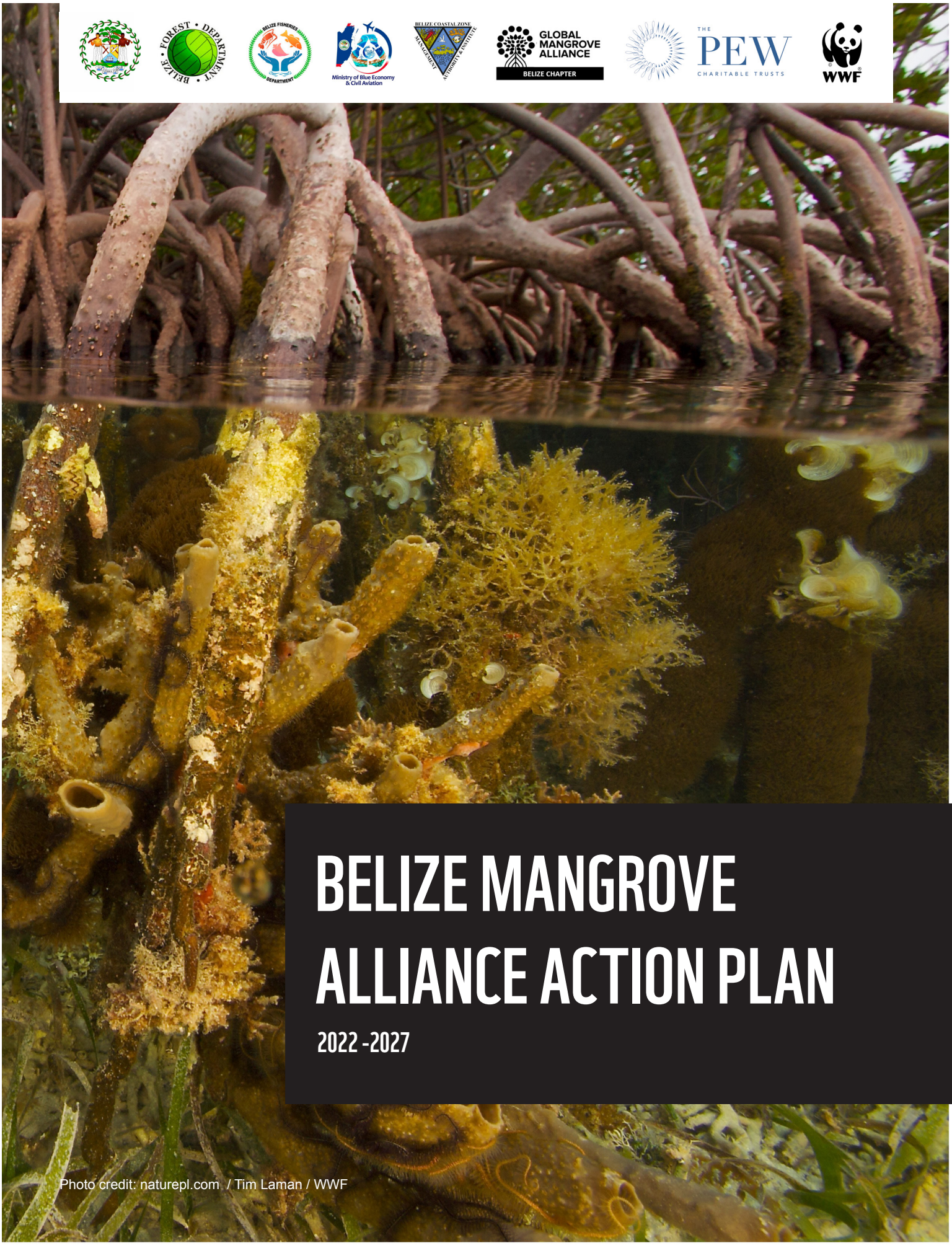

BELIZE MANGROVE ALLIANCE ACTION PLAN

2022 -2027

Photo credit: naturepl.com / Tim Laman / WWF

BELIZE MANGROVE ALLIANCE

ACTION PLAN

2022 – 2027

Created by: Wildtracks, 2022

This Action Plan was created through the generous support of The Pew Charitable Trust and the DWS Group

Photo credit: naturepl.com / Tim Laman / WWF

TABLE OF CONTENTS

ACRONYMS	4
ACKNOWLEDGEMENTS	4
BMA ACTION PLANNING PARTICIPANTS	5
EXECUTIVE SUMMARY	6
1. THE NATIONAL CONTEXT	8
2. THE GLOBAL MANGROVE ALLIANCE	14
3. DEVELOPING THE BMA ACTION PLAN	17
4. THE BMA ACTION PLAN	21
5. MONITORING AND EVALUATION	32
REFERENCES	36

