this endemic species has become exceedingly rare despite the lack of harvesting for many years. The largest known stand is located in the upper reaches of the Ngermeskang River in Ngaremlengui State. The locality was recently nominated for membership in the Protected Areas Network in order to conserve this rare species and other wildlife in the watershed. The reasons for the decline of this endemic tree are unclear and additional research is needed to determine its habitat requirements, pollinators, seed dispersers and other factors that may have a bearing on its survival. Research is also needed to develop a means of cultivating the species from seed. One immediate threat is wildfires, which could destroy the few remaining trees or seriously degrade their surrounding habitat.

The Diversity of Palau's Terrestrial Macroinvertebrates

1. 5.2 Arthropods (Insects and related organisms)

Insects and related arthropods are vital to maintaining the biodiversity of every terrestrial ecosystem in Palau through the roles that they play in the web of life as pollinators, recyclers, dispersers of plant propagules and food sources for birds and other wildlife. It is often wisely said that without insects most of the world's (and Palau's) terrestrial biodiversity would become rare or extinct.

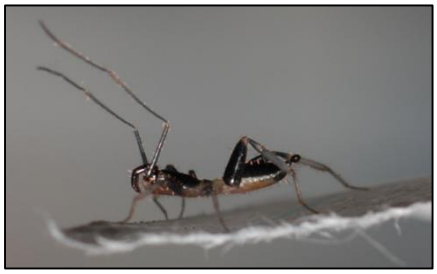
A survey of Micronesia conducted by the Bishop Museum during the administration of the U.S. Trust Territory of the Pacific Islands documented over 1,200 species of insects and closely related arthropods from Palau with an endemism rate of approximately 25%. More recent survey work indicates that the total number of terrestrial arthropods in Palau may approach 10,000 species. The NBSAP calls for an ongoing national taxonomic needs assessment in order to complete the process of cataloging this rich diversity. In response, Belau National Museum added a Natural History Section to its organizational structure for the purpose of filling the gaps in our knowledge of Palau's biodiversity. The newly–formed section supports field research by staff members and visiting scientists as well as maintaining a scientific repository collection of preserved insect specimens and educational displays in the museum's Natural History Gallery.

Major Groups of Terrestrial Arthropods of Palau	
Taxon (Class or Order)	**Common Name**
Tardigrada	Tardigrades
Scorpiones	Scorpions
Schizomida	Short-tailed Whipscorpions
Amblypygi	Tailless Whipscorpions
Araneae	Spiders
Opiliones	Harvestmen
Acari	Mites and Ticks
Pseudoscorpiones	False Scorpions
Diplopoda	Millipedes
Chilopoda	Centipedes
Pauropoda	Pauropods
Symphyla	Symphylans
Branchiopoda	Freshwater Shrimp
Amphipoda	Amphipods
Isopoda	Sowbugs and Woodlice
Collembola	Springtails
Diplura	Diplurans
Microcoryphia	Jumping Bristletails
Thysanura	Silverfish
Ephemeroptera	Mayflies
Odonata	Dragonflies and Damselflies
Orthoptera	Grasshoppers, Crickets and Katydids
Phasmatodea	Walkingsticks
Dermaptera	Earwigs
Isoptera	Termites
Mantodea	Mantises
Blattodea	Roaches
Hemiptera	True bugs and related insects
Thysanoptera	Thrips
Psocoptera	Booklice
Phthiraptera	Lice
Coleoptera	Beetles
Neuroptera	Lacewings and Antlions
Hymenoptera	Bees, Wasps and Ants
Trichoptera	Caddisflies
Lepidoptera	Moths and Butterflies
Siphonaptera	Fleas
Diptera	Flies, Midges and Mosquitos

Endemic Damselfly, *Pseudagrion palauense*

The known terrestrial arthropod fauna of Palau includes species from 38 major taxonomic groups. The richest diversity is found in the Class Hexapoda (insects), which is the most diverse group of animals on the face of the earth. Palau's Insect species represent 26 of the 31 recognized taxonomic Orders of Hexapoda in over 100 Families.

Palau's arthropod diversity includes many unusual and noteworthy species. Among the flies, for example, the endemic Palau Horsefly, *Tabanus palauen*sis (Diptera: Tabanidae), is the only native horsefly in Micronesia and the endemic Palau March Fly *Plecia palauensis* (Diptera: Bibionidae), is the only known march fly in Oceania.
An endemic damselfly, *Drepanosticta palauensis*, is listed as endangered due to restricted habitat and rarity. Palau has at least two other endemic damselflies that are more abundant.



Palau Short-tailed Whipscorpion (Schizomida)

Another noteworthy component of Palau's arthropod fauna is the presence of the rare Order Schizomida or Short-tailed Whipscorpions. Only 200 species of this rare group are known worldwide and at least one (as yet unnamed) of those species occurs in Palau. They are also known as "grasshopper spiders" due to their elongated hind legs used for jumping.
One noteworthy aspect of Palau's biodiversity is the presence of insects that have adapted to marine habitats, an environment that is normally hostile to insects. Several near-shore and pelagic species of Sea Skaters (*Halobates* spp.) are found in Palau's waters and the midge, *Pontomyia oceana* (Chironomidae), is found only on the coral barrier reefs of Palau and Queensland. The recent discovery of an ant (Formicidae) species that lives exclusively in the littoral intertidal zone added one more unusual species to the list of Palau's marine insects. The marine littoral ant, *Odontomachus malignus*, was first discovered in Palau in 2007. Palau is the only place in Micronesia where this rare species is found.

Ants provide an example of the urgent need for further study of the diversity of terrestrial arthropods. Recent survey work has increased the number of ant species known to occur in Palau from an original estimate of 16 species to 80 or more species with at least eight previously undescribed species and two undescribed Genera. The surveys established the presence of functional groups of ants that can be used as bioindicators for monitoring the health of Palau's forest ecosystems.

