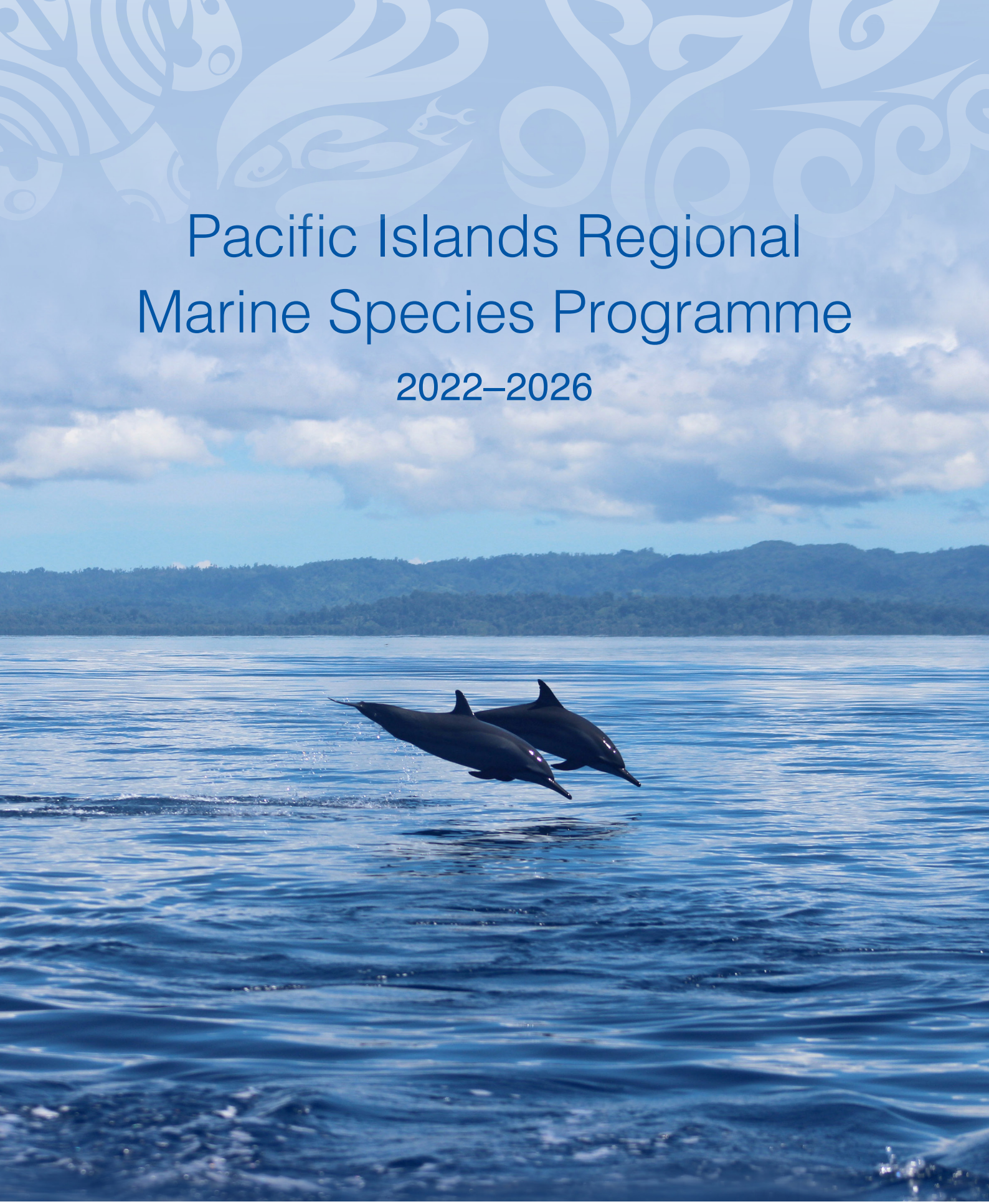
Pacific Islands Regional Marine Species Programme

2022–2026



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Secretariat of the Pacific Regional Environment Programme

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Department of Conservation
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Cover image: Spinner dolphins near M'Buke Islands, PNG. © Cara Miller

SPREP
PROE

Secretariat of the Pacific Regional Environment Programme (SPREP)
PO Box 240, Apia, Samoa, sprep@sprep.org, www.sprep.org

SPREP's vision: *The Pacific environment, sustaining our livelihoods and natural heritage in harmony with our cultures*

ACRONYMS

ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACPMEA	Multilateral Environmental Agreements in African, Caribbean and Pacific Countries.
ALDFG	Abandoned, Lost, and Discarded Fishing Gear
ASG	Australasian Seabird Group
CBD	Convention on Biological Diversity
CEFAS	Centre for Environment, Fisheries, and Aquaculture Science, UK government
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMM	Conservation and Management Measure
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CROP	Council of Regional Organisations of the Pacific
CSO	Civil Society Organisation
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
DD	Data Deficient
EBA	Ecosystem-Based Adaptation
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
FFA	Pacific Islands Forum Fisheries Agency
GEF	Global Environment Facility
IGO	Intergovernmental Organisation
IMMA	Important Marine Mammal Areas
IOSEA	Indian Ocean and South-East Asia
ISRA	Important Shark and Ray Areas
ISSF	International Seafood Sustainability Foundation
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported, and Unregulated
IWC	International Whaling Commission
KBA	Key Biodiversity Area
LMMA	Locally Managed Marine Area
MCS	Monitoring, Control, and Surveillance
MEA	Multilateral Environmental Agreement
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSP	Marine Spatial Plans
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organisation
NPOA	National Plan(s) of Action
OECM	Other Effective Area-Based Conservation Measures
PBIF	Pacific Biodiversity Information Facility
PCRAP	Pacific Coral Reef Action Plan
RFMO	Regional Fisheries Management Organisation
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
SPC	Secretariat for the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SSIP	Shark Search Indo-Pacific
TED	Turtle Exclusion Device
TRAFFIC	Trade Records Analysis of Flora and Fauna in Commerce
TREDS	Turtle Research and Monitoring Database System
UK	United Kingdom
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WWF	World Wide Fund for Nature

DEFINITIONS

Cetacean	All species of whale, dolphin, or porpoise
Direct take	Targeted removal for use
Index nesting beaches	Turtle nesting sites identified for long-term monitoring
Monitoring, control, and surveillance	This term is taken from a fisheries context as defined by FAO.[1] In this plan it broadly applies to all forms of monitoring, control, and surveillance (MCS), to ensure rules and regulations are met under all legislation relating to marine species, including protection of their habitats. In this context, the following definitions apply: ▪ *monitoring* — the continuous action of measuring activities in relation to specific rules ▪ *control* — the regulatory conditions ▪ *surveillance* — the degree and types of observations required to maintain compliance with the regulatory controls
Key biodiversity area (KBA)	The IUCN defines a KBA as a site that contributes significantly to the global persistence of biodiversity in terrestrial, freshwater, and marine ecosystems[2] The KBA Programme supports identifying, mapping, monitoring, and conserving KBAs to help safeguard the most critical sites for nature on our planet
Marine species	For this programme, *marine species* refers to dugong, marine turtles, whales and dolphins, sharks and rays, and seabirds only, unless otherwise stated
Members	SPREP has 21 Pacific island Member countries and territories (American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Marianas, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Wallis and Futuna) and five metropolitan countries (Australia, France, New Zealand, United Kingdom and United States of America) with direct interests in the region
Nature-based solution	Sustainably managing and using nature to tackle socio-environmental challenges, particularly climate change
Partners	International and local non-government organisations, multilateral environmental agreements that cover the Pacific region, scientists and other experts, community conservation organisations, and other who have interests in helping to implement this plan
Regional	In this document, *regional* refers to the whole Pacific islands region. When referring to things on a national and regional scale, it includes sub-regional cooperation between countries within the region.
Sharks and rays	All species known as elasmobranchs, e.g. sharks, rays, skates, and chimaeras
Take	Taking, hunting, fishing, capturing, harassing, deliberately killing, or attempting to engage in any such conduct (as per the CMS Convention text Article I.1.i)

1 Bergh E, Davies S. 2002. Chapter 8: Fishery monitoring, control and surveillance. In: A fishery manager's guidebook: management measures and their application [Internet]. FAO Fisheries technical paper 424; [accessed 2022 Mar 12]. https://www.fao.org/3/y3427e/y3427e0a.htm

2 IUCN. Mediterranean: Key biodiversity areas [Internet]. IUCN; [accessed 2022 Mar 12]. https://www.iucn.org/regions/mediterranean/our-work/biodiversity-knowledge-and-action/biodiversity-standards-and-indicators/key-biodiversity-areas

VISION

A healthy Pacific Ocean with thriving populations of whales, dolphins, marine turtles, dugongs, sharks and rays, and seabirds and the associated ecosystems on which they depend and contribute, which assures the aspirations of Pacific island peoples and protects their natural and cultural heritage.

PACIFIC ISLANDS REGIONAL MARINE SPECIES PROGRAMME

The Pacific Islands Regional Marine Species Programme (Marine Species Programme) of the Secretariat of the Pacific Regional Environment Programme (SPREP) is a regional strategy for conserving and managing dugong, marine turtles, whales and dolphins, sharks and rays, and seabirds, referred to throughout this document as marine species.

The programme is designed to support SPREP Pacific island countries and territories, excluding metropolitan Members. It will be implemented from 2022–2026 through the accompanying action plans, and will support Pacific peoples to take a primary role in achieving the above vision.

INTRODUCTION

The Pacific islands region served by SPREP covers 32 million km^2 within the largest continuous marine habitat on the planet, the Pacific Ocean. The region is home to a diverse range of large marine species, including cetaceans (whales and dolphins), sirenians (dugong), testudines (marine turtles), elasmobranchs (sharks and rays), and seabirds.

Over half of the world's known species of cetaceans are found in the region. Seven species are assessed by the International Union for Conservation of Nature (IUCN) as threatened with extinction, many of them as a result of interactions with tuna fisheries.

The Pacific Ocean supports some of the world's largest remaining populations of dugong (IUCN Red List, global listing: Vulnerable), and significant populations of turtle: green turtle (IUCN global listing: Endangered), hawksbill turtle (IUCN global listing: Critically Endangered), and loggerhead turtles (IUCN global listing: Vulnerable). Sharks and rays are increasingly threatened globally, particularly from over-exploitation.

Nearly all shark and ray species recorded from the Pacific (189 species) have been assessed by IUCN, with approximately half listed as threatened (Vulnerable, Endangered, Critically Endangered) or Near Threatened.

Seabirds have most recently been added to the suite of migratory marine species covered by this programme. Around 40 species are known to breed across the Pacific with many more migrating across and breeding outside the region. Eleven species are assessed by IUCN as threatened with extinction (Vulnerable, Endangered, Critically Endangered) and one is Near Threatened. The locations of the breeding grounds of some species are unknown.

Dugong, turtles, whales, dolphins, sharks, rays, seabirds, and other large marine species play a significant ecological role in the functioning of coastal and oceanic habitats and systems. The life history characteristics of many of these species are long-lived with low reproductive potential. This makes them vulnerable to population decline where there is adult mortality due to anthropogenic impacts or reduced reproductive output due to environmental pressures.

Some species, such as humpback whales, are widely regarded as flagship species for Pacific marine ecosystems. Flagship species often feature prominently in promotional tourist materials for Pacific island countries and territories. The contribution of these species to ecosystem services and livelihoods is increasingly under threat. Protection and recovery of populations of migratory species is critical for maintaining a healthy Pacific Ocean.

Cultural importance

For some SPREP Members, marine species are considered taboo. However, for others, they provide culturally important resources and are recognised as a fundamental element of Pacific island culture and heritage. Many Pacific island cultures have legends, stories, and traditional uses of marine species that highlight the importance of these species to peoples' identities, ways of life, and heritage.

Some species have been hunted extensively in parts of the Pacific, both for traditional and subsistence purposes and, more recently, for commercial gain. Turtles and dugong are now considered threatened in the Pacific islands region and many small and / or isolated populations are vulnerable to extinction.

Marine species remain highly valued as food items (meat, fat, and oil), for medicine (oil and bone), and for jewellery and ornaments (turtle shells, and skin and bones from dugong and cetaceans).

- In some Pacific islands dolphins have been sought after for food, e.g. through local drive hunts.
- Dugong bone (New Caledonia) and the teeth of small cetaceans (in Manus Province, Papua New Guinea; and Malaita in Solomon Islands) have been important in certain ceremonies (e.g. marriages and funerals). In Fiji, *tabua* (historically harvested sperm whale teeth) are a highly valued commodity in cultural ceremonies and exchanges.
- In New Ireland, Papua New Guinea, local people of the Mandak language practise the cultural fishing method of 'shark calling'. On wooden paddle-canoes, fishers sing and tap a stick that is fixed with loosely tied coconut shells against the underside of the canoe. The pulsing rhythm draws sharks to the surface next to the canoe where they are captured, often by hand.
- Seabirds also have a valued place in the cultures of the Pacific, including as oceanic guides to fish schools and for navigational support.

For all marine species, there is a growing awareness of their non-consumptive values and benefits to local communities (e.g. boat or shore-based tourism activities, such as whale watching).

In recognition of the cultural importance of these species, in some regions management is undertaken by local communities in accordance with traditional lore. For example, in the Torres Strait the harvest of marine turtles and dugong is managed through community-based management plans.

Conservation challenges

Marine species face a wide and increasing range of human-induced threats to their survival.

FISHERIES MANAGEMENT

Overfishing, fisheries by-catch and abandonment, and lost or discarded fishing gear, including poorly managed Fish Aggregating Devices (FADs), are ongoing threats to all five of the marine species groups discussed here.

MARINE POLLUTION

Impacts from marine pollution are continuing to increase. Marine species are directly affected through consumption and interactions causing mortality or long-term health impacts, including from:

- point sources of pollution
- poor catchment management and coastal development
- discharges from shipping and accidents
- plastic pollution (of great concern to Pacific island Member states)
- poorly designed marine tourism infrastructure development.

Marine tourism can provide much-needed income for Pacific island countries and local communities. However, the impacts from developing tourism infrastructure and the direct impacts of operations to view marine species need to be carefully managed.

CLIMATE CHANGE

Climate change and its impact on marine species, their habitats, and ecosystems is a major cause for concern and a particular focus for the 2022–2026 programme, including from:

- rising temperatures
- ocean acidification and its effect on food availability and distribution
- loss of beach nesting habitat from increasingly frequent, intense storms.

There is growing evidence that climate-related environmental change, including changes to suitable breeding habitats and prey availability, poses a major threat to all marine species in the region.

SUBSISTENCE HUNTING

Subsistence hunting of dolphins, dugong, and turtles is no longer sustainable because of cumulative impacts from other threats, such as:

- increasing human populations
- coastal development
- pollution and underwater anthropogenic ocean noise
- new harvesting technologies (e.g. outboard motors and gill nets have severely impacted many marine megafauna species, resulting in fragmented populations and some local extinctions).

The global harvest of turtles in the 1960s reached a record 17,000 tonnes due to the high demand in international trade for turtles and turtle products. Conservation efforts since then, including interventions by the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES), have brought about a significant decline in the global trade of turtle products. Direct take of turtles is still widespread throughout the Western Pacific. Some islands have restricted their take to subsistence only, but there is evidence of common illegal captures for domestic and international trade.

WHALING

Commercial whaling during the nineteenth and twentieth centuries, largely by countries from outside the region, has reduced the breeding populations of many species of large South Pacific whales to extremely low levels, and possibly to local extinction for some species. Now there are also increasing threats to smaller whales and dolphins from fisheries interactions.

Most of these species have distribution and migratory pathways that extend across and beyond the Pacific and international boundaries, further contributing to their vulnerability. Pacific island countries and territories have a shared responsibility to ensure the recovery and maintenance of viable populations of marine species and their habitats, including under the provisions of various international and regional agreements such as:

- CITES
- Convention on Biological Diversity (CBD)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- Regional Fisheries Management Organisations (RFMOs).

Partners have a responsibility to support Pacific island countries and territories to implement multi-lateral environmental agreements. In recent years, there has been a growing awareness of the increasingly threatened status of many iconic Pacific marine species and the need for a concerted and coordinated approach from Pacific island countries to reverse declining population trends.

COVID-19

One of the more challenging issues globally, and for our Pacific region, is the effect of the Covid-19 pandemic on our ability to implement conservation actions and for Pacific countries to realise benefits from conservation actions through tourism. It has also highlighted the need for Pacific Members to continue to rely on traditional marine food sources for sustenance and livelihoods. This reliance on nature's contributions to Pacific peoples' nutrition and livelihoods places even more importance on ensuring that populations of marine species remain healthy and will always be available to Pacific island communities, especially in times of high need.

RESOURCE, DATA, AND CAPACITY LIMITATIONS

The overarching problems and challenges of marine species' conservation efforts in the Pacific islands region include:

- lack of data and information, including basic population parameters, migration routes, and long-term data sets
- lack of identification and quantification of the threats that marine species face
- absence and lack of ongoing and long-term research, survey, and monitoring programmes
- limited public awareness and education programmes
- limited in-country capacity to provide leadership in marine species research and conservation management
- limited national prioritisation and management mechanisms to protect marine species and their habitats
- lack of resources, including access to sustained funding
- limited information exchange, linkages, and collaboration at national and regional levels
- lack of monitoring, control, and surveillance (MCS) capacity.

Coral reef and islands. © Stuart Chape

Strategic approach

Pacific island peoples are stewards of their marine environment and depend on marine resources for their way of life. The 2022–2026 Marine Species Programme is intended to support them by:

- increasing knowledge, awareness, and understanding of marine species and their habitats, and their ecological, cultural, and economic values, including through sharing best practice
- appropriately incorporating and recognising cultural knowledge, traditional use, and conservation practices as the starting point for public awareness
- building capacity and securing human resources to implement the action plans
- securing sustainable financing to support implementing the action plans
- identifying and addressing emerging threats and avoiding, reducing, or mitigating current threats
- improving the condition of marine species and their habitats through improved management and protection
- promoting appropriate customary management practices and traditional stewardship
- ensuring that marine species populations recover and continue to fulfil their ecological roles
- promoting the socio-economic benefits of non-consumptive use through responsible tourism
- enhancing cooperation and coordinated action at national, sub-regional, regional, and international levels
- fostering opportunities for ecosystem-based multi-species management approaches.

Roles and responsibilities

These action plans and their implementation are the collective responsibility of SPREP Member states, the SPREP Secretariat, partner non-governmental and inter-governmental organisations (NGOs and IGOs), and private sector organisations.

SPREP will continue to play an important role in facilitating the exchange of information, coordinating efforts, building capacity, securing resources, and regularly monitoring and reporting on implementing the action plans.

Other partner organisations have technical expertise, including conventions to which some Members are parties or signatories such as CITES, the International Whaling Commission (IWC), the CMS, and its daughter agreements and memorandums of understanding (MOUs).

SPREP hopes to forge new relationships with the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the Australasian Seabird Group (ASG), to support and advise Members in collaboration with BirdLife International as we begin implementing our new seabird action plan.

Supporting framework

The following section sets out programme-level actions and indicators for achieving the Marine Species Programme objectives:

A: Commitment, funding, and human resources

B: Implementation and coordination

C: Networking and reporting to support implementation

COMMITMENT, FUNDING, AND HUMAN RESOURCES

Significant resources are needed beyond in-country capacity to achieve the aims and objectives of the action plans. Further efforts will be directed towards identifying potential sources of funding for implementing the action plans at regional and national levels.

NOTE Throughout this document, actions are numbered using Arabic numerals (1, 2, 3. . .) and indicators are numbered with Roman numerals (i, ii, iii. . .). Relevant indicator numbers are referenced in parentheses at the end of each action.

Two manta rays piggy back feed in the plankton rich waters surrounding Kadavu Island, Fiji. © Luke Gordon

OBJECTIVE A: Ensure resources are available to effectively implement the Marine Species Programme

NUMBER	ACTIONS	RESPONSIBILITY
A.1	Continue to seek and identify opportunities to secure funding and technical support through donor partners, universities, NGOs, institutions and initiatives, and prepare funding proposals that specifically address the marine species issues identified in these action plans. (i)	SPREP, Partners, Members
A.2	Continue to regularly provide information related to upcoming funding opportunities. (ii)	SPREP
A.3	Continue to identify technical advisors and secure opportunities for them to support the marine species action plans through appropriate mechanisms, e.g: ▪ CMS Dugong MOU[3] ▪ Pacific Islands Cetaceans MOU[4] ▪ IOSEA Marine Turtle MOU[5] ▪ Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) ▪ IUCN species specialist groups of the Species Survival Commission ▪ IWC. (iii)	SPREP
A.4	Continue to actively support marine species biodiversity conservation by committing appropriate resources, including staffing and funding. (iv)	SPREP, Members
A.5	Continue to seek Members' commitment through fora such as the annual SPREP meeting and other marine-focused regional meetings for marine species and biodiversity conservation. (v)	SPREP

INDICATORS	TIMEFRAME
i. Funding opportunities are identified, secured, and available to support marine species programmes identified in this programme.	2026
ii. Opportunities for funding are communicated to contact points in a timely manner through contact lists held by SPREP.	Ongoing
iii. Appropriate technical advisors are identified for each species group.	2022
iv. SPREP and Members are committing to, and reporting on, resources being allocated to marine species conservation.	Ongoing
v. Projects addressing marine species issues and priority actions identified in the action plans are implemented.	2026

3 CMS Secretariat. 2007. Memorandum of understanding on the conservation and management of dugongs (dugong dugon) and their habitats throughout their range [Internet]. CMS; [accessed 2022 Feb 1]. https://www.cms.int/dugong/

4 CMS Secretariat. 2006. Memorandum of understanding for the conservation of cetaceans and their habitats in the Pacific islands region [Internet]. CMS; [accessed 2022 Feb 1]. https://www.cms.int/en/legalinstrument/pacific-islands-cetaceans

5 CMS Secretariat. 2009. Memorandum of understanding on the conservation and management of marine turtles and their habitats of the Indian Ocean and South-East Asia [Internet]. CMS; [accessed 2022 Mar 1]. https://www.cms.int/iosea-turtles/en/page/mou-text-cmp

IMPLEMENTATION AND COORDINATION

These actions outline SPREPs role in providing overall coordination for the marine species programme and the need to integrate the programme into national priorities.

OBJECTIVE B: Ensure the Marine Species Programme is successfully implemented through effective and sustained management, coordination, and communication

NUMBER	ACTIONS	RESPONSIBILITY
B.1	Continue to provide sustained regional and national facilitation and coordination of the Marine Species Programme through a regional advisor. (i)	SPREP
B.2	Identify contact points / national officers / CMS MOU contact points for implementing and reporting on the Marine Species Programme. (ii)	Members
B.3	Develop and implement a communication strategy for the Marine Species Programme that ensures effective outreach and support at national, regional, and international levels. Ensure the strategy is appropriately targeted to politicians, local communities, donor agencies, IGOs, NGOs, and technical experts. (iii)	SPREP
B.4	Identify opportunities to promote and integrate the Marine Species Programme and the priorities of its action plans into regional and international strategies, plans, and projects, as appropriate and relevant to regional and international needs. (iv)	Members, SPREP, Partners

INDICATORS	TIMEFRAME
i. The Threatened and Migratory Species Advisor is retained as a permanent position and is supported by temporary or permanent staff.	Ongoing
ii. Each Member has identified at least one contact point for the Marine Species Programme.	2022
iii. A communication strategy is produced, promoted, and available on the SPREP website and is used to guide the Marine Species Programme.	2023
iv. The Marine Species Programme priorities are presented to regional and international strategies, plans, and projects, and integrated where appropriate	Ongoing

NETWORKING, REPORTING, AND INFORMATION MANAGEMENT

SPREP will take primary responsibility for networking, information management, archiving, and regional reporting. It will continue to rely on reporting and information from Members and partners to achieve this.

To support this process, there will be a mid-term and end-of-term review so that SPREP, Members, partners, and donors can track progress. SPREP will set up an online reporting form on its Inform portal to enable Members to report on achievements in a comprehensive and effective way over the life of this programme.

OBJECTIVE C: Ensure implementation of the Marine Species Programme is supported by networks and accessible resources, and progress is measured through reporting

NUMBER	ACTIONS	RESPONSIBILITY
C.1	Set up a knowledge resource (information portal) through SPREP's virtual library for each species group to provide easy access to resources, including links to available global resources. **(i)**	SPREP
C.2	Develop and maintain accessible information management systems and promote information sharing by: ▪ maximising online access to action plan information and databases ▪ archiving relevant reports and information through the SPREP Library and its Information Resource Centre and Archives ▪ ensuring the information management system is readily available and easily accessible ▪ ensuring any restrictions on source information are respected. **(ii)**	SPREP
C.3	Continue to build and strengthen marine species networks comprising SPREP Members and partners, including IGOs, NGOs, donors, technical experts, and other interested parties by: ▪ maintaining a marine species contacts database ▪ disseminating relevant information about the action plans to the network contacts on a regular basis ▪ keeping the SPREP website up to date ▪ encouraging in-country networks ▪ facilitating access to information and resources, including scientific and technical reports. **(iii)**	SPREP
C.4	Support the creation of a network to focus on ocean cultural connectivity. **(iv)**	SPREP, Partners, Members
C.5	Use the SPREP reporting tool to provide mid-term and end-of-term updates on implementing the actions in the Marine Species Programme. **(v)**	SPREP, Partners, Members
C.6	Incorporate information from action plan reports into other national reporting mechanisms, where possible and appropriate (e.g. CBD, CMS, United Nations Convention on Climate Change (UNFCCC), CITES, CTI-CFF, IOSEA, Sustainable Development Goals (SDGs), UN Ocean Commitments). **(vi)**	Members
C.7	Use information provided by Members using the reporting tool to prepare a mid-term and end-of-term report on the Marine Species Programme implementation for SPREP meetings, with a focus on in-country progress, including successes and constraints, and implementation of arrangements under CMS. Strengthen the need for producing annual progress reports (as opposed to end-of-plan report). **(vii)**	SPREP

OBJECTIVE C: Ensure implementation of the Marine Species Programme is supported by networks and accessible resources, and progress is measured through reporting

NUMBER	ACTIONS	RESPONSIBILITY
C.8	Undertake a final review of the Marine Species Programme, including lessons learned, and provide a status report to SPREP Members and partners. (viii)	SPREP, Partners, Members
C.9	Where appropriate, promote translation of common databases into French. (ix)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. Knowledge resources relating to migratory marine species are available on the SPREP website through SPREPs virtual library.	2022
ii. Accessible and appropriate information systems are in place and reports and information are securely stored with appropriate security.	2022
iii. Contact groups have been created by SPREP for each species group to enable knowledge sharing and networking and are used to disseminate relevant information regularly.	2022 and Ongoing
iv. A network to support ocean cultural connectivity has been established.	2022
v. Members are using the online reporting tool to record progress against actions.	2026
vi. Reporting on action plan progress through other national reporting mechanisms is being undertaken where appropriate.	Ongoing
vii. Progress on marine species conservation in the Pacific islands region is presented annually to SPREP meetings.	Annually
viii. The Marine Species Programme is reviewed at the end of the term to capture progress on actions, feedback on plans, and lessons learned. This information is captured for use in developing the next series of plans.	2026
ix. Common databases are being translated into French.	Ongoing

Action plans

The following sections set out species-level actions and indicators for the following action plans:

- MULTI-SPECIES
- DUGONG
- SEABIRDS
- TURTLES
- SHARKS AND RAYS
- WHALES AND DOLPHINS.

MULTI-SPECIES ACTION PLAN

Read this multi-species plan in conjunction with each of the species-specific plans to get a complete picture of conservation actions for marine species in the Pacific.

Many actions that can be undertaken to support the conservation of our marine species and their habitats are general in nature, such as managing pollution and coastal development, and implementing them will provide benefits for all species groups and across ecosystems. These actions are outlined in this multi-species action plan to reduce the need to repeat each action within each species plan.

Themes and objectives

THEMES	OBJECTIVES
1. **Research and monitoring**	1. Improve understanding of marine species distribution, migratory paths, population abundances, and trends.
2. **Climate change**	1. Increase marine species resilience to climate change by reducing other threats and advocating for lower emissions.
3. **Ecosystems and habitat protection**	1. Identify and protect critical habitat and migratory pathways for marine species.
4. **Threat reduction**	1. Quantify and prioritise threats to marine species and habitats. 2. Reduce impact of pollution and coastal development on marine species and habitats. 3. Reduce impact of tourism and watercraft on marine species. 4. Reduce impact of by-catch and entanglement on marine species. 5. Eliminate illegal trade of marine species and their parts.
5. **Cultural significance and value**	1. Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into conservation management.
6. **Legislation, policy, and management**	1. Improve protection of marine species through MCS, legal frameworks, and national action plans.
7. **Ecotourism and livelihoods**	1. Ensure the development of marine species tourism is sustainable and conducted responsibly, with minimum impact to the environment and species while delivering maximum education and economic returns.
8. **Capacity building and collaboration**	1. Increase capacity at national and community levels for monitoring and managing marine species populations. 2. Increase national, regional, and international collaboration and partnership.
9. **Education, awareness, and communication**	1. Improve awareness and understanding of marine species conservation issues and the importance of marine species in ecosystems, recognising the importance of culture.

