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Conservation strategy for dugongs and seagrass habitats in Solomon Islands

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WorldFish

Conservation strategy for dugongs and seagrass habitats in Solomon Islands

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The NFC would like to congratulate the MFMR for passing the Fisheries Management (Prohibited Activities) Regulations 2018 to ensure that this vulnerable species is now legally protected in Solomon Islands.

Project: Dugong & Seagrass Conservation Project

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Foreword

It gives us great pleasure to present the Solomon Islands Conservation Strategy for Dugongs and Seagrass Habitats.

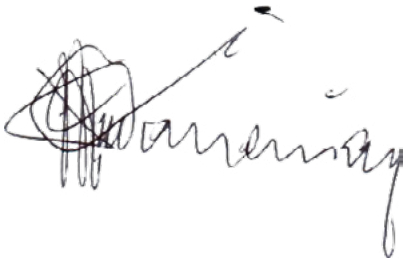
Dugongs have attracted regional and international attention because of their declining population status. In addition, seagrass habitats have received global recognition for their ecological significance and their direct relationship as food for a variety of species including dugongs. In recognizing the need to protect these marine resources in Solomon Islands, the government is committed to ensuring that appropriate legal and policy frameworks are in place. To protect dugongs, the Ministry of Fisheries and Marine Resources (MFMR) has listed them in the Fisheries Management (Prohibited Activities) Regulation 2018 as a protected mammal. Furthermore, the national law on Wildlife Protection and Management lists dugongs as a "Prohibited Species" from any wildlife trade. Additionally, this strategy reinforces national responsibilities toward protecting dugongs and their habitats.

The Solomon Islands National Facilitating Committee of the Dugong and Seagrass Conservation Project (DSCP) led the development of this strategy with the support and guidance of the two lead government agencies, the MFMR and the Ministry of Environment, Climate Change and Disaster Management (MECDM). The inclusion of key government agencies and partners in developing the strategy demonstrates strong ownership of the process and future implementation.

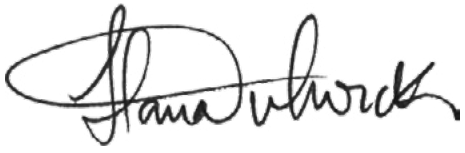
This strategy provides direction for implementation of priority actions that are necessary for achieving effective conservation and management of dugong and seagrass habitats. It complements the Fisheries Management Act 2015 and the Wildlife Protection and Management Act (2017) ensuring sustainability of the resources. It also highlights the government's commitment to continue to collaborate with international and national partners and communities in ensuring dugongs and healthy seagrass meadows are available for the future generations.

We take this opportunity to thank the DSCP, executed by the Mohamed bin Zayed Species Conservation Fund (MbZSCF) with financing from the Global Environment Facility (GEF), supported by the United Nations Environment Program (UN Environment) and technical support from the Convention on the Conservation of Migratory Species (CMS) Dugong MOU Secretariat, for the financial support rendered for the development of this policy. Our sincere appreciation goes to WorldFish for leading the development of the strategy, and for the collaborative efforts of government ministries, as well as support from international and local nongovernmental organizations, community-based organizations and national institutions.

Finally, let us continue working together for the protection of our dugongs and seagrass to benefit all Solomon Islanders now and into the future.



Honorable John Maneniaru
Minister of Fisheries and Marine Resources



Honorable Dr. Cullwick Togamana
Minister of Environment, Climate Change, Disaster Management and Meteorology

Vision and goal

Vision

The inshore fisheries regulation is enforced, and government, stakeholders and communities are working together to protect dugongs and safeguard healthy seagrass habitats.

Goals

The goals of the Conservation Strategy for Dugongs and Seagrass Habitats in Solomon Islands are to outline the following set of priority actions:

1. Build knowledge and reduce information gaps on dugongs and seagrass.
2. Raise public awareness on dugongs and seagrass in order to ensure protection in the wild and highlight their ecological and cultural significance.

Photo credit: Brian Fenl

Introduction

Dugongs

The dugong (*Dugon dugon*) is a seagrass community specialist that inhabits warm coastal waters in the tropical and subtropical Indo-West Pacific (Marsh et al. 2011). Dugongs, like their freshwater cousins the manatees, are the only strictly herbivorous marine mammal in the world. For thousands of years, dugongs have been hunted for their meat and oil. Today, hunting still occurs in areas around northern Australia and the Pacific Islands (Delisle et al. 2018). Dugongs feed exclusively on seagrass. Therefore seagrass and dugong conservation must go hand in hand.