1.5.3 Gastropods

Land and Freshwater Snails

Land snails are among the most extraordinarily diverse animals in Palau and at least 95% of these species are endemic to Palau (Rundell, 2010). Palau's land snail biota is severely understudied, but initial research on these species over the past decade shows that there are likely ca. 200 species, most of which are new to science, and many of which are threatened with extinction (Rundell 2008, 2010; 57 IUCN conservation assessments: Rundell 2012; O'Foighil and Rundell 2012a-c). Discovering species, mapping species' geographical distributions, and describing species from collections are critical components of ongoing research in Palau, since only species with locality data and formal taxonomic names can be assessed under IUCN criteria and subsequently prioritized for conservation efforts.

Endemic land snail species are found throughout the Palau archipelago, from Kayangel (Ngcheangel) atoll in the North to Angaur (Ngeaur) in the South. The Southwest Islands also harbor indigenous, and possibly endemic species (Rundell 2003, unpublished data) and comprise a fauna distinct from that of the main archipelago. Within the main Palau archipelago, indigenous forests have the highest land snail diversity and endemism. Of these forests, indigenous forests of the Rock Islands have the highest land snail diversity and endemism, although the island of Babeldaob also harbors several land snail species that are endemic only to Babeldaob's volcanic forest.

Within Babeldaob there are also important "hotspots" of land snail diversity, particularly the limestone outcrop forests of Oikull and the surrounding areas. Among the many land snail species found there are Palau-endemic partulid tree snails, which have been driven to extinction or near-extinction on practically every other island in the Pacific. There are at least two species of large-bodied and charismatic partulid tree snail species in Palau (a third is presumed extinct). Live partulids are currently known only from isolated pockets in southern Airai State, Ulong, Ngeruktabel, and Ngermalk. Immediate threats to partulids include limestone quarrying, rats, and potential spread or reintroduction of invasive species. Predatory land snail species (e.g. the rosy wolf snail *Euglandina rosea*) and predatory flatworms have been unfortunately introduced throughout the Pacific in disastrous attempts at biocontrol. Because partulids are slow to reach reproductive maturity and give birth to live young one baby at a time, all of the above threats can have immediate and devastating impacts on these snails.

There are at least 4 introduced land snail and slug species in Palau (Cowie et al. 1996; Rundell 2013, unpublished data). Most of these are currently restricted to human-occupied or disturbed areas, but evidence from elsewhere in the Pacific suggests that introduced land snail and slug species (e.g. eggs and adults from imported soil, plants and other agricultural products) have the potential to spread into indigenous forests, and become permanently established. Many of these molluscan hitchhikers, particularly slugs, are major agricultural pests, meaning that thorough and regular inspections of shipments are imperative.

Palau's freshwater (including brackish water) snails are poorly known. Smith's (1991) review of the fauna lists 15 total freshwater mollusc species. The most recent comprehensive survey of

freshwater snails by Cowie et al. (1996) uncovered 8 of these species (all of which are likely indigenous) from 5 collecting sites on Babeldaob. Incidental collections of 3 freshwater snail species were made on Babeldaob in 2013 (Rundell 2013, unpublished data).

1.5.4 The Diversity of Palau's Freshwater Fish

Very little is known about the native (indigenous) freshwater fishes of Palau. At least 50 species are thought to occur in Palau's rivers. The most diverse group is the gobies, which include four or more endemic species. There are five introduced species, including an invasive fish, *Tilapia* sp., which is currently confined to a settling pond at a rock quarry in Koror.

1.5.5 The Diversity of Palau's Herpetofauna (Reptiles and Amphibians)

Palau has 44 species of reptiles and two species of amphibians. Two of these are introduced species of freshwater turtles but no concrete evidence that either of these invasive species has established a breeding population in Palau. One of the lizard spcies is the introduces anole, *Anolis carolinensis*. Among the native Palauan reptiles are four species of sea turtles, seven snake species, 30 lizard species and one species of crocodile. One of the lizard species is known from skeletal remains only. The two Palauan amphibians are an introduced toad and an endemic frog. The 44 species of herpetofauna are distributed among fourteen taxonomic Families. Two amphibian families, five lizard families, five snake families, one marine turtle family and one crocodile family are represented in Palau.

The Palauan frog, *Platymantis pelewensis*, is the only endemic amphibian in Palau. It is unusual in that very few endemic frogs are known from small island countries. Its closest relatives are found in New Guinea and the Philippines. Large numbers of females of the Palauan frog have been observed to congregate in caves and abandoned World War II bunkers. The purpose of this behavior is unknown. The other amphibian is the introduced marine toad, *Bufo marinus*.

The Palauan blind snake is an endemic burrowing species while the remaining native snakes are not endemic to Palau but enjoy a wider distribution in the Australasian and Oceanian regions. The most diverse group of Palauan reptiles is the lizards with 30 species including six endemic species. Two more of the thirty lizard species are categorized as "Pacific insular endemics" that are found only in the islands of the Pacific Ocean. Palau is unusual among Pacific islands in having a native boa constrictor. This snake species is also found in Papua/New Guinea. Two endemic lizards are seemingly rare. The Palauan pandanus skink is known only from leaf axils of pandanus trees. One endemic gecko species is known from only two islets in the Ngerukewid Nature Reserve. One Pacific insular endemic lizard is found only in the Southwest islands in Palau; however, it also occurs in other islands across the Pacific. The coastal waters and the open sea surrounding Palau support eight species of marine reptiles. Four species of sea turtles are known from Palauan waters. The saltwater crocodile, *Crocodylus porosus*, also occurs in Palau's waters. Sea turtles and the crocodile are protected species. In addition, there are three species of sea snakes known from Palau. The dog-faced sea snake is normally seen in or near mangrove forests. The banded sea krait is common throughout the lagoon. A third pelagic sea snake is reported from waters outside Palau's fringe reef. All three are venomous.

1.5.6 The Diversity of Palau's Birds

A total of 171 bird species have been reported from Palau: 52 resident species, 7 pelagic species, 66 migratory species, 44 vagrant species and 2 introduced species that have been extirpated or eradicated. Palau's bird diversity is highlighted by 21 endemics including 11 endemic species, 6 endemic subspecies and 2 endemic genera.