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 1: Improve understanding of marine species distribution, migratory paths, population abundances, and trends

NUMBER	ACTION	RESPONSIBILITY
1.1.1	Identify and prioritise knowledge gaps for each marine species group. (i)	SPREP, Partners
1.1.2	Develop protocols to support Members' response to marine species strandings including live strandings, and including investigation of factors contributing to cause of death, if possible. Provide protocols, training, and response kits, including personal protective equipment (PPE) to Members. (ii)	SPREP, Partners
1.1.3	Identify repositories for animal samples of each marine taxa (and their traded products); form agreements for transporting and processing samples, and provide equipment and technical expertise to build in-country capacity. (iii)	SPREP, Partners
1.1.4	Identify and document best practice for approaching local communities for research and monitoring approval (community entry protocols). (iv)	SPREP, Partners
1.1.5	Encourage and support collaborations between regional museums such as Museum of New Zealand Te Papa Tongarewa, the Auckland War Memorial Museum Tāmaki Paenga Hira, and the Australian Museum, to help with collections and collation of marine species and capacity building. (v)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. Gaps in knowledge are identified, prioritised and available to potential research providers, managers, and communities.	2024
ii. Stranding protocols are produced for each taxa and include standard data, measurements, photos and information on collecting, submitting, storing, and dispatching samples. Response kits and training have been provided.	2024
iii. Repositories for samples from each taxa are identified, including agreements for transport and processing, where needed.	2025
iv. Community entry protocols for research and monitoring have been developed and shared.	2023
v. Collaborations have been initiated with regional museums.	2024

A nesting green turtle. © Jurgen Freund, WWF

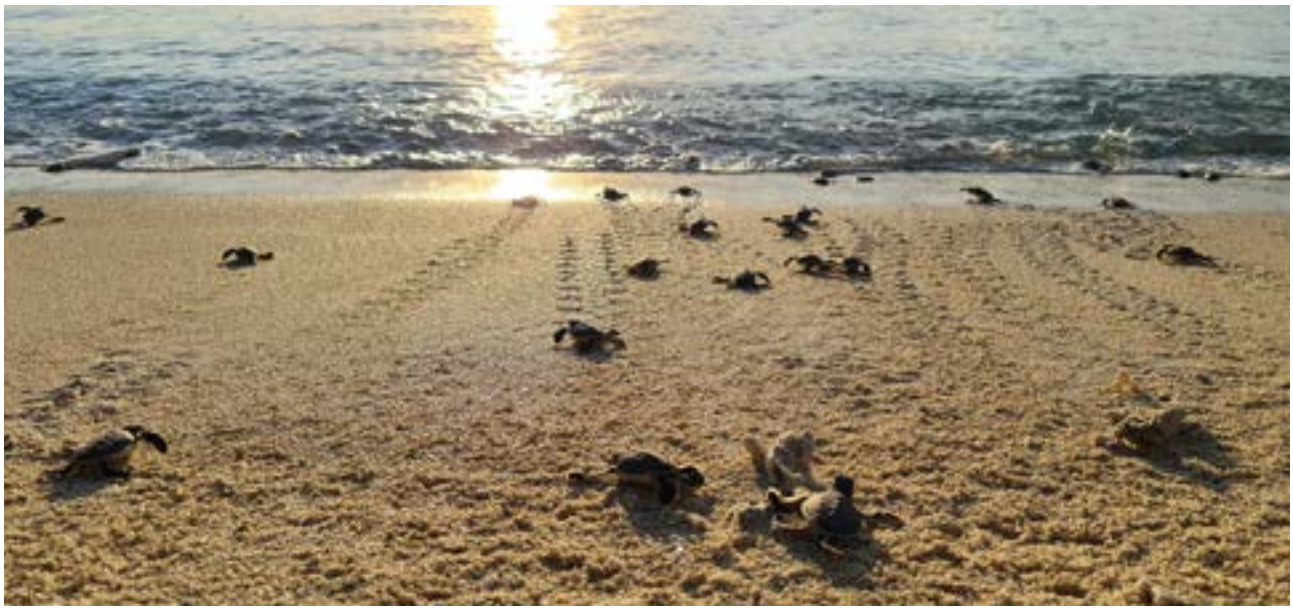
A turtle hatchling making its way to the ocean. © Jonathan Caramanus, WWF

THEME 2: CLIMATE CHANGE

OBJECTIVE 1: Increase marine species resilience to climate change by reducing other threats and advocating for lower emissions

NUMBER	ACTION	RESPONSIBILITY
2.1.1	Support actions to limit global warming to 1.5˚C to protect biodiversity, including marine species, and support the adaptive capacity of ecosystems that will be threatened above this level. (i)	All
2.1.2	Promote and support research and monitoring of key marine species to track the impact of climate change on biodiversity. (ii)	SPREP, Members, Partners
2.1.3	Build species resilience to climate change by enhancing existing effective mechanisms and developing innovative solutions and case studies. Implement, monitor, document, and share results widely. (iii)	Members, Partners
2.1.4	Support ecosystem-based adaptation (EBA) by stopping the loss and degradation of species-rich marine ecosystems, including mangroves, saltmarshes and deep water (refer IPBES-IPCC Co-Sponsored Workshop Report on Biodiversity and Climate Change).[6] Support 30% of ocean covered by marine protection targets, including at least 10% in strict protection, taking into account representativeness, effectiveness, and equity. (iv)	Members

INDICATORS		TIMEFRAME
i.	The Pacific continues to present a strong, united voice at international fora for a target of 1.5°C and the post-2020 Global Biodiversity Framework targets.	2022
ii.	The impact of climate change (e.g. sea-level rise, sand temperature increase) on marine species has been identified and is being tracked.	2023
iii.	Ways of building species resilience to climate change are being implemented, monitored, documented, and shared with Pacific Member states.	2022
iv.	Thirty per cent of exclusive economic zones (EEZs) are under a high level of protection.	2030



Green turtle (*Chelonia mydas*) hatchlings making their way to the ocean. © CICI-PNG

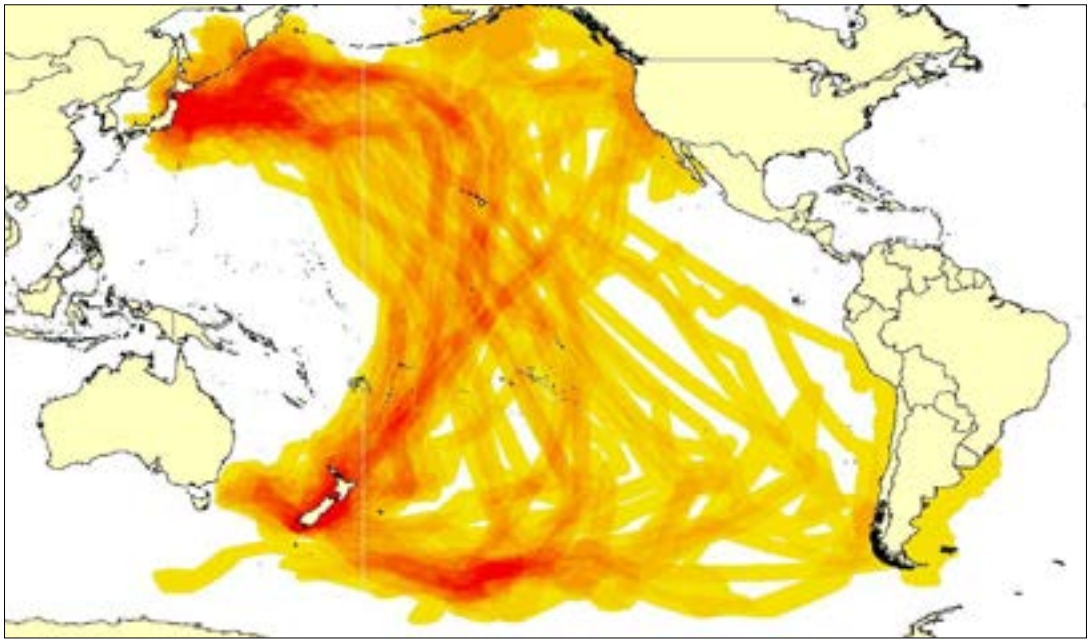
6 IPBES. 2021. IPBES-IPCC co-sponsored workshop report on biodiversity and climate change [Internet]. IPBES; [accessed 2022 Feb 1]. https://ipbes.net/events/ipbes-ipcc-co-sponsored-workshop-report-biodiversity-and-climate-change

THEME 3: ECOSYSTEMS AND HABITAT PROTECTION

OBJECTIVE 1: Identify and protect critical habitat and migratory pathways for marine species

NUMBER	ACTION	RESPONSIBILITY
3.1.1	Identify and map: priority feeding, breeding, and aggregation habitats and migration routes for marine species to inform new key biodiversity areas[7] (KBAs) for protection, and to develop marine protected areas (MPAs) and marine spatial plans (MSPs). **(i)**	SPREP, Members, Partners
3.1.2	Provide links to resources to help with designing MPAs and MSPs, e.g: Environmental Impact Assessment Guidelines for Coastal Tourism Development in Pacific Island Countries and Territories[8] Developing a Marine Spatial Plan: A Toolkit for the Pacific.[9] **(ii)**	SPREP
3.1.3	Develop and provide a toolkit or template enabling community-led marine species protection for relevant country authorities and agencies to use to help local villages and communities with local management action. **(iii)**	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. KBAs are identified and used to develop MPAs and MSPs.	2026
ii. A resource list for marine protection is available on the SPREP website.	2022
iii. A toolkit for community-led marine species protection is developed and available on the SPREP website.	2024



Sooty Shearwater distribution during breeding and on migration (Shaffer et al. 2006). Map: BirdLife International.

7 KBA. 2022. Key biodiversity areas: keep nature thriving [Internet]. KBA; [accessed 2022 Feb 1]. https://www.keybiodiversityareas.org/

8 SPREP. 2018. Environmental impact assessment guidelines for coastal tourism development in Pacific island countries and territories [Internet]. SPREP; [accessed 2022 Feb 1]. https://www.sprep.org/sites/default/files/documents/publications/eia-guidelines-tourism-development_0.pdf

9 Ceccarelli D, Davey K, Fernandes L. 2018. Developing a marine spatial plan: a toolkit for the Pacific [Internet]. MACBIO (SPREP/IUCN/BMU); [accessed 2022 Feb 1]. http://macbio-pacific.info/wp-content/uploads/2019/01/MSP-toolkit_finalversion_24.10.19-digital.pdf

THEME 4: THREAT REDUCTION

OBJECTIVE 1: Quantify and prioritise threats to marine species and habitats

NUMBER	ACTION	RESPONSIBILITY
4.1.1	Identify, assess, and prioritise threats to marine species groups and their habitats, including emerging threats, such as deep-sea mining at national and regional levels. (i)	SPREP, Partners, Members
4.1.2	Promote increased transparency of threatened marine species by-catch data through regional fisheries bodies, to allow more accurate assessment of impacts. (ii)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. A review of known threats is produced for each marine species group and is available on the SPREP website for use in national and regional research and management planning. National scale information is included where possible.	2026
ii. Regional fisheries bodies have increased availability of marine species by-catch data.	2026

Spinner dolphins (*Stenella longirostris*) off the coast of Falealupo, Savaii, Samoa. © Juney Ward, SPREP

THEME 4: THREAT REDUCTION

OBJECTIVE 2: Reduce impact of pollution and coastal and offshore development on marine species and habitats

4.2.1	Protect water quality by promoting sustainable land use practices (e.g. ridge-to-reef and community-based management) to protect and conserve coastal marine species habitats and foraging grounds, such as seagrass meadows. (i)	SPREP, Members
4.2.2	Ensure environmental impact assessment (EIA) processes for coastal development take account of and avoid, reduce, or mitigate any impacts to marine species, their habitat and foraging grounds, especially coral reefs and seagrass beds, including impacts of runoff. (ii)	SPREP, Members
4.2.3	Consider the impacts of other developments, such as seabed mining, sand mining, and deep-sea mining in national legislative and EIA processes. Make sure SPREP's Strategic Environmental Assessment (SEA) Guidelines for Pacific Island Countries and Territories[10] are available to ensure environmental and social considerations are integrated in national and sectoral development plans, policies, strategies, and programmes. (iii)	Members, Partners
4.2.4	Enforce compliance with international and national regulations on vessel discharges containing oil and other toxic substances, including plastic, and report breaches. (iv)	SPREP, Members, Partners
4.2.5	Implement the Pacific Regional Action Plan: Marine Litter 2018–2025[11] (Pacific Marine Litter Action Plan) and the International Maritime Organization's Action Plan to Address Marine Plastic Litter from Ships.[12] Strengthen collaboration between relevant government agencies. Ensure proper waste disposal facilities exist at ports. (v)	Members

INDICATORS	TIMEFRAME
i. Community-based management practices are sustainable and protect coastal habitats.	2023
ii. SPREP's EIA and SEA guidelines have been shared and promoted to Members and are being used to help with policy development and EIA and SEA processes.	2023
iii. Examples of effective EIAs and SEAs are available for reference.	2026
iv. Reported incidents / cases / offences are being received, documented, and actioned for vessels discharging oil or other toxic substances.	2026
v. Appropriate policies are in place and enforced in Pacific island countries and territories to reduce the impacts of waste and pollution on marine species. Proper waste disposal facilities exist in ports.	2026

10 SPREP. 2020. Strategic environmental assessment (SEA) guidelines for Pacific island countries and territories [Internet]. SPREP; [accessed 2022 Mar 1]. https://www.sprep.org/publications/strategic-environmental-assessment-sea-guidelines-for-pacific-island-countries-and-territories

11 SPREP. 2018. Pacific regional action plan: marine litter 2018–2025 [Internet]. SPREP; [accessed 2022 Mar 1]. https://www.sprep.org/publications/pacific-regional-action-plan-marine-litter

12 International Maritime Organization. 2018. Action plan to address marine plastic litter from ships [Internet]. IMO; [accessed 2022 Mar 1]. https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/IMO%20marine%20litter%20action%20plan%20MEPC%2073-19-Add-1.pdf

THEME 4: THREAT REDUCTION

OBJECTIVE 3: Reduce impact of tourism and watercraft on marine species

4.3.1	Promote SPREP's Environmental Impact Assessment Guidelines for Coastal Tourism Development in Pacific Island Countries and Territories[8] as best practice. Use SPREP website to provide information and resources about lessons learned and best practices in environmental management. (i)	SPREP
4.3.2	Review and promote guidelines for responsible watercraft operations, including those generated by cruise ship operations. Consider reductions in boat speed, distance, or limits on the number of vessels in proximity to marine species, or spatial / temporal closures, where needed, to prevent injury and death of marine species. Establish and promote appropriate mortality reporting procedures. (ii)	SPREP, Members

INDICATORS	TIMEFRAME
i. Up-to-date guidelines for responsible watercraft operations are available on the SPREP website and promoted.	2022
ii. Regulations are in place for operating watercraft around marine species with further restrictions for areas where this is a significant problem.	2026

Humpback whale fluke, off the coast of Totoya, Fiji. © Cara Miller

THEME 4: THREAT REDUCTION

OBJECTIVE 4: Reduce impact of by-catch and entanglement of marine species

4.4.1	Prohibit and prevent the discarding of fishing gear, especially nets (which become ghost nets). Encourage ghost-net-clearing programmes in important marine species habitat areas and on beaches and reefs, and provide facilities for the disposal of old fishing gear in ports. (i) (ii)	Members, SPREP, CMS Secretariat, Western and Central Pacific Fisheries Commission (WCPFC)
4.4.2	Require fishery licence holders to have management plans for each vessel for dealing with old fishing gear, including the fate of drifting FADs used in the tuna fishery. (iii) (iv)	Members
4.4.3	Improve by-catch reporting by implementing electronic monitoring. Continue to improve observer programmes to better identify, document, and report marine species by-catch. Promote opportunities to use observers to record observations of marine species at sea. (v)	SPREP, Members, WCPFC
4.4.4	Identify the key sources of fisheries mortality or injury for marine species and advise governments on ways to reduce, to the greatest extent practicable, the incidental capture and mortality of marine species during fishing activities (e.g. spatial and temporal closures and gear modifications). (vi)	SPREP, Members, Secretariat for the Pacific Community (SPC), CMS Secretariat, NGOs
4.4.5	Promote best practice guidelines for the safe handling and release of by-catch species in collaboration with partners such as the Food and Agriculture Organization of the United Nations (FAO), SPC, and United Nations Development Programme (UNDP). Support use of non-entangling and biodegradable FADs. (vii) (viii)	SPREP, Members, WCPFC
4.4.6	In small-scale fisheries, increase data collection on interactions with marine species and encourage adoption of best practice mitigation methods. (ix)	SPREP, SPC, Pacific Islands Forum Fisheries Agency (FFA), Members, Partners

INDICATORS	TIMEFRAME
▪ Members support measures to reduce fishing vessels as sources of marine litter, including management of derelict fishing gear.	2026
▪ Ghost-net-clearing programmes are in place.	2026
▪ Policies are in place requiring every vessel to have a waste management plan for dealing with old, unwanted fishing gear, including drifting FADs.	2026
▪ Facilities are available in port for disposal of old fishing gear, including old FADs	2026
▪ Improved documentation of marine species by-catch is occurring and recorded in relevant databases. Electronic monitoring is increasingly being implemented.	2026
▪ Key sources of fisheries mortality are identified and options for reducing incidental captures and mortality are promoted.	2023
▪ Best practice guidelines for by-catch mitigation and the safe handling and release of by-catch marine species are adopted throughout fisheries in the Pacific.	2024
▪ Use of non-entangling and biodegradable FADs are required to be used in the Western and Central Pacific Ocean (WCPO).	2026
▪ Data on interactions with marine species in small-scale fisheries is being collected and reported and best practice mitigation methods are being adopted.	2026

THEME 4: THREAT REDUCTION

OBJECTIVE 5: Eliminate illegal trade of marine species and their parts

4.5.1	Promote membership of, and compliance with, relevant international regulations, conventions, and agreements such as CITES. (i)	SPREP, Partners, Members
4.5.2	Build capacity nationally and regionally to analyse and share genetic data to aid in MCS of traded products. (ii)	SPREP, Partners, Members
4.5.3	Undertake community-based use and trade surveys to understand the levels, motivations, and drivers of taxa use and trade to inform which populations are targeted and are most at risk. (iii)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. Membership of CITES is increased.	2026
ii. Capacity to use genetic data to aid MCS has been developed.	2026
iii. Surveys of community-based use and trade have been undertaken and results summarised in a report.	2026

Green turtle swimming leisurely in a lagoon on Maui, Hawaii. © Bo Blinksi

THEME 5: CULTURAL SIGNIFICANCE AND VALUE

OBJECTIVE 1: Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into conservation management

NUMBER	ACTION	RESPONSIBILITY
5.1.1	Enable local communities to contribute their cultural knowledge and traditions when conducting research and developing management and action plans for marine species management. (i)	Members, Partners
5.1.2	Ensure gender, youth, and other under-represented demographic groups are considered, respected, and included when working with local communities and undertaking research or protection of marine species. (ii)	Members, Partners
5.1.3	Ensure solutions to threats to marine species are centred on indigenous knowledge and aspirations by integrating cultural governance and stewardship into developing and implementing conservation actions. (iii)	Members, Partners, SPREP
5.1.4	Record and preserve traditional knowledge associated with marine species. Provide fair and equitable benefits (monetary and non-monetary) arising from its use to the owners of traditional knowledge and customs for conservation and sustainable use. (iv)	Members, Partners, SPREP
5.1.5	Ensure outcomes and results are returned to the communities that have contributed cultural and traditional knowledge or have participated in research or conservation management. (v)	Members, Partners, SPREP

INDICATORS	TIMEFRAME
i. Cultural knowledge and traditions are acknowledged in national action plans.	Ongoing
ii. The representation of females, youth, and other under-represented demographic groups in community research, monitoring, and management is supported, increased, and reported.	2026
iii. Cultural governance and stewardship are incorporated when developing and implementing solutions to marine species threats.	Ongoing
iv. Traditional knowledge about marine species is recorded and benefits shared appropriately.	2026
v. Communities are kept informed of the results of local research and management activities.	Ongoing

THEME 6: LEGISLATION, POLICY, AND MANAGEMENT

Objective 1: Improve protection of marine species through monitoring, control, and surveillance, legal frameworks, and national action plans

NUMBER	ACTION	RESPONSIBILITY
6.1.1	Encourage the creation or review of national action plans (or equivalent) for each marine species group. (i)	Members
6.1.2	Support the development and implementation of management plans for established and declared marine sanctuaries, MPAs, and other ecosystem-based protection mechanisms that include marine species. (ii)	SPREP, Partners, Members
6.1.3	Ensure the conservation status of threatened and migratory marine species is considered when developing new legislation or policy. Reduce inconsistencies between different Acts and policies relating to these species, e.g. between fisheries and environment. (iii)	Members
6.1.4	Proactively strengthen marine species and habitat protection in national legislation and policy, including national biodiversity strategies and action plans (NBSAPs). Ensure collaboration between government agencies to achieve cross-sector integration. (iv)	Members
6.1.5	Review and update national CITES and fisheries legislation and regulations relating to traded marine species to: ▪ ensure inter-operability and improve management ▪ support the use of electronic CITES permit systems. (v)	Members
6.1.6	Incorporate relevant traditional knowledge, customary marine tenure and practices into policy, legislation, and management plans, where appropriate. (vi)	Members, Partners

INDICATORS	TIMEFRAME
i. Members have national action plans updated, completed, or drafted for two or more species groups.	2026
ii. Management plans for MPAs and other marine ecosystem-based protection mechanisms that include effective measures to protect marine species are developed in Pacific island countries and territories.	2023
iii. New and reviewed legislation considers the conservation status of threatened and migratory marine species, and resolves any legislative or policy inconsistencies.	2026
iv. There is increased protection for marine species in legislation and actions are incorporated into national implementation plans, action plans, strategies or other national programmes or projects.	2025
v. CITES and fisheries legislation has been reviewed.	2026
vi. Traditional knowledge, customary marine tenure and practices are present in new and reviewed policy, legislation, and management plans.	2026

THEME 7: ECOTOURISM AND LIVELIHOODS

OBJECTIVE 1: Ensure the development of marine species tourism is sustainable and conducted responsibly, with minimum impact to the environment and species while delivering maximum education and economic returns

NUMBER	ACTION	RESPONSIBILITY
7.1.1	From the outcomes of 4.5.3, encourage the development of alternative livelihoods as ways to support and protect marine species. (i)	Members, Partners
7.1.2	Collaborate with the Pacific Tourism Organisation to develop regional marine tourism guidelines building on international work. (ii)	SPREP, Pacific Tourism Organisation
7.1.3	Organise a regional workshop for range states on responsible marine species tourism. (iii)	SPREP
7.1.4	Encourage the inclusion of the cultural dimension, including traditional stories, in the development of tourism operations, where appropriate. (iv)	Partners, Members

INDICATORS		TIMEFRAME
i.	Alternative livelihoods are developed, which protect marine species.	2024
ii.	Regional marine tourism guidelines exist for marine species tourism in the Pacific region and are available on the SPREP website.	2024
iii.	A virtual workshop has been held to promote responsible marine tourism for the different marine species with updates from Members and partners on local management of marine wildlife tourism.	2025
iv.	Traditional stories are increasingly incorporated in tourism operations.	2026

A female green turtle (*Chelonia mydas*) returning to the ocean after laying its eggs. © CICI-PNG

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 1: Increase capacity at national and community levels for monitoring and managing marine species populations

NUMBER	ACTION	RESPONSIBILITY
8.1.1	Investigate opportunities for Pacific island nationals to obtain further training and education through postgraduate degrees, and support exchange programmes in: ▪ marine conservation management ▪ human environment relationships ▪ practical experience in conservation management. (i)	Partners, Members, SPREP
8.1.2	Promote postgraduate research that is linked to national research priorities, with governments providing career pathways for graduates. (ii)	Members, Sponsor partners
8.1.3	Develop a graduate programme for work experience in conservation work mentored by experienced conservation providers, including access to tools and networks to support successful careers in conservation. (iii)	Partners, Members, SPREP
8.1.4	Provide training for national coordinators to effectively use and communicate information, including support for language translation. (iv)	SPREP
8.1.5	Ensure capacity building effectively targets and enables the involvement of women and youth. (v)	SPREP, Partners, Members

INDICATORS		TIMEFRAME
i.	Training and education, graduate employment, and exchange opportunities for Pacific island nationals and practical conservation management are identified and communicated through networks.	Ongoing
ii.	Students who undertake postgraduate studies can continue their careers in-country.	Ongoing
iii.	Mentored graduate programmes offering work experience in conservation are operating.	2024
iv.	Communications training has been offered to Members and conducted.	Ongoing
v.	Women and youth are involved in capacity building and data on their involvement is recorded.	Ongoing

A pair of humpback whales, one with a white flank characteristic of the southern hemisphere humpback whales in front of ilot Ugo (New Caledonia). © Claire Garrigues, Opération Cétacés

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 2: Increase national, regional, and international collaboration and partnership

8.2.1	Continue to identify and strengthen communication. Share data between relevant laboratories, universities, and Members, to enable genetic analyses of marine species biopsy samples. **(i)**	SPREP, Partners
8.2.2	Encourage CMS Members and Non-Party Members to become signatories to the: ▪ CMS Migratory Sharks MOU[13] ▪ Pacific Islands Cetaceans MOU[4] ▪ CMS Dugong MOU.[3] (ii)	SPREP, Members
8.2.3	Encourage Non-Party Members to accede to CITES and / or adhere to CITES requirements to increase protection for traded marine species. **(iii)**	SPREP, Members
8.2.4	Use training workshops and other capacity building opportunities to enable Members to comply with CITES regulations concerning marine species trade, export / import, including training on identifying parts. **(iv)**	SPREP, Members
8.2.5	Where scientific sampling for DNA analysis is required, help establish permit requirements under CITES. **(v)**	SPREP
8.2.6	Foster civil society organisation (CSO) and NGO partnerships at national, regional, and international levels. **(vi)**	SPREP, Partners, Members
8.2.7	Foster interagency collaboration at the national level and engage with the private sector. **(vii)**	Members
8.2.8	Continue to foster collaboration with the CMS and CITES Secretariats as well as other relevant species conventions, MEAs, and relevant UN International Decades.[14] **(viii)**	SPREP

INDICATORS	TIMEFRAME
i. Laboratories and universities are identified for genetic analysis of each marine species group.	2022
ii. Membership of marine species MOUs has increased.	2023
iii. At least one additional Member has become a party to CITES / CMS.	2026
iv. Capacity building workshops have helped Members to comply with CITES.	2026
v. Import and export for DNA analysis is streamlined where CITES permits are required.	2026
vi. There are examples of improvement in collaboration at national, regional, and international levels.	2024
vii. There is increased interagency collaboration at the national level.	2024
viii. There is ongoing collaboration with CMS and CITES Secretariats.	2022

13 CMS Secretariat. 2010. Memorandum of understanding on the conservation of migratory sharks [Internet]. CMS; [accessed 2022 Feb 1]. https://www.cms.int/sharks/en

14 UNESCO. 2021. International decades [Internet]. UNESCO; [accessed 2022 Feb 1]. https://en.unesco.org/commemorations/international-decades

THEME 9: EDUCATION, AWARENESS, AND COMMUNICATION

OBJECTIVE 1: Improve awareness and understanding of marine species conservation issues and the importance of marine species in ecosystems, recognising the importance of culture

NUMBER	ACTION	RESPONSIBILITY
9.1.1	Promote Pacific island achievements and perspectives in international fora and engage with international media. (i)	All
9.1.2	For all marine species groups: ▪ develop regionally and nationally tailored education and awareness tools and resources (e.g. brochures, posters, documentaries) ▪ incorporate scientific and traditional knowledge in the resources (e.g. known threats; species diversity, distribution and status, including migration; key conservation projects; traditional knowledge and customs; role of climate change). ▪ Translate into French and local languages where relevant. (ii)	SPREP, Partners, Members
9.1.3	Disseminate education and awareness tools to governments, schools, coastal community groups, fishers, media agencies, private sector, and NGOs. (iii)	SPREP, Members, Partners
9.1.4	Develop or update an educational toolkit to help range states deliver curricula on key marine species groups, e.g. SPREP's 2006 Pacific Sea Turtle Education Kit.[15] (iv)	SPREP, Partners, Members
9.1.5	Help government agencies, community trainers, and educators to deliver outreach programmes. (v)	SPREP, Members
9.1.6	Support and strengthen the Lui Bell scholarship, Sue Taei Ocean Fellowship, and other marine science scholarships for tertiary students in the region. (vi)	All
9.1.7	Undertake outreach using informal / traditional methods of education (e.g. *talanoa* (chat) sessions, turtle calling), involving elders within communities where appropriate. (vii)	SPREP, Partners, Members
9.1.8	Foster community participation in data collection through promoting citizen science projects. (viii)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. Pacific island achievements and perspectives have been presented in international fora.	2025
ii. Education tools and resources have been developed and are available in English, French, and local languages as appropriate.	2025
iii. The SPREP website contains a section for marine species education and awareness tools and resources and is promoted widely.	2023
iv. Educational toolkits to support school curricular are available.	Ongoing
v. Help has been provided to deliver outreach programmes.	Ongoing
vi. Scholarships are issued to Pacific island tertiary students working on marine species projects.	Ongoing
vii. Outreach is delivered using informal and traditional methods of education.	Ongoing
viii. Citizen science projects have been established and promoted.	2025

15 Logan T. 2006. Pacific sea turtle education kit [Internet]. SPREP; [accessed 2022 Feb 27]. https://www.sprep.org/att/publication/000547_SeaTurtleKitWeb.pdf

Dugong in Vanuatu. © Christina Shaw

DUGONG ACTION PLAN

GOAL To protect dugongs and their habitats allowing Pacific island populations to recover and thrive, recognising their strong cultural importance to the peoples of the Pacific.

Introduction

Dugong (*Dugong dugon)* are the only surviving species of the family Dugongidae and the only strictly herbivorous marine mammal. The dugong's closest relative, Stellar's sea cow, was hunted to extinction within 27 years of its discovery in the eighteenth century. The life history characteristics of dugong are similar to Stellar's sea cow, being long-lived with a low reproductive rate, long generation time, and high investment in each offspring. Dugong live about 70 years, but don't breed until 7–17 years of age, and have a gestation period of 13–15 months. They produce just one calf every 2.5–7 years.

Dugong feed on seagrass beds in shallow waters and are seagrass community specialists, playing an important ecological role in the structure of seagrass ecosystems. If a particular seagrass habitat is lost, some dugong may temporarily migrate to another area, while others may starve and die. All surviving animals are likely to postpone breeding.

Because of their life history characteristics, dugong populations are slow to recover when they are lost from a particular area. Without the influence of dugong grazing activities, seagrass communities may change to less favourable species for dugong, discouraging their return. Unmanaged human activities that threaten dugong and their habitat may increase the risk of local extinction and range contraction, leading to an increased overall risk of species extinction.

Species distribution

It is generally thought that throughout much of their range, dugong are represented by relict populations separated by large areas where their numbers have been reduced. Dugong have been extirpated from some parts of their range, and animals in the waters of isolated islands are particularly at risk.

Dugong occur in six SPREP Member countries and territories: Australia, New Caledonia, Palau, Papua New Guinea, Solomon Islands, and Vanuatu. Palau's dugong population is the most isolated in the world and unlikely to be supplemented by recruitment (population spread) from any other area. Dugong are highly mobile and can move across the exclusive economic zones of different countries, but the frequency of large-scale movements is unknown and likely rare.

New Caledonia, Palau, Papua New Guinea, Solomon Islands, and Vanuatu participated in a CMS Dugong Catch and Bycatch Questionnaire,[16] which provides the latest information on:

- distribution and abundance of dugong populations and seagrass habitat
- data on catch and by-catch
- areas of fishing pressure
- potential conservation hotspots.

Information on dugong distribution across four of the five dugong range states is disparate and more research is needed in some countries.

Species status

The global population of dugong has declined significantly over recent decades to the point of local extinction across parts of its former range. The largest population in the world occurs in Torres Strait between northern Australia and Papua New Guinea.

Dugong were classified in 2019 by the IUCN Red List as Vulnerable with a decreasing trend, an evaluation consistent with its status during the previous SPREP dugong action plan. All dugong populations are listed on Appendix 1 of CITES, prohibiting commercial international trade of the species. Dugong are additionally listed on Appendix II of the CMS.

In the Pacific islands region, the status of dugong populations is generally unknown (with the exception of Torres Strait) and is of concern.

It is important that each range state assesses the local extinction risk to dugong in its waters and regional assessments are based on regional management units.

The low reproductive rate of dugong requires that greater than 95% of adult animals have to survive each year to maintain a small dugong population.

16 Pilcher N, Williams J, Hopkins G, Jaouen L. 2017. CMS dugong MOU standardised dugong catch and bycatch questionnaire final report [Internet]. CMS; [accessed 2022 Feb 2]. https://www.cms.int/dugong/sites/default/files/publication/standardised-dugong-questionnaire_final-report_jan2017.pdf

Traditional knowledge and customs

Dugong play a significant role in the culture of Pacific island communities. In some societies, it is an important totem because of its size and strength, and features prominently in stories and legends. The activities associated with historical dugong hunting and the preparation of its meat also have great significance and are an expression of long-held cultural traditions.