The dugong is widely distributed in Solomon Islands, but its population size remains unknown (Bass 2010; Marsh 2002). In a recent Conservation of Migratory Species (CMS) standardized dugong catch/bycatch survey, carried out in 2017, in 47 select communities in six provinces, 59% of respondents indicated sightings of dugongs during the past year. Temotu Province was not a part of this survey, but anecdotal reports indicate there is a small dugong population in Vanikoro (SICCP unpublished data).

DUGONG FACTS

- Dugongs are seagrass specialists, uprooting whole plants when accessible but feeding only on leaves when the whole plant cannot be uprooted.
- They live in warm coastal waters that support seagrass meadows, usually at a depth of about 10 m but descending as far as 39 m.
- They are spread across some 40 countries from the tropical to subtropical Indo-West Pacific waters.
- Dugongs are shy animals with poor eyesight, relying on smell and tactile senses.
- They reach sexual maturity between 7 and 17 years of age.
- Females have a gestation period of 13–15 months and give birth only a few times in their lifetime.
- Babies are born in shallow waters and measure approximately 1.2 m long and weigh 30 kg. Mothers nurse calves for 14–18 months after birth.

Seagrass

Seagrass is a vital ecosystem service provider that supports high biodiversity. Sixty seagrass species have been recorded worldwide. However, these productive meadows are being degraded, with 29% of the world's seagrass habitat already lost, and the remaining areas reportedly rapidly disappearing and degrading (Orth et al. 2006; Waycott et al. 2009; Cullen-Unsworth et al. 2014).

Green et al. (2006) reported 10 seagrass species in Solomon Islands during a Rapid Ecological Assessment (REA). Extensive areas of seagrass are found in Roviana Lagoon (Western Province), Lau Lagoon and Small Malaita (Malaita Province), Tatamba (Isabel Province) and Wagina Island (Choiseul Province) (Green et al. 2006).

SEAGRASS FACTS

- Seagrass is a group of flowering plants that grow underwater.
- It provides critical shelter and nursery areas for fish and other marine animals.
- It is an important food source for a number of grazing animals, like dugongs and green turtles.
- Seagrass prevents erosion because of its rhizomes and root-binding sediment.
- It also filters harmful nutrients and sediment pollution from coastal waters.
- Seagrass has a positive interaction with mangroves and coral reefs. This means that these systems have a stabilizing effect on the environment.
- It slows water movement, causing suspended sediment to fall out and thereby benefiting corals by reducing sediment loads in the water (Green et al. 2004).

Importance of dugongs and seagrass in Solomon Islands

Cultural significance of dugongs

Solomon Islands is rich in cultural diversity, which is manifested in its languages and expressed in songs, custom stories, dances and societal taboos. For some people, dugongs are considered a "taboo" animal, which is neither consumed nor captured but is sacred for certain groups of families or tribes. For instance, some tribes in Lau Lagoon and West Guadalcanal prohibit to kill or even touch the animal.

Dugongs play important roles in coastal marine ecosystems. Their grazing on seagrass contributes to nutrient cycling and energy flow as they stir up sediment (Macdonald 2011). The grazing also helps to maintain the reef area from algal bloom.

Lau Lagoon case study

Lau Lagoon is located on the north coast of Malaita Province. The lagoon harbors the largest seagrass meadow in Solomon Islands. Numerous artificial islands dot the Lau coastline. Some tribes in Lau Lagoon consider dugongs sacred animals. People tell the story of a women named Faifu, who was badly treated by her mother-in-law. One day, Faifu could no longer bear the insults. She asked her husband and son to meet her after 7 days at the seaside and then jumped into the water. One week later, the father and young boy were waiting for Faifu. At noon, she appeared in the form of a dugong, and from then on would live in the sea. Since then, many people in Lau Lagoon will not hunt or eat dugongs.

Ecological value of seagrass

Seagrass ecosystems are important to the livelihoods of many coastal communities in Solomon Islands. For example, in Lau Lagoon in North Malaita, the rabbitfish or *mu'u* fishery is a key source of food and income. People are aware of some of the benefits they derive from healthy seagrass ecosystems, especially related to fisheries. Seagrass habitats, however, are less well known than mangroves and coral reefs.