Endemic Birds		
Common Name	**Scientific Name**	**Palauan Name**
Micronesian Megapode	*Megapodius laperouse senex*	Bekai
Rufous Night-Heron	*Nycticorax caledonicus pelewensis*	Melabaob
Purple Swamphen	*Porphyrio porphyrio pelewensis*	Uek
Nicobar Pigeon	*Caloenas nicobarica pelewensis*	Laib
Palau Ground-Dove	*Gallicolumba canifrons*	Omekrengukl
Palau Fruit-Dove	*Ptilinopus pelewensis*	Biib
Micronesian Imperial-Pigeon	*Ducula oceanica*	Ieb
Palau Owl	*Pyrroglaux podargina*	Chesuch
Palau Swiftlet	*Aerodramus pelewensis*	Chesisekiaid
Rusty-capped Kingfisher	*Todiramphus cinnamominus pelewensis*	Cherosech
Micronesian Honeyeater	*Myzomela rubratra kobayashii*	Chesisebangiao
White-breasted Woodswallow	*Artamus leucorynchus pelewensis*	Mengaluleu
Morningbird	*Colluricincla tenebrosa*	Tutau
Palau Fantail	*Rhipidura lepida*	Melimdelebteb
Palau Flycatcher	*Myiagra erythrops*	Charmelachull
Palau Bush-Warbler	*Cettia annae*	Wuul
Citrine White-eye	*Zosterops semperi semperi*	Charmbedel
Dusky White-eye	*Zosterops finschii*	Chetitalial
Giant White-eye	*Megazosterops palauensis*	Charmbedel
Micronesian Starling	*Aplonis opaca*	Kiuid
Blue-faced Parrotfinch	*Erythrura trichoa pelewensis*	- - - -

Endangered Bird Species

Palau Megapode, *Megapodius laperouse senex* (Endangered). There are two subspecies of the endangered Micronesian Megapode, one in the Commonwealth of the Northern Mariana Islands (*M.l. laperouse*) and one in the Republic of Palau (*M.l.senex*). They are categorized as endangered based on restricted range and small, isolated populations. Differences between the subspecies with respect to morphology, vocalizations, ecology and ectoparasites indicate that they may actually be separate species. The largest subpopulation in Palau is found in the Rock Islands Southern Lagoon UNESCO World Heritage Site.

The Palau Megapode builds an unusual nesting mound to incubate its eggs. The mound (pictured left) is composed of a core of leaf litter and plant detritus that is covered with sand, soil or coral rubble to form a mound that uses the heat from the composting core to incubate the eggs that are subsequently buried in the mound. Over 90% of these nesting mounds are located in low-lying coastal strand forests that are threatened by rising sea levels and increasingly destructive typhoons due to climate change.

Black-tailed Godwit, *Limosa limosa* (Endangered): Small numbers of this endangered migratory species visit Palau as transients during the annual migration from central Asia to Western Australia. In Palau, it is attracted to sand flats in the lagoon and to artificial wetland habitats such as aquaculture facilities and sewage treatment ponds. It feeds on invertebrates by probing the mud or sand with its long beak. The species is categorized as endangered due to loss of nesting ground habitat in central Asia. A non-threatened sibling species, the Bar-tailed Godwit, *Limosa lapponica*, also transits through Palau during the migratory season.

Near-Threatened Bird Species

Nicobar Pigeon, *Caloenas nicobarica pelewensis* (Near-Threatened): Palau's population of the endemic subspecies of this near-threatened species is apparently stable. Nicobar Pigeons are a keystone forest species by virtue of their habitat of burying fruit of forest trees in the soil, which enhances germination and strengthens the overall biodiversity of forest ecosystems in Palau. The Nicobar Pigeon is the flagship species of Palau's National

Program for Monitoring Forest and Coastal Birds.

Palau Ground-Dove, *Gallicolumba canifrons* (Near-Threatened): This endemic species shares range and habitat with the Palau Megapode and is subject to the same climate change threats. Perhaps because of its secretive nature, the Palau Ground-Dove is thought to be Palau's rarest endemic bird. It is most often encountered in remote localities such as the Rock Islands Southern Lagoon UNESCO World Heritage Site

Micronesian Imperial-Pigeon, *Ducula oceanica* (Near-Threatened):
This species is threatened by poaching and loss of habitat throughout its range in Micronesia. The Palau subpopulation is in decline due to illegal hunting and habitat degradation. As a canopy frugivore, it is a keystone species that disperses fruit, seeds and other propagules of forest trees. In other Pacific localities where Imperial-Pigeons and other canopy frugivores were extirpated, the forest tree diversity gradually decreased.

Giant White-eye, *Megazosterops palauensis* (Near-Threatened): This endemic Genus and species is categorized as Near-Threatened due to an extremely restricted range in Palau's Rock Islands and Peleliu Island. Within its range, however, the Giant White-eye can be found in sizeable flocks of 10 to 20 birds. It feeds on insects, seeds and fruit. It is often seen in mixed flocks with the other Palauan species of white-eyes.

Threats to Palau's Bird Diversity

Climate Change: Rising sea levels due to climate change as well as the increased frequency and intensity of tropical typhoons also due to climate change are the most urgent threats to Palau's bird diversity. The Palau Megapode is critically endangered by climate change because over 90% of its nesting ground habitat is in low-lying coastal strand forests that are threatened with inundation from rising sea levels and increasingly intense typhoon tidal surges. A recent "king" tide (2013) and the tidal surges from supertyphoons Bopha (2012) and Haiyan (2013) have destroyed approximately 15% of the megapode nesting grounds in Palau. Many other forest-dependent birds are threatened with habitat loss from salt infiltration of low-lying forests due rising sea levels and from increasingly destructive typhoon winds. This is especially true for seabird nesting grounds that are often located on low atolls and sand bars.

Other threats to bird diversity include illegal hunting and egg-harvesting; habitat destruction from construction projects; overharvesting of forest trees and invasive species.