Specific parts of the dugong are used in customary events (e.g. weddings, funerals, and traditional feasts) as well as for making traditional items, including drums, spoons, scrapers, hooks, laces, and necklaces. Although dugong meat is a traditional and sometimes highly prized meat in some societies, other cultures place traditional taboos against killing them. For example, in Bougainville, the dugong is a clan totem for some people and it is taboo to hunt them.

Income-generating opportunities

Similar to other tourism activities based on marine species (e.g. whale and dolphin watching), several countries have dugong watching (e.g. Australia and Vanuatu). Vanuatu also offers 'swim with dugong' operations.

Threats

The long lifespan and slow reproduction rate of dugong makes them particularly vulnerable to human-induced threats.

Threats to dugong have been broadly categorised into two types: those that cause direct dugong mortality, and those that result in dugong habitat degradation or loss.

DIRECT DUGONG MORTALITY THREATS

- Harvesting for food, medicine, artefacts, and trade: Dugong are targeted by coastal hunters and have long been sought after for their meat, oil, skin, bones, and teeth. Hunting is a key threat in the Pacific islands region given the low numbers or unknown status of dugong populations in some areas. For most countries, it is unknown whether the level of harvest is sustainable, and there is concern about the use of modern hunting equipment.
- Incidental by-catch, destructive fishing methods, and vessel strikes: Incidental drowning of dugong caught in fisheries gear (e.g. nets) is considered to be the predominate threat to the decline of dugong in some areas of Pacific range states. Increased vessel traffic has increased the likelihood of dugong being killed by vessel strikes and, even though the number of vessel strikes is generally low, any mortality is serious in areas with low numbers of dugong.
- Habitat loss: Because of their dependence on seagrasses, dugong are very vulnerable to habitat loss and disturbance.

INDIRECT DUGONG THREATS

- Coastal development, including reclamation: Development and reclamation activities increase sedimentation and turbidity in coastal waters where seagrasses are found. Sedimentation and turbidity not only smother seagrasses, but also reduce the amount of light reaching them, resulting in the degradation of seagrasses and a reduction in their density and productivity.
- Nutrient runoff from land: Nutrients from human activities (e.g. those found in sewage water, farming, and agricultural fertilisers) can alter the marine habitat, making it unsuitable for seagrass and promoting algal growth instead.
- Agricultural pollution: Herbicide runoff from agricultural activities presents a potential risk to seagrass habitats and increased sedimentation from poorly managed land practices can be a cause for concern.
- Extreme weather events: Cyclones and storms can destroy or degrade seagrass beds either directly by wave action or indirectly by increased turbidity.
- Climate change: Seagrass is expected to continue to decline in extent, and it is likely that climate change will increasingly contribute to the intensification of extreme storm events and loss in marginal habitats. The proportion of decline attributable to climate change will be difficult to assess, especially as the impacts of climate change on seagrasses are expected to be locally variable.

Thermal stress to seagrasses is likely to cause contraction in the geographical ranges of some seagrass species and the depth ranges of most species. Intensification of both dry conditions and storm events may increase the scale and frequency of disturbances to a level that seagrass cannot tolerate. The community composition of many seagrass meadows is likely to change as a consequence.

Climate change will reduce the resilience and increase the vulnerability of seagrass meadows, which are already stressed by other human activities, such as coastal development.

Themes and objectives

THEMES	OBJECTIVES
1. **Research and monitoring**	1. Collect, centralise, and share data on dugong. 2. Improve our understanding of dugong populations and habitats through research and monitoring.
2. **Climate change**	1. Identify exposure, consequence, and vulnerability of dugong and seagrass to climate change.
3. **Ecosystems and habitat protection**	1. Identify and protect important dugong habitats.
4. **Threat reduction**	1. Reduce direct and indirect threats to dugong populations.
5. **Cultural significance and value**	1. Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into research and management.
6. **Legislation, policy, and management**	1. Improve protection of dugong through monitoring, control, and surveillance, legal frameworks, and national action plans.
7. **Ecotourism and livelihoods**	1. Encourage best international practice for dugong / human interactions.
8. **Capacity building and collaboration**	1. Build in-country capacity to strengthen dugong research and conservation. 2. Enhance national, regional, and international collaboration.
9. **Education, awareness, and communication**	1. Improve awareness of the importance of dugong, their habitats, and relevant conservation issues.

Feeding behaviour of dugong. © Andrey Nekrasov

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 1: Collect, centralise, and share data on dugong

NUMBER	ACTION	RESPONSIBILITY
1.1.1	Include dugong response in national stranding networks. Collect data, and conduct necropsies where possible, including evidence of cause of death, for inclusion in the Strandings of Oceania Database[17] hosted on Flukebook.[18] **(i)**.	Members, Partners
1.1.2	Encourage the public to report all dugong strandings and mortalities to the appropriate management authority for response. **(ii)**	Members
1.1.3	Collect and archive genetic samples for analysis to support the Global Dugong Genetics Project (e.g. from strandings) following the CMS Dugong MOU Protocol[19] developed by James cook University and Nelson Mandela Metropolitan University for collecting genetic samples. **(iii)**	Members, Partners
1.1.4	Organise a regional centralised repository for dugong genetic samples. **(iv)**	SPREP
1.1.5	Support use of the CMS Dugong Catch and Bycatch Questionnaire,[16] Dugong Questionnaire Survey Project Manual,[20] and other dugong habitat and vessel interaction mapping tools, including through training opportunities within country or online. Disseminate information gathered to relevant parties targeting identified conservation hotspots in conservation and research efforts. **(v)**	SPREP, CMS Secretariat, Members, Partners

INDICATORS	TIMEFRAME
i. Dugong mortalities are reported.	Ongoing
ii. Dugong strandings are responded to and relevant data is collected and submitted to the regional database.	Ongoing
iii. Genetic sampling following the CMS Dugong MOU Protocol[19] is continued or initiated in all range states.	2022 and ongoing
iv. A centralised genetic repository is in place.	Ongoing
v. CMS Dugong Catch and Bycatch Questionnaires[16] are being used and incorporated into relevant training to stakeholders and incorporated in conservation planning by all range states.	2024

17 SPREP. Strandings of Oceania database [Internet]. SPREP; [accessed 2022 Feb 2]. https://www.sprep.org/ioe/strandings-of-oceania-database

18 Flukebook. A.I. for cetacean research: machine learning and citizen science and conservation research [Internet]. Flukebook; [accessed 2022 Feb 22]. https://www.flukebook.org/

19 James Cook University Australia. 2012. Outline of the technical aspects of dugong genetics work being done at James Cook University in Australia [Internet]. CMS; [accessed 2022 Feb 2]. https://www.cms.int/dugong/sites/default/files/document/cms-dugong_mos3_inf8_dugong-genetics.pdf

20 Pilcher N, Kwan D. 2012. Dugong questionnaire survey project manual [Internet]. CMS–UNEP: [accessed 2022 Feb 2]. https://www.cms.int/dugong/sites/default/files/publication/standardised-dugong-questionnaire_project-manual_sep2012.pdf

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 2: Improve our understanding of dugong populations and habitats through research and monitoring

1.2.1	Promote the use of the Dugong and Seagrass Research Toolkit[21] and investigate new technologies to facilitate standardised and comparable research in all range states. (i)	SPREP, CMS
1.2.2	Prioritise baseline surveys and mapping in areas where abundance and distribution assessments are needed. Use robust techniques appropriate for the circumstances, including identifying seagrass species targeted by dugong. Encourage and facilitate collaboration with technical advisors or other field experts. (ii) (iii)	Members
1.2.3	Promote regular (at least every 5 years), replicable surveys, incorporating traditional knowledge and using participatory scientific assessments, to determine national dugong population status, abundance, distribution, and trends. (iv)	SPREP, CMS Secretariat, Members, Partners
1.2.4	Investigate spatial-temporal changes in habitat use and take advantage of developments in new technologies as they become available. (v)	Partners
1.2.5	Undertake an extinction risk assessment for dugong across the region. (vi)	SPREP, Partners

INDICATORS	TIMEFRAME
i. Dugong and Seagrass Research Toolkit[21] or other technologies are used by all range states.	2022 and ongoing
ii. Baseline surveys for distribution and abundance completed for all Pacific range states.	2024
iii. Important seagrass species for dugong have been identified.	2024
iv. Relevant information on dugong population status is being summarised every 5 years and made widely available.	2025
v. Spatial-temporal changes in habitat use research has been undertaken and published.	2026
vi. A regional extinction risk assessment for dugong has been completed.	2026

21 Dugong & seagrass research toolkit [Internet]. 2017. Dugong & seagrass research toolkit developed in collaboration with CMS; Dugong MOU; Environment Agency; Total; [accessed 2022 Feb 2]. www.conservation.tools

THEME 2: CLIMATE CHANGE

OBJECTIVE 1: Identify exposure, consequence, and vulnerability of dugong and seagrass to climate change

NUMBER	ACTION	RESPONSIBILITY
2.1.1	Identify and protect seagrass sites that are most at risk from climate change using a climate vulnerability tool. (i)	SPREP, Partners
2.1.2	Assess and map what impact climate change may have on the distribution of seagrass and dugong populations. (ii)	SPREP, Partners
2.1.3	Include risk assessments for seagrass sites that are identified as being at high risk from climate change impacts as part of seagrass mapping and monitoring. (iii)	SPREP, Partners, Members
2.1.4	Support actions to include seagrass protection that take account of contribution to blue carbon and support alternative livelihoods. (iv)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. Seagrass sites that are vulnerable to climate change impacts are identified and prioritised for protection.	2024
ii. Possible distribution changes of seagrass beds under future climate change scenarios are mapped.	2026
iii. Risks from climate change are included in seagrass mapping and monitoring.	2026
iv. Blue carbon projects support livelihood projects to protect seagrass.	2026

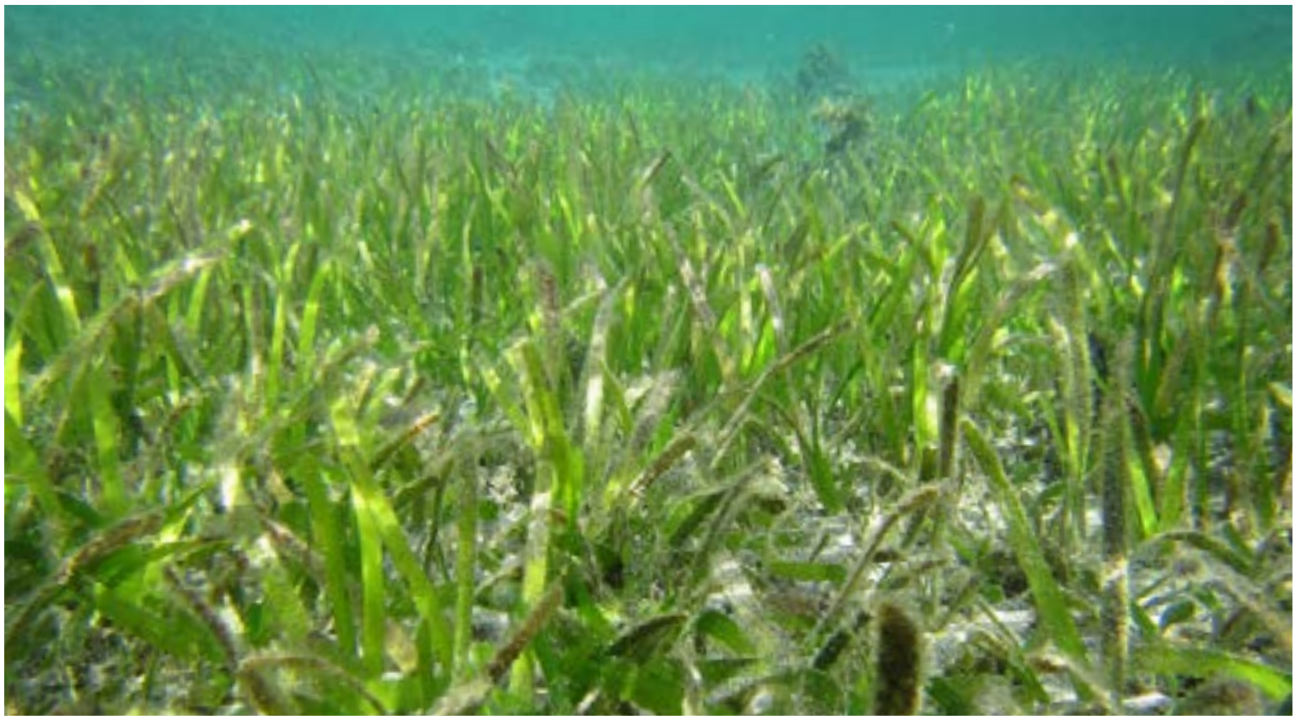
Grazing dugong, Vanuatu. © Christina Shaw

THEME 3: ECOSYSTEMS AND HABITAT PROTECTION

OBJECTIVE 1: Identify and protect important dugong habitats

NUMBER	ACTION	RESPONSIBILITY
3.1.1	Identify, map, and monitor seagrass areas important for dugong, to prioritise for protection and dugong threat reduction efforts. (i)	Members, Partners
3.1.2	Develop effective relationships with local communities and collaborate to protect dugong and seagrass habitat. (ii)	Members
3.1.3	Identify and restore degraded seagrass habitat sites. (iii)	Members
3.1.4	Integrate coastal ecosystem services of seagrasses into local decision-making and support customary marine tenure protection approaches. (iv)	Members
3.1.5	Contribute data to identification of KBAs (See action 3.1.1 in multi-species action plan) on globally and regionally significant sites for dugong and seagrass in the region and for designation as KBAs. (v)	Members, Partners, SPREP
3.1.6	Ensure important seagrass areas are protected from sedimentation by appropriate management and protection of catchments, e.g. from logging operations. (vi) (vii)	Members

INDICATORS	TIMEFRAME
i. Important seagrass areas are identified and mapped and communicated to Members.	2024
ii. Local communities are engaged in habitat protection and seagrass restoration.	2024
iii. Management plans for degraded seagrass beds are developed and restoration activities started. Reasons for degradation are identified and addressed.	2024
iv. The value of ecosystem services to local communities is recognised and incorporated into decision-making processes.	2026
v. KBAs for dugong and seagrass are identified across the Pacific.	2026
vi. Logging operations avoid catchments of important seagrass beds.	Ongoing
vii. Catchment management protects important seagrass beds.	Ongoing



Seagrass habitat, Vanuatu. © Christina Shaw

THEME 4: THREAT REDUCTION

OBJECTIVE 1: Reduce direct and indirect threats to dugong populations

NUMBER	ACTION	RESPONSIBILITY
4.1.1	Work with communities where legal harvesting of dugong is allowed, to collaboratively develop dugong management plans that recognise traditional knowledge and cultural practices that are consistent with dugong conservation. (i)	Members
4.1.2	Enforce existing bans on traditional hunting. (ii)	Members
4.1.3	Promote alternative livelihood programmes, e.g. through sustainable tourism opportunities for communities that currently take dugong. (iii)	SPREP, Members
4.1.4	Prohibit the use of destructive fishing practices and gear in known dugong habitats (e.g. blasting and gill nets). Support use of traditional taboo systems of protection where there is customary marine tenure. (iv)	Members

INDICATORS	TIMEFRAME
i. Areas with known dugong cultural harvest are identified and management plans are collaboratively developed with communities in all range states.	2024
ii. Traditional hunting bans are enforced.	2026
iii. Options for alternative livelihoods are developed with communities who take dugong.	2024
iv. Blast fishing and gill netting does not occur in identified dugong habitats. Traditional taboo protections are in use where there is customary marine tenure.	2026

THEME 5: CULTURAL SIGNIFICANCE AND VALUE

OBJECTIVE 1: Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into research and management

NUMBER	ACTION	RESPONSIBILITY
5.1.1	Ensure that dugong-specific traditional knowledge is documented (including video or audio recordings), held by the appropriate authorities, and adequately protected and shared where appropriate. (i)	Members, Partners
5.1.2	Incorporate relevant traditional knowledge, resource management, and customary marine tenure into dugong and associated habitat management. (ii)	Members

INDICATORS	TIMEFRAME
i. Traditional knowledge about dugong in Pacific island range states is documented, adequately protected, and shared where appropriate.	2026
ii. Traditional knowledge, resource management, and customary marine tenure is incorporated into dugong and associated habitat management.	2026

THEME 6: LEGISLATION, POLICY AND MANAGEMENT

OBJECTIVE 1: Improve protection of dugong through monitoring, control, and surveillance, legal frameworks, and national action plans

NUMBER	ACTION	RESPONSIBILITY
6.1.1	Establish a mechanism for reporting and responding to illegal activities. Implementing agency to develop clear protocols.(i)	Members
6.1.2	Review regulations regarding the protection of dugong in all range states. Promote compliance with legal frameworks that prohibit the take of dugong. (ii)	SPREP, Members
6.1.3	Help range states to provide community awareness of, and compliance with, regulations, e.g. Solomon Islands new legal protection for dugong; New Caledonian communication strategy to increase awareness of dugong regulations. (iii)	SPREP, Members
6.1.4	Strengthen MCS and penalties; engage local communities in monitoring, surveillance, and reporting illegal activities. (iv)	Members

INDICATORS	TIMEFRAME
i. Protocols for responding to reports of illegal activity are established and implemented.	2023
ii. Legislation and / or regulations are fit for purpose to protect dugong in all range states.	2024
iii. Information about regulations is easily available, widely communicated, and included in public awareness campaigns.	Ongoing
iv. Compliance with regulations is monitored and enforced with sufficient disincentives to discourage illegal activities.	Ongoing

THEME 7: ECOTOURISM AND LIVELIHOODS

OBJECTIVE 1: Encourage best international practice related to dugong / human interactions

NUMBER	ACTION	RESPONSIBILITY
7.1.1	Monitor the impact of ecotourism-related activities on dugong. (i)	Members, Partners
7.1.2	Promote sustainable wildlife tourism in collaboration with local communities and other stakeholders. (ii)	SPREP, CMS Secretariat, Members, Partners
7.1.3	Promote best practice community-approved guidelines for responsible dugong watching and other related activities (e.g. Guidelines for Interacting with Dugongs[22] developed in Vanuatu), with resources available online in English, Bislama and French, including a code of conduct for tourism operators. (ii)	SPREP, Members
7.1.4	Encourage development of a community-approved permit system to regulate dugong-watching operations and related activities. (iii)	SPREP, Members

INDICATORS	TIMEFRAME
i. Information is collected and available to assess the impact of ecotourism on dugong.	2026
ii. Community-approved guidelines for responsible dugong watching and related activities has been disseminated and effectively implemented.	2023
iii. Policy and legislation are in place for issuing permits, where necessary, to regulate dugong-watching operations and related activities for at least one range state.	2026

22 VESS. 2016. Guidelines for interacting with dugongs [Internet]. Vanuatu Environmental Science Society; [accessed 2022 Feb 2]. https://www.vanuatuconservation.org/wp-content/uploads/2018/09/Tourists-Guide-for-Interacting-with-Dugongs-WEB.pdf

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 1: Build in-country capacity to strengthen dugong research and conservation

NUMBER	ACTION	RESPONSIBILITY
8.1.1	Build national capacity at all levels to participate in dugong management, research, and monitoring. Support with access to expertise and resources. (i)	SPREP, Members, Partners
8.1.2	Support community / ranger monitoring of dugong and seagrass along similar lines to ranger monitoring of marine turtles. (ii)	SPREP, Members, Partners
8.1.3	Encourage Pacific island nationals to undertake postgraduate studies on conservation / management that provide them with the knowledge and skills to take leadership roles in marine wildlife conservation and management. (iii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. The skills required for dugong management, research, and monitoring are held in each dugong range state or possible out-sourcing opportunities have been identified. Skills gaps are identified, and training opportunities sought.	2026
ii. Community / ranger monitoring of dugong and seagrass is being undertaken.	2026
iii. At least one postgraduate study on dugong is in place by and held by a Pacific national.	2026

OBJECTIVE 2: Enhance national, regional, and international collaboration

8.2.1	Encourage range states to collaborate with each other in dugong work (e.g. Australia / PNG partnerships, New Caledonia / Vanuatu). Assist with technical support for monitoring and tracking. (i)	SPREP, CMS Secretariat, Members
8.2.2	Build relationships with international seagrass mapping organisations to share their data to help with developing management actions, e.g. Centre for Environment, Fisheries and Aquaculture Science[23] (Cefas). (ii)	Members, Partners, SPREP
8.2.3	Encourage and support Pacific range states to actively implement the Dugong MOU Conservation and Management Plan.[24] (iii)	SPREP, CMS Secretariat, Members

INDICATORS	TIMEFRAME
i. Partnerships are formed between relevant range states and areas of collaboration are identified. Technical support is in place for monitoring and tracking.	2023
ii. International seagrass data is available from international seagrass mapping organisations for use in managing key habitat areas in Pacific range states.	2023
iii. The Dugong MOU Conservation and Management Plan[24] is implemented.	2022

23 Cefas. Tackling the serious global problems of climate change, biodiversity loss and food security to secure a sustainable blue future for all [Internet]. Centre for Environment Fisheries and Aquaculture Science (Cefas); [accessed 2022 Feb 4]. https://www.cefas.co.uk/

24 CMS Secretariat. 2007. Conservation and management plan for the memorandum of understanding on the conservation and management of dugongs (dugong dugon) and their habitats throughout their range [Internet]. CMS; [accessed 2022 Feb 2]. https://www.cms.int/dugong/en/documents/action-plans

THEME 9: EDUCATION, AWARENESS, AND COMMUNICATION

OBJECTIVE 1: Improve awareness of the importance of dugong, their habitats, and relevant conservation issues

NUMBER	ACTION	RESPONSIBILITY
9.1.1	Collate existing public awareness and educational resources developed in the region and globally for sharing (e.g. through the SPREP website). (i)	SPREP
9.1.2	Increase awareness about the ecosystem services of seagrasses (e.g. mitigating ocean acidification, carbon sequestration, storm surge mitigation, sediment trapping) to increase funding and support for seagrass conservation. (ii)	SPREP, CMS Secretariat, Seagrass-Watch Secretariat, Members
9.1.3	Develop regional education and public awareness resources using existing global resources (e.g. Dugong Fact Sheet[25] provided through the CMS Dugong MOU).[3] (iii)	SPREP, Partners
9.1.4	Facilitate and encourage networking and information exchange to relevant community monitoring groups, such as Seagrass-Watch,[26] the Dugong and Seagrass Hub,[27] and Strandings of Oceania[17] (hosted on Flukebook).[18] (iv)	SPREP, CMS Secretariat

INDICATORS	TIMEFRAME
i. Regional resources are available on the SPREP website.	2022
ii. Awareness of the ecosystem services of dugong seagrasses is increasing through public awareness campaigns.	2024
iii. Resources outlining the importance of dugong and seagrasses are available and used in awareness campaigns and communications.	2024
iv. Networking and information exchange is occurring.	2025

Carving of dugong mother and calf. A gift from the government of Palau to SPREP in support and acknowledgement of the 2011 Pacific Year of the Dugong campaign.

25 CMS Secretariat. 2019. Fact sheet on the memorandum of understanding on the conservation and management of dugongs and their habitats (dugong MOU) [Internet]. CMS; [accessed 2022 Feb 2]. https://www.cms.int/dugong/sites/default/files/publication/dugong_mou_0.pdf

26 Seagrass-Watch. 2021. Global seagrass observing network [Internet]. Seagrass-Watch; [accessed 3 Dec 2021]. https://www.seagrass-watch.org

27 Dugong and Seagrass Hub. 2022. Protecting seagrass and the ecosystem it supports [Internet]. Dugong and Seagrass Hub; [accessed 2022 Feb 3]. https://www.dugongseagrass.org/

Alanna Smith from Te Ipukarea Society counting tara (sooty tern, *Onychoprion fuscatus*) nests in Suwarrow Atoll national park, July 2021. © Te Ipukerua Society, Cook Islands

SEABIRD ACTION PLAN

GOAL: Conserve seabirds and their habitats, recognising the traditions and aspirations of the peoples of the Pacific Ocean and islands.

Introduction

Of approximately the 11,000 species of birds worldwide, remarkably, only 370 are 'seabirds' (i.e. birds that spend most of their lives at sea). Of those, 42 are known to breed within Oceania, with 17 unique to our region.

Seabirds are more threatened than any other comparable group of birds and their status continues to deteriorate globally. Across the Pacific, albatrosses, petrels, shearwaters, and storm-petrels (family Procellariidae and Oceanitidae) in particular, have experienced greater population declines than other bird families. The loss of Oceania's seabirds also represents a loss of cultural values for Oceanic peoples. Restoring healthy populations of seabirds will help build ecosystem resilience, support terrestrial and nearshore habitats as important carbon sinks, and rebuild and retain Pacific peoples' cultural connections with seabirds and the ocean.

Species distribution

The distribution of seabirds across Oceania is poorly known. Breeding sites are often difficult to access due to remoteness and inaccessibility. In addition, there is a lack of regional capacity for systematic surveys.

Species breeding within the region

Forty-two species are known or suspected to breed in the Pacific (Table 1).[28] Seabird breeding habitats range in altitude from high inland to coastal fringes and atoll islands. They occur on:

- large mountainous islands (e.g. New Ireland (PNG), Bougainville (PNG), Kolambangara (SI), Vanua Lava (V), Grande Terre (NC), Taveuni (FI), Gau (FI), Tahiti (FP))
- medium and small-sized islands (e.g. Matthew and Hunter Islands (NC), Ata (Tonga), Rarotonga (CI), Ta'u (AS) and Rapa islets (FP))
- raised atoll islands (makatea) (e.g. Walpole Island (NC) and Henderson Island (PI))
- low-lying atoll islands (e.g. Marshall Islands, Kiritimati and Rawaki, Line Islands (K), Chesterfield Reef (NC), Oeno (PI), Ducie (PI))
- emergent reef Pocklington (PNG) and sand cays.

28 American Samoa (AS), Cook Islands (CI), Federated States of Micronesia (FSM), Guam (GU), Kiribati (KI), Marshall Islands (MI), Nauru (NU), New Caledonia (NC), Niue (NI), Commonwealth of the Northern Marianas Islands (NMI), Palau (PA), Papua New Guinea (PNG), Pitcairn Islands (PI), Samoa (SA), Solomon Islands (SI), Tokelau (TOK), Tonga (TO), Tuvalu (TU), Vanuatu (VA), Wallis and Futuna (WF).

TABLE 1. Species of seabirds breeding or potentially breeding within the region

		PACIFIC ISLAND COUNTRY OR TERRITORY																						
SEABIRD SPECIES	**IUCN Threat Class**	**AS**	**CI**	**FSM**	**FI**	**FP**	**Gu**	**KI**	**MI**	**NA**	**NC**	**NI**	**NMI**	**PA**	**PNG**	**PI**	**SA**	**SI**	**TOK**	**TO**	**TU**	**VA**	**WF**
Murphy's petrel *Pterodroma ultima*	LC					■										■							
Kermadec petrel *Pterodroma neglecta*	LC					■										■							
Phoenix petrel *Pterodroma alba*	EN					■		■								■							
Herald petrel *Pterodroma heraldica*	LC	■	■			■										■							
Henderson petrel *Pterodroma atrata*	EN															■							
White-necked petrel[1] *Pterodroma cervicalis*	VU																					■	
Collared petrel[1] *Pterodroma brevipes*	VU	▫	■		■	■																■	
Black-winged petrel *Pterodroma nigripennis*	LC		▫			■										■							
White-winged petrel [1] *Pterodroma leucoptera*	VU										■												
Fiji petrel *Pseudobulweria macgillivrayi*	CR				▫																		
Bulwer's petrel *Bulweria bulwerii*	LC					■		■															
Tahiti petrel *Pseudobulweria rostrata*	NT	■			■	■					■						▫						
Beck's petrel *Pseudobulweria becki*	CR														▫			▫					
Wedge-tailed shearwater *Puffinus pacificus*	LC		▫	■	■	■		■	■		■	■	■		■					■		■	
Christmas Island shearwater *Puffinus nativitatis*	LC	■				■		■								■				■			
Heinroth's shearwater *Puffinus heinrothi*	VU														▫			▫					
Tropical shearwater* *Puffinus bailloni*	LC	■				■		■						■			▫	■		■		■	
Rapa shearwater *Puffinus myrtae*	CR					■																	
White-bellied storm-petrel* *Fregetta grallaria*	LC					■																	
Polynesian storm-petrel *Nesofregetta fuliginosa*	EN				▫	■		■			■					■	▫						
Red-tailed tropicbird *Phaethon rubricauda*	LC	■	■	■		■		■	■		■		■			■				■			

SEABIRD SPECIES	IUCN Threat Class	PACIFIC ISLAND COUNTRY OR TERRITORY																					
		AS	CI	FSM	FI	FP	Gu	KI	MI	NA	NC	NI	NMI	PA	PNG	PI	SA	SI	TOK	TO	TU	VA	WF
White-tailed tropicbird *Phaethon lepturus*	LC	■	■	■	■	■		■	■	■	■	■	■	■	■		■	■	■	■		■	■
Brown booby *Sula leucogaster*	LC	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■		■	■
Masked booby *Sula dactylatra*	LC	■	■	■	■	■		■	■		■	■			■	■				■			
Red-footed booby *Sula sula*	LC	■	■	■	■	■		■	■		■		■	■	■	■	■	■		■	■		■
Great frigatebird *Fregata minor*	LC	■	■	■	■	■		■			■			■		■	■	■			■		
Lesser frigatebird *Fregata ariel*	LC	■	■	■	■	■		■			■				■			■		■			
Silver gull *Chroicocephalus novaehollandiae*	LC										■												
Brown noddy *Anous stolidus*	LC	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Black noddy *Anous minutus*	LC	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Blue noddy *Procelsterna cerulea*	LC	■	■		■	■		■	■		■							■		■			
Grey noddy *Procelsterna albivitta*	LC															■				■			
White tern *Gygis alba*	LC	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■
Sooty tern *Onychoprion fuscatus*	LC	■	■	■	■	■		■	■		■		■	■				■		■			
Grey-backed tern *Onychoprion lunatus*	LC	■		■		■		■			■			■									
Roseate tern *Sterna dougallii*	LC										■				■			■					
Bridled tern *Onychoprion anaethetus*	LC				■						■				■			■		■			■
Black-naped tern *Sterna sumatrana*	LC				■			■	■		■				■			■		■	■		■
Fairy tern* *Sternula nereis*	VU										■												
Great crested tern *Thalasseus bergii*	LC			■	■	■		■	■		■			■	■			■					
Coral Sea storm petrel *Fregetta sp*	DD										□												

* See section on species status below.

■ Confirmed breeding □ Suspected breeding (not confirmed)

Species breeding outside the region

Birds migrating across the Pacific equator number in the millions, and their passage through the region each year is a major ecological event. The timing of passage of birds returning to their southern breeding colonies varies with species, but September and October are peak months. As many as 60 species of seabirds that breed outside the region have been recorded within the Pacific island countries and territories (Table 2). Several species are annual trans-equatorial migrants, which breed mainly in Aotearoa New Zealand and Australia and spend their non-breeding months north of the equator.