Seagrass meadows are an important carbon sink (Lutz and Martin 2014; Champenoise et al. 2012; Macreadie et al. 2014).

Threats to dugongs and seagrass

The fact that dugongs are dependent on nearshore, shallow habitats, as well as their slow reproduction rates, makes them vulnerable to human activities. In Solomon Islands, hunting dugongs has contributed to a diminished population. Other contributing factors include by-catch incidences and the use of destructive fishing practices.

Hunting

In Solomon Islands, dugongs are culturally significant as a ceremonial food. In the past, some parts of the country supplied dugong meat as a delicacy for feasts, cultural events and festivals. Fishers will opportunistically kill dugongs either for food or commercial gain.

In early 2017, targeted killings of dugongs were reported in Gizo, Western Province, for the purpose of selling dugong meat. Selling dugong meat has been reported at some Honiara-based market outlets (White River market). Since there were no clear legal measures in place to deal with the selling of dugong meat, authorities could not take actions to contain the opportunistic hunters from catching, killing and selling of dugong.

The CMS recently conducted a standardized dugong catch/by-catch survey, and preliminary findings showed that 48% of respondents said nearby villages had been hunting dugongs, while 34% admitted their own villages had hunted dugongs. Regarding intentional capture, 69% of respondents stated it was primarily for consumption, followed by selling dugong meat (26%). Only 33% of respondents released the mammal alive if caught accidentally.

Seagrass loss and degradation

Increased sedimentation associated with runoff from land-based activities (logging, coastal developments and agricultural activities) and population growth has resulted in the loss of seagrass meadows. The Nature Conservancy (TNC) carried out the most recent marine assessment, in 2004, which showed that seagrass habitats were disturbed by factors—such as wave action, nutrient availability, presence of water pooling, sedimentation, reef depths—that varied between regions and between seasons (Green et al. 2006). At the national level, no data is available that shows the extent of seagrass habitat loss.

Healthy seagrass is often low in areas of high disturbance, polluted waters, high sedimentation and runoff because of upland activities. Unexpected flooding events reportedly place significantly more stress on dugongs, as large volumes of sediment, contaminants and debris flush into estuaries, bays and reef areas.

Turbidity in open water and reef areas is common in coastal areas and is often caused by human activities such as construction, logging, agriculture, mining and boat traffic. Anecdotal reports from some parts of Solomon Islands suggest pollution (through turbid waters) has reduced the distribution of seagrass meadows.

Survey team plus community rep assisting carrying out the data collection and recording under water.

Policy and legal protection

Solomon Islands is a signatory of the Memorandum of Understanding (MOU) on the conservation and management of dugongs and their habitats for the CMS (Bonn Convention), which commits the country to ensure a favorable conservation status for dugongs and their seagrass habitats. In August 2018, the Fisheries Management (Prohibited Activities) Regulations 2018 came into effect. Under this regulation the fishing, retaining, possession, buying and selling of dugongs is prohibited. It is punishable through a 40,000 Solomon Islands Dollar penalty unit fine, or four months imprisonment, or both. Prior to this regulation, the Fisheries Amendment Bill 2015, the Environment Act 1998, the Wildlife Management and Protection Act (1998) and the Protected Areas Act 2010 existed but did not specifically protect dugongs.

Dugongs are protected internationally and regionally through a number of instruments. With substantial subpopulations of dugongs remaining in northern Australia and Papua New Guinea, the species is classified as "Vulnerable" on the International Union for Conservation of Nature (IUCN) Red List (Marsh and Sobtzick 2015) and is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Regionally concerted efforts for the protection, management and conservation of dugongs and seagrass habitats are covered under multilateral programs. In the Pacific, the Secretariat of the Pacific Regional Environment Program (SPREP) drafted the Pacific Islands Marine Species Program 2018–2022 with the Dugong Action Plan. The dugong is identified as a target species in the Regional Plan of Action of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), but it is not included in the Solomon Islands National Plan of Action (NPoA 2010) with its overarching community-based resource management (CBRM) central approach.

Photo credit: Ronnie Posala/WorldFish

Survey team debriefing before actually going out to sea.