Response: Conserving Palau's Bird Diversity

Important Bird Areas (IBAs): Two Important Bird Areas in Palau, Fanna Island and Helen Reef, have been established to protect globally significant nesting populations of seabirds (Black Noddies and White Terns). The largest population of Red-footed Boobies in Micronesia also nests in these areas as well as several other seabird species.

National Program for Monitoring Forest and Coastal Birds: Established in 2010, the National Program for Monitoring Forest and Coastal Birds (NPMFCB) was established to address the nation's obligations to under the Convention on Biological Diversity including the National Biodiversity Strategic and Action Plan (NBSAP). The work of the National Program for Monitoring Forest and Coastal Birds is divided into three main categories:

- Regular monitoring of bird diversity at permanent monitoring stations
- Site-specific inventories of bird diversity
- Population estimates for selected species

The NPMFCB commands a national database of field observations of bird diversity that was initiated by Belau National Museum (BNM) and is maintained by museum scientists under the guidance of the national focal point for the Global Taxonomy Initiative (GTI) and in coordination with Palau Conservation Society, a BirdLife International partner. Through regular, continuous monitoring of bird diversity since the inception of the database in 2006, the national bird diversity database now holds approximately 20,000 entries and continues to grow. Regular reports are issued to inform conservation managers of local and national trends that are revealed in the database. The program issues an annual report, *State of Palau's Birds*, which describes major national trends, reports the progress of community bird conservation initiatives and enhances general awareness of the importance of Palau's bird diversity.

1.5.7 The Diversity of Palau's Terrestrial Mammals

As is the case with many small, isolated Pacific islands, Palau's native diversity of terrestrial mammals is limited to bats and rats. The most striking is the Palau Flying Fox (an Old World Fruit Bat), *Pteropus mariannus pelewensis*., which was hunted commercially for export to Guam until exportation was banned by the Palau government. Still, it is not protected from being hunted for local consumption (including the restaurant trade) and its numbers appear to be declining. In the not too distant past, Palau was home to a second, and endemic, species of flying fox, *P. pilosus*, thought to be extinct from unknown causes and the only evidence of its existence is found in the one-hundred-old museum specimen that was used to describe the species. The insectivorous Pacific Sheath-tailed Bat is the only other bat species found in Palau.

The Pacific Rat, *Rattus exulans*, probably came to Palau millennia ago with the original Palauan settlers and it has become naturalized over the centuries. Three additional species of *Rattus* are of recent (20th century) introduction as is the House Mouse, *Mus musculus*. These recently introduced rodents appear to be commensal, or synanthropic, in distribution as does the recently introduced Asian Musk Shrew, *Suncus murinus*.

Threats to Biodiversity from Feral Mammals

Feral domesticated mammals (livestock and pets) represent a serious threat to Palau's native flora and fauna. These feral mammals include pigs, cats and monkeys. Feral pigs are responsible for habitat destruction and feral cats are opportunistic predators of native birds and reptiles. Feral monkeys on Angaur Island disrupt natural habitats, prey on native wildlife and destroy human crops. There are ongoing efforts in Palau to control all three.

Native and Introduced Mammals		
Common Name	**Scientific Name**	**Status**
Asian Musk Shrew	*Suncus murinus*	Introduced
Micronesian Flying Fox	*Pteropus mariannus pelewensis*	Native
Large Palau Flying Fox	*Pteropus pilosus*	Native (extinct)
Pacific Sheath-tailed Bat	*Emballonura semicaudata*	Native
Feral Long-tailed Macaque	*Macaca fasciularis*	Introduced
Feral Cat	*Felis catus*	Introduced
Feral Pig	*Sus scrofula*	Introduced
Pacific Rat	*Rattus exulans*	Naturalized

1.6 Marine Biodiversity

Considered one of the "Seven Underwater Wonders of the World," Palau has the highest levels of marine and terrestrial biodiversity within Micronesia, and is on the north-eastern margin of the area called "the Coral Triangle" which has the highest diversity of shallow-water marine species in the world (Green and Mous 2006). Although Palau has slightly fewer species than found in the coral triangle, the diversity of marine habitats found within the relatively small area of the Palauan archipelago is probably as great as would be found anywhere in the world. Palau supports more than 350 species of hard coral, 200 species of soft coral, over 300 species of sponges and more than 1,300 species of reef fish (Anon 2002). Its waters are also home to endangered and vulnerable species such as the dugong, saltwater crocodile, hawksbill and green turtles, and giant clams. Palau also has more than 50 marine lakes, of which five are home to stingless jellyfish that have evolved in these unique ecosystems.

Marine Fish	Marine Reptiles	Marine Mammals
With over 1387 fish species known to date, Palau has the richest fish fauna in Micronesia (95% of Micronesian fish species are found in Palau)	Sea Turtles Four species of sea turtles are found in Palau: Green, Hawksbill, Olive Ridley, and Leatherback.	Dugong There is one species of sirenian present in Palau, the dugong. Dugongs can be found throughout Palau's waters, except the Southwest Islands, and are thought to spend the daytime in deeper waters around the barrier reef to avoid boat traffic.

11 species of marine fish are known endemics to the Palau/Yap region.	Sea Snakes • There are about 50 species of sea snake in the world; Palau has two. •Laticauda columbrina, the "Banded Sea Snake," is a highly venomous species, active during the day, which comes onto land to lay eggs. •The Pelagic Sea Snake, Pelamis platurus, is the most widely distributed sea snake in the world. This snake rarely enters the lagoon in Palau.	Cetaceans •There are 11 species of cetaceans including a breeding population of sperm whales. This list includes spinner dolphins, fraser dolphins, pygmy killer whales and pilot whales.
	Crocodiles •There is 1 species of saltwater crocodile (Crocodylus porosus) present in Palau, although this remains to be confirmed.1 •Palau is home to the only population of crocodiles in Micronesia.	