TABLE 2. Species that annually migrate into the region and / or across the Equator[29]

			PACIFIC ISLAND COUNTRY OR TERRITORY																					
SEABIRD SPECIES	**IUCN Threat Class**	**Origin**	**AS**	**CI**	**FSM**	**FI**	**FP**	**GU**	**KI**	**MI**	**NA**	**NC**	**NI**	**NMI**	**PA**	**PNG**	**PI**	**SA**	**SI**	**TOK**	**TO**	**TU**	**VA**	**WF**
Black-footed albatross *Phoebastria nigripes*	NT	Haw						■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■
Laysan Albatross *Phoebastria immutabilis*	NT	Haw						■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■
Chatham Island petrel *Pterodroma axillaris*	EN	NZ					■																	
Juan Fernandez petrel *Pterodroma externa*	VU	Chile					■		■															
Hawaiian petrel *Pterodroma sandwichensis*	EN	Haw							■															
Chatham Is taiko / magenta petrel *Pterodroma magentae*	CR	NZ					■																	
Grey-faced petrel *Pterodroma gouldi*	LC	NZ					■					■	■								■		■	
Newell's shearwater *Puffinus newelli*	CR	Haw							■	■														
Black petrel *Procellaria parkinsoni*	VU	NZ		■		■	■					■	■				■				■		■	
Mottled petrel *Pterodroma inexpectata*	NT	NZ	■	■		■	■		■	■								■			■		■	■
Cook's petrel *Pterodroma cookii*	VU	NZ	■	■		■	■				■	■							■	■	■		■	■
Pycroft's petrel *Pterodroma pycrofti*	VU	NZ		■		■	■									■							■	■

29 Australia (Aus), Antarctic (Ant), Arctic (Ar), Chile (Ch), Hawaii (Haw), Japan (Jap), New Zealand (NZ)

SEABIR SPECIES	IUCN Threat Class	Origin	PACIFIC ISLAND COUNTRY OR TERRITORY																					
			AS	CI	FSM	FI	FP	GU	KI	MI	NA	NC	NI	NMI	PA	PNG	PI	SA	SI	TOK	TO	TU	VA	WF
Stejneger's petrel *Pterodroma longirostris*	VU	Ch			■		■	■		■				■				■			■			
Streaked shearwater *Calonectris l eucomelas*	NT	Jap			■			■						■	■	■			■					
Buller's shearwater *Puffinus bulleri*	VU	NZ	■	■	■	■	■			■			■	■				■			■			■
Flesh-footed shearwater *Puffinus carneipes*	NT	NZ / Aus		■	■	■	■			■	■	■	■			■		■	■		■		■	
Sooty shearwater *Ardenna grisea*	NT	NZ	■	■		■	■		■			■	■				■	■		■	■		■	■
Short-tailed shearwater *Puffinus tenuirostris*	LC	Aus	■	■		■	■		■			■	■				■	■		■	■		■	■
Wilson's storm-petrel *Oceanites oceanicus*	LC	Ant								■		■							■					
Black-bellied storm-petrel *Fregetta tropica*	LC	NZ				■	■					■							■		■			
White-bellied storm-petrel F*regetta g rallaria*	LC	NZ / Aus		■		■	■					■												
Band-rumped storm-petrel *Oceanodroma castro*	LC	Haw / Jap					■			■														
Arctic jaeger *Stercorarius parasiticus*	LC	Ar		■		■	■					■				■			■				■	
Long-tailed jaeger *Stercorarius longicaudus*	LC	Ar			■							■		■	■	■			■				■	
Little tern *Sternula albifrons*	LC	Asia			■			■	■	■		■		■	■	■		■	■					
Antipodean albatross *Diomedea antipodensis*	EN	NZ			■		■					■					■				■			

Other species that also breed outside the region, but which may migrate or forage within the region: wedge-tailed shearwater, white-necked petrel, grey petrel, white-chinned petrel, black-winged petrel and white-bellied storm-petrel, white-faced storm-petrel, northern royal albatross, white-capped albatross, Campbell albatross, grey-headed albatross, Kermadec petrel, providence petrel, Leach's storm-petrel, Swinhoe's storm-petrel, Matsudaira's storm-petrel, south polar skua, pomarine jaeger, Arctic tern, sooty tern, noddies, roseate terns, and common terns.

Species status

Of the 42 species breeding within the region, three are listed as Critically Endangered (Fiji and Beck's petrel, Rapa shearwater), three Endangered (Phoenix and Henderson petrels, Polynesian storm petrel), five are Vulnerable (white-necked petrel, collared petrel, white-winged petrel, Heinroth's shearwater, and (New Caledonian) fairy tern), and one is Near Threatened (Tahiti petrel) (Table 1).

New Caledonian storm petrel at sea. © Hadoram Shirihai, Tubenoses Project

There is also taxonomic uncertainty over several taxa (tropical shearwater (Melanesian, Micronesian and Polynesian (tropical) shearwaters), white-necked petrel (white-necked and Vanuatu petrel), collared petrel (magnificent petrel and collared petrel), white-winged (Gould's) petrel (New Caledonian and Gould's petrel), white-bellied storm-petrel (titan storm-petrel), fairy tern).

In addition, there are at least three potentially undescribed streaked storm-petrel taxa ('Coral Sea' or 'New Caledonian' storm-petrel, 'Marquesas' storm-petrel, and 'Samoan' storm-petrel).

Traditional knowledge and customs

Seabirds are highly important to the heritage, folklore, totemism, and subsistence of many Pacific peoples. Seabirds played a critical role in the settlement and navigation of the Pacific, including the long-distance voyages that are known to follow the paths of migrating seabirds. Some seafaring peoples used shore-sighting birds, such as tropicbirds and white terns, to indicate when they were close to land. Seabird behaviour assists people to this day in finding fish at sea (tuna birds) and providing information on oceanic weather patterns.

Annual harvesting of chicks, adults, and eggs continue to be important traditional activities for a number of Pacific cultures and communities.

Seabird researcher discussing seabird identification with villagers, Silur Bay, New Ireland Province, Papua New Guinea. Photo: Bill Morris

Income-generating opportunities

Seabirds play a major role in shaping the ecology of terrestrial communities. They act as links between the land and sea by depositing marine-derived nutrients into terrestrial communities. Runoff from seabird colonies can provide nutrients to nearshore marine environments supporting marine food chains, including enhancing coral reef productivity. For example, fish biomass in coral reefs adjacent to a seabird colony increased by 48% when introduced predator species were removed from the colony and seabird activity subsequently increased.[30] Evidence indicates that rebuilding healthy seabird populations increases ecosystem resilience and supports livelihoods through fishing.

To witness the spectacle of seabirds massing over Kiritimati and Rawaki (Kiribati), Chesterfield Reefs (New Caledonia), Morotiri (French Polynesia), and Oeno and Henderson Islands (Pitcairn Islands) is to appreciate how seabirds serve as a conduit linking marine and terrestrial ecosystems. Like whale watching, seabirds can provide ecotourism opportunities for 'birders' from around the world to see the unique and rare seabird species of the Pacific.

Threats

Seabirds are exposed to threats both on land where they breed, and at sea where they feed and spend their time during migration and non-breeding periods. These threats vary in intensity across space and time. For the most part, the threats at sea are common to all marine groups covered by these action plans (whales and dolphins, dugong, sharks and rays, and marine turtles), whereas those on land relate more directly to seabirds.

Key land-based threats

- Invasive predator species
- Habitat loss, degradation, and modification
- Unsustainable harvesting of eggs, chicks, and adults
- Light pollution (causing disorientation and collisions)
- Climate change
- Disease

Key marine-based threats

- Incidental by-catch in fisheries
- Disruption to foraging opportunities induced by fisheries
- Pollution (plastic, oil spills, deep sea mining, and light)
- Climate change

30 Graham NA, Wilson SK, Carr P, Hoey AS et al. 2018 Jul 11. Seabirds enhance coral reef productivity and functioning in the absence of invasive rats. Nature. 559:250–253; [accessed 2022 Mar 11]. https://doi.org/10.1038/s41586-018-0202-3

Themes and objectives

THEMES	OBJECTIVES
1. **Research and monitoring**	1. Collect and centralise data on seabirds and make it accessible. 2. Improve knowledge of seabird species, breeding, population, trends, diet, and foraging distributions, ecosystem impacts, and threats.
3. **Climate change**	1. Protect vulnerable seabird breeding sites. 2. Incorporate seabird conservation into nature-based solutions to build ecosystem resilience.
3. **Ecosystems and habitat protection**	1. Protect critical habitat and migratory pathways for seabirds. 2. Prioritise marine areas for protection to align with seabird foraging and migration hotspots.
4. **Threat reduction**	1. Reduce direct and indirect land-based threats to seabirds. 2. Reduce marine-based threats to seabirds, including in areas beyond national jurisdiction (ABNJ).
5. **Cultural significance and value**	1. Incorporate traditional knowledge, stories, and customs about seabirds and their place in the cultural landscape in policies, plans, and public awareness materials, where culturally appropriate. 2. Ensure traditional knowledge informs management systems.
6. **Legislation, policy, and management**	1. Include measurable outcomes for seabird conservation in legislation, policy, and management plans.
7. **Ecotourism and livelihoods**	1. Support seabird-related marine-based ecotourism that contributes to the local economy. 2. Restore seabird colonies to improve local fisheries.
8. **Capacity building and collaboration**	1. Increase capacity for monitoring and managing seabird populations at community and national levels. 2. Enhance national, regional, and international collaboration.

Spotting seabirds offshore, Silur Bay, southern New Ireland, Papua New Guinea. Photo: Bill Morris

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 1: Collect and centralise data on seabirds and make it accessible

NUMBER	ACTIONS	RESPONSIBILITY
1.1.1	Identify existing datasets on Pacific seabirds, update and expand the Regional Seabird Colony and Tracking Database and ensure access through SPREP's Pacific Environment Portal[31] or the Pacific Biodiversity Information Facility[32] (PBIF). Note other national and international databases and potential for interoperability. (i)	SPREP, Members, Partners
1.1.2	Develop a seabird node through the Pacific Environment Portal[31] or PBIF,[32] facilitating access to the database for all Members and partners. (ii)	SPREP
1.1.3	Promote access and data submission to the portal to Members and partners. (iii)	SPREP, Partners

INDICATORS	TIMEFRAME
i. Online regional colony and tracking database created, maintained, updated, and used by Members.	2022
ii. Links to relevant online seabird databases established and maintained (e.g. Threatened Island Biodiversity Database, BirdLife International's Seabird Tracking Database, Seabird Restoration Database).	2023
iii. Increased engagement with the colony database and tracking data is uploaded to BirdLife International's Seabird Tracking Database.	

Surveying within the sooty tern colony on Rawaki, Kiribati. © Ray Pierce

31 SPREP. Pacific environment data portal: environmental information for decision making [Internet]. SPREP; [accessed 2022 Feb 3]. https://pacific-data.sprep.org/

32 PBIF. Pacific Biodiversity Information Facility presents all of the Pacific biodiversity data available on GBIF [Internet]. SPREP; [accessed 2022 Feb 28]. https://pbif.sprep.org/g/

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 2: Improve knowledge on seabird species, breeding, population, trends, diet and foraging distributions, ecosystem impacts, and threats

1.2.1	Develop partnerships between stakeholders, survey known colonies for population estimates, and confirm colony status of suspected breeding sites. (i)	SPREP, Members, Partners
1.2.2	Develop projects to locate breeding locations for species (including identification of cryptic species, e.g. Vanuatu petrel) where currently unknown, to assess threats and develop management and population monitoring plans. (ii)	SPREP, Members, Partners
1.2.3	Identify priority species for tracking projects to determine at-sea foraging distribution and migration using bird-borne tracking technologies. (iii)	SPREP, Members, Partners
1.2.4	Identify priority species and sites for demographic and diet studies. (iii) (iv)	SPREP, Members, Partners
1.2.5	Assess threats to breeding seabirds at different scales, including species, island, and colony scales. (v)	SPREP, Members, Partners
1.2.6	Develop and publish a guide on standardised research and monitoring methodology. (vi)	SPREP, Partners
1.2.7	Encourage Pacific island nationals to undertake postgraduate studies on seabird conservation / management. (vii)	Members

INDICATORS	TIMEFRAME
i. Partnerships between stakeholders have been developed for surveying and confirming known and new seabird colonies; population size estimates are being obtained.	Ongoing
ii. Breeding locations have been found and confirmed for highly threatened, cryptic, or data deficient species.	Ongoing
iii. Tracking and diet studies have been initiated.	2024
iv. Peer-reviewed articles and reports have been published on distribution, diet, and demography.	2026
v. Long-term monitoring programmes are established for threatened species.	2026
vi. Pacific Regional Research and Monitoring Guide has been published.	2023
vii. Students from Pacific island range states are enrolled in postgraduate studies on seabirds and island ecosystems.	2026

THEME 2: CLIMATE CHANGE

OBJECTIVE 1: Protect vulnerable seabird breeding sites

NUMBER	ACTION	RESPONSIBILITY
2.1.1	Investigate options for protecting and / or mitigating risks to species breeding on low-lying islands at risk from rising sea level and storm events.	SPREP, Members, Partners

INDICATOR	TIMEFRAME
▪ Species at risk from climate change impacts identified and sites for protection or translocation investigated.	2023

OBJECTIVE 2: Incorporate seabird conservation into nature-based solutions to build ecosystem resilience

2.2.1	Develop management plans incorporating seabird conservation to build ecosystem resilience in both terrestrial and near-shore / coral reef environments.	SPREP, Members

INDICATOR	TIMEFRAME
▪ Conservation management plans developed to take advantage of the benefits obtained by conserving seabirds in providing nature-based solutions to climate change.	2025

Seabirds over Nukutolu Islets, Northern Lau Group, Fiji. © Karen Baird

THEME 3: ECOSYSTEMS AND HABITAT PROTECTION

OBJECTIVE 1: Protect critical habitat and migratory pathways for seabirds

NUMBER	ACTIONS	RESPONSIBILITY
3.1.1	Identify and / or restore suitable alternative seabird colony sites to mitigate urban and agricultural impacts and climate change (see 2.1.1). (i)	SPREP, Members, Partners
3.1.2	Identify and prioritise critical habitats (e.g. breeding sites, foraging areas, migratory pathways) as nationally protected areas and / or KBAs, and target for protection through national planning processes (e.g. NBSAPs). (ii)	SPREP, Members, Partners
3.1.3	Develop capacity within local communities to undertake and monitor conservation management and restoration work. (iii)	SPREP, Members, Partners
3.1.4	Ensure that EIA processes take account of seabird breeding sites and flyways to avoid or mitigate adverse effects from rural and urban development (including lighting), conversion to plantations, agricultural expansion, mining, and logging. (iv)	SPREP, Members, Partners
3.1.5	Encourage and support Pacific range states to action principles of the CMS for seabirds and their habitats. (v)	SPREP, Members

INDICATORS	TIMEFRAME
i. Alternative seabird colonies are established as mitigation.	2026
ii. KBAs that include seabirds are protected through national planning processes.	2024
iii. Capacity building to monitor seabirds is being carried out.	2024
iv. EIA processes take account of threats to seabird breeding sites and flyways.	2024
v. Critical habitats for seabirds are both recognised (e.g. through KBAs) and protected through national planning processes.	2026

OBJECTIVE 2: Prioritise marine areas for protection to align with seabird foraging and migration hotspots

3.2.1	Identify priority marine areas for protection using information from seabird tracking projects (see 1.2.2). (i)	SPREP, CMS Secretariat, Members, Partners
3.2.2	Develop a network of dynamic marine protection zones for key seabird foraging periods (e.g. investigate feasibility of short temporal fishing closures in key areas). (ii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Marine areas covering seabird foraging hotspots are defined and gazetted for temporal and / or spatial protection.	2026
ii. Key seabird foraging areas are protected by dynamic MPAs.	2026

THEME 4: THREAT REDUCTION

OBJECTIVE 1: Reduce direct and indirect land-based threats to seabirds

NUMBER	ACTIONS	RESPONSIBILITY
4.1.1	Eradicate or control invasive alien species (animal and plant) at targeted and priority seabird breeding sites and monitor and maintain biosecurity at these sites. **(i)**	SPREP, Members, Partners
4.1.2	Set seabird and egg harvest levels under appropriate traditional or legislative frameworks to promote recovery of depleted and declining populations. **(ii)**	SPREP, Members, Partners
4.1.3	Avoid or mitigate, as appropriate, infrastructure and industry development to take account of seabird attraction to lights and potential for collisions with power lines and other infrastructure at height (refer to CMS Light Pollution Guidelines).[33] **(iii)**.	SPREP, Members, Partners
4.1.4	Investigate potential stressors on seabird populations that can contribute to outbreaks of disease. **(iv)**	SPREP, Members, Partners

INDICATORS		TIMEFRAME
i.	Eradication or control programmes established for critical habitats for seabirds.	2024
ii.	Sustainable harvest management plan in place where traditional harvest takes place.	2024
iii.	Avoidance or mitigation implemented that reduces light pollution impacts and potential collisions with power lines.	2023
iv.	Stress factors that can lead to seabird disease outbreaks investigated.	2026

Brown booby, Fiji Islands. © Karen Baird

33 Government of Australia. 2020. National light pollution guidelines for wildlife including marine turtles, seabirds and migratory shorebirds [Internet]. CMS; [accessed 2022 Feb 3]. https://www.cms.int/sites/default/files/document/cms_cop13_doc.26.4.9.1_rev.1_australia-light-guidelines_e.pdf

THEME 4: THREAT REDUCTION

OBJECTIVE 2: Reduce marine-based threats to seabirds, including in areas beyond national jurisdiction (ABNJ)

4.2.1	Build on existing compliance systems in-country to enforce regulations around seabird by-catch in RFMOs, e.g. Western Central Pacific Fisheries Commission. (i)	Members, Partners
4.2.2	Undertake port-based outreach with fishing vessels providing information and education on required conservation and management measures for mitigation of seabird by-catch and safe handling and release guidelines. (ii)	SPREP, Members, Partners
4.2.3	Continuously monitor the effectiveness of provisions within RFMOs to reduce seabird by-catch and allow impacted populations to recover. (iii)	Members, Partners
4.2.4	Investigate potential indirect effects from fisheries on seabird populations and using seabirds to further our understanding of predator–prey dynamics and the health of marine ecosystems. (iv)	SPREP, Members, Partners
4.2.5	Establish a region-wide programme using several INDICATOR species to monitor the nature and incidence of plastic ingestion in seabirds. (v)	SPREP, Members, Partners
4.2.6	Identify areas where marine structures or lighting on vessels at night are problematic for seabirds, and develop methods of mitigation (refer to CMS Light Pollution Guidelines).[33] (iv)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Enforcement of national by-catch mitigation requirements on fishing vessels is occurring.	Ongoing
ii. Port-based outreach extension programmes have been established to improve awareness and compliance of seabird by-catch mitigation measures.	2023
iii. Seabird by-catch mitigation requirements and enforcement in RFMOs is allowing impacted seabird populations to recover.	2025
iv. Research on the indirect effects of fisheries on seabird populations is being supported.	Ongoing
v. Seabird indicator species for plastic pollution (ingestion) have been identified.	2024
vi. Promotional material on the impact of light on seabirds at sea has been developed and shared and, if appropriate, mitigation options produced and circulated.	2025

Feeding brown and red-footed boobies, Samoa. © Juney Ward, SPREP

THEME 5: CULTURAL SIGNIFICANCE AND VALUE

OBJECTIVE 1: Incorporate traditional knowledge, stories, and customs about seabirds and their place in the cultural landscape in policies, plans and public awareness materials, where culturally appropriate

NUMBER	ACTIONS	RESPONSIBILITY
5.1.1	Work with traditional knowledge holders to understand historical and current distribution of seabirds, long-term trends, and potential for restoration. (i)	SPREP, Members
5.1.2	Preserve and protect the traditional knowledge and values associated with seabirds in artforms, video, audio and publications. (ii)	SPREP, Members, Partners
5.1.3	Encourage contemporary artists and artisans within the region to incorporate the significance of Pacific seabirds into their work. (ii)	SPREP, Members

INDICATORS	TIMEFRAME
▪ Traditional knowledge holders contribute to knowledge of seabird distribution, trends, and potential for restoration.	Ongoing
▪ Projects to support traditional knowledge and values in art are supported.	Ongoing

OBJECTIVE 2: Ensure traditional knowledge informs management systems

5.2.1	Integrate cultural practices, values, and knowledge associated with seabirds into management plans, national policies, and legislation. (i)	SPREP, Members

INDICATOR	TIMEFRAME
i. Traditional values, knowledge, and cultural practices are recorded and included in management plans, national policies, and legislation.	2025

THEME 6: LEGISLATION, POLICY AND MANAGEMENT

OBJECTIVE 1: Include measurable outcomes for seabird conservation in legislation, policy, and management plans

NUMBER	ACTIONS	RESPONSIBILITY
6.1.1	Review legislative mechanisms to assess where seabird conservation actions can be applied within existing frameworks and identify gaps. (i)	SPREP, Members
6.1.2	Integrate seabird conservation into regional and international initiatives, including the CMS, e.g. nominating threatened regional seabird species to Appendix I or II. Also consider joining the CMS daughter agreement: ACAP.[34] (ii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Report of the outcomes of the legislative review and recommendations for changes published.	2024
ii. Seabirds explicitly included in national plans of action (NPOAs) and advocated for at international fora.	Ongoing

34 ACAP. 2004. Agreement on the conservation of albatrosses and petrels [Internet]. ACAP; [accessed 2022 Feb 3]. https://www.acap.aq/

THEME 7: ECOTOURISM AND LIVELIHOODS

OBJECTIVE 1: Support seabird-related marine-based ecotourism that contributes to the local economy

NUMBER	ACTIONS	RESPONSIBILITY
7.1.1	Review marine-based tourism including economic benefits / value and level of interest in the region's seabirds. (i)	SPREP, Members
7.1.2	Identify opportunities to support wildlife tourism for seabirds at the community level. (ii)	SPREP, Members, Partners
7.1.3	Encourage marine tour operators to include information about seabirds as part of marine tour operations and prioritise training and employment of Pacific island nationals as nature guides and boat drivers. (iii)	SPREP, Members
7.1.4	Encourage and support Pacific island nationals to start and run appropriate marine wildlife ventures. (iv)	SPREP, Members

INDICATORS		TIMEFRAME
i.	A review of potential for seabird inclusion in marine-based tourism has been completed.	2026
ii.	Seabirds are included in local wildlife tourism ventures.	2026
iii.	Pacific island nationals are employed in wildlife tourism.	2024
iv.	Wildlife ventures are owned and operated by Pacific island nationals.	2025

OBJECTIVE 2: Restore seabird colonies to improve local fisheries

7.2.1	Collaborate with fishers to develop adaptive fishing practices where seabird restoration is occurring, to demonstrate the benefits to nearshore and reef fish productivity. (i)	SPREP, Members, Partners

INDICATOR		TIMEFRAME
i.	Adaptive fishing practices have been established collaboratively with fishers and are demonstrating the benefits of seabird restoration to nearshore and reef fish productivity.	2026

Fiji Petrel, Fiji. © Hadoram Shirihai, Tubenoses Project

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 1: Increase capacity for monitoring and managing seabird populations at community and national levels

NUMBER	ACTIONS	RESPONSIBILITY
8.1.1	Help communities to build skills and knowledge in mapping, recording, and monitoring seabird populations, and to participate in conservation programmes (e.g. access to expertise and resources, including possible exchange programmes with countries that have greater expertise). (i)	SPREP, Members
8.1.2	Develop practical training modules and / or workshops for survey methods based on regional priorities, including searches for breeding sites, data collection, and monitoring colonies. (ii)	SPREP, Members, Partners
8.1.3	Investigate options for providing tertiary scholarships in both marine and social sciences relating to Pacific seabird ecology. Support internship and training on seabirds through research centres, universities, and other agencies throughout the region, and with major partners (e.g. Aotearoa New Zealand, Australia, France, UK, and USA). (iii)	SPREP, Members, Partners
8.1.4	Develop workshop programmes for effective research, conservation, and management of seabirds, drawing on regional expertise. (iv)	SPREP, Members, Partners
8.1.5	Develop in-country capacity to monitor existing seabird harvesting to ensure sustainability. (v)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Communities supported to build knowledge and skills to manage conservation of seabird colonies, e.g. exchange programmes.	2025
ii. Regional workshops for survey methods and colony monitoring undertaken.	2025
iii. A scholarship for tertiary students on Pacific seabird ecology has been awarded.	2024
iv. Workshops are available for Pacifica on research, conservation, and management of seabirds.	2025
v. In-country capacity has been developed to monitor sustainability of harvesting.	2026

OBJECTIVE 2: Enhance national, regional, and international collaboration

8.2.1	Encourage the transfer of seabird knowledge and expertise between projects through exchange opportunities for conservation workers. (i)	SPREP, Members, Partners
8.2.2	Establish a Pacific seabird expert advisory group that can help provide advice through SPREP and negotiate and advocate for regional policies at international fora. (ii)	SPREP, Members, Partners
8.2.3	Encourage international cooperation for the protection of Pacific seabirds through the CMS and ACAP. (iii)	SPREP, CMS Secretariat, Members, Partners

INDICATORS	TIMEFRAME
▪ Exchange opportunities are provided for conservation workers.	2024
▪ Seabird expert advisory group is in place.	2022
▪ Participation in CMS / ACAP discussions and priority settings is promoting the consideration of the requirements of Pacific seabirds.	Ongoing

Green turtle in lagoon water in Fiji. © Ocean Ventures Fiji

TURTLE ACTION PLAN

Goal: To conserve marine turtles and their habitats, recognising the traditions of the peoples of the Pacific islands region.

Introduction

Out of a total of seven marine turtle species in the world, six are found in the Pacific region. All turtle species exhibit highly migratory behaviour, travelling thousands of kilometres and crossing jurisdictional boundaries to reach mating, nesting, and feeding grounds.

Marine turtles are ecologically very important. They need high-quality food and water and a healthy habitat and are considered very good indicators of coastal and marine ecosystem health. They are a long-lived species, taking many years to reach sexual maturity. They have a high reproductive potential, but mortality of hatchlings and juveniles is also high. All six turtle species found in the Pacific are listed on the IUCN Red List as either Vulnerable (VU), Endangered (EN), Critically Endangered (CR) or Data Deficient (DD) (Table 3).

The main challenges to effective conservation of marine turtles in the Pacific islands region include:

- unsustainable take, including illegal take
- interactions with coastal and pelagic fishing activities
- climate change
- lack of population trend data
- limited research
- monitoring of fisheries activities.

A coordinated regional approach is needed to conserve marine turtles, including collaborating with Members and ensuring a healthy exchange of information at national, regional, and global levels. Major constraints to implementing management actions in the region include limited financial and human resources. This turtle action plan focuses on the most important actions needed to conserve marine turtles in the Pacific islands region.

Species distribution

Of the six marine turtle species found in the Pacific region, the green and hawksbill turtles are the most widely recorded, appearing in nearly all countries and territories (Table 3). Green and hawksbill turtles also nest in many Pacific island countries and territories. The flatback turtle occurs only in Australia and southern Papua New Guinea.

TABLE 3. Marine turtle species occurrence in the Pacific islands region[35]

Species	AS	AU	CI	FSM	FI	FP	GU	KI	MI	NA	NC	NZ	NI	NMI	PA	PNG	SA	SI	TOK	TO	TU	VA	WF
Flatback turtle *Natator depressus*		x														*							
Green turtle *Chelonia mydas*	x	x	x	x	x	x	x	x	x	*	x	*	*	x	x	x	*	x	x	x	x	x	x
Hawksbill turtle *Eretmochelys imbricata*	x	x	*	*	x	x	*	*	x	*	*	*	*	*	x	x	x	x	x	x	*	x	x
Leatherback turtle *Dermochelys coriacea*	*	x	*	*	*	*	*		*		*	*			*	x	*	x		*	*	x	*
Loggerhead turtle *Caretta caretta*		x	*		*	*			*		x	*	*			*	*		x	*	*	x	*
Olive ridley turtle *Lepidochelys olivacea*	*	x		*		*			*		*	*			*	x		x				*	

x = nesting; * occur in EEZ waters

Nesting leatherback turtle. © Nick Pilcher

35 Work T, Parker D, Balazs G. 2020. Sea turtles in Oceania: MTSG annual regional report 2020 [Internet]. IUCN-SSC Marine Turtle Specialist Group; [accessed 2022 Feb 5]. https://static1.squarespace.com/static/5e4c290978d00820618e0944/t/5fad9eea08f95b782a228444/1605213972015/MTSG+Regional+Report_Oceania_2020.pdf

Species status

Marine turtles are recognised internationally as species of conservation concern. Table 4 shows the status of Pacific marine turtles listed on IUCN's Red List of Threatened Species.

TABLE 4. IUCN Red List status for marine turtle species found in the Pacific Ocean (2020–2023)[35]

Turtle species	IUCN Red List status
Flatback (*Natator depressus*)	Data Deficient (Global listing)
Green (*Chelonia mydas*)	Endangered (Global listing)
Hawksbill (*Eretmochelys imbricata*)	Critically Endangered (Global listing)
Leatherback (*Dermochelys coriacea*)	Critically Endangered (Western Pacific Regional listing)
Loggerhead (*Caretta caretta*)	Vulnerable (Global listing)
Olive ridley (*Lepidochelys olivacea*)	Vulnerable (Global listing)

All marine turtle species are threatened with extinction and are listed in Appendix I of CITES, where commercial international trade in specimens of these species is prohibited.

Under the CMS, marine turtle species are listed in Appendices I and II.[36]

- Appendix I: 'migratory species that have been assessed as being in danger of extinction throughout all or a significant proportion of their range'
- Appendix II: 'migratory species that have an unfavourable conservation status and that require international agreements for their conservation and management, as well as those that have a conservation status which would significantly benefit from the international cooperation that could be achieved by an international agreement'

The IOSEA Marine Turtle MOU[5] partly overlaps with the Pacific islands region and covers joint management units.

Hawksbill and leatherback turtles are especially threatened in the Pacific region and concerted action is needed to prevent their extinction. The Western Pacific subpopulation of leatherback turtles has decreased by more than 80% over 28 years and is now facing extinction. Papua New Guinea and Solomon Islands are the main nesting areas in the Pacific for leatherback turtles — the largest turtle in the world. For hawksbill turtles, it is estimated only 4,800 nesting females remain in the Pacific Ocean basin.

The overall status of marine turtles in the Pacific islands region remains largely uncertain. However, in response to growing concern about the plight of Pacific marine turtles, particularly from broadscale threats such as climate change, several countries have been undertaking concerted conservation efforts. Ongoing efforts include initiatives to strengthen community management and enhance local turtle population monitoring. Regional conservation effort for these iconic creatures needs to be significantly scaled up to prevent extinction.

36 CMS Secretariat. 2020. Convention on the conservation of migratory species of wild animals: appendix I & II of CMS [Internet]. CMS; [accessed 2022 Mar 9]. https://www.cms.int/en/species/appendix-i-ii-cms

Traditional knowledge and customs

Marine turtles and eggs have long held economic, cultural, and spiritual value for the peoples of the Pacific islands. Their spiritual and cultural importance is illustrated through stories, traditions, and customs, including contemporary ceremonies.