Key Legislation	Content
Fisheries Management Regulations 2018 under the Fisheries Management Bill 2015	Section 5 schedule 4: Prohibits fishing for and retaining, possessing, selling, buying or exporting dugongs. The punishment is a 40,000 penalty unit or 4 months imprisonment, or both.
Wildlife Management and Protection Act (No. 10 of 1998)	Provides protection, conservation and management of wildlife.
Environment Act (No. 8 of 1998)	Makes provision for and establishes integrated systems of development control, environmental impact assessment and pollution control. Also prevents, controls and monitors pollution.
Protected Areas Act 2010	Establishes systems of protected areas and measures to rehabilitate and restore degraded ecosystems, and also promotes the recovery of threatened species, including through the development and implementation of plans and other management strategies.
UNCBD	Promotes the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings.
IUCN Red List	Sets criteria to evaluate the extinction risk of all species.
Dugong MOU	Ensures the long-term survival of dugongs and seagrass habitats in coastal waters.
CITES	Controls and monitors international trade in specimens of species by imposing strict regulations on all species that are threatened with extinction in order not to further endanger their survival. Under the convention, trading such specimens of species may only be authorized in exceptional circumstances.

Table 1. Key international treaties and national legislation for protecting dugongs.

Existing conservation efforts

In recent years, there have been national and community-based marine conservation initiatives implemented through the Dugong and Seagrass Conservation Project (DSCP) by the Ministry of Fisheries and Marine Resources (MFMR) and the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM), as well as various nongovernmental organizations (NGOs) and community-based organizations (CBOs).

Dugong and Seagrass Conservation Project

In 2016, Solomon Islands began implementing a project called Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs across the Indian and Pacific Ocean Basins—better known as the GEF DSCP. Implemented in eight countries, it was led by the MECDM and MFMR through WorldFish, the Solomon Islands Community Conservation Partnership (SICCP) and the Coastal Marine Management (CM2), and coordinated by the National Facilitating Committee (NFC). The NFC consisted of the implementing partners mentioned above together with the World Wide Fund for Nature (WWF) and the Critical Ecosystems Partnership Fund (CEPF). The scope of work involved undertaking the CMS standardized dugong catch/by-catch survey, seagrass mapping activities, local and national awareness raising programs on dugong and seagrass habitats and providing strategic and policy recommendations to the government.

Tetepare Descendants Association

Tetepare Island in Western Province was one of the implementation sites of the DSCP, supported by the Mohamed bin Zayed Species Conservation Fund, in Solomon Islands. The island was designated a conservation area by its hereditary landowners who formed the Tetepare Descendants Association (TDA) in 2002 to conserve and manage the island and its natural resources. As part of its management activities, the TDA has a resource monitoring regime, which collects information on coral reefs, trochus, coconut crabs, giant clams and seagrass habitats. Dugongs frequent the Tetepare waters, and those that forage inside the Tetepare Marine Protected Area (MPA) are a source of attraction for paying guests at the Tetepare Eco-lodge.

Themes, objectives and actions

MFMR and MECDM are central agencies for leading implementation and facilitating actions. Additionally they will jointly lead oversight and coordination. Potential stakeholders including NGOs and academia will be identified for each activity and brought in as necessary for implementation.

Theme 1. Legislation and enforcement	
Summary: Dugongs are protected under the Fisheries Management (Prohibited Activities) Regulations 2018. It is now prohibited to fish for, retain, be in possession of, buy and sell dugongs. It is punishable through a SBD 40,000 fine, or four months imprisonment, or both.	
Objective: To ensure that people in the Solomon Islands are aware of the new Fisheries Management (Prohibited Activities) Regulations 2018.	
Alignment: SPREP Regional Action Plan for Dugongs 2018–2022, Theme 4: Objective 1 (4.4).	
Actions	**Priority**
Develop a communications strategy for the Fisheries Management (Prohibited Activities) Regulations 2018.	High
Increase awareness of law enforcement personnel—including the RSIPF, customs, immigration, SIELA, churches, compliance officers of the MECDM and MFMR and provincial fisheries officers (PFOs)—on the regulations and clarify responsibilities, particularly for PFOs, in enforcement.	High
Establish the Inshore Fisheries Compliance Unit within the MFMR.	High
Establish a mechanism for reporting illegal activities and a clear protocol for the compliance personnel.	High