Protoanguilla palau is a new species of small, eel-like fish discovered in a fringing-reef cave in the Rock Islands Southern Lagoon, Palau. The fish differs from all previously known eels in a number of important respects including a disproportionately large head, a short and compressed body, unusual collar-like gill openings and caudal fin rays that are only slightly produced. It is so distinct that it has been assigned to a new genus and new family, Protoanguillidae.

The new species was described by an international team led by Dr G David Johnson of the Smithsonian Institution's National Museum of Natural History and including collaborators from Kitasato University, Iwate, Japan, the Southern Marine Laboratory in Koror, Palau, and the Natural History Museum and Institute in Chiba, Japan.

Given this planktonic early life, the authors reason that the geographic distribution of this remarkable eel will ultimately prove to be much wider than Palau. There can be no doubt that its lineage had a different distribution for much of its existence since the Palau-Kyushu Ridge did not form until 60-70m years ago.

Coral Reefs	Corals	Echinoderms: Sea Stars, Urchins, and Sea Cucumbers
• The total coral reef habitat in Palau is 524.5 square km, composed of:**Error! Bookmark not defined.** - 194.8 square km of fringing reef - 264.7 square km of barrier reef - 65.0 square km of atoll reef - 418 reef holes	Scleractinian "hard corals" 385 species; 66 genera 425 species ; 78 genera	•Asteroidea (Sea stars) - At least 25 species of asteroids (sea stars) have been identified in Palau •Holothuridae (Sea Cucumbers) - At least 22 species of sea cucumbers inhabit Palau's waters, with 8 having been identified from Helen Reef. ,
1,136.5 square km of lagoon and passes are contained within the current reef configuration. The lagoon shelters the patch reefs, many pinnacle reefs and over 500 Rock Islands, provides feeding habitat for sea turtles, dugongs and seabirds, and supports important finfish and shellfish resources.	Octocorals "soft corals" 115 species; 59 genera	•Crinoidea (Crinoids or sea lillies) - There have been 22 crinoid species identified in Palau, of which one inhabits deep waters.
Barrier reef surrounds most of the main Palau islands except Angaur, Peliliu and Kayangel and Ngeruangel atolls.	Hydrocorals"fire corals" 7 species; 4 genera	• Opiouroidea (Brittlestars) – Two species of brittlestars have been recorded from Palau, but many more unrecorded species
Lagoon fringing reefs protect island shorelines, provide sand to replenish beaches, and support coral communities, sea grass beds and important finfish and invertebrate populations.		Echinoidea (Sea urchins) – 12 species have been recorded, but much work remains to be done on this group in Palau.

Some coral reefs in Palau are surviving and even thriving in highly acidified environments. Coral reefs in the Rock Islands around Nikko Bay appeared to be healthier than those in nearby reefs with less acidified waters.

That is according to research done by the Palau International Coral Reef Center and Woods Hole Oceanographic Institution in Massachusetts. The finding seemed to contradict the common expectation that acidified seawater, resulting from climate change, impairs coral growth.

The more acidified seawater is caused by three natural processes: the growth of reefs that removes carbonate ions, the breathing of organisms on the reef and the maze-like reef formation that retains water longer, so processes in the reef can change the chemistry of the water more dramatically. Researchers at PICRC and Woods Hole are still conducting research on

Part II: The NBSAP, its implementation, and the mainstreaming of biodiversity.

2.1 Protecting Biodiversity through protected area site management regimes

Biodiversity protection in Palau has been undertaken mainly through the establishment of protected areas. Biodiversity targets are identified and an action plan with associated funding is developed to guide biodiversity conservation and resource management actions. The following matrix describes Palau's protected area portfolio.

Palau's Protected Area Profile

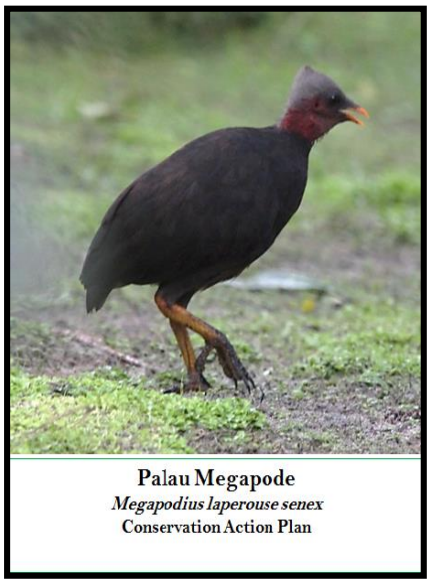
		Number	Total Area
Realm	Terrestrial	16	48.94 sq. km
	Marine (including coastal)	16	2372.43 sq. km
National Protected Areas: IUCN Management Category	Ia: Strict Nature Reserve	4	4.85 sq. Km.
	Ib: Wilderness Area	4	10.92 sq. Km.
	II: Ecosystem Protection/Recreation	6	31.63 sq. Km.
	III: National Monument or Feature	5	19.85 sq. Km.
	IV: Habitat/species management area	4	201.08 sq. Km.
	V: Protected Area with sustainable use	2	303.26 sq. Km.
	VI: Protected Landscape/Seascape	6	1891.22 sq. Km.
	Not Reported (NR)	19	971.15 sq. Km.
International Protected Areas	World Heritage	1	859 sq. km.
	Ramsar	1	6.44 sq. km.
	UNESCO MAB	1	98 sq. km.
	Others		

2.1.2 Palau Protected Areas Network (PAN)

The Palau Protected Areas Network is a nationwide network of terrestrial and marine protected areas that aims to protect areas of significant biodiversity, important habitats, and other valuable resources that are essential to the future social, cultural, economic and environmental stability and health of Palau. To date there are 13 PAN sites that consist of single sites and networked sites. These 13 sites have a management plan that guides conservation and natural resource management efforts within their borders and are implemented by site conservation officers employed at the state in which these sites are located. All of these managed sites have goals and objectives that speak to biodiversity conservation.

2.1.3 Species Conservation Action Plans

A small number of terrestrial and marine species are on the IUCN Red List. Efforts to improve the conservation status of these species are normally carried out as part of protected area management plan implementation. However, a number of these species are charismatic species and have generated sufficient public interest which has led to the development of a stand alone conservation action plan for the species in question. One such species is the Palau Megapode.