Marine turtles have been an important source of protein and a trade item for many coastal communities for hundreds of years. Some communities continue to consume marine turtles and use their shells for traditional crafts.

Many Pacific peoples are extremely knowledgeable about marine turtles and provide information on the biology and ecology of the species found in their areas (where they occur and at what time of year, their habitat preferences, and so on). Sources of traditional knowledge need to be further harnessed to inform scientific research and management approaches, particularly in the face of wider threats such as climate change. For this reason, local communities are the most important stakeholders in improving the conservation status of turtles.

Traditionally, many communities took only what was needed and would only take turtles at specific times of the year or from particular areas using traditional hunting practices, ensuring this resource would be available to them in the future. Unfortunately, the context of sustainable traditional use has changed significantly, and marine turtle populations now confront multiple threats. This turtle action plan recognises the fundamental role that traditional knowledge and customs play in turtle conservation, and the importance of community-based stewardship.

Income-generating opportunities

In some places, marine turtles are becoming an ecotourism attraction, e.g. observing nesters on the beach or watching them swim while on a dive. Responsible ecotourism with turtles can generate income for local communities in a positive way, while also conserving turtles and their habitats.

Local fishermen are often well placed to provide information on the local marine environment and have the potential to be skilled, knowledgeable guides. The potential for local fishers to enjoy higher earnings as guides may provide an incentive to transition away from turtle hunting.

In addition to direct employment, ecotourism can also create indirect employment through a trickle-down effect to jobs in other service sectors, such as hospitality and transport. This can become an incentive for entire communities to safeguard their natural environment and create an economy where turtles are worth more alive than dead.

Threats

The IUCN Marine Turtle Specialist Group[37] has identified the five most significant threats to marine turtles globally (the extent of each threat is unknown in the region).

- **Direct take**: In the Pacific islands region, marine turtles and their eggs are harvested for food and products, including oil, leather, and shell. The taking of turtles is still permitted under the legislation of many Pacific island countries. Hawksbill turtles are the source of the beautiful shell known as 'tortoise shell' used to create jewellery and trinkets — historical harvesting of hawksbill for their shell nearly drove the species to extinction. CITES forbids the trade of turtle products on the international market but illegal (and legal) hunting continues to pose a major threat to the species.
- **Fisheries impacts**: Marine turtles are especially affected by longlines, gill nets, and trawls. The most severe of these impacts are by-catch mortality, habitat destruction, and entanglement.
- **Coastal development**: Sea turtle habitats can be degraded by developments including both shoreline and seafloor alterations, e.g. nesting beach degradation, seafloor dredging, vessel traffic, construction, and alteration of vegetation. Sedimentation from coastal and catchment developments can also impact sensitive marine habitats, such as coral reefs and seagrass beds.
- **Pollution and pathogens**: Marine pollution (including plastics, discarded fishing gear, petroleum by-products, and other debris) directly impacts sea turtles through ingestion and entanglement. Light pollution disrupts nesting behaviour and hatchling orientation and leads to hatchling mortality. Chemical pollutants can weaken or disrupt the physiological functioning and immune systems of turtles, making them unhealthy and susceptible to disease, and potentially toxic for human consumption.
- **Climate change**: Climate change is known to impact natural sex ratios of hatchlings; as the sand on nesting beaches gets warmer, the number of males successfully hatching is reduced. Temperatures of >30˚C generate females. The increased severity and frequency of extreme weather events also causes loss of nesting beaches and foraging habitat — bleached coral reefs, for instance, reduce foraging habitat for hawksbill turtles, and may increase the likelihood of disease outbreaks. Rising sea level will also result in loss of nesting beaches.

Francesca Roncolato, WWF-Australia curates a selection of donated tortoiseshell items as part of the Surrender your Shell campaign
© Veronica Joseph, WWF

37 IUCN-SSC Marine Turtle Specialist Group. The global authority on marine turtles [Internet]. Ross (CA): MTSG; [accessed 2022 Feb 3]. https://www.iucn-mtsg.org/

Themes and objectives

THEMES	OBJECTIVES
1. **Research and monitoring**	1. Collect and centralise data, and make it accessible. 2. Identify and monitor major marine turtle nesting beaches. 3. Genetically profile all major hawksbill breeding beaches in the region to identify sources of illegal trade. 4. Identify and monitor important marine turtle foraging grounds.
2. **Climate change**	1. Identify vulnerability of turtles to climate change by assessing sand temperature and sea-level rise impacts.
3. **Ecosystems and habitat protection**	1. Protect critical habitats for turtles.
4. **Threat reduction**	1. Reduce direct and indirect threats to turtle populations. 2. Quantify and prioritise threats to turtle populations. 3. Reduce harvest and trade of turtles and their products.
5. **Cultural significance and value**	1. Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into management.
6. **Legislation, policy, and management**	1. Ensure a cohesive, proactive, and transboundary approach in policy and legislation that incorporates traditional knowledge and customary marine tenure.
7. **Ecotourism and livelihoods**	1. Ensure turtle tourism is sustainable and conducted responsibly, with minimum impact on turtles or the environment and maximum education and economic outcomes achieved.
8. **Capacity building and collaboration**	1. Improve capacity for marine turtle protection, management, population research, monitoring, and resourcing. 2. Increase national, regional, and international collaboration and partnership for turtle conservation and management.
9. **Education, awareness, and communication**	1. Improve awareness and understanding of the importance of turtles and relevant conservation issues.

A green turtle that has been tagged with a satellite tracker attached to its carapace. © Georgina Goodwin, WWF

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 1: Collect and centralise data, and make it accessible

NUMBER	ACTIONS	RESPONSIBILITY
1.1.1	Maintain and administer the Turtle Research and Monitoring Database System[38] (TREDS) and facilitate training. Produce an annual report on submitted data. (i) (ii)	SPREP, Members
1.1.2	Develop a regional tagging and monitoring protocol (monitoring manual) as part of a new regional monitoring manual. This will include a system of training standards for tagging and monitoring turtles. (iii)	SPREP
1.1.3	Continue to distribute tags and applicators to Members undertaking monitoring and research projects. Maintain an inventory of stock and distribution. Ensure tag data is submitted as soon as possible after tagging and annual returns of tag deployments and remaining holdings made to TREDS.[38] (iv)	SPREP, Members, Partners
1.1.4	Promote and support citizen science in Pacific island communities to help partners and Members with data collection, and monitoring of nesting as well as indigenous harvest and consumption. (v)	SPREP, Members, Partners

INDICATORS		TIMEFRAME
i.	Members are using upgraded TREDS[38] effectively and reporting annually to SPREP.	2023 and Ongoing
ii.	SPREP produces annual reports of summary data, accessible on the SPREP website.	2022 and Ongoing
iii.	A monitoring manual for Oceania is produced.	2023
iv.	The return of tags and reporting of tagging information has increased.	2023 and Ongoing
v.	Information from TREDS[38] is being used to provide a picture of turtle distribution and migration at regional level and input into regional population trend assessments.	2023

A ranger measures the carapace length of a nesting green turtle. © CICI-PNG

38 SPREP. 2022. Turtle research and monitoring database system (TREDS) [Internet]. SPREP; [accessed 2022 Feb 4]. https://www.sprep.org/thetreds

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 2: Identify and monitor marine turtle index nesting beaches

1.2.1	Support surveys and mapping for turtle index nesting beaches (long-term monitoring sites) and new index sites, as required, to continue collecting baseline and trend data and surveys for those already initiated. Establish continuous monitoring to allow trend analysis. Encourage participation from community and NGOs. (i) (ii) (iii) (iv)	SPREP, Members, Partners
1.2.2	Assess impact of legal and illegal human turtle take (where it occurs) and impact of sand temperature, light pollution and other threats, especially on nesting beaches. (v) (vi)	Members, SPREP
1.2.3	Prioritise maintenance of turtle nesting beaches by removing obstructions (e.g. logs, litter, discarded fishing gear). (vii)	Members, Partners
1.2.4	Promote and support citizen science or ranger programmes in Pacific island communities to help partners and Members with data collection and monitoring of nesting as well as indigenous harvest and consumption. (viii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Index sites are identified.	2023
ii. A long-term monitoring programme for index nesting beaches is established across the region.	2024
iii. Estimates and trends using established protocols have been obtained for index nesting beach populations.	2026
iv. An updated map of key turtle nesting sites across the Pacific has been produced.	2024
v. The level of illegal and legal human take across a representative sample of nesting beaches is quantified.	2026
vi. The level of human take (by-catch) at sea is investigated and quantified.	2026
vii. Turtles are not obstructed from accessing nesting sites.	Ongoing
viii. Training assistance on monitoring is provided for citizen science or ranger programmes.	2023

OBJECTIVE 3: Genetically profile all major hawksbill breeding beaches in the region to identify sources of illegal trade

1.3.1	With an initial focus on hawksbill turtles, work with appropriate partners to enable genetic sampling and analysis and provide appropriate training, including facilitation of CITES permits for research purposes, where necessary. (i) (ii)	SPREP, Partners, Members, World Wide Fund for Nature (WWF)
1.3.2	Consider joining the Asia-Pacific Marine Turtle Genetic Working Group to aid with capacity building, and regularly report the results of genetic sampling to TREDS[38] and GenBank to support identification of major hawksbill turtle stocks in the region. (iii)	Members, Partners, SPREP
1.3.3	Use TREDS,[38] GenBank, CITES annual reports, and other mechanisms to establish shared turtle stocks. (iii)	SPREP

INDICATORS	TIMEFRAME
i. Training in genetic sampling of turtles is provided across the region.	2022
ii. Genetic samples are exported where necessary and analysed.	2022 and Ongoing
iii. Analysed samples are used to identify Pacific stocks of hawksbill turtles and results reported and published.	2022

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 4: Identify and monitor important marine turtle foraging grounds

1.4.1	Assess available information on marine turtle foraging grounds, including in TREDS,[38] and identify important sites for monitoring. (i)	SPREP, Partners
1.4.2	Encourage and support community monitoring to identify and instigate foraging surveys through establishing demonstration sites. (i)	Members, Partners, SPREP
1.4.3	Undertake seagrass mapping and monitoring where possible, in association with Cefas,[23] Seagrass-Watch,[26] Allen Coral Atlas,[39] and other partners. (ii)	Members, SPREP, Partners
1.4.4	Promote, where possible, aerial and / or drone surveys to identify courtship areas and assess localised population abundance at foraging grounds. (iii)	SPREP, Partners, Members
1.4.5	Promote satellite tagging to fill information gaps on turtle distribution and migrations. (iv)	SPREP, Partners

INDICATORS		TIMEFRAME
i.	Pilot sites to demonstrate community monitoring on foraging grounds have been established.	2024
ii.	Seagrass mapping and monitoring is undertaken for key foraging sites.	2024
iii.	Techniques such as aerial or drone surveys and satellite tagging are increasingly used.	2026
iv.	Results of turtle tracking from satellite tagging are shared with Members through the SPREP website and SPREP's marine turtle action plan contacts list.	Ongoing

ABOVE: Conflict Islands hawksbill turtle with satellite tag attached.
RIGHT: Rangers Henry John (right) and Ranger Toby Losane (left) holding a weather station data collector for collecting weather data such as rainfall, cloud coverage, humidity, wind speed and direction.
Photos © Migration Media Underwater Imaging

39 Allen Coral Atlas. A game-changing coral conservation tool [Internet]. Allen Coral Atlas; [accessed 2022 Feb 4]. https://allencoralatlas.org/

THEME 2: CLIMATE CHANGE

OBJECTIVE 1: Identify vulnerability of turtles to climate change by assessing sand temperature and sea-level rise impacts

NUMBER	ACTION	RESPONSIBILITY
2.1.1	Monitor specific impacts of climate change and responses of marine turtles at index turtle nesting monitoring sites and foraging grounds including: ▪ nest sand temperatures, using data loggers (to provide an indication of likely hatchling sex ratio and feminisation) ▪ hatching success (70% hatch success indicates a good sign of a recovering population) ▪ nesting population each year ▪ temporal changes of beach morphology. Where feasible, foraging ground studies should assess functional sex ratios across all accessible age cohorts. (i)	Members, Partners, SPREP
2.1.2	As a result of 1.2.1, 1.4.3, 2.1.1 and available climate change models, undertake a review of the potential impacts of climate change on turtle species, populations, or nesting and feeding sites in the Pacific. Identify the most at-risk species / populations and likely effects on distribution, population sex ratios, and survivorship. (ii)	SPREP, Partners
2.1.3	Undertake detailed risk assessments for turtle species or populations that are identified as being particularly vulnerable to climate change impacts as identified in 2.1.2. (iii)	SPREP, Partners
2.1.4	Identify, promote, and adopt adaptation and mitigation measures. (iv)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Specific impacts of climate change (e.g. sand temperature and hatching success) are monitored.	2022
ii. Data from monitoring is analysed, and the information used to assess the current and possible future impacts of climate change on turtle nesting success.	2022 and Ongoing
iii. Turtle species, populations, or sites that are vulnerable to climate change impacts are identified and prioritised for protection.	2025
iv. Adaption and mitigation measures are being applied at key sites across the region.	2024 and Ongoing

A female turtle laying eggs. © Solvin Zankl, WWF

Newly hatched hawksbill turtle hatchlings heading for the ocean, Conflict Islands, Milne Bay Province, PNG. © CICI-PNG

THEME 3: ECOSYSTEMS AND HABITAT PROTECTION

OBJECTIVE 1: Protect critical foraging habitats for turtles

NUMBER	ACTION	RESPONSIBILITY
3.1.1	Support the implementation of the Pacific Coral Reef Action Plan[40] (PCRAP), including Action 5: Conserve reef habitat and biodiversity: 'To better protect coral reef habitats against local threats, make coral-reef ecosystems more resilient to climate change and halt biodiversity loss.' (i)	Members, Partners
3.1.2	Implement PCRAP[40] Action 6: Prioritise habitat restoration: 'To restore critical reef habitats so the ecosystems are healthy, functional, connected and resilient to climate change'. (ii)	Members, Partners
3.1.3	Prioritise protection of important seagrass habitats for foraging turtles including through MPAs, locally managed marine areas (LMMAs), and other effective area-based conservation measures (OECMs). (iii)	Members, Partners

INDICATORS	TIMEFRAME
i. Specific actions have been undertaken by all Members to protect coral reef habitats.	2024
ii. Specific actions have been undertaken by all Members to restore at least one critical reef habitat.	2026
iii. Seagrass habitats important for turtles are represented in MPAs, LMMAs, and OECMs.	2026

Juvenile green turtle seen over a seagrass bed. © David Troeger

40 Toki B, Davies P. 2021. Pacific coral reef action plan 2021–2030 [Internet]. SPREP; 2021 [accessed 2022 Feb 4]. https://library.sprep.org/sites/default/files/2021-10/pacific_coral_reef_action_plan.pdf

THEME 4: THREAT REDUCTION

OBJECTIVE 1: Quantify and prioritise threats to turtle populations

NUMBER	ACTION	RESPONSIBILITY
4.1.1	Quantify the impact of all threats to turtle populations through an extinction risk analysis to identify and rank each threat. (i)	SPREP

INDICATOR	TIMEFRAME
▪ An extinction risk analysis of turtles throughout the Pacific is undertaken, published, and available on the SPREP website.	2022

OBJECTIVE 2: Reduce the impact of indirect threats and by-catch to turtles

4.2.1	Require coastal developments to prevent or reduce habitat degradation and loss, such as water quality on seagrass and corals, beach erosion, and increased access by predators on turtles. Also take account of the effects of light pollution on turtles and avoid or mitigate as appropriate (refer to CMS Light Pollution Guidelines).[33] Ensure appropriate EIA processes are used. (i)	Members
4.2.2	Control, eradicate, or protect turtle nesting sites from invasive alien species predation, as appropriate. (ii)	Members, Partners
4.2.3	Work to improve the WCPFC sea turtle conservation and management measure (CMM) to include use of circle hooks, fin fish bait, and removal of 2 hooks near buoy. Apply to both shallow and deep-set fisheries. (iii)	SPREP, Members, WCPFC
4.2.4	Promote trials of mitigation devices such as hook pods. (iv)	SPREP, Members, Partners
4.2.5	Ensure vessels that interact with turtles have turtle de-hookers and turtle exclusion devices (TEDs) and receive training in safe handling and turtle release guidelines. (v)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Coastal developments are avoided in key nesting areas (especially index breeding sites) and mitigation is implemented in other areas that reduces threats to nesting turtles and hatchlings, including light pollution impacts. EIA processes adequately cover these issues.	2022
ii. All known important nesting beaches are protected from invasive animals and appropriate mitigation measures are implemented to promote the objective of 70% of nests being fully productive.	2023
iii. The CMM for marine turtles has been significantly improved. It requires more mitigation measures to be used and mitigation is also required in the deep-set longline fishery.	2026
iv. Trials on use of hook pods as a mitigation device on longline fishing vessels have been undertaken and results shared.	2024
v. Turtle de-hookers are on board all longline fishing vessels and training on safe turtle release and use of mitigation measures has been undertaken.	2023

THEME 4: THREAT REDUCTION

Objective 3: Reduce harvest and trade of turtles and their products

4.3.1	Prohibit and enforce the commercial harvesting of marine turtles and their eggs and the commercial trade of their parts and derivatives. (i)	Members
4.3.2	Prohibit, control, or discourage the take of critically endangered Western Pacific leatherback and hawksbill turtles for local consumption. (ii)	Members, Partners, SPREP
4.3.3	Where traditional take is allowed for other species under national legislation, consider establishing both minimum and maximum size limits for all species (as recommended by experts), so that adult turtles are not taken. Consider regulations and taboo to prohibit the take of turtle eggs and nesters, to ensure there is adequate population recruitment to help recovery of depleted populations. Require monitoring and compliance. (iii) (iv)	Members, Partners, SPREP
4.3.4	Work with CITES, Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC), and national governments to help implement CITES turtle decisions and resolutions. Encourage governments that are Parties to CITES to enforce and comply with Appendix 1 listing requirements that prevent the export of turtle products. (v)	SPREP, CITES, TRAFFIC, WWF
4.3.5	Increase monitoring, compliance, and surveillance (MCS) for marine turtles. (vi)	Members, Partners, TRAFFIC

INDICATORS	TIMEFRAME
i. Prohibition of commercial harvesting of marine turtles and their eggs is being enforced, and commercial trade of their parts and derivatives is occurring.	2026
ii. Measures are in place to prohibit, control, or discourage the take of Western Pacific leatherback and hawksbill turtles for local consumption.	2026
iii. Where turtle harvesting is not prohibited, Pacific island countries and territories are documenting reliable information on turtle harvesting and turtle egg collection; and countries with a prohibition on turtle take are reporting on compliance. Maximum and minimum size limits are established where take is allowed.	2026
iv. Where turtle harvesting is permitted for traditional and subsistence use, Member countries have introduced strategies to promote sustainable levels of take.	2026
v. Improved compliance with CITES resolutions is occurring.	2024
vi. Training provided to support marine turtle MCS activities.	2024

A ranger observes a female turtle laying eggs. © CICI-PNG

A newly tagged green turtle, Safata, Upolu. © Juney Ward, SPREP

THEME 5: CULTURAL SIGNIFICANCE AND VALUE

OBJECTIVE 1: Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into management

NUMBER	ACTION	RESPONSIBILITY
5.1.1	Support communities to undertake marine turtle monitoring. Provide training opportunities that incorporate traditional knowledge and customs. (i) (ii)	Members, SPREP
5.1.2	Make the use of traditional knowledge and customary practices an integral part of the recovery of turtle populations in the Pacific, e.g. establishing indigenous protected areas. (ii)	Members
5.1.3	Help to document traditional knowledge and customary practices to develop shared management approaches. (ii)	Members, SPREP
5.1.4	Encourage communities to share their traditional knowledge and customs in culturally appropriate ways, e.g. through ecotourism ventures, as alternative livelihood options. (iii) (iv)	Members

INDICATORS		TIMEFRAME
i.	Community members are trained to monitor and protect their turtle nesting beaches.	2023
ii.	Traditional knowledge and customary practices are documented during training and appropriately protected.	2023
iii.	Ecotourism training helps communities to incorporate storytelling about traditional knowledge and customs into ecotourism ventures.	2026
iv.	Communities are transitioning from customary take to turtle monitoring or ecotourism.	2026

Taking a photo ID of a green turtle before it is released. © CICI-PNG

THEME 6: LEGISLATION, POLICY AND MANAGEMENT

OBJECTIVE 1: Ensure a cohesive, proactive, and transboundary approach in policy and legislation that incorporates traditional knowledge and customary marine tenure

NUMBER	ACTION	RESPONSIBILITY
6.1.1	Taking into account traditional practices and customs, work with local communities to consider phasing out harvesting of hawksbill and leatherback turtles for local consumption. (i)	SPREP, Partners, Members
6.1.2	Strongly consider reviewing legislation and regulations (including CITES) to prohibit any take of leatherback and hawksbill turtles and eggs and consider similar regulations for other species. (ii)	SPREP, Members

INDICATORS	TIMEFRAME
i. Local communities are increasingly phasing out harvesting of hawksbill and leatherback turtles.	2023
ii. Legislation reform is taking place across the region to include prohibition on take of leatherback and hawksbill turtles and their eggs.	2024

One year old head started green turtles (conservation effectiveness of this approach is inconclusive). © Nicolas Pilcher

THEME 7: ECOTOURISM AND LIVELIHOODS

OBJECTIVE 1: Ensure turtle tourism is sustainable and conducted responsibly, with minimum impact on turtles or the environment and maximum education and economic outcomes achieved

NUMBER	ACTION	RESPONSIBILITY
7.1.1	Develop best practice guidelines for marine turtle-based ecotourism. (i)	SPREP
7.1.2	Provide support to Member countries to ensure sustainable and responsible ecotourism businesses, based on turtles and other marine attractions. (ii)	SPREP, Partners

INDICATORS	TIMEFRAME
i. Best practice guidelines for marine turtle-based ecotourism are developed and shared.	2023
ii. Training workshops for tourism operators on best practice guidelines have been undertaken	2024

Female turtles can nest multiple times within a season.
Green turtle, Conflict Islands, Milne Bay Province, PNG. © CICI-PNG

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 1: Improve capacity for marine turtle protection, management, population research, monitoring, and resourcing

NUMBER	ACTION	RESPONSIBILITY
8.1.1	Develop a Pacific turtle monitoring and tagging manual to support standardised monitoring of turtles across the region. (i)	SPREP, Partners
8.1.2	Provide training for turtle monitors and rangers (prioritising women and youth involvement) including facilitating training exchanges across the region. (ii)	SPREP, Partners
8.1.3	Build in-country capacity to enforce turtle conservation policies and legislation. Support governments seeking to develop or revise national CITES legislation to improve the conservation status of all marine turtles. (iii) (iv)	Members, SPREP
8.1.4	Extend the regional network of marine turtle monitors. (v)	SPREP, SPC, LMMA

INDICATORS	TIMEFRAME
i. Pacific turtle monitoring and tagging manual developed and disseminated.	2023
ii. Rangers are trained in turtle monitoring and compliance activities, and participation includes women and youth.	2023
iii. MCS regional training workshops undertaken to support CITES and CMS.	2023
iv. Governments are supported to update national CITES legislation to further protect marine turtles.	2024
v. Nesting beach and foraging ground monitoring and survey training workshops have been held, as requested by Members.	2025

OBJECTIVE 2: Increase national, regional, and international collaboration and partnership for turtle conservation and management

8.2.1	Identify and confirm experts who will be marine turtle technical advisors for the region. (i)	SPREP
8.2.2	Establish a contact list of national, regional, and international stakeholders, e.g. IUCN Marine Turtle Specialist Group.[37] (ii)	SPREP
8.2.3	Use information on shared turtle stocks to promote collaboration on regional conservation actions. (iii)	SPREP, Partners, Members
8.2.4	Establish collaboration with the IOSEA Marine Turtle MOU[5] to help knowledge sharing. (iv)	SPREP, CMS Secretariat

INDICATORS	TIMEFRAME
i. Technical advisory group is formed and information available on SPREP website.	2022
ii. Communications with agencies working on turtle conservation are established and active; contact list is available.	2022
iii. The number of SPREP Members actively participating and collaborating in the regional network is improved.	2026
iv. Collaboration with IOSEA Marine Turtle MOU[5] is established.	2023

THEME 9: EDUCATION, AWARENESS, AND COMMUNICATION

OBJECTIVE 1: Improve awareness and understanding of the importance of turtles and relevant conservation issues

NUMBER	ACTION	RESPONSIBILITY
9.1.1	Update key messages about the tag recovery programme as a mechanism for promoting tag return and turtle conservation in general, e.g. Return Tag Data turtle poster.[41] (i)	SPREP
9.1.2	Develop materials to promote the tag recovery programme and make materials available in local languages. (ii)	
9.1.3	Conduct turtle public awareness campaigns throughout the region and share outputs. (iii)	SPREP

INDICATORS	TIMEFRAME
i. Flipper tag recovery programme is active in 15 Member countries and territories.	2025
ii. Materials about the tag recovery programme and how it supports turtle conservation have been updated and are available in at least English, French, and Bislama. Information is available on SPREP's website.	2023
iii. An awareness campaign has been conducted in Papua New Guinea and outcomes and lessons learned are recorded, shared, and available for future campaigns.	2024

A green turtle with a flipper tag that is used for identification. © CICI-PNG

41 SPREP. 2010. Return tag data [Internet]. SPREP; [accessed 2022 Feb 4]. https://library.sprep.org/sites/default/files/000932_Tag.pdf

Data of turtle nesting sites recorded in TREDS up to 2018 in the Pacific region

The Turtle Research and Monitoring Database System[38] is hosted by SPREP. It is a system for Pacific island countries and territorites to collate data from tagging, nesting, and emergence and beach surveys, as well as other biological data on marine turtles, such as stranding events. It can assist monitoring and sustainable management of turtle populations.

The database has been upgraded to a web-based system. Data remains the property of data holders and access must be sought. Go to TREDS[38] for more information.

The following maps show records of nesting sites for each species from the database.