ACRONYMS

BELAPS	Belize Electronic Licenses and Permits System
BMA	Belize Mangrove Alliance
BMF	Belize Marine Fund
MAR	Mesoamerican Reef
NDC	Nationally Determined Contribution
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organization
NPAPSP	National Protected Areas Policy and System Plan
NPAS	National Protected Areas System Plan
SDG	Sustainable Development Goals
ToC	Theory of Change
UB	University of Belize
WWF	World Wildlife Fund

ACKNOWLEDGEMENTS

Thank you to all those who participated in the workshops during the development of this Action Plan – for sharing your thoughts on the status of mangroves in Belize and the pressures they are facing…and how the Belize Mangrove Alliance may contribute to national initiatives to improve conservation, protection and sustainable use. This Action Plan was made possible through the support of the World Wildlife Fund, The Pew Charitable Trust and DWS Group.

BMA ACTION PLANNING PARTICIPANTS

Chris Summers	ACES Wildlife Rescue
Dominique Lizama	Belize Audubon Society
Angeline Valentine	Belize Marine Fund
Abil Castaneda	Belize Tourism Board
Jen Chapman	Blue Ventures
Josh Borland	Blue Ventures
Addiel Perez	Bonefish Trust
Allie Ifield	Caye Caulker Strong
Marisa Tellez	Crocodile Research Coalition
Dassia Regalado	Crocodile Research Coalition
Jane Champion	Crocodile Research Coalition
Vivian Belisle-Ramnarace	Fisheries Department
Minerva Gonzalez	Forest Department. Landscape Restoration Desk
Victoria Cawich	Forest Department
Lisa Carne	Fragments of Hope
Marcial Alamina III	Friends of Swallow Caye
Sherry Gibbs	Galen University
David Hilmy	KEEP, Sittee River
Jamal Andrewin-Bohn	MarAlliance
Emilie Gomez	Ministry of Blue Economy of Civil Aviation
Shantel Espadas	Ministry of Blue Economy and Civil Aviation
Jané Salazar Mcloughlin	Ministry of Blue Economy and Civil Aviation
Stewart Krohn	Naia Resort and Residences
Kamil Salazar	National Climate Change Office
Joel Verde	Sarteneja Alliance for Conservation and Development
Rina Miss	Southern Environmental Association
Leomir Santoya	Sarteneja Alliance for Conservation and Development
Honorio Santos	Sarteneja Alliance for Conservation and Development
Abisai Verde	Sarteneja Alliance for Conservation and Development
Roberto Pott	The Nature Conservancy
Edgar Deleon	Three Lagoons Sustainability Project
Flor Deleon	Three Lagoons Sustainability Project
Alex Anderson	Turneffe Atoll Trust
Virginia Burns Perez	Turneffe Atoll Sustainability Association
Eliceo Cobb	Turneffe Atoll Sustainability Association
Maria Vega	VEGA
Ralna Lamb	Wildlife Conservation Society
Diveana Samos	Wildtracks
Zoe Walker	Wildtracks
Nadia Bood	World Wildlife Fund
Juliet Neal	World Wildlife Fund
Carolyn Henri	
Emily Roberts	

EXECUTIVE SUMMARY

Mangroves are recognized in Belize for their important role as a nature-based solution to climate change, providing critically important ecosystem services that include shoreline protection from erosion and tropical storms and important nurseries for commercial fish species that support fisher livelihoods. Despite their recognized importance, mangroves have also been one of the least represented ecosystems in the National Protected Areas System. In 2019, approximately 12,800 ha of mangrove were under protection – only 16.6% of the total mangrove coverage in Belize. Considering the high value and importance placed on this ecosystem, and the increasing pressures it faces, there is a recognized need to increase focus on ensuring its long-term viability.

The World Wildlife Fund has a long history of championing mangrove conservation in Belize, raising the visibility of mangroves at national level and engaging stakeholders across the country in the protection and restoration of this critical ecosystem. As part of its efforts, it is facilitating the establishment of the Belize Mangrove Alliance (BMA) as a national chapter of the Global Mangrove Alliance, a collaboration that seeks to bring together NGOs, governments, scientists, industry, local communities, and funders towards a common goal of 'increasing the global area of mangrove habitat through conservation, restoration and equitable management.'

The BMA is conceived as a collaborative alliance of national organizations, civil society, key public sector organizations, local communities, and academic institutions in Belize, with a focus on using collective strengths and partnerships to address the need for improved mangrove conservation, protection, restoration and sustainable use. It will also provide a platform for discussion of blue carbon accounting, and blue-green investments in mangrove systems.