The Palau Megapode is an IUCN endangered bird whose conservation status is being imperiled by coastal erosion through storm surges and climate change. In 2013 efforts to draft a conservation action plan to address the threats to its status began. To date the plan has been completed and is now being integrated into protected area management plans of Kayangel and Koror States.

Genesis of the Palau Megapode Conservation Action Plan

In November 2011, the Koror State Rangers and Belau National Museum began an informal survey of the bird diversity of the Rock Islands Southern Lagoon UNESCO World Heritage Site. The preliminary results of the survey documented extensive activity of the endangered Palau Megapode throughout the World Heritage Site. The outcome was a recommendation to conduct a full survey of the megapode population in the World Heritage Site in order to develop effective management strategies to conserve this important species and potentially valuable ecotourism attraction. In 2012, Palau Conservation Society coordinated a full survey of the megapodes of the World Heritage Site in partnership with the museum and rangers, with funding from the BirdLife International Community Conservation Fund through the Royal Forest and Bird Protection Society of New Zealand. Based on the results and recommendations of the two surveys, the Koror State Government included megapode conservation action items in their five-year management plan for the World Heritage Site (KSG 2012).

2.2 Updating of NBSAP

Although the 2005 Palau National Biodiversity Strategy and Action Plan (NBSAP) was not ratified by the Palau Olbiil Era Kelulau (OEK) or national legislature, the program of work outlined in the document has been implemented to various degrees by both government and non government organizations. The following narrative describes the efforts undertaken in support of this strategy.

According to the 2005 NBSAP the National Government leads implementation of UNCBD-related and NBSAP activities, in full partnership with the State governments, national and state Public Land Authorities, traditional leaders, and local communities. The lead national government implementing and monitoring agency is designated as MNRET. The 2005 NBSAP

called for an active role for the National Environmental Protection Council (NEPC; a committee formed in 2002 by Executive Order 205; consisting of representatives of all relevant environmental agencies and organizations, with OERC as Secretariat) to serve an advisory role to the Ministry. The NEPC was not active from 2008 to 2013 when it was reactivated into service by President Remengesau.

A 2007 report from the ADB stated that for MNRET to effectively implement the NBSAP, it needed to carry out the following recommendations illustrated in the table below.

Recommendation	Activity	Comment
Establish an implementation coordinator position within the Ministry of Natural Resources Environment and Tourism	MNRET is currently developing a terms of reference for this position	
Establish local experts panels to support implementation efforts	• The National Environment Protection Council has been activated- that body is mandated to coordinate environment and biodiversity efforts • The Belau Watershed Alliance (BWA) was instrumental in pushing for the development of protected area management plans	the Palau Conservation Consortium is an informal group of practitioners who meet regularly to discuss and partner in conservation/resource management activities
Identify all regional and international agencies and organizations that can provide funding and technical assistance	The National Government recently created a grants office and one of its mandate is to keep a roster of funding opportunities	Palau Small Grants Program, the Palau PAN Fund are two national programs that have funding schemes for biodiversity conservation
Establish a formal clearinghouse mechanism to ensure continual assessment of government agencies, statutory bodies, non-governmental organizations, local communities and the private sector	Unknown	
Establish an achievable and measurable monitoring plan stressing coordination between the National Government and state governments	Protected areas that are also PAN sites are mandated to conduct biodiversity monitoring. Additionally the PAN Office conducts management effectiveness assessments of sites.	
Develop reporting mechanism to effectively distribute updates and progress reports on all biodiversity related programs and activities	Palau has developed a reporting manual and template to aid in reporting of the RIO conventions. This manual and template fulfills this requirment	

2.3 CBD Implementation since last National Report

Palau's NBSAP Theme 2 - Species Protection - calls for two ongoing actions in order to meet objective 1 "To develop a comprehensive inventory of species to identify and prioritize their

importance and status." The two actions are to (1) conduct a national taxonomic needs assessment and (2) conduct national surveys to inventory biodiversity. Although neither action received the recommended official financing for the terrestrial and coastal components of Palau's biodiversity, several NGOs stepped forward to begin filling the gaps in Palau's terrestrial and coastal biodiversity inventory. The leaders in the efforts to address this objective are Belau National Museum and Palau Conservation Society, working in collaboration with various donors and international organizations such as BirdLife International and IUCN as well as the national focal point for the Global Taxonomy Initiative and several government agencies in Palau and the United States.

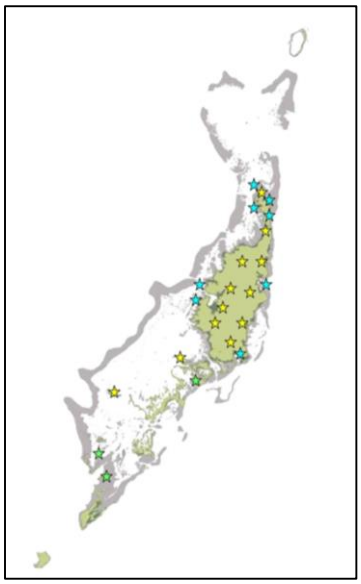
Taking stock of our progress since the inception of the NBSAP in 2004, several highlights stand out as examples of progress in pursuit of the NBSAP objective with regard to terrestrial and coastal biodiversity:

- Establishment of the National Program for Monitoring Forest and Coastal Birds
- Completion of national inventories
  - Resident and migratory birds
  - Land snails
  - Ants
  - Aquatic macroinvertebrates
- Population estimates for two priority bird species
  - Palau Megapode
  - Rufous Night-Heron
- Development of a Conservation Action Plan (CAP) for the endangered Palau Megapode
- Establishment of priority conservation areas based on biodiversity inventories
  - Ngermeskang Bird Sanctuary
  - Kmekumer Reserve for nesting grounds: Hawksbill Turtles, Palau megapodes
- Inventories of the UNESCO Rock Islands Southern Lagoon World Heritage Site
- Identification of specific taxonomic needs
  - Speciation of the subspecies of the Micronesian Megapode
  - Taxonomic Descriptions of undescribed ant species