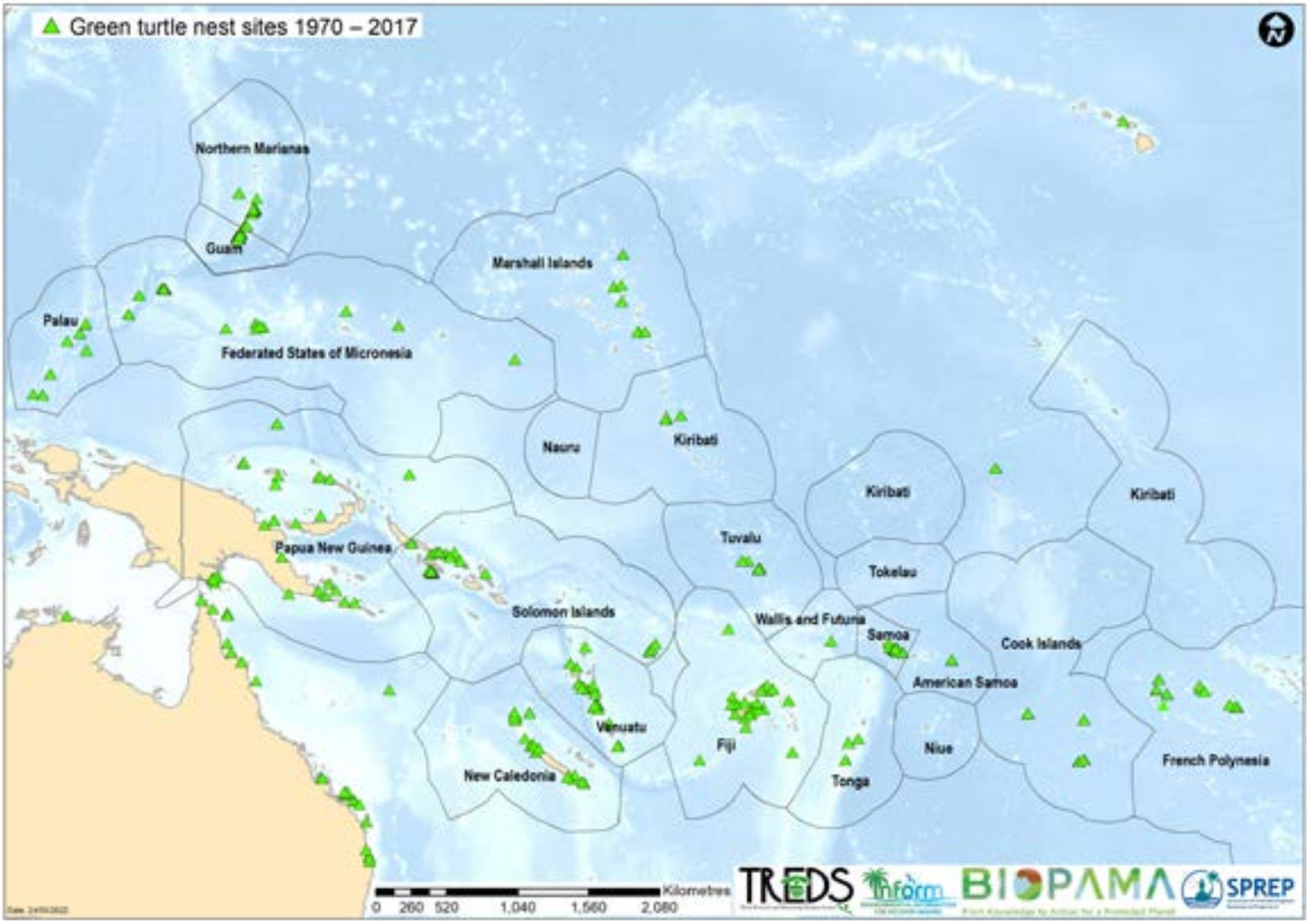


FIGURE 1. Green turtle nesting sites as of 2018. © SPREP, TREDS, 2018

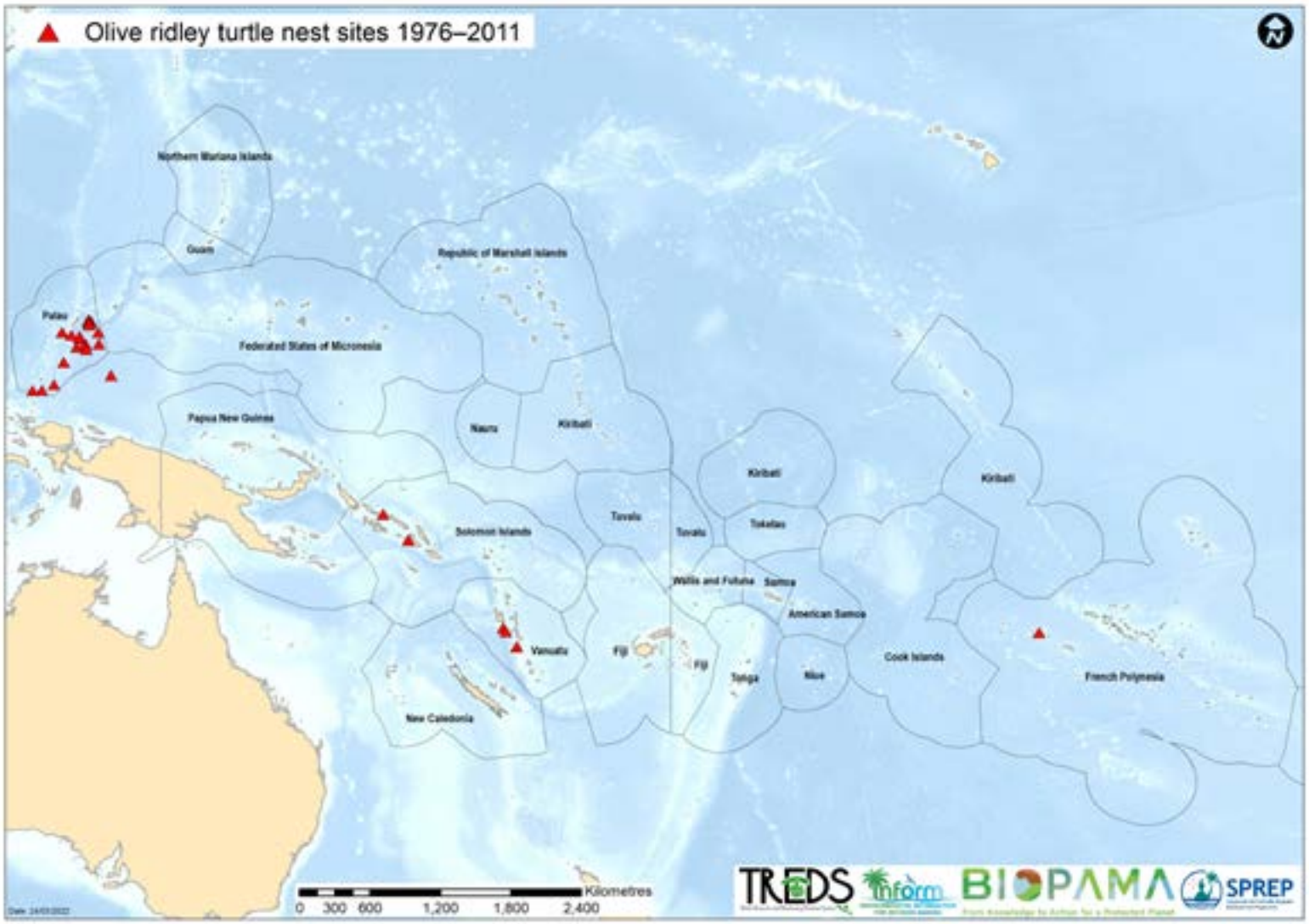


FIGURE 2. Olive ridley turtle nesting sites as of 2018. © SPREP, TREDS, 2018

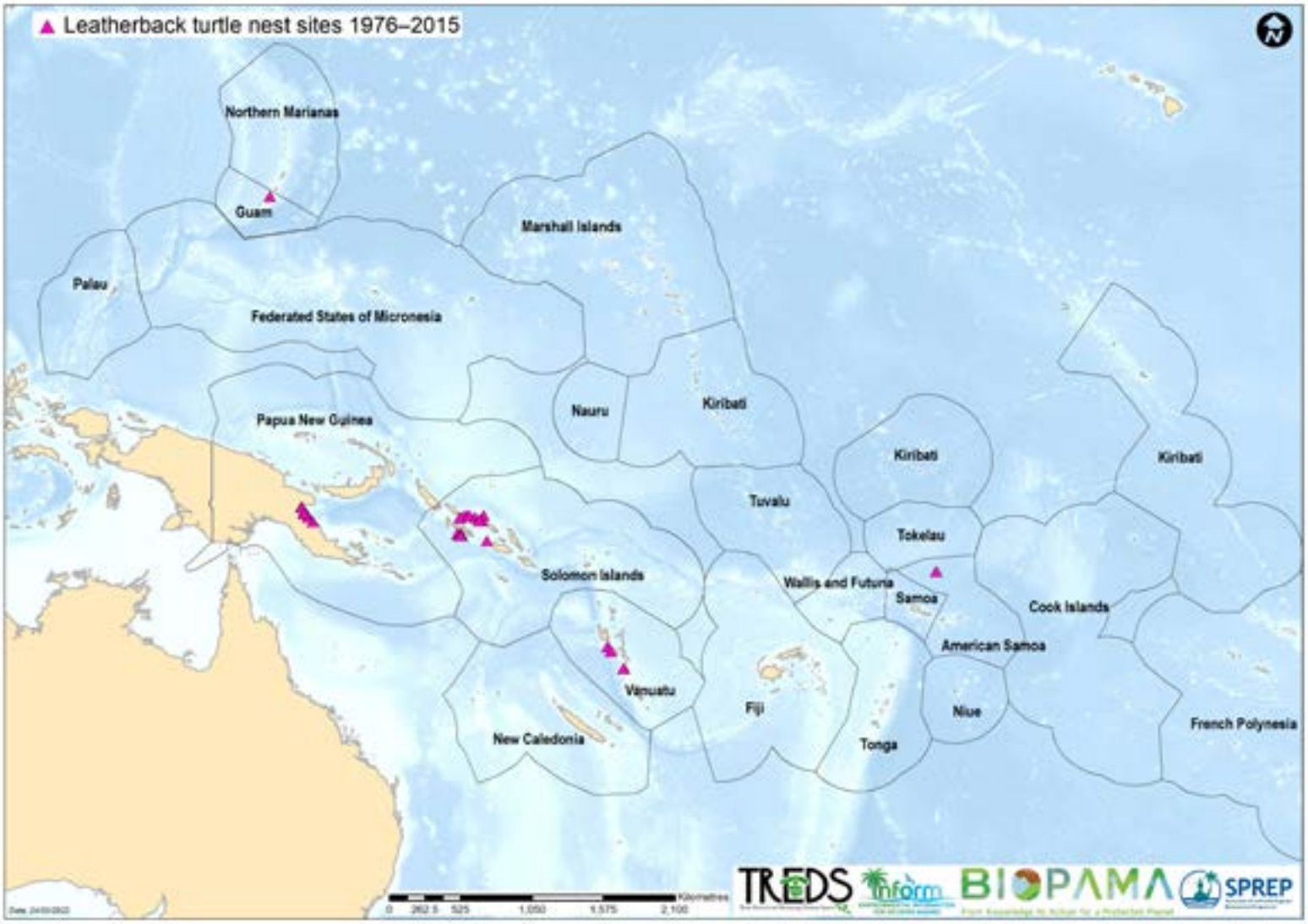


FIGURE 3. Leatherback turtle nesting sites as of 2018. © SPREP, TREDS, 2018

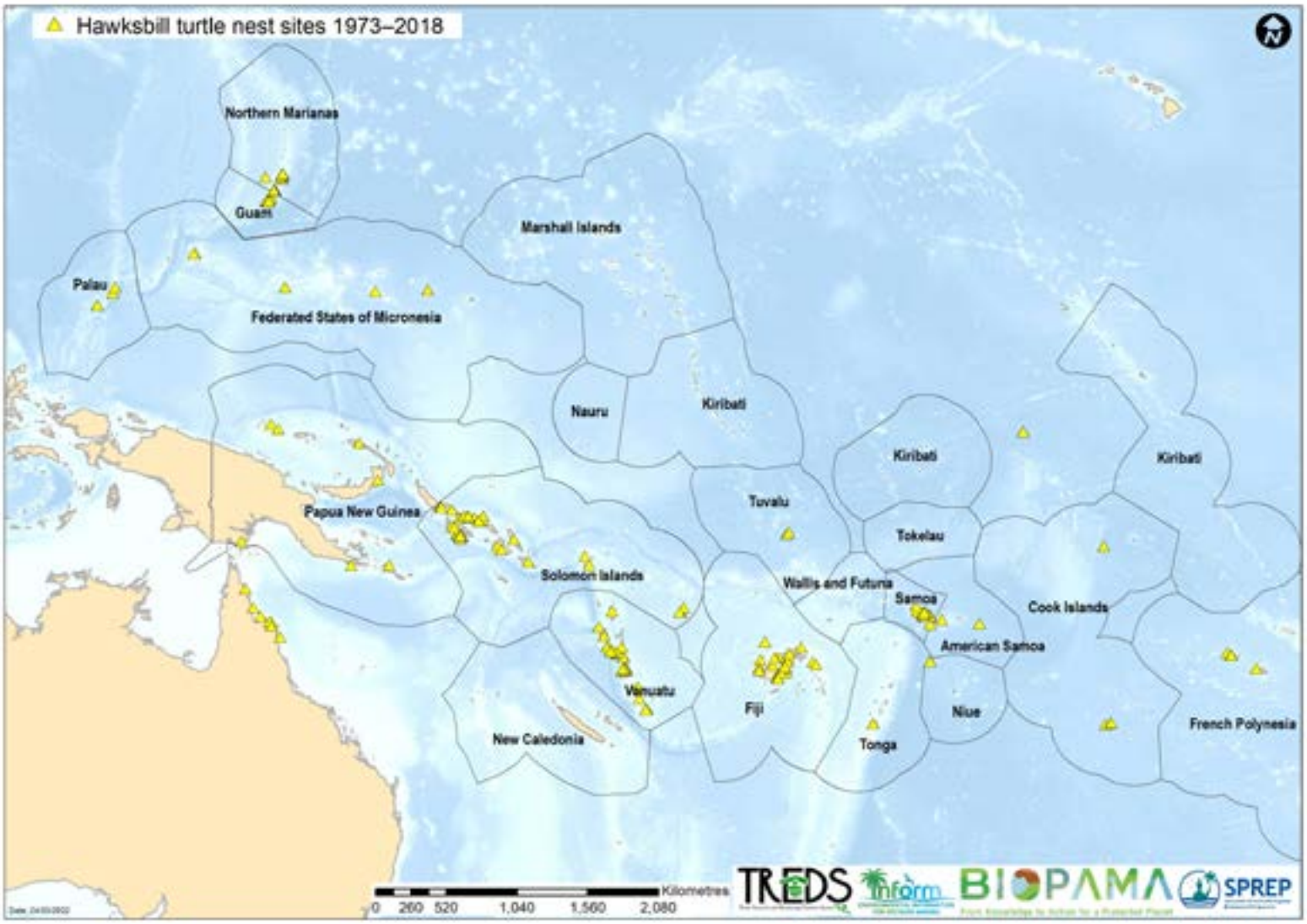


FIGURE 4. Hawksbill turtle nesting sites as of 2018. © SPREP, TREDS, 2018

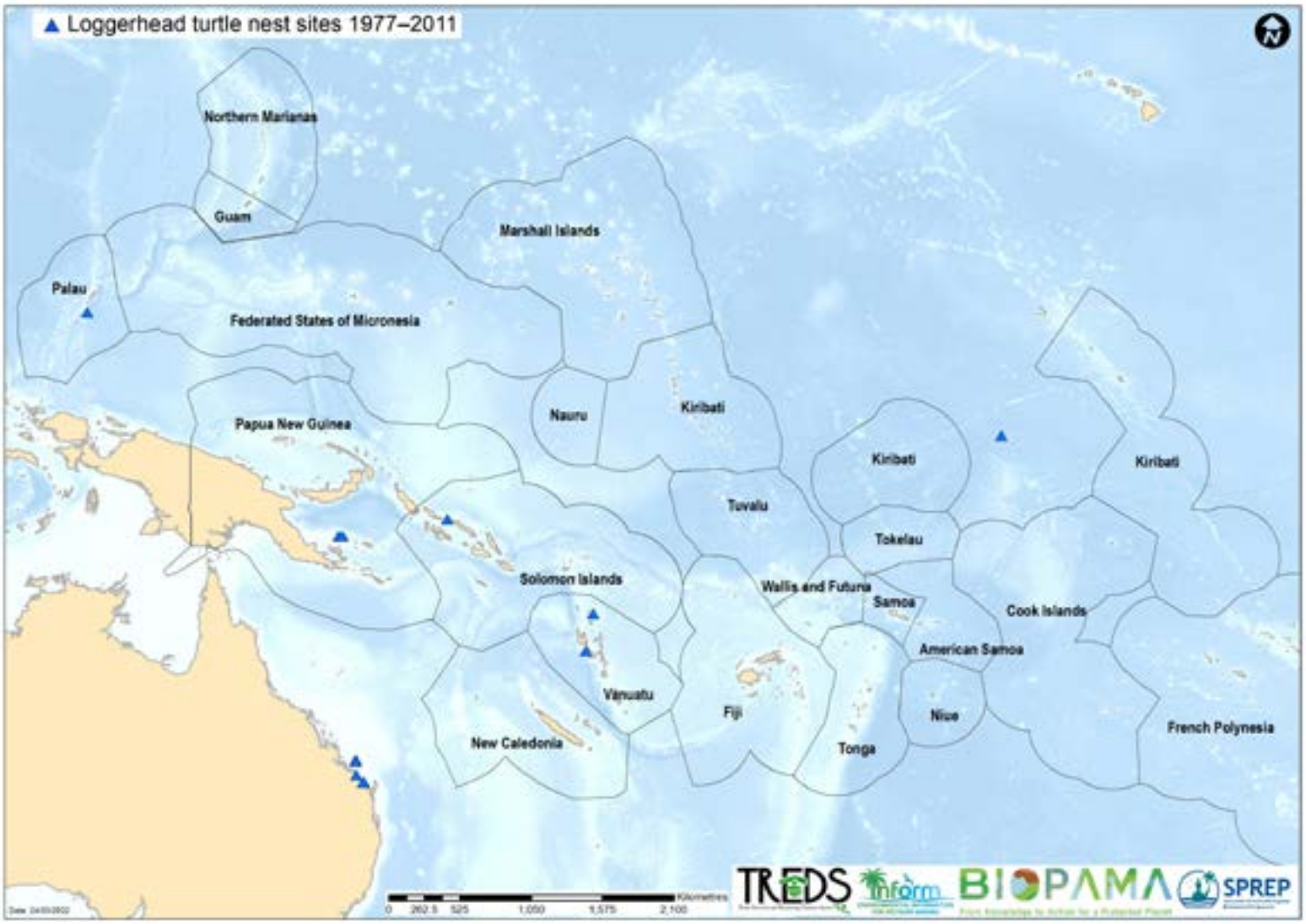


FIGURE 5. Loggerhead turtle nesting sites as of 2018. © SPREP, TREDS, 2018

Reef manta rays (*Mobula alfredi*). © Guy Stevens, Manta Trust

Blue shark. © Jim Abernethy

SHARK AND RAY ACTION PLAN

GOAL: To conserve sharks, rays, and their habitats, ensuring healthy populations in the long term, recognising the traditions and aspirations of the peoples of the Pacific islands region.

Introduction

Sharks and rays, skates, and chimaeras (collectively known as sharks and rays) have been in our oceans for more than 400 million years. The IUCN has assessed around 1,200 of the approximately 1,250 known species of sharks and rays that are found today in all oceans and habitats — freshwater, coastal, estuarine, pelagic, and deep water. At least 189 of these species have been recorded from the Pacific islands region.

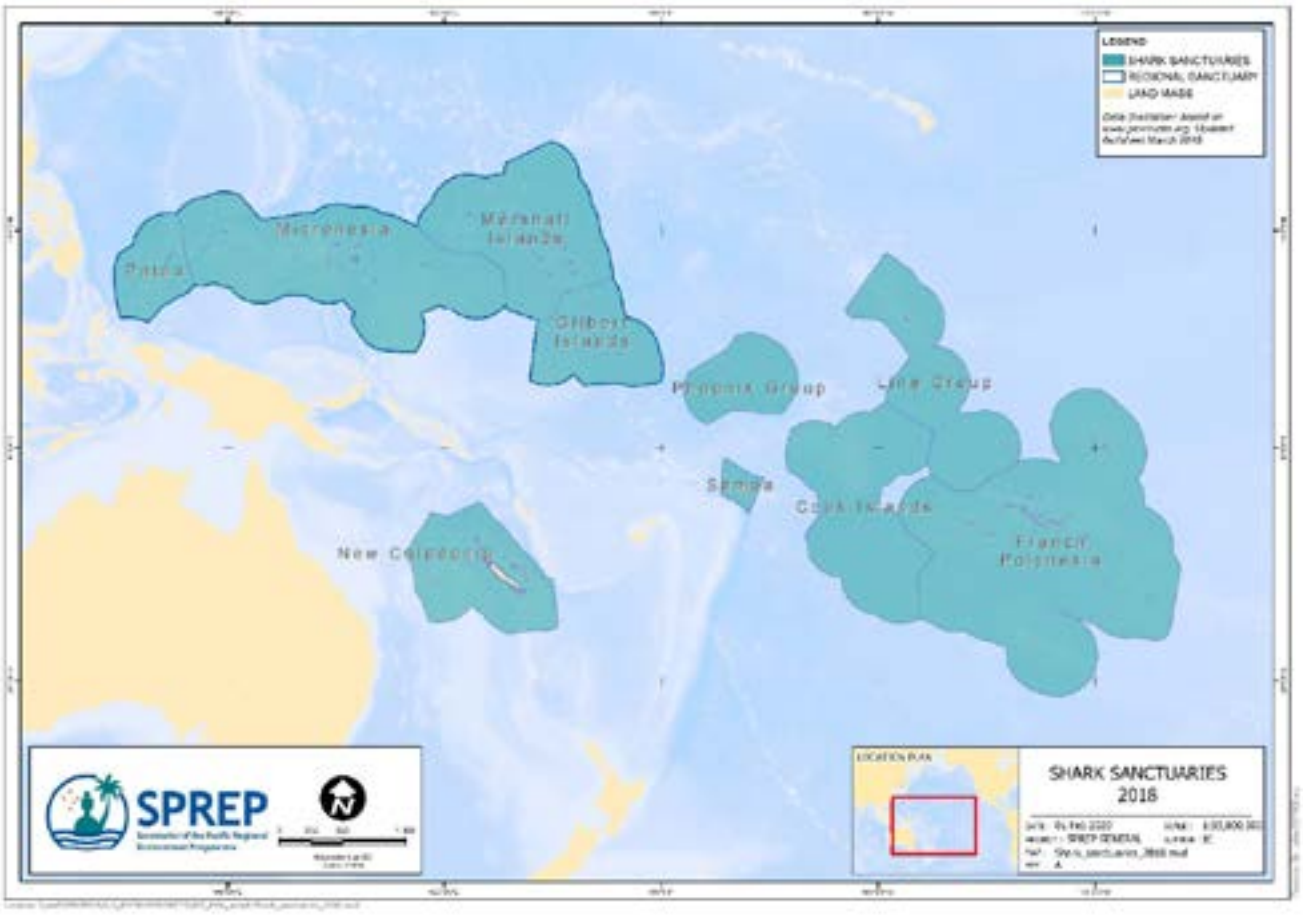
Despite their widespread distribution throughout the world's oceans and rivers, sharks and rays have come under mounting pressure in recent decades, in particular from fishing operations and habitat loss from sedimentation. Approximately 100 million sharks are caught annually worldwide. A 2021 oceanic shark assessment of 57 shark species showed their populations have decreased by 71% in the last 50 years due to an 18-fold increase in fishing pressure (Pacoureau et al. 2021).[42] Consequently, many species are now threatened or endangered.

Pacific island governments have responded to threats to sharks and rays by establishing sanctuaries and protected areas covering an area of over 26 million square kms (Figure 6).

Shark research PNG. © Michael Grant

Beautiful carving of sawfish, PNG. © Michael Grant

42 Pacoureau N, Rigby CL, Kyne PM, Sherley RB et al. 2021. Half a century of global decline in oceanic sharks and rays [Internet]. Nature. 589:567–571; [accessed 2022 Feb 5]. https://doi.org/10.1038/s41586-020-03173-9



Although sharks and rays are fish, they have very different life histories to bony fish (teleosts). Sharks are more like larger mammals in that they generally grow slowly, mature late, and have few offspring. Some sharks and rays, such as thresher sharks, produce just two to four pups once a year, compared, for example, to a swordfish that produces millions of eggs in its lifetime. Because of these life history characteristics, most sharks and rays have very low rates of population increase and are not as readily able as teleosts to withstand sustained harvest or recover from over-exploitation (direct or indirect) and other threats and pressures.

Sharks and rays often play a key ecosystem role as apex or top predators. The demand for shark fins in Asia, and growing market for shark meat and products, has led to a huge increase in shark catches in the past 20 years. As most sharks have slow population growth potential, the impacts of increased fishing pressure have been very severe for many species, and there is concern about the status and trends of a number of sharks and rays in the Pacific islands region.

Species distribution

Drivers of shark and ray diversity in the Pacific include island and atoll size, size of continental and insular shelves, and degree of isolation from source populations. Island and shelf size are important for habitat diversity and amount of available habitat. All these factors combine to produce a general decline in coastal shark and ray diversity from west to east across the Pacific, e.g. approximately 110 species in Papua New Guinea compared to around 10 in the Pitcairn Islands.

Sharks and rays occupy a range of trophic niches from planktivorous sharks such as whale and basking sharks to top predators that feed on marine mammals. They are present in a variety of habitats, primarily the demersal zone on continental and insular shelves, coral reefs and atolls, the benthic upper slope (200–1000 m), and in coastal pelagic waters (0–200 m).

Understanding of the Pacific's sharks and rays is still very limited, and the focus of research has generally been on species taken in fisheries. One exception is the book Sharks and Rays of Papua New Guinea (White et al. 2018),[43] which provides photographs and diagnostic characteristics for 79 shark, 51 ray, and 2 chimaera species.

Shark Search Indo-Pacific[44] (SSIP) is a programme focused on establishing diversity catalogues for the Indo-Pacific region. The programme's specialists are working with in-country expertise to:

- assemble a checklist of sharks and rays for every country in the Pacific
- develop a status overview that provides country-specific information on diversity, values, threats, and management.

The first SSIP species list and overview report, Sharks and Rays of the Solomon Islands,[45] included 50 confirmed, provisionally confirmed, or likely present species in the country. Draft reports have been prepared for the Federated States of Micronesia, Fiji, French Polynesia, Kiribati, New Caledonia, Niue, Palau, Tonga, Tuvalu, and Vanuatu.

The SSIP programme uses information and photos taken by SCUBA divers acting as citizen scientists. This work will help countries and territories develop and update their NPOAs for conserving sharks and rays and help with reporting obligations to international agreements, such as CBD, CITES, and CMS.

43 White W, Baje L, Sabub B, Appleyard S et al. 2017. Sharks and rays of Papua New Guinea [Internet]. Monograph 189. Canberra, AU: Australian Centre for International Agricultural Research (ACIAR); [accessed 2022 Feb 5]. https://www.aciar.gov.au/publication/books-and-manuals/sharks-and-rays-papua-new-guinea

44 Shark Search Indo-Pacific. 2020. Exploring the diversity and importance of the Indo-Pacific's sharks and rays [Internet]. QLD, Australia: James Cook University; [accessed 2022 Feb 5]. https://www.sharksearch-indopacific.org/

45 Hylton S, White W, Chin A. 2017. The sharks and rays of the Solomon Islands: a synthesis of their biological diversity, values and conservation status [Internet]. Pacific Conservation Biology. 23(4):324–334. CSIRO; [accessed 2022 Feb 5]. https://doi.org/10.1071/PC17012

Species status

Nearly all of the 189 shark and ray species that have been recorded in the Pacific have been assessed by IUCN (91%) and about half are estimated to be threatened, or Near Threatened. A further 10% are Data Deficient. Of the 59 species that are classified as Least Concern, most are deep water species.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora lists one group of sharks and rays in Appendix I and a number of sharks and rays in Appendix II. Appendix I species are highly threatened and cannot generally be traded except in special circumstances. Species listed in Appendix II are not currently considered threatened with extinction, but population trajectories are declining and may become threatened unless trade is regulated for these species.

Under the CMS, certain species of sharks and rays are listed in Appendix I (migratory species that are categorised as endangered throughout all or a significant proportion of their range). Parties that are range states are required to prohibit the trade of Appendix I listed species, except in exceptional circumstances. They are also required, amongst other things, to conserve habitats and maintain migratory pathways. Appendix II listed species would benefit significantly from international cooperation with the CMS. CMS Parties established the CMS Migratory Sharks MOU.[13]

Oceanic whitetip shark. © Jim Abernethy

TABLE 5. Shark and ray species found in the Pacific islands region and listed on CITES and CMS

Species	CITES Appendix	CMS Appendix	CMS Migratory Sharks MOU
Whale sharks *Rhincodon typus*	II	I and II	Annex 1
Oceanic whitetip sharks *Carcharhinus longimanus*	II	I	Annex 1
Sawfishes (narrow, dwarf, green, and largetooth) Family *Pristidae*	I	I and II	Annex 1
Hammerhead sharks (scalloped, great, smooth) Family *Sphyrnidae*	II	II	Annex 1
Mobulid rays (reef and oceanic manta rays, devil rays) Family *Mobulidae*	II	I and II	Annex 1
Silky sharks Family *Carcharhinidae*	II	II	Annex 1
Thresher sharks (bigeye, common, pelagic) Family *Alopiidae*	II	II	Annex 1
Shortfin mako sharks *Isurus oxyrinchus*	II	II	Annex 1
Longfin mako *Isurus paucus*	II	II	Annex 1
White sharks *Carcharodon carcharia*	I and II	I and II	Annex 1
Blue shark *Prionace glauca*		II	
Dusky shark *Carcharhinus obscurus*		II	Annex 1
Wedgefishes (eyebrow, bowmouth, bottlenose) Family *Rhinidae*	II (all spp)	II (*R. australiae*)	Annex 1 (*R. australiae)*
Giant guitarfishes Family *Rhinidae*	II (all spp)		

Traditional knowledge and customs

Like other species of marine megafauna, sharks and rays have economic, cultural, and spiritual value to the peoples of the Pacific islands. The cultural and traditional importance of sharks and rays is demonstrated in Pacific stories, legends, customs, artifacts, chants and calling, as well as traditional tattoo designs and weapons.

Sharks and rays are an important protein source that has sustained Pacific peoples for generations. Specialised traditional fishing methods were once used by ancestors to catch sharks to feed families and their communities. Traditionally, people took only what was needed for their community and families, ensuring marine resources would be available to them in the future.

Income-generating opportunities

As the populations of many shark species have declined, there has been a surge in the market for well-managed shark and ray ecotourism in the Pacific, providing an attractive alternative revenue to commercial fishing. A 2010 study in Palau showed that the value of an individual reef shark over its lifetime was estimated at US$1.9 million compared to a one-time value of US$108 for the carcass.[46] Similarly, in 2011 in Fiji, the value of shark and ray tourism contributed approximately US$42 million annually to the economy.[47]

Sustainable and best-practice ecotourism provides employment opportunities for communities and local business operators, such as hotels and restaurants. In some circumstances, shark and ray ecotourism can be an incentive for communities to protect and conserve sharks, rays, and their habitats for the enjoyment of future generations.

46 Vianna GM, Meekan MG, Pannell D, Marsh S et al. 2010. Wanted dead or alive: the relative value of reef sharks as a fishery and an ecotourism asset in Palau. Australian Institute of Marine Science and University of Western Australia, Perth. PEW Charitable Trusts; [accessed 2022 Mar 12]. https://www.pewtrusts.org/en/research-and-analysis/reports/2011/05/02/wanted-dead-or-alive-the-relative-value-of-reef-sharks-as-a-fishery-and-an-ecotourism-asset-in-palau

47 Vianna GM, Meeuwig JJ, Pannell D, Sykes H et al. 2011. The socio-economic value of the shark-diving industry in Fiji. Australian Institute of Marine Science. University of Western Australia, Perth. PEW Charitable Trusts; [accessed 2022 Mar 12]. https://www.pewtrusts.org/en/research-and-analysis/reports/2012/04/18/the-socioeconomic-value-of-the-sharkdiving-industry-in-fiji

Threats

Many shark and ray populations in the Pacific have been severely depleted because of overfishing by targeted commercial fishing and by-catch.

- **Targeted commercial fishing:** The demand for shark fins in Asian markets and the demand for shark and ray meat and products has resulted in the capture of an estimated 97–273 million sharks and rays every year in commercial fisheries, many of them in the Pacific (IUCN 2021).[48]

  In the Pacific, the oceanic whitetip shark population has declined to around 7% of its original biomass and current estimates of fishing mortality suggest it is on a trajectory towards extinction (Tremblay-Boyer et al. 2019).[49] The silky shark population has declined to less than 28% of its original biomass.

- **High by-catch of sharks and rays:** Sharks and rays are also caught accidentally as by-catch in fishing gear that targets commercial species, such as tuna and swordfish. According to WCPFC, the species that are currently most frequently by-caught include blue shark, pelagic stingray, silky shark, bigeye thresher, shortfin and longfin mako, porbeagle, hammerhead sharks, mobulids (manta and devil rays), and the whale shark.

  It is estimated that 80,000 sharks were by-caught in 2017 in WCPFC fisheries, mostly silky sharks (88%) but also mobulid rays, and oceanic whitetip.[50] Increasing use of FADs may result in an increased likelihood of catching silky sharks.

  There has been a requirement for 100% observer coverage on purse seine vessels since 2010, providing reliable estimates of captures. However, observer coverage in longline fisheries in the WCPFC area is low (generally less than 5%), making assessment of the risks to sharks much more difficult.

In 2019 WCPFC reviewed and consolidated the Conservation and Management Measure for Sharks[51] and the Conservation and Management Measure on Mobulid Rays.[52] These measures prohibit targeting and retaining mobulid rays, oceanic whitetip, and silky sharks in the Western Central Pacific Fisheries convention area and require live release. Other measures include not using wire trace or shark lines. There are no specific no-retention requirements included for other CITES / CMS listed species, such as thresher, hammerhead or mako sharks. WCPFC

48 IUCN SSC Shark Specialist Group. 2021. Frequently asked questions: sharks rays, and chimeras [Internet]. IUCN; [accessed 2022 Feb 5]. http://www.iucnssg.org/faqs.html

49 Tremblay-Boyer L, Carvalho F, Neubauer P, Pilling G. 2019. Stock assessment for oceanic whitetip shark in the Western and Central Pacific Ocean [Internet]. In: WCPFC Scientific Committee 15th regular session. BMIS. WCPFC-SC15-2019/SA-WP-06:99; [accessed 2022 Feb 5]. https://www.bmis-bycatch.org/references/dk5c8x8q

50 Western & Central Pacific Fisheries Commission. 2018 Jul 24. Summary of purse seine fishery bycatch at a regional scale, 2003–2017 Rev 1 [Internet]. 14th regular session: WCPFC–SC14–ST–IP–04; [accessed 2022 Mar 15]. https://meetings.wcpfc.int/node/10715

51 Western & Central Pacific Fisheries Commission. 2019 Dec 5–11. Conservation and management measure for sharks [Internet]. Commission 16th regular session: CMM 2019–04; [accessed 2022 Feb 5]. https://www.wcpfc.int/doc/cmm-2019-04/conservation-and-management-measure-sharks

52 Western & Central Pacific Fisheries Commission. 2019 Dec 5–11. Conservation and management measure on mobulid rays caught in association with fisheries in the WCPFC convention area [Internet]. Commission 16th regular session: CMM 2019–05; [accessed 2022 Feb 5]. https://www.wcpfc.int/doc/cmm-2019-05/conservation-and-management-measure-mobulid-rays-caught-association-fisheries-wcpfc

continues to prohibit purse seines on whale sharks and the retention of any unintentionally caught whale sharks.