This collaborative five-year Belize Mangrove Alliance Action Plan is aligned with national and global commitments goals and targets. It has been developed through broad stakeholder consultation to identify areas of influence and intervention that BMA members consider important to address if the status of mangroves in Belize is to be improved, towards achieving the following desired impact:

Five key strategic thematic areas were identified to frame the strategy:

1. Strengthened legislative and policy framework for protection of mangrove values
2. Reduced illegal clearance of mangroves
3. Engaged and informed general public
4. Successful mangrove restoration and protection
5. Reduced contamination in the watershed

In addition to the strategic activities identified under the five thematic areas, the Action Plan also recognizes the need for BMA to have effective coordination of collaborative implementation of the Action Plan, and to ensure BMA members remain informed, involved, and committed.

THE NATIONAL CONTEXT

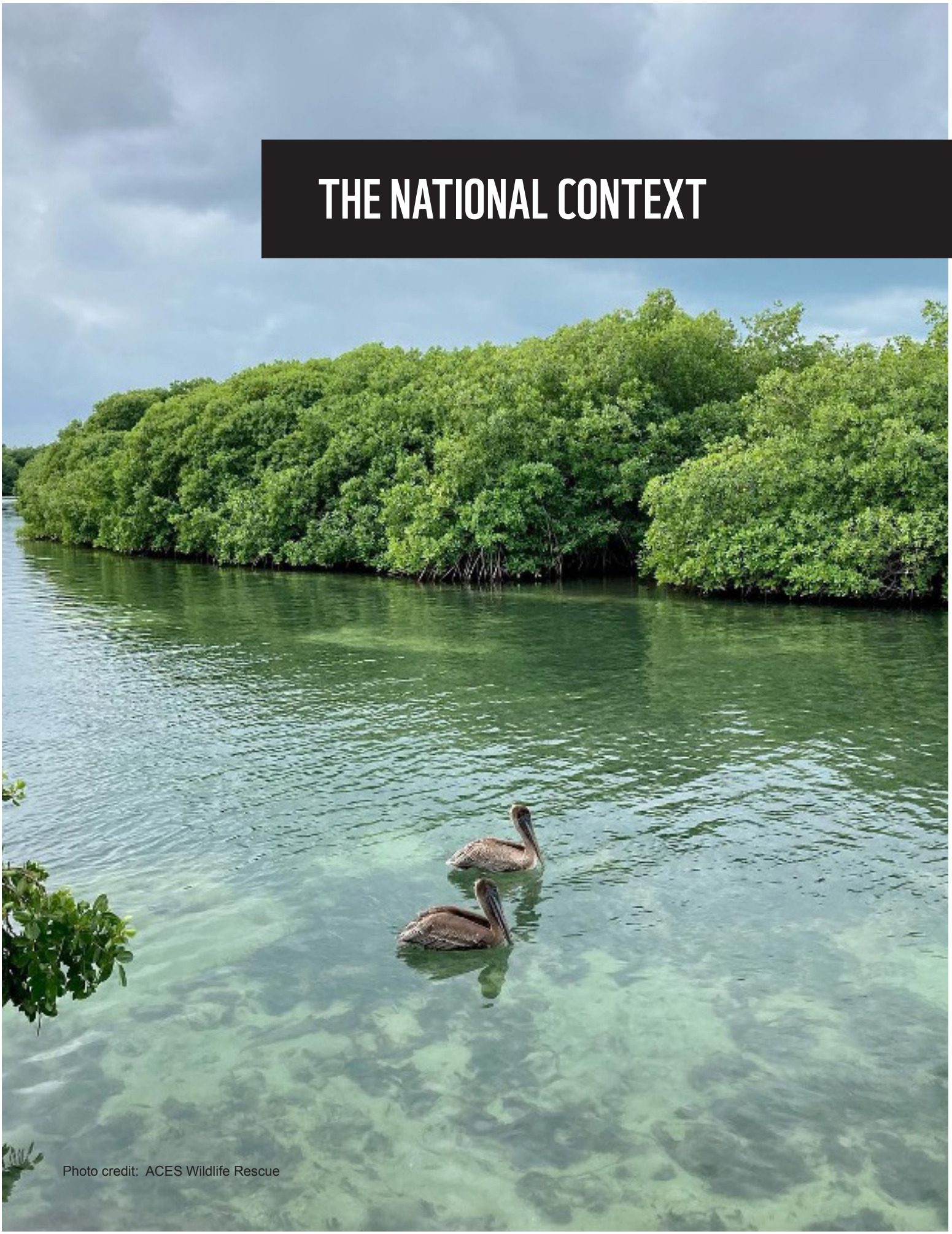

Photo credit: ACES Wildlife Rescue

1. THE NATIONAL CONTEXT

GLOBAL AND NATIONAL COMMITMENT

Belize is signatory to a number of global conventions that call for protection of critical ecosystems and maintenance of ecosystem services, including the Convention on Biological Diversity. This is currently revising the global biodiversity framework and targets, and includes a number of important milestones to be achieved, relevant to the objectives of the Belize Mangrove Alliance:

POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

DRAFT MILESTONES

Milestone A.1 Net gain in the area, connectivity and integrity of natural systems of at least 5 per cent.