2.4 Biodiversity and Monitoring

2.4.1 Regular Monitoring of Bird Diversity

Monitoring of Resident Birds

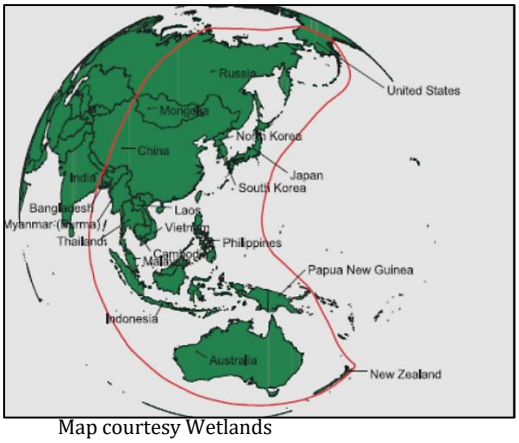


In Palau, bird diversity and bird indicator species are now used to monitor the health of forest and coastal ecosystems. The map of Palau (right) depicts the locations of the 23 permanent monitoring stations currently operated by the NPMFCB using the official Protected Areas Network (PAN) bird-monitoring protocols for the environmental monitoring of forest and coastal ecosystems.

Twelve of the stations (yellow stars) are terrestrial stations that are positioned in the major terrestrial ecosystem types found in Palau. Seven of the terrestrial stations are located in protected areas including Ngermeskang Bird Sanctuary, Lake Ngardok (a Ramsar wetland) and the Rock Islands Southern Lagoon UNESCO World Heritage Site. Another station is located in the Ngerikiil Watershed, an Integrated Water Resource Management (UNDP/IWRM) area and the principal source of Palau's municipal water supply. Eight of the stations (blue stars) are positioned at coastal viewpoints for monitoring the bird diversity of major coastal ecosystems. Three of the coastal stations are located in Marine Protected Areas and one at a state beach. Three of the stations (green stars) are positioned to simultaneously monitor bird diversity in both forest and coastal ecosystems.

Monitoring of Migratory Birds

Palau is the only locality in Micronesia that is well within the East Asian-Australasian flyway used by migratory birds on their seasonal flights between Asia and Australia (map). Consequently, Palau's list of migratory is longer than any other locality in Micronesia. The NPMFCB scientists monitor these birds during the migratory season (October through March). All the monitoring data is submitted to the global eBird database at Cornell University. Recent results from that monitoring revealed an increase in the numbers of Black-winged Stilts, which is consistent with the global data indicating that this species is expanding its range eastward into the Pacific.



Map courtesy Wetlands International

Every year since 2006, Palau has experienced new records of migratory bird species. Some of these new species have shown a tendency to return to Palau on an annual basis. From a global perspective, Palau is increasingly important as on outlying waystation for migratory birds.

Asian House Rat	*Rattus tanezumi*	Introduced
Norway Rat	*Rattus norvegicus*	Introduced
Himalayan Rat	*Rattus nitidus*	Introduced
House Mouse	*Mus musculus*	Introduced

2.4.2 Regular Monitoring of Marine Biodiversity

Marine protected areas are an important tool in coral reef resource management. The ability to monitor the effectiveness of management measures is a critical component of natural resource management. Marine protected areas that are formally recognized within the PAN framework are required to develop a management plan with a monitoring and evaluation element. PICRC as part of the Micronesia Challenge Measures efforts has developed a monitoring protocol for Palau which has subsequently been endorsed by the Ministry of Natural Resources, Environment and Tourism. The protocol is intended to provide technical guidance to state governments in developing site-based monitoring plans to complement existing management plans.

General Indicator	Measurable Indicator	Survey Method*
Reef fish	• Species density (No. of fish/m^2) • Species biomass (Kg of fish/m^2)	Underwater visual census by snorkel or SCUBA • Belt transect (5m x 50m) along 50m transect. • Five x 50 m transects per station • 3 stations per MPA and Control site (each habitat type)
Benthic community	• % Coral cover (genus level) • % Benthic cover (Sand, Rubble, Carbonate, macroalgae, turf, etc.)	Photo quadrat method by snorkel or SCUBA • Photo quadrat (0.5m x 0.5m) every meter per transect • Five x 50 m transects per station • 3 stations per MPA and Control site (each habitat type)
	• Coral recruitment (genus level) (Number of colonies/m^2) • Size of individual recruits)	Underwater visual census by SCUBA • Belt transect (0.3m x 10m at the beginning of each 50m transect, See above)
Invertebrates(high value for commercial and subsistence)	• Species density (Number of individual/m^2) • Size of individual invertebrate	Underwater visual census by Snorkel or SCUBA • Belt transect (2 x 50m) of each 50m transect, See above)
Sea grass community	Species cover	Quadrat method by snorkel or SCUBA • Quadrat (0.5m x 0.5m) every 5 meter at the first 20m of each 50m transect (i.e., 5 quadrat/transect, See above)
Sediment	Organic and inorganic sediment weight ($mgcm^2/d$)	Sediment traps • 2 sediment traps (5.08cm diameter)/station • Traps retrieved every month.
Visibility	Horizontal or vertical visibility in meter at seabed	Use of Secchi disc
Temperature	Water temperature (^0C)	Data logger deployed at the site that records every 20 minutes

This protocol aims to standardize monitoring across MPAs by providing guidance on monitoring objectives, sampling design, indicators, and methodology. The objectives of coral reef monitoring are to assess how successful and efficient management strategies are in improving resource conditions and to provide managers with information to help them promote adaptive management of MPAs. Coral reef monitoring is also expected to answer questions relating to the condition of resources and the views and behavior of people using the resources.