Guidelines are available to support safe release of unintentionally caught whale sharks,[53] sharks,[54] and mobulids.[55]

Pacific island Members have recognised the threat to sharks and rays in the Pacific and many have established shark and ray sanctuaries in their waters. These sanctuaries prohibit commercial fishing of all shark species throughout the countries' EEZs and also prohibit the possession, sale, trade, import, and export of sharks and shark products (Figure 6).

A new global initiative to identify a network of priority sites globally for protection of sharks and rays has been initiated by the IUCN Shark Specialist Group.[56] See also the 2015–2025 strategy: Global Priorities for Conserving Sharks and Rays.[57] Sites will be identified by experts in a similar process to that which identified important marine mammal areas (IMMAs), on a region-by-region basis.

Other threats

- Pollution
- Marine debris
- Habitat loss / degradation
- Coastal development
- Coastal fisheries
- Climate change

Sawfish research in PNG.
© Michael Grant

53 Western & Central Pacific Fisheries Commission. 2015 Dec 3–8. Guidelines for the safe release of encircled whale sharks [Internet]. Commission 12th regular session: CMM 2019-04; [accessed 2022 Feb 6]. https://www.wcpfc.int/doc/supplcmm-2012-04/guidelines-safe-release-encircled-animals-including-whale-sharks

54 Western & Central Pacific Fisheries Commission. 2018 Dec 10–14. Best handling practices for the safe release of sharks (other than whale sharks and mantas/mobulids) [Internet]. Commission 15th regular session: CMM 2019–04; [accessed 2022 Feb 6]. https://www.wcpfc.int/doc/supplcmm-2010-07/best-handling-practices-safe-release-sharks-other-whale-sharks-and

55 Western & Central Pacific Fisheries Commission. 2017 Dec 3–7. Best handling practices for the safe release of mantas and mobulids [Internet]. Commission 14th regular session: CMM 2019-04; [accessed 2022 Feb 6]. https://www.wcpfc.int/doc/cmm-2019-05/conservation-and-management-measure-mobulid-rays-caught-association-fisheries-wcpfc

56 IUCN SSC Shark Specialist Group. Home [Internet]. [accessed 2022 Feb 6]. http://www.iucnssg.org

57 Bräutigam A, Callow M, Campbell IR, Camhi MD et.al. 2015. Global priorities for conserving sharks and rays: a 2015–2025 strategy [Internet]. IUCN Shark Specialist Group; [accessed 2022 Mar 12]. https://www.iucnssg.org/uploads/5/4/1/2/54120303/grsi_report_21-12-15_websingles.pdf

Themes and objectives

THEMES	OBJECTIVES
1. **Research and monitoring**	1. Improve understanding of shark and ray populations.
2. **Climate change**	1. Identify vulnerability of sharks and rays to climate change.
3. **Ecosystems and habitat protection**	1. Protect critical habitat for sharks and rays.
4. **Threat reduction**	1. Reduce direct and indirect threats to shark and ray populations.
5. **Cultural significance and value**	1. Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into management.
6. **Legislation, policy, and management**	1. Improve management and protection measures for sharks and rays.
7. **Ecotourism and livelihoods**	1. Ensure shark and ray tourism is sustainable and conducted responsibly, with minimum impact on sharks and rays or the environment and maximum education and economic outcomes.
8. **Capacity building and collaboration**	1. Build in-country capacity to strengthen implementation of shark and ray management and conservation measures. 2. Enhance national, regional, and international collaboration.

Great hammerhead shark. © Jim Abernethy

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 1: Improve understanding of shark and ray populations

NUMBER	ACTION	RESPONSIBILITY
1.1.1	Support and encourage robust taxonomic research and surveys of shark and ray populations throughout the region, including morphological and genetic studies on deep-water species. Contribute to country-specific species checklists and overviews, such as created by SSIP.[44] (i)	SPREP, Members, Partners, SSIP
1.1.2	Encourage countries to support and fully participate in existing and future regional research initiatives on sharks and rays, e.g. post-release survival, stock assessments, status of sharks and rays, abundance, diversity, through WCPFC and other organisations. (ii)	Members, Partners, SPREP, WCPFC, SPC
1.1.3	Continue to support periodic risk assessments for pelagic and deep-water shark and ray species through WCPFC and South Pacific Regional Fisheries Management Organisation (SPRFMO). Where appropriate, consider national risk assessments for threatened species. Consider improved CMMs, where required, to rebuild shark and ray populations. (iii)	SPREP, Members, Partners
1.1.4	Encourage universities to offer, and students to undertake, national research projects on shark and ray species on topics such as inventory, critical habitats, abundance, life history, age, growth, and social dimensions, including patterns of local use. (iv)	Partners, Members, University of Newcastle, Victoria University of Wellington, University of the South Pacific, James Cook University
1.1.5	Encourage the use of existing databases (e.g. Pacific Environment Portal[31] and PBIF,[32] and expand them where necessary to include information on traditional knowledge on sharks and rays. (v)	Partners, SPREP

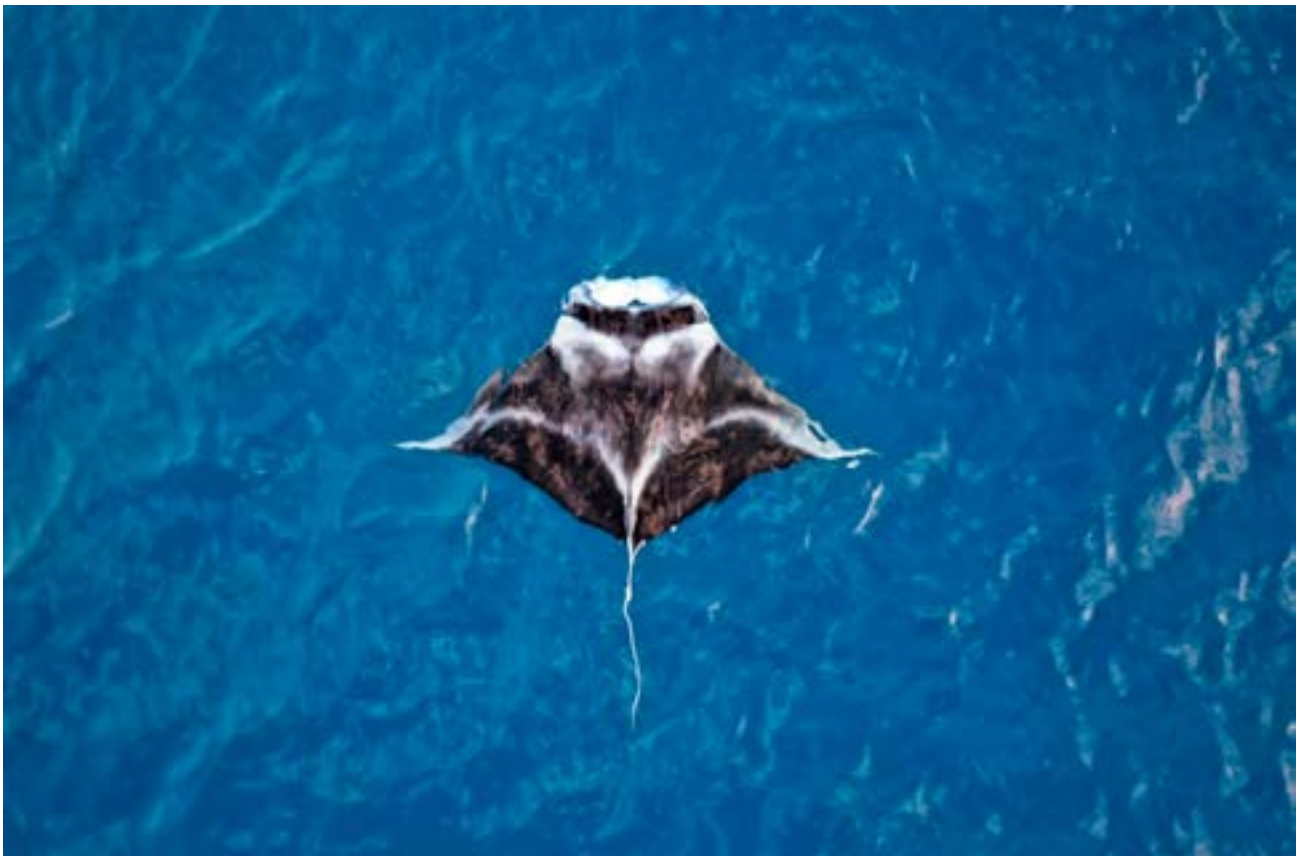
INDICATORS	TIMEFRAME
i. Species checklists and overviews are available for every Pacific island country and territory.	2024
ii. A centralised research programme on sharks and rays is established, such as through WCPFC.	2024
iii. A qualitative risk assessment is conducted with sub-regional expert groups and published.	2026
iv. Students are undertaking research projects on sharks and rays.	2026
v. The Pacific Environment Portal[31] or PBIF[32] contains a shark- and ray-specific node for data collection.	2022

THEME 2: CLIMATE CHANGE

OBJECTIVE 1: Identify vulnerability of sharks and rays to climate change

NUMBER	ACTION	RESPONSIBILITY
2.1.1	Undertake detailed risk assessments of the potential impacts of climate change on shark and ray species in the Pacific and identify the most at-risk species and populations, including potential changes in distribution. (i)	SPREP
2.1.2	Consider mitigation strategies, including reducing fishing mortality to allow depleted populations to rebuild, and increasing their resilience to the impacts of climate change. (ii)	SPREP, Partners
2.1.3	Encourage research projects into the impact of climate change on sharks and rays, e.g. thermal tolerances, range shifts, and migration patterns. (iii)	SPREP, Partners, Members

INDICATORS	TIMEFRAME
i. Shark and ray populations and species that could be vulnerable to climate change are identified.	2024
ii. Potential changes in shark and ray distribution are assessed and mapped where necessary and possible impacts from management strategies are understood.	2026
iii. There is an improved understanding of biological responses to changes in climate.	2026



A young manta glides through the surface waters in the Fiji Islands. © Luke Gordon

THEME 3: ECOSYSTEMS AND HABITAT PROTECTION

OBJECTIVE 1: Critical habitat for sharks and rays are protected

NUMBER	ACTION	RESPONSIBILITY
3.1.1	Support efforts to determine important nursery sites for sharks and rays for prioritising protection, e.g. through KBA processes or develop the concept of important shark and ray areas (ISRAs). (i)	SPREP, Members, Partners
3.1.2	Encourage and support the establishment of conservation measures through legislation or regulation and policies for priority sites such as KBAs, including through customary measures, to protect and conserve sharks, rays and their habitats. (ii)	Members, SPREP
3.1.3	Support continued efforts to: establish effectively managed EEZ-wide shark sanctuaries include protection of sharks and rays within established or proposed MPAs, LMMAs, and OECMs. (iii)	Members, SPREP
3.1.4	Ensure MCS processes are in place to ensure marine protection measures are effective. (iv).	Members
3.1.5	Support the use of data collected on sharks and rays in established or proposed MPAs, LMMAs, and OECMs to inform effective management that considers species movement patterns. (v)	Members, Partners

INDICATORS	TIMEFRAME
i. Important nursery areas for sharks and rays are identified through a process such as KBA or ISRA assessment.	2025
ii. Protection for sharks and rays through identification and protection of critical habitats is established.	2026
iii. Sharks are effectively managed in EEZ-wide sanctuaries and new sanctuaries, MPAs, LMMAs, and / or OECMs are established.	2026
iv. MCS processes are used.	Ongoing
v. Data collected on sharks and rays is used to inform effective management of MPAs, LMMAs, and OECMs.	Ongoing

Blue shark. © Karin Leonard, Marine Photobank

THEME 4: THREAT REDUCTION

OBJECTIVE 1: Reduce direct and indirect threats to shark and ray populations

NUMBER	ACTION	RESPONSIBILITY
4.1.1	Further develop, disseminate, and implement effective shark and ray by-catch mitigation techniques, safe handling, and release guidelines. (i)	Partners, Members, SPREP
4.1.2	Support work on post-release survival to improve mitigation and safe handling techniques. (ii)	Partners, Members, SPREP
4.1.3	Collect information on the scale, species, age, and location of shark and ray by-catch from fisheries operations (including small-scale and artisanal fisheries) to better assess impacts and possible mitigation actions. (iii)	Partners, Members, SPREP
4.1.4	Work through WCPFC to improve species-specific shark and ray by-catch documentation. (iv)	Members, SPREP, FAO, FFA, Partners
4.1.5	Encourage Pacific island countries to support management approaches that prohibit finning (where this means discarding of shark bodies). Promote full utilisation of sharks that are caught, and eliminate targeted shark fishing for commercial purposes. (Note: many Members are already doing this with shark sanctuaries in place across the Pacific). (v)	Members, Partners, SPREP, CITES, WCPFC
4.1.6	Ensure exploratory and new deep-sea fisheries adequately address risks to deep-sea sharks and rays (vi)	Members

INDICATORS	TIMEFRAME
i. Known shark and ray by-catch mitigation, safe handling, and release techniques implemented through outreach programmes to fisheries.	2023
ii. Data on post-release survival is being collected in fisheries in WCPFC and used it assist with mitigation recommendations.	2025
iii. Shark by-catch information is collected to assess impacts, and mitigation options recommended.	2025
iv. WCPFC species-specific shark and ray by-catch documentation is improving.	2025
v. Shark finning and targeted commercial fishing of sharks is prohibited in all Pacific island countries and territories.	2026
vi. Environmental impact assessments of exploratory and new deep-sea fisheries are undertaken.	Ongoing

Manta rays and white-tip reef shark. Photos. © Hannah Hendricks

THEME 5: CULTURAL SIGNIFICANCE AND VALUE

OBJECTIVE 1: Recognise the value of traditional knowledge, customs, and marine tenure and ensure it is incorporated into management

NUMBER	ACTION	RESPONSIBILITY
5.1.1	Document traditional knowledge, customs, uses and values relating to sharks and rays (and their management) for use in education and awareness-raising activities. (i)	Members, Partners, SPREP
5.1.2	Promote and support appropriate community-based conservation approaches, including improved understanding of traditional management approaches, within customary tenure frameworks that protect sharks and rays. (ii)	Members

INDICATORS	TIMEFRAME
i. Traditional knowledge and customs on sharks and rays documented and integrated into conservation and management schemes.	2026
ii. Appropriate community-based conservation approaches for sharks and rays supported.	2026

Feeding manta rays, Fiji Islands. © Luke Gordon

THEME 6: LEGISLATION, POLICY AND MANAGEMENT

OBJECTIVE 1: Improve management and protection measures for sharks and rays

NUMBER	ACTION	RESPONSIBILITY
6.1.1	Develop NPOAs for sharks (including on the high seas) to guide and develop policy and legislation to effectively implement CITES, CMS, and WCPFC rules. (i)	Members, SPREP, Partners, WCPFC
6.1.2	Ensure national legislation and regulations meet changes from CITES, CMS Conferences of the Parties (COPs), and WCFPC annual meetings. (ii)	Members
6.1.3	Apply CITES, CMS, and WCPFC MCS requirements at a national level to ensure effective protection of sharks and rays. (iii)	Members
6.1.4	Consider EEZ-wide sanctuaries to protect sharks and rays from commercial fishing, and also consider additional measures to enhance protection of threatened shark and ray species. (iv)	Members
6.1.5	Support the identification of ISRAs in the Pacific region in the process being led by the IUCN Shark Specialist Group.[56] (v)	Members, SPREP, Partners

INDICATORS	TIMEFRAME
i. Sharks NPOA developed and / or amended to guide policy and legislation development.	2026
ii. CITES, CMS, and WCPFC national rules are regularly updated.	Ongoing
iii. Monitoring, control, and surveillance of CITES, CMS, and WCPFC rules is being implemented.	Ongoing
iv. EEZ-wide shark sanctuaries are implemented in additional Pacific countries.	2026
v. Regional shark and ray experts assist in the identification of ISRAs.	2023

Thresher shark (*Alopias pelagicus*), Malapascua. © Steve De Neef

THEME 7: ECOTOURISM AND LIVELIHOODS

OBJECTIVE 1: Ensure shark and ray tourism is sustainable and conducted responsibly, with minimum impact on sharks and rays or the environment and maximum education and economic outcomes

NUMBER	ACTION	RESPONSIBILITY
7.1.1	Evaluate and monitor the growth of shark- and ray-based tourism, including identifying development barriers, economic benefits, and value. (i)	Partners, Members, SPREP, Pacific Tourism Organisation (PTO)
7.1.2	Promote the use of Responsible Shark and Ray Tourism Guidelines[58] to ensure best practice and sustainability. Support developing more guidelines, e.g. for the dive industry and specifically for the Pacific region. (ii)	SPREP, Partners, PTO
7.1.3	Promote licensing and permits for shark and ray watching and diving tourism operations as a tool for safe management. (iii)	Members, Partners
7.1.4	Support programmes for shark and ray watching and diving operators to collect species-specific data. (iv)	Members, Partners, NGOs

INDICATORS	TIMEFRAME
i. Shark-based tourism industry is evaluated regionally.	2026
ii. Safe shark watching, diving, and feeding guidelines are developed and promoted to all Members.	2024
iii. Licensing and permit systems for ecotourism activities based on sharks and rays are developed where needed.	2026
iv. Systems are developed and implemented for operators to collect usable species-specific data.	2025

58 Project AWARE, Manta Trust, WWF. 2017. Responsible shark and ray tourism: a guide to best practice [Internet]. ISSUU; [accessed 2022 Feb 6]. https://issuu.com/projectaware/docs/sharkandrays_bestpracticeguide_2017

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 1: Build in-country capacity to strengthen implementation of shark and ray management and conservation measures

NUMBER	ACTION	RESPONSIBILITY
8.1.1	Identify skills (e.g. database management, survey, and MCS) required by relevant government agencies and local communities for shark and ray management and protection. (i)	Members, SPREP
8.1.2	Collaborate with relevant Council of Regional Organisations of the Pacific (CROP) agencies to deliver identified training needs relating to CITES and CMS listed species. (ii) (iii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Skill requirements for shark and ray management and conservation have been identified.	2023
ii. Training, including for research, has been conducted in countries or territories.	2026
iii. MCS and compliance workshops have been conducted.	2026

OBJECTIVE 2: Enhance national, regional, and international collaboration

8.2.1	Encourage Non-Party Members to join CMS and the CMS Migratory Sharks MOU.[13] (i)	Members, CMS Secretariat, SPREP
8.2.2	Support Member countries to report on their progress implementing shark and ray obligations, CMMs, and best practice handling and release guidelines under WCPFC, CITES, CMS, and other environmental agreements, as appropriate. (ii)	SPREP, Members
8.2.3	Provide support and assistance to CITES and CMS Oceania Parties to recognise and implement new shark and ray Appendix listings. (iii)	SPREP, Partners, Members
8.2.4	Support developing Pacific negotiating positions for shark and ray conservation at regional and international fora by providing technical advice as required. (iv)	SPREP, Members, Partners
8.2.5	Collaborate to combat illegal, unreported, and unregulated (IUU) fishing and the illegal trade of sharks, rays, and their products at national and international levels. (v)	SPREP, Partners, Members, CITES
8.2.6	Strengthen partnerships between government and other existing and new stakeholders in research, conservation, and management efforts for sharks and rays. (vi)	Members, SPC, FFA, SPREP, CMS, CITES, Universities, WCPFC, NGOs
8.2.7	Encourage countries to attend international symposia that include research and management of sharks and rays. (vii)	Members

INDICATORS	TIMEFRAME
i. Additional SPREP Members sign the CMS Migratory Sharks MOU.[13]	2025
ii. Reporting obligations are completed.	Ongoing
iii. New shark and ray listings are made to CITES and CMS, where appropriate.	2026
iv. Technical support and advice is provided to Pacific island countries and territories on conservation of sharks in regional and international fora.	Ongoing
v. Illegal trade in shark and ray products is reducing based on data from TRAFFIC.	2026
vi. Collaboration is in place with relevant stakeholders to combat illegal trade of sharks and shark products.	2025
vii. International symposia have representatives from the Pacific islands region.	2023

Humpback whale breaching. © Mike Donoghue

WHALE AND DOLPHIN ACTION PLAN

GOAL: To protect Pacific whales and dolphins and their habitats to enable their populations to recover, while acknowledging their strong cultural importance to Pacific island peoples.

Introduction

The Pacific islands region is home to half of the world's 90 species of whales and dolphins. Some whales and dolphins have relatively small home ranges, while others travel between several EEZs. Baleen whales are highly migratory, travelling thousands of kilometres each year between winter tropical breeding grounds and summer feeding grounds.

All large whales, except for minke whales, were brought to the brink of extinction last century by whaling. Some populations were reduced to less than 2% of their initial abundance. Now, over 36 million km^2 of SPREP Member country EEZs function as whale and dolphin sanctuaries and fully protect cetaceans. Humpback whales (*Megaptera novaeangliae*) and some other species are beginning to recover, although their numbers remain low relative to their abundance in 1900. Whale watching has become an important tourist attraction for many countries and territories, including French Polynesia, New Caledonia, Niue, and Tonga.

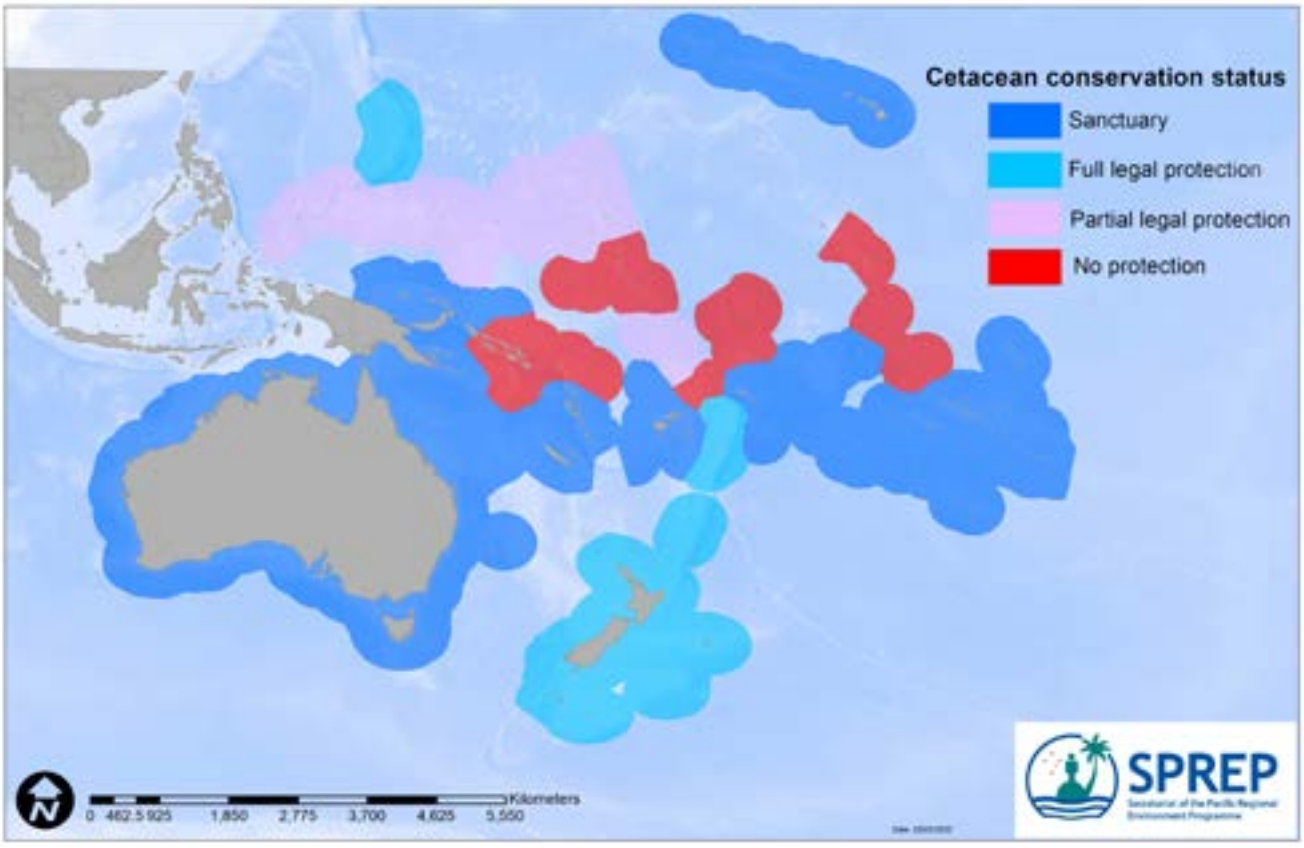


FIGURE 7. Whale and dolphin protected areas and sanctuaries. © SPREP, 2021

SPREP Members designated 2017 and 2018 as Years of the Whale. The Whales in a Changing Ocean Conference[59] held in Nuku'alofa, Tonga, in April 2017 was the region's first inter-governmental conference focused on whales. The conference was attended by representatives from 16 governments. Initial commitments included establishing a whale sanctuary in Tonga and providing technical support for the whale and dolphin action plan. Conference discussions also informed many of the recommendations in this action plan.

Species distribution

Our understanding of whale and dolphin diversity and distribution in the Pacific islands region is incomplete because many locations have not yet been surveyed or there is little local environmental knowledge. Based on largely opportunistic records, at least 30 different whale and dolphin species are present either as year-round residents or seasonal migrants in the EEZs of the 21 SPREP Pacific island countries and territories (Table 6). This number is likely to be higher, if rare and vagrant species are also considered.

The most reported species across the region include the sperm whale, short-finned pilot whale, spinner dolphin, and humpback whale — these species are easily identifiable, even at a distance. The distribution and abundance of many species, particularly beaked whales, is difficult to assess because they are hard to identify at sea and are largely known from stranding data. Stranding data can reveal important information that cannot be gained from systematic surveys for live sightings, underlining the importance of collecting stranding data throughout the region. Stranding data is particularly important for identifying offshore, deep-diving species such as beaked whales, which frequent the deep, seamount ecosystems of many Pacific island countries and territories. Limited research efforts in the region, coupled with the very large

Sperm whale (*Physeter macrocephalus*), M'Buke Island, Papua New Guinea. © Cara Miller

59 SPREP. 2017. Whales in a changing ocean: outcomes [Internet]. 2017. SPREP; [accessed 2022 Feb 6]. https://www.sprep.org/whales-in-a-changing-ocean-conference-2017/outcomes

marine area, make it highly likely that there are species as yet unreported from these waters.

The Science Research Working Group at the 2017 Whales in a Changing Ocean conference recommended establishing a validated inventory of whale and dolphin species, genetic distinctiveness, and habitat use across each Pacific island country and territory of the SPREP region to improve understanding of ecological roles, economic and cultural values, and better inform management.

Important marine mammal areas

Important marine mammal areas delineate a discrete portion of habitat for one or more marine mammal species, which has the potential to be delineated and managed for conservation.

In March 2017 a regional workshop was held in Samoa to identify IMMAs for the Pacific region. Potential sites were reviewed by an expert panel and 18 IMMAs were accepted. A further five candidate sites and 19 areas of interest were identified, requiring further information to be upgraded to full IMMA status. Notably, it was recognised that there are substantial data gaps for marine mammals across the region, which means the designation process for globally important sites is incomplete. An interactive e-atlas[60] provides species lists and other information for each IMMA in the Pacific.

Workshop outcomes are detailed in the Final Report of the Regional Workshop on Pacific Islands IMMAs.[61]

Species status

Cetacean species in the region vary in conservation status according to the IUCN system of species classification. Endangered species include the sei whale (*Balaenoptera borealis*), blue whale (*Balaenoptera musculus*), and the Oceania subpopulation of the humpback whale (*Megaptera novaeangliae*). Vulnerable species include the fin whale (*Balaenoptera physalus*), Australian snubfin dolphin (*Orcaella heinsohni*), Australian humpback dolphin (*Sousa sahulensis*), and sperm whale (*Physeter macrocephalus*). Near Threatened species include the Antarctic minke whale (*Balaenoptera bonaerensis*), false killer whale (*Pseudorca crassidens*), and the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*).

Of the remaining species:

- 17 are of Least Concern and two are Data Deficient
- 12 species have changed in conservation status since the publication of the previous whale and dolphin action plan, many of which were a reclassification of Data Deficient to Least Concern (due to a revised interpretation of the categories)
- 3 species have moved from Data Deficient to Near Threatened, fin whales moved from Endangered to Vulnerable, and snubfin dolphin moved from Near Threatened to Vulnerable).

60 Marine Mammal Protected Areas Task Force. IMMA e-atlas [Internet]; [accessed 2022 Feb 6]. https://www.marinemammalhabitat.org/imma-eatlas/

61 Marine Mammal Protected Areas Task Force. 2017. Final report of the regional workshop on Pacific islands important marine mammal areas [Internet]. Apia, Samoa; [accessed 2022 Feb 6]. https://www.marinemammalhabitat.org/download/report-regional-workshop-pacific-islands-important-marine-mammal-areas/

TABLE 6. Cetacean diversity in Pacific island countries and territories[62]

	PACIFIC ISLAND COUNTRY OR TERRITORY																				
SPECIES	**AS**	**CI**	**FSM**	**FI**	**FP**	**GU**	**KI**	**MI**	**NA**	**NC**	**NI**	**NMI**	**PA**	**PNG**	**PI**	**SA**	**SI**	**TOK**	**TO**	**TU**	**VA**	**WF**
Australian humpback dolphin *Sousa sahulensis*														x								
Blainville's beaked whale *Mesoplodondensirostris*		x		x	x	x	x			x	x	x		?		x	?					
Blue whale *Balaenoptera musculus*				?			?	x						x			x		x			
Blue whale, Pygmy *B. m. brevicauda*		x								x												
Bottlenose dolphin *Tursiops spp*	x	?	?	x	x	x	x	x		?		x	?	x		x	x		x	x	x	
Bryde's whale *Balaenoptera edeni*				x	?	x										x						
Bryde's-like whale *Balaenoptera sp.*		?	x	x		?		?	x	x		x	x	x			?				?	
Common dolphin *Delphinus spp*		x		?				x		x		?					?		x			
Cuvier's beaked whale *Ziphius cavirostris*	x	x	?		x	x	x		?	x	x	x	?	x	x	x	?		x			
Deraniyagala's beaked whale *Mesoplodon hotaula*							x															
Diminutive sperm whale *Kogia sp.*				x	x	x								x						x		
Dwarf sperm whale *Kogia sima*	?									x		x				x						
Ginkgo-toothed beaked whale Mesoplodon ginkgodens			x				?															
False killer whale *Pseudorca crassidens*	x	?		x	x	x	?			x	x	x	x	x		x	x		x	?		
Fin whale *Balaenoptera* physalus)				x	?			x														
Fraser's dolphin *Lagenodelphis hosei*		x	x	?	x		x		x	x			x	x		x	x					
Humpback whale *Megaptera novaeangliae*	x	x		x	x	x		x		x	x	x		?	x	x	?		x		x	x
Indo-Pacific bottlenose dolphin *Tursiops aduncus*										x							x					
Longman's beaked whale *Indopacetus pacificus*										x		x										

62 Miller, C. 2022. Review of cetacean diversity, status and threats in the Pacific islands region 2021. Apia, Samoa: SPREP.