Theme 2. Education and awareness	
Summary: Raise awareness and share information about the importance of dugongs and their habitats, with an emphasis on raising the cultural and ecological profile of the mammal.	
Objective: To inform and promote public awareness and education through targeted and specific awareness programs with a focus on the cultural significance and the importance of seagrass habitats.	
Alignment: SPREP Regional Action Plan for Dugongs 2018–2022, Theme 5: Objective 1.	
Actions	**Priority**
Develop a dugong and seagrass information toolkit for practitioners.	High
Develop an awareness raising strategy for dugongs and seagrass for communities that includes • incorporating cultural values of the mammal • developing awareness material and disseminating plans to communities, schools, clinics, institutions and provincial networks • look-and-learn exchange visits • media programs	High
Implement the awareness raising strategy, liaising with established provincial networks.	High

Theme 3. Research and monitoring	
Summary: Information on dugong and seagrass ecology is available, but dugong population and distribution (as well as seagrass) remain unknown. Nationally, seagrass management is of low priority, so little attention is directed to its research.	
Objective: To improve our local understanding of dugong populations and seagrass habitats through research and monitoring.	
Alignment: SPREP Regional Action Plan for Dugongs 2018-2022, Theme 2: Objective 2 (3.5).	
Actions	**Priority**
Establish a monitoring program of seagrass and mangrove ecosystem health, linked to existing regional/global monitoring programs (e.g. Seagrass-Watch, www.seagrasswatch.org) for monitoring health status, climate change/sea level rise impact and the effects of sedimentation.	
Build a seagrass monitoring program with the Solomon Islands National University (SINU) and engage students and staff.	
Continue to implement CMS data collection to determine dugong population distribution baseline.	High
Conduct remote-sensing mapping of seagrass habitats.	High
Determine critical "hotspots" for dugong and seagrass management.	High
Liaise through NGO and academic networks, inviting students to participate in researching • the importance, ecology and dynamics of coastal fisheries (e.g. rabbit fish), which seagrass/mangrove ecosystems support • dugong-seagrass distribution • the effect of land-based developments and sedimentation on seagrass habitats • the movement and familial patterns by conducting dugong tagging and DNA tagging.	Medium
Develop or align to the existing national database for the storage of information and data collected in the research program.	High

Theme 4: Knowledge and skills	
Summary: Local capacities were built during the DSCP. This theme focuses on capitalizing upon existing national expertise and continuing technical capacity building.	
Objectives: To build local capacity for strengthening dugong and seagrass management/conservation.	
Alignment: SPREP Regional Action Plan for Dugongs 2018–2022, Theme 3: Objective 1(3.1).	
Actions	**Priority**
Establish a national Seagrass Watch Resource Group, building its capacity to train others.	High
Establish monitoring sites around the country where trained community members can collect seagrass monitoring data and link efforts to the global Seagrass Watch team.	Medium

Theme 5: Partnerships, networking and coordination	
Summary: Partnerships and networking are critical to efforts for conserving dugongs and seagrass habitats.	
Objective: To link to regional and international networks to ensure collaboration and learning with the global community.	
Alignment: SPREP Regional Action Plan for Dugongs 2018–2022, Theme 3: Objective 2 (3.5). SPREP Regional Action Plan for Dugongs 2018–2022, Theme 3: Objectives 1 and 2; Theme 4: Objective 1	
Actions	**Priority**
Engage the Ministry of Culture and Tourism and the Solomon Visitors Bureau.	Medium
Seek endorsement for the NFC membership to form a technical advisory body for the CTI-CFF threatened species working group.	High
Encourage participation from technical experts in the country at global conferences and networks, including community members.	Medium
Strengthen partnership with SPREP on the SPREP Dugong Action Plan.	High
Following the lead of the MECDM and MFMR, identify funding opportunities for the implementation of the strategy actions, encouraging community groups to apply.	High

Technical advice

As described in Section 5.1, the NFC was set up to coordinate and advise on the implementation of activities under the DSCP. To ensure the sustainability of the NFC, a key recommendation is to have the NFC or a similar mechanism brought in under the CTI-CFF's National Coordinating Committee (NCC) (as per Theme 5 Action). This group would provide technical advice specifically for Theme 5 in the Regional Plan of Action on Threatened Species. This was a recommendation to the NCC in May 2018.

Monitoring and evaluation

The MFMR and MECDM will jointly lead oversight and coordination of national implementation. They will foster partnerships and collaborations for financial and technical support for implementing, monitoring, evaluating and reporting on the status of the strategy (State of the Environment (SOE), annual reports, etc.). A monitoring and evaluation framework will need to be developed as part of ongoing assessments.

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