Long-term Coral Reef Monitoring

PICRC continues to monitor 22 permanent sites across Palau. Analysis of data collected from this activity is ongoing. Interesting findings in 2012 included information that the condition of Palau's south-western outer reefs were in strikingly excellent condition; outer reefs had significant positive relationships between coral cover and densities of invertebrates and fish; and that outer reefs showed a surprising lack of relationship between reef rugosity and fish densities. In 2010 PICRC adjusted the long-term monitoring program to include 80 randomly chosen sites to assess coral bleaching. In 2011 and 2012 those data were analyzed. The results of the bleaching survey showed that coral bleaching

Minister Harry Fritz endorsing Palau's marine monitoring protocol

was significantly lower in the sheltered bays than on outer and patch reefs, indicating that bay reefs are more resilient to bleaching.

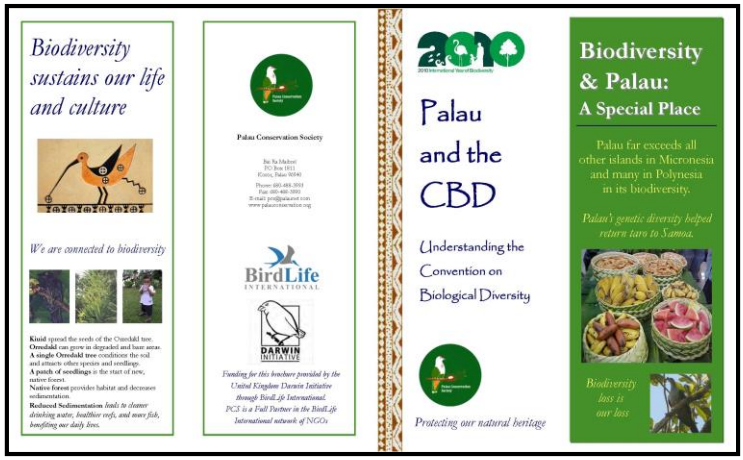
Conducting Research to inform management of natural resources

Fish status

In early 2012 PICRC analyzed existing data on fish and reported to traditional leaders that fish populations across Palau continue to decline. However, areas with effective management in place showed signs of minimizing the decline. In 2012 PICRC completed a pilot study to assess populations of Bumphead Parrotfish and Napoleon Wrasse. A national ban on their harvest was implemented in 2006. In the pilot study, researchers surveyed 27 sites for the fish. Findings from that survey shows the population of the fish rebounding. Preliminary analysis shows the value of management measures such as closure of a fishery as a means to improve the status of said fishery.

2.5 Environmental Education, Public Awareness and Public Participation

Effective communication and outreach are the cornerstones of effective biodiversity conservation. Conservation organizations such as PCS have continually prioritized effective communication of environmental information to raise awareness about Palau's environment and unique biodiversity. As 2014 is the International Year of Small Island Developing States and May of 2014 has been set aside to celebrate Island biodiversity, conservation organizations in Palau are preparing to develop and implement programs intended to celebrate island biodiversity.



Part III: Progress towards the 2015 and 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals.

3.1 Palau's progress towards the implementation of a Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets

Most of Palau's NBSAP efforts have gone towards achieving the Aichi Targets that are listed below. Although these targets have not been achieved in their entirety, significant progress has been made in all of them.

Target 1 By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

A number of organizations both public and private have been actively promoting biodiversity awareness. Most of these awareness activities are general awareness such as those that occur during Palau's annual Earth Day celebrations, the Palau Conservation Society's annual general membership meeting and during Palau's education awareness week. However, more targeted biodiversity awareness activities have been implemented for community groups as well as traditional and elected leaders deliberating resource management issues.

Target 2

By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

In the last 10 years a number of protected area sites have begun to incorporate eco-tourism activities within their management regimes. These enterprises integrate biodiversity and cultural resources into a tourism offering that is marketed to Palau's visitors. In this way local communities are able to utilize their abundant biodiversity to generate incomes.

Target 5

By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Palau recently adopted a forest management plan. A major objective of that plan is to ensure zero loss of Palau's forest resources. This plan is being implemented by the Division of Forestry under the Bureau of Agriculture within the Ministry of Natural Resources, Environment and Tourism.

Target 9

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Palau has recently drafted and adopted a national invasive species management plan. This plan's focus is mostly on terrestrial invasive species but there are recommendations for including a more robust marine component.

Target 10
By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.
Palau has adopted a sustainable land management policy that is being integrated into planning processes at both the state and the national level. This has resulted in a reduction of sediment along Palau's near shore areas.

Target 11*By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.*

The Palau Protected Areas Network (PAN) is a network of protected areas representing key habitats and species which ensures long-term sustainable use of resources, and has the institutional flexibility to adapt to future change. The PAN enables communities to manage their local environment, including biodiversity and to evaluate their needs and implement management regimes and monitoring programs that are locally appropriate.
The Palau PAN currently offers sustainable financing, capacity building opportunities for local site managers, and scientific and technical assistance to Palau's protected areas.

Target 12
By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.
Palau has just completed a Megapode conservation action plan. The Palau Megapode is an IUCN listed endangered bird and this plan is being integrated into existing management plans in communities where there is a significant population of these birds.

Target 14
By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
Palau recently adopted a water policy to guide management actions at both the local community and national level. Additionally, best water management actions are being promoted by the Belau Watershed Alliance an NGO whose mandate is to ensure sufficient water quality and quantity for all of Palau.

Target 16
By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.
Palau is in the process of developing an ABS strategy for itself.

Target 17
By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.
Work on developing Palau's NBSAP are ongoing.

Target 18
By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.
Palau's traditional conservation ethic underpins much of its NBSAP efforts. However, a more targeted process of ensuring that Palau's traditional ecological knowledge and expressions of culture around biodiversity is collected and utilized needs to be realized.

Target 19
By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.
Palau has made significant strides in developing methodologies that incorporate biodiversity values into natural resource assessments. Some of those have been described in the preceding chapter.

Concluding Remarks

Based on the information that has been provided it is evident that Palau has achieved many of the enabling factors necessary for achieving the Aichi Targets and for successful implementation of a National Biodiversity Strategy and Action Plan once it has been drafted.

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