	PACIFIC ISLAND COUNTRY OR TERRITORY																				
SPECIES	**AS**	**CI**	**FSM**	**FI**	**FP**	**GU**	**KI**	**MI**	**NA**	**NC**	**NI**	**NMI**	**PA**	**PNG**	**PI**	**SA**	**SI**	**TOK**	**TO**	**TU**	**VA**	**WF**
Melon-headed whale *Peponocephala electra*		x	x		x	x	?	x	x	x		x	x	x		x	x		x		x	
Minke whale, Antarctic *Balaenoptera bonaerensis*										x									x			
Minke whale, dwarf *Balaenoptera acutorostrata* unnamed subsp.										x									x			
Minke-like whale *Balaenoptera sp.*	x	x		x	?			x			x	x	?		x	x				x		
Orca *Orcinus orca*	x	x	?	x	x	?	x	x	?	x	x	?	x	x		x	x	?	x	x	x	
Pantropical spotted dolphin *Stenella attenuata*	x	x	?	x	x	x	x	x		x		x	x	x			x		x	x	x	
Peale's dolphin *Lagenorhynchus australis*		?																				
Pygmy killer whale *Feresa attenuata*					x	x				x		x	x	?					x			
Pygmy sperm whale *Kogia breviceps*				x			x			x												
Risso's dolphin *Grampus griseus*		?			x	x				x		x	?	x		x	x		x			
Rough-toothed dolphin *Steno bredanensis*	x			?	x	x	x	?		x		x		?		x	x		x			
Sei whale *Balaenoptera borealis*		x				?				x	x	x		x					x			
Short-finned pilot whale *Globicephala macrorhynchus*	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x		x		x	
Australian snubfin dolphin *Orcaella heinsohni*														x			?					
Sperm whale *Physeter macrocephalus*	x	x	x	x	x	x	x	?	x	x	x	x	x	x	x	x	x	x	x	x	x	?
Spinner dolphin *Stenella longirostris*	x	x	x	x	x	x	x	x		x	x	x	x	x		x	x		x	x	x	
Striped dolphin *Stenella coeruleoalba*		?	x			x	?	x		x		x	x			x	x				?	
Unknown beaked whale																?				?		

Records for *T.truncatus* and *T. aduncus* are combined into *Tursiops spp* as older records do not differentiate. Common dolphins are most likely to be *Delphinus delphis* rather than *D. capenensis.*

x = confirmed records

? = unconfirmed records

Pacific island cetacean species listed in CMS Appendix I are sei, blue, fin, humpback, and sperm whales. Several Pacific island cetacean species, such as the Antarctic minke whale, Bryde's whale, Australian snubfin dolphin, orca, and Indo-Pacific humpback dolphin are also listed on CMS Appendix II, which denotes species with an unfavourable conservation status or a status that would significantly benefit from international cooperation.

The Revised SPREP Whale and Dolphin Action Plan (2013–2017) has been appended to the Pacific Islands Cetaceans MOU.[4] It forms the basis for the on-the-ground conservation efforts of MOU signatories and collaborating organisations across the region.

Traditional knowledge and customs

Whales and dolphins are important to the cultures, legends, traditions, and heritages of many Pacific island peoples, and are often associated with identity, livelihoods, and wellbeing. The history of some cultures includes the role of whales in traditional navigation. Whale migrations are used as environmental cues on some islands, and ceremonies and ritual surround cetaceans across the region. In some traditions, whales are viewed as incarnations of humans, and their regular appearance to breed and give birth continues to be a significant event in many communities. The cultural importance of cetacean species is illustrated in myths, stories, and legends that are passed down from generation to generation through song, dance, and oral traditions.

Cultural marine mammal harvesting has existed in varying degrees in most Pacific islands at some time. The practice has ranged from harvesting beach-cast animals to direct and opportunistic hunting. Cetacean meat is sometimes harvested as a source of sustenance for the local village, but their bones and teeth are also particularly sought after (e.g. in dowry / bride price — the latter is likely to have played an important role in historical trade. Some traditional and subsistence harvesting still takes place in some communities.

Spinner dolphin, Tafatafa, Upolu, Samoa. © Juney Ward, SPREP

Income-generating opportunities

A regional review of the status of whale watching tourism (IFAW 2008)[63] showed a 10-fold increase in value between 1998 and 2005 and a 45% growth in whale watchers, expanding from 9 countries to 14. In 2005, the industry had a total estimated direct economic value of USD 7.5 million and USD 21 million in total value. Data from Tonga (Teisa Fifita-Tupou, 2021)[64] shows that the number of whale watchers more than doubled between 2006 and 2019 from 9,804 to 20, 018, providing increased direct revenue from USD 1,515,069 to USD 9,107,643.

Whale watching is now of high economic importance to many Pacific island countries and territories, and the growth potential and economic benefits of cetacean-based tourism has proved an effective argument against whaling throughout the Pacific. The rapid growth of whale watching in the region between 1988 and 2005 raised questions about its sustainability. However, there has been little activity since 2020 because of the impacts of Covid-19 on the region's tourism industry. Any future resumption of whale watching will need to include further management measures for the potential impacts on marine mammal populations. The hiatus in tourism may be an opportune time to ensure whale watching best practice is implemented.

Recent research (Fiori et al. 2019)[65] has highlighted that swim-with operations in Tonga are having a negative behavioural impact on whales, in particular, humpback whale mother–calf pairs, which may have consequences for survival of calves. This highlights the need for long-term monitoring of whale-watching activities, monitoring, control, surveillance of regulations, and capping the numbers of vessels to ensure the safety of animals and people.

Useful resources

Pacific Islands Regional Guidelines for Whale and Dolphin Watching[66] (a template for developing regulations and recommended management measures for sustainable whale watching)

IWC Whale Watching Handbook[67]

Whales Alive Whale Watch Operator and Guide Training Program[68] (training designed to meet the skill needs of Pacific whale-watching operators)

Global Best Practice Guidance for Responsible Whale and Dolphin Watching[69]

Responsible Whale Watching Guides Training Course[70]

63 IFAW. 2008 Pacific islands whale watch tourism: a regionwide review of activity. Surry Hills, AU: IFAW; [accessed 2022 Mar 12]. https://library.sprep.org/sites/default/files/2022-03/Pacific_Whale_Watching_0.pdf

64 Fifita-Tupou T. 2021. Whale watching and swimming: Kingdom of Tonga. 2021 Aug 3. Ministry of Tourism Tonga presentation to SPREP Whale and Dolphin Action Plan meeting.

65 Fiori L, Martinez E, Orams M, Bollard B. 2019. Effects of whale-based tourism in Vava'u, Kingdom of Tonga: behavioural responses of humpback whales to vessel and swimming tourism activities [Internet]. PLoS ONE. 14(7):e0219364; [accessed 2022 Feb 6]. https://doi.org/10.1371/journal.pone.0219364

66 SPREP, IFAW, Opération Cétacés. 2009. Pacific islands regional guidelines for whale and dolphin watching [Internet]. SPREP; [accessed 2022 Feb 6]. https://www.sprep.org/att/publication/000647_whale_watch_guidelines_en.pdf

67 International Whaling Commission. 2022. Whale watching handbook: a comprehensive online tool for regulators, industry and the general public [Internet]. IWC; [accessed 2022 Feb 6]. https://iwc.int/whale-watching-handbook

68 Whales Alive. 2022. Whales Alive whale watch operator and guide training program [Internet]. Whales Alive; [accessed 2022 Feb 6]. https://www.whalesalive.org.au/training-program/

69 Lewis S, Walker D. 2018. Global best practice guidance for responsible whale and dolphin watching: tourism activities involving cetaceans [Internet]. World Cetacean Alliance with support from ClubMed; [accessed 2022 Feb 6]. https://worldcetaceanalliance.org/wp-content/uploads/2019/07/WCA-Global-Best-Practice-Guidance-Whale-Watch.pdf

70 World Cetacean Alliance. 2022. WCA responsible whale watching guides training course. WCA; [accessed 2022 Feb 6]. https://worldcetaceanalliance.thinkific.com/courses/responsible-whale-watching-guides-training-course

Threats

Although whales are no longer hunted commercially in the Southern Hemisphere, they are exposed to a wide range of threats that vary in geographic coverage, regularity, and by species across the region.

Main threats to cetaceans in the Pacific islands region

- Fisheries interactions: Including by-catch and entanglement in both active and abandoned, lost and discarded fishing gear (ALDFG), including FADs and gill nets
- Whale watching: Disturbance from whale watch vessels and swimmers
- Vessel strike
- Pollution (e.g. heavy metals)
- Marine debris (e.g. plastic, abandoned fishing gear)
- Habitat degradation (e.g. coastal development)
- Anthropogenic noise: Including from vessels, industrial activity (e.g. pile driving) and naval operations
- Climate change (e.g. prey depletion)
- Direct take: For both sustenance (hunts) and commercial trade (live)
- Unknown or cryptic species: Incomplete understanding of genetically discreet populations of pan-tropical species and implications for by-catch risk.
- Lack of scientific information: Needed to inform decisions on how to manage anthropogenic threats

Mother and calf humpback whales. © Malcolm Francis

FISHERIES

Interactions and by-catch in fishing gear have been reported for more than 30 species of cetaceans in tuna and other small- and large-scale fisheries in the Western Central Pacific Ocean.

Longline and purse seine interactions mostly occur with:

- false killer whales (*Pseudorca crassidens*) most frequently interacting in both longline and purse seine
- baleen whales, including threatened species such as blue whale, pygmy (*B.m. brevicauda*), fin whale (*Balaenoptera physalus*) and humpback whales (*Megaptera novaeangliae*)
- sperm whales (*Physeter macrocephalus*)
- pan-tropical spotted dolphin (*Stenella attenuata*).

Coastal fisheries and gill-netting interactions mostly occur with:

- Risso's dolphin (*Grampus griseus*)
- rough-toothed dolphin (*Steno bredanensis*),
- Indo-Pacific bottlenose dolphin (*Tursiops aduncus*)
- pan-tropical spotted dolphin (*Stenella attenuata*)
- Australian snubfin dolphin (*Orcaella heinsohni*)
- Australian humpback dolphin (*Sousa sahulensis)*

Survival from interactions with fishing gear is poorly understood, particularly where gear remains attached to animals. Interactions with ALDFG are of increasing concern and, as with ship strike, are likely to be one of the biggest threats to large whales. According to WCPFC, high levels of observer coverage in tuna purse seine fisheries provide a good understanding of the level of interactions. This is not the case with tuna longline fisheries, which generally have very low levels of observer coverage (2–5%).

Estimates of by-catch in non-tuna small- and large-scale fisheries are lacking. Our incomplete knowledge of population sizes, distributions, and genetic distinctiveness of many marine mammal species in the Pacific makes it difficult to assess the degree to which these interactions may threaten cetacean populations.

Filling data gaps will take many years and we cannot wait for definitive results. A precautionary approach is required. Increased effort to reduce interactions and mitigate harm is essential if we are to guarantee the long-term benefits of whales and dolphins to our ocean health, as well as important cultural icons.

Themes and objectives

THEMES	OBJECTIVES
1. **Research and monitoring**	1. Collect, centralise, make accessible, and maintain research and monitoring data. 2. Improve knowledge of abundance and distribution of cetaceans. 3. Understand critical habitat and migratory pathways. 4. Understand impact of threats to populations of whales and dolphins.
2. **Climate change**	1. Identify vulnerability of whales and dolphins to climate change. 2. Promote the benefits of protecting whale populations to help mitigate climate change.
3. **Ecosystems and habitat protection**	1. Protect critical habitat and migratory pathways for whales and dolphins.
4. **Threat reduction**	1. Reduce direct and indirect threats to whale and dolphin populations.
5. **Cultural significance and value**	1. Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into management.
6. **Legislation, policy, and management**	1. Review legal, policy, and institutional frameworks for protecting whales and dolphins.
7. **Ecotourism and livelihoods**	1. Ensure whale and dolphin tourism is developed sustainably and conducted responsibly, with minimum impact and maximum education and economic returns.
8. **Capacity building and collaboration**	1. Increase in-country expertise and capacity for conserving and sustainably managing cetaceans. 2. Increase national, regional, and international collaboration and partnership for conserving and managing whales and dolphins.
9. **Education, awareness, and communication**	1. Improve awareness and understanding of the importance of whales and dolphins and relevant conservation issues.

Pair of spinner dolphins (*Stenella longirostris*), M'Buke Island, Papua New Guinea. © Cara Miller

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 1: Collect, centralise, make accessible, and maintain research and monitoring data

NUMBER	ACTION	RESPONSIBILITY
1.1.1	Identify hunting locations or directed takes of cetaceans and encourage monitoring and assessment of the takes by species, location, and date. Where appropriate, establish observer programmes. (i)	Members, SPREP
1.1.2	Facilitate the widespread use of innovative electronic reporting and monitoring tools, such as Happywhale,[71] iNaturalist,[72] and other suitable applications to promote citizen science and collect observational data. (ii)	SPREP, Partners, Members
1.1.3	Maintain and administer the Strandings of Oceania Database[17] hosted on Flukebook.[18] (iii)	SPREP
1.1.4	Encourage the public to report all whale and dolphin strandings and mortalities to the appropriate national management authority. (iv)	Members
1.1.5	Develop national stranding networks that are inclusive of stakeholders. Implement stranding response and data collection protocols, collect information on the potential impact of human interactions, including plastics and fishing gear on whales and dolphins, with the best-practice goal of full necropsies where possible. (v)	Members, SPREP, SPC
1.1.6	Submit stranding data and analysis results to the Strandings of Oceania Database[17] hosted on Flukebook[18], including any DNA results or necropsy notes and reports, and evidence of human interaction including entanglement or plastic ingestion. (vi)	Members
1.1.7	Encourage reporting of vessel strikes to local and regional authorities and the IWC's Global Ship Strikes Database.[73] Record in Strandings of Oceania Database[17] hosted on Flukebook.[18] (vii)	Members

INDICATORS	TIMEFRAME
i. Sufficient data is available on directed takes to develop management plans for future hunting.	Ongoing
ii. A range of complementary applications is in use in the region to record and disseminate sightings.	2024
iii. The Strandings of Oceania Database[17] is maintained and in use.	2025
iv. The public are encouraged to report strandings.	2025
v. National stranding networks are established and use best practice data collection protocols.	2026
vi. The Strandings of Oceania Database[17] contains stranding records from Members.	Ongoing
vii. Vessel strikes are reported to the IWC's Global Ship Strikes Database[73] and entered on the Strandings of Oceania Database.[17]	Ongoing

71 Happywhale. 2022. Your whales as individuals [Internet]. Happywhale; [accessed 2022 Feb 6]. https://happywhale.com/home

72 iNaturalist. A community for naturalists [Internet]. California Academy of Sciences and the National Geographic Society; [accessed 2022 Feb 6.] https://www.inaturalist.org/

73 International Whaling Commission. IWC global ship strikes database [Internet]. IWC; [accessed 2022 Feb 6]. https://iwc.int/ship-strikes

THEME 1: RESEARCH AND MONITORING

OBJECTIVE 2: Improve knowledge of abundance / distribution of cetaceans

1.2.1	Support and promote well-designed surveys to provide abundance estimates, and establish distribution, range and habitat information for cetacean species in the Pacific islands region. Provide information to SPREP Members. (i)	SPWRC, Partners, SPREP
1.2.2	Consider the use of remote sensing (e.g. hydrophones, gliders, satellites) to detect whales and dolphins in the region. Promote the use of cetacean remote sensing systems. (ii)	SPREP, Partners
1.2.3	Conduct and support surveys to contribute to an inventory of whale and dolphin species. (iii)	SPREP, Partners, Members
1.2.4	Encourage research on subpopulations of false killer whales and other vulnerable species in the Pacific including assessing genetic distinctiveness to inform the level of risk from industrial fisheries. (iv)	SPREP, SPC, Partners, Members
1.2.5	Assess genetic distinctiveness and isolation of cetacean species and, where appropriate, taxonomic status and implications for threat management and survival. (v)	SPREP, Partners

INDICATORS	TIMEFRAME
i. Surveys for inventory, distribution, abundance, and habitat are supported.	2023
ii. Remote sensing techniques are promoted and a pilot study using remote sensing techniques has been conducted.	2026
iii. An inventory of cetacean species in the Pacific islands region has been published.	2024
iv. Research on false killer whales in the region is contributing to understanding the level of risk from fisheries.	2025
v. Research on genetic distinctiveness of other cetaceans is occurring.	2026

OBJECTIVE 3: Understand critical habitat and migratory pathways

1.3.1	Work to upgrade candidate IMMAs and already identified areas of interest to full IMMA status, in partnership with the IUCN Pacific Islands Regional Committee on IMMAs, and others. (i)	SPREP, Partners, Members

INDICATOR	TIMEFRAME
i. At least one Pacific IMMA candidate site has been confirmed.	2025

OBJECTIVE 4: Understand impact of direct threats on whale and dolphin species

1.4.1	Assess the scale and impact of by-catch and entanglement on cetaceans in all fisheries. (i)	SPREP, Partners, Members
1.4.2	Assess the impact of ongoing drive hunts or other direct take in the region on populations of small cetaceans. (ii)	SPREP, Partners, Members
1.4.3	Consider the importance of social structure of cetaceans in relation to direct threats, such as dolphin drive hunts. (iii)	Partners

INDICATORS	TIMEFRAME
i. The impact of by-catch in fisheries on cetaceans in Pacific island countries and territories has been assessed.	2024
ii. The direct take on populations of cetaceans has been assessed.	2025
iii. The importance of social structure has been included in research on dolphin drive hunts.	2024

THEME 2: CLIMATE CHANGE

OBJECTIVE 1: Identify vulnerability of whales and dolphins to climate change

NUMBER	ACTION	RESPONSIBILITY
2.1.1	In international climate-focused fora, advocate to protect migratory whale foraging grounds in the high latitudes of the Southern Ocean and Antarctica, and suitable breeding habitats in the Pacific. (i)	SPREP, Partners, Members
2.1.2	Assess the potential impacts of climate change on whale and dolphin species, including their migratory pathways and timing of migrations in the Pacific and identify the most at-risk species and populations. (ii)	SPREP, Partners
2.1.3	Undertake detailed risk assessments for whale and dolphin species or populations that are identified as being at high risk from the impacts of climate change and the potential impact on communities, including whale watching economies. (iii)	SPREP, Partners

INDICATORS	TIMEFRAME
i. Whale and dolphin populations that are vulnerable to climate change impacts are identified and habitats are prioritised for protection.	2025
ii. Possible changes to whale distribution or migration pathways are identified and implications for management noted.	2025
iii. Risk assessments for most at-risk species are published and disseminated.	2026

OBJECTIVE 2: Promote the benefits of protecting whale populations to help mitigate climate change

2.2.1	Explore opportunities to support whale protection through climate mitigation funding opportunities. (i)	SPREP, Partners
2.2.2	Promote surveys (using standardised protocols) to estimate the abundance of humpback whales in Pacific island breeding grounds, and integrate carbon sequestration services provided by whales into national considerations for climate change mitigation and adaptation. (ii)	Members, Partners

INDICATORS	TIMEFRAME
i. Opportunities to fund whale protection through climate mitigation have been identified.	2024
ii. Humpback whale surveys are undertaken and there is increased understanding of their carbon sequestration potential and inclusion in climate policies.	2025

THEME 3: ECOSYSTEMS AND HABITAT PROTECTION

OBJECTIVE 1: Protect critical habitat and migratory pathways for whales and dolphins

NUMBER	ACTION	RESPONSIBILITY
3.1.1	Establish further well-managed MPAs that include EEZ-wide whale and dolphin sanctuaries. Pay special attention to IMMAs, management plans, and legislation that prioritise protecting cetaceans and their habitats, including migratory pathways and associated biodiversity. (i) (ii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Further MPAs that include national EEZ-wide sanctuaries and key habitats to protect whales and dolphins are formally designated and established.	2024
ii. A management plan is in place for each established MPA and sanctuary.	2026

THEME 4: THREAT REDUCTION

OBJECTIVE 1: Reduce direct and indirect threats to whale and dolphin populations

NUMBER	ACTION	RESPONSIBILITY
4.1.1	Encourage collaboration between WCPFC, national governments, regional agencies, and researchers to improve data collection on cetacean species interacting with small- and large-scale fisheries. Include collecting genetic samples and analysing photos to improve species identification. (i)	SPREP, SPC, FFA, FAO, Members, Partners
4.1.2	Foster partnerships to trial and deploy suitable mitigation methods relating to cetacean interactions with fishing gear. (ii)	SPREP, SPC, FFA, Members, Partners
4.1.3	Work with local communities to develop management plans for traditional hunting, and encourage alternative livelihood options to reduce or eliminate cetacean by-catch and directed takes. (iii)	Members
4.1.4	Collaborate with international organisations such as FAO, IWC, CMS, Marine Stewardship Council (MSC), and the International Seafood Sustainability Foundation (ISSF) to provide technical advice and support for reducing cetacean by-catch. (iv)	SPREP

INDICATORS	TIMEFRAME
i. Management options are informed by improved information on cetacean species interactions with fisheries.	2026 and ongoing
ii. Suitable mitigation methods for cetaceans are identified and implemented across fishing fleets.	2026
iii. A collaborative management plan is developed and implemented for traditional hunting and alternative livelihood options are identified in consultation with communities.	2026
iv. Collaborations are providing technical advice to reduce by-catch.	2026

THEME 5: CULTURAL SIGNIFICANCE AND VALUE

OBJECTIVE 1: Recognise the value of traditional knowledge, customs, and marine tenure, and ensure it is incorporated into management

NUMBER	ACTION	RESPONSIBILITY
5.1.2	Encourage socio-cultural research into traditional knowledge and cultural practices relating to dolphin drive hunts, to underpin future research and management approaches. (i)	SPREP, Members, Partners
5.1.3	Collaborate with regional voyaging societies and other cultural groups to promote traditional knowledge related to the conservation and management of whales and dolphins and enhance data collection from traditional sailing vessels. (ii)	Members, Voyaging Societies of the Cook Islands, Fiji, French Polynesia, New Zealand, Okeanos Foundation, Samoa, Tonga.

INDICATORS	TIMEFRAME
i. Socio-cultural research into cultural practices relating to dolphin drive hunts has taken place in one country or territory.	2024
ii. At least one project or initiative has been undertaken in collaboration with regional voyaging societies and other cultural groups in at least one SPREP Member country or territory.	2024

THEME 6: LEGISLATION, POLICY AND MANAGEMENT

OBJECTIVE 1: Review legal, policy, and institutional frameworks for protecting whales and dolphins

NUMBER	ACTION	RESPONSIBILITY
6.1.1	Ensure effective conservation and management of whales and dolphins by: ▪ ensuring integration of whale and dolphin conservation when developing new legislation or policy, including national ocean strategies or reviewing existing legislation ▪ identifying and addressing gaps and inconsistencies related to these species (e.g. between fishery and environment legislation, policy, and MCS gaps). (i)	Members
6.1.2	Respond to country or territory requests for help with developing legal, policy, and institutional frameworks; management or action plans; and legislative measures to implement this whale and dolphin action plan. (ii)	SPREP, Partners
6.1.3	Encourage Pacific island countries and territories to develop national whale and dolphin action plans, sanctuary management plans, and marine mammal regulations. (iii)	Members, Partners
6.1.4	Prohibit the live capture of dolphins. (iv)	Members

INDICATORS	TIMEFRAME
i. SPREP Members have enacted new or updated legislative and policy measures to conserve and manage whales and dolphins.	2026
ii. SPREP has helped to develop legal, policy, and institutional frameworks; management or action plans; and legislative measures, where requested.	Ongoing
iii. National action plans have been developed for whales and dolphins.	2026
iv. Legislation prohibiting the live capture of dolphins is in place.	2024

THEME 7: ECOTOURISM AND LIVELIHOODS

OBJECTIVE 1: Ensure whale and dolphin tourism is developed sustainably and conducted responsibly, with minimum impact and maximum scientific, education, and economic returns

NUMBER	ACTION	RESPONSIBILITY
7.1.1	Document and share lessons learned from Pacific whale and dolphin-watching industries at regional meetings and international fora. Collaborate with the IWC Whale Watch Sub-Committee, the South Pacific Tourism Organisation, and others. (i)	SPREP, Partners, Members
7.1.2	Encourage whale watch operators and other platforms of opportunity to carry researchers to record, or themselves record, sightings and identification features of cetaceans (e.g. tail fluke photos) and share them in appropriate archives (e.g. Happywhale.[71] (ii)	SPREP, Partners, Members
7.1.3	Review the Pacific Islands Regional Guidelines for Whale and Dolphin Watching[66] to ensure relevance and promote sustainability. (iii)	Partners, SPREP
7.1.4	Encourage annual pre-whale-watching season, national and local stakeholder meetings and training (government, industry, scientists, NGOs) to assess management of the whale watch industry. (iv)	Members, Partners
7.1.5	Encourage appropriate levels of licensing and permits, as a tool for managing and developing industry training and certification programmes. (v)	Members, Partners
7.1.6	Help countries to develop national regulations in line with the SPREP-endorsed regional guidelines for whale and dolphin watching. (vi)	SPREP, Partners
7.1.7	Continue to assess the potential impacts and localised effects on whales and dolphins from cetacean-oriented tourism activities, including swim-with activities. (vii)	SPREP, Partners, Members
7.1.8	Encourage land-based whale watching and non-swimming marine tourism opportunities as a potentially lower-impact alternative. (viii)	SPREP, Members

INDICATORS	TIMEFRAME
i. A Pacific case study on whale and dolphin watching industries has been presented at regional or international fora.	2024
ii. Research is being undertaken on whale watch vessels	2024
iii. The Pacific Islands Regional Guidelines for Whale and Dolphin Watching[66] have been reviewed.	2024
iv. National and local stakeholder meetings and training have been conducted in advance of whale watching seasons.	2023
v. National regulations for whale and dolphin ecotourism operations have been developed or reviewed as appropriate.	2023
vi. SPREP Member countries and territories have implemented licensing or permit programmes for whale-watching entities, which include an industry training and / or certification programme requirement.	2023
vii. Members have adopted or updated national whale watch regulations in line with the SPREP-endorsed regional guidelines.	2023
viii. Whale watch operators have reported multiple humpback sightings to a citizen science platform, such as Happywhale.[71]	2024

THEME 8: CAPACITY BUILDING AND COLLABORATION

OBJECTIVE 1: Increase in-country expertise and capacity for conserving and sustainably managing cetaceans

NUMBER	ACTION	RESPONSIBILITY
8.1.1	Compile an online database of potential partners with existing best practice policies, guidelines, and educational materials, overlapping goals, and potential resources, including trainers. The purpose of the database is to help Members with capacity building efforts on common regional priorities (including training in stranding response, necropsy, disentanglement, species identification, whale watching protocols, and MCS). (i)	SPREP
8.1.2	Identify, develop, and distribute training packages, e.g. through brochures and videos. (ii)	SPREP, Partners
8.1.3	Undertake regional strandings and disentanglement and database training using experts, including IWC, and online strandings training resources, such as the Global Marine Animal Stranding Training Toolkit[74] and support from the IWC Expert Advisory Panel on Entanglement Response[75] and its resources. (iii)	SPREP, Partners, Members, IWC
8.1.4	Distribute stranding and disentanglement kits with necessary resources for collecting and storing tissue samples from necropsies. (iv)	SPREP, Partners, Members, IWC
8.1.5	Develop a regional training template (consisting of industry training and certification programmes) for whale-watching operators and guides / stakeholders, e.g. the New Zealand SMART Operator Programme.[76] Ensure the template aligns with the SPREP-endorsed Pacific Islands Regional Guidelines for Whale and Dolphin Watching[66] and best practice IWC Whale Watching Handbook.[67] (v)	SPREP, Partners
8.1.6	Conduct MCS training workshops to increase national compliance of whale watch operators with whale watch guidelines and regulations. (vi)	SPREP, Members
8.1.7	Encourage Non-Party Members to join CMS and the Pacific Islands Cetaceans MOU.[4] (vii)	SPREP, Members

INDICATORS	TIMEFRAME
i. An online up-to-date list of partners with potential resources to help with prioritised capacity building efforts is live on SPREP website.	2022
ii. Training packages in stranding response, necropsy, disentanglement, species identification, whale watching protocols, and MCS have been developed and distributed.	2023
iii. Training sessions and workshops on species identification, stranding prevention and response, and disentanglement have been undertaken for relevant stakeholders.	2024
iv. Regional stranding booklets and stranding and disentanglement kits with necessary resources for sampling and necropsies have been provided to SPREP Members.	2024
v. A regional training template for whale watch operators, guides, and stakeholders has been agreed by SPREP Members.	2023
vi. Workshops have been conducted in the Pacific islands region for national MCS of whale watch guidelines and regulations.	2024
vii. Non-Party Members have been encouraged to join CMS, and a workshop on the value of becoming a Member of the Pacific Islands Cetacean MOU has been held.	2024

74 WHOAS. Global marine animal stranding training toolkit [Internet]. WHOAS; [accessed 2022 Feb 6]. https://darchive.mblwhoilibrary.org/handle/1912/8695

75 International Whaling Commission. The IWC expert advisory panel on entanglement response [Internet]. IWC; [accessed 2022 Mar 2]. https://iwc.int/entanglement-response-network

76 Department of Conservation. SMART operator programme [Internet]. New Zealand: Department of Conservation; [accessed 2022 Feb 6]. https://www.doc.govt.nz/our-work/smart-operator-programme/

OBJECTIVE 2: Increase national, regional, and international collaboration and partnership for conserving and managing whales and dolphins

NUMBER	ACTION	RESPONSIBILITY
8.2.1	Help Pacific island countries and territories to become involved in relevant international (e.g. IWC) and regional meetings and initiatives for whale and dolphin conservation. (i)	SPREP, Members, Partners
8.2.2	Develop partnerships / relationships with relevant organisations (such as WCPFC, fishing and tourism industries, and NGOs) to reduce threats such as marine debris and by-catch, and maximize management and science objectives for whales and dolphins. (ii)	SPREP, Members, Partners

INDICATORS	TIMEFRAME
i. Pacific island countries and territories are involved in international and regional meetings and initiatives relating to whale and dolphin conservation.	Ongoing
ii. New partnerships are working to reduce threats to whales and dolphins.	Ongoing

THEME 9: EDUCATION, AWARENESS, AND COMMUNICATION

OBJECTIVE 1: Improve awareness and understanding of the importance of conserving whales and dolphins and relevant conservation issues

NUMBER	ACTION	RESPONSIBILITY
9.1.1	Celebrate World Whale Day on the third Sunday in February and / or hold an annual 'Welcome the Whales' festival at the start of the whale season (June). (i)	All

INDICATOR	TIMEFRAME
i. An annual whale celebration event has become a focal point for education and promoting conservation.	2024 then annually

Mother and calf humpback whale observed by the 'Maryvonne' whale watching boat in the South lagoon of New Caledonia. © Claire Garrigue – Opération Cétacés

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