Milestone B.1 Nature and its contributions to people are fully accounted and inform all relevant public and private decisions.

Milestone B.2 The long-term sustainability of all categories of nature's contributions to people is ensured, with those currently in decline restored, contributing to each of the relevant Sustainable Development Goals.

DRAFT TARGETS

Target 1. Ensure that all land and sea areas globally are under integrated biodiversity-inclusive spatial planning addressing land- and sea-use change, retaining existing intact and wilderness areas.

Target 2. Ensure that at least 20 per cent of degraded freshwater, marine and terrestrial ecosystems are under restoration, ensuring connectivity among them and focusing on priority ecosystems.

Target 3. Ensure that at least 30 per cent globally of land areas and of sea areas, especially areas of particular importance for biodiversity and its contributions to people, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 8. Minimize the impact of climate change on biodiversity, contribute to mitigation and adaptation through ecosystem-based approaches, contributing at least 10 $GtCO_2e$ per year to global mitigation efforts, and ensure that all mitigation and adaptation efforts avoid negative impacts on biodiversity.

Target 11. Maintain and enhance nature's contributions to regulation of air quality, quality and quantity of water, and protection from hazards and extreme events for all people.

Target 14. Fully integrate biodiversity values into policies, regulations, planning, development processes, poverty reduction strategies, accounts, and assessments of environmental impacts at all levels of government and across all sectors of the economy, ensuring that all activities and financial flows are aligned with biodiversity values.

Belize is also guided by the 2030 Agenda for Sustainable Development and associated global Sustainable Development Goals and Targets, with Horizon 2030, the national sustainable development plan, being linked to the global goals and targets. Mangroves are a transitional ecosystem, bridging terrestrial and marine environments, recognized for their importance in water filtration, climate resilience, nurturing life and protection of shorelines. The BMA objectives are aligned with the following SDG goals and targets:

SDG 6: Clean Water for All

Ensure availability and sustainable management of water and sanitation for all

6.6 Protect and restore water-related ecosystems

SDG 13: Climate Action:

Take urgent action to combat climate change and its impacts

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters.

13.2 Integrate climate change measures into national policies, strategies and planning

SDG 14: Life Below Water:

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

SDG 15: Life on Land:

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

NATIONAL FRAMEWORK

The **National Protected Areas Policy and System Plan** (NPAPSP, 2005) called for a minimum of 10% of each ecosystem to be protected within the National Protected Areas System (NPAS), but an optimum of 30%, in line with the global targets. Ecosystem representation was assessed in 2013, identifying that whilst Belize generally had good ecosystem representation within the NPAS, seven ecosystems fell under the global target of 10% protection. Five of these seven ecosystems were marine (primarily deep-water ecosystems), and one was a mangrove ecosystem - Caribbean mangrove forest (Dwarf Mangrove Scrub) with only 9.3% of the ecosystem protected. Whilst over the 10% protection target, other mangrove ecosystems also fell below the recommended 30% minimum (Table 1).

TABLE 1: MANGROVE REPRESENTATION IN THE NPAS (Walker, 2013)

Mangrove Ecosystems with < 30% protection	% within PA Network
Caribbean mangrove forest; dwarf mangrove scrub	9.3
Caribbean mangrove forest; riverine mangrove	11.0
Caribbean mangrove forest; coastal fringe mangrove	12.6
Caribbean mangrove forest; freshwater mangrove scrub	17.4
Caribbean mangrove forest; mixed mangrove scrub	18.2
Caribbean mangrove forest; basin mangrove	27.2

The **National Biodiversity Strategy and Action Plan** (NBSAP, 2016) provides the national framework to ensure Belize meets its commitments under the Convention on Biological Diversity. NBSAP Goal C states a national commitment to protection of biodiversity. Target C1: By 2030, Belize's natural landscapes and seascapes are functional and build biodiversity resilience to climate change and Sub target: Ensure that the NPAS protects representative examples of all ecosystems as per the NPAPSP 2005 targets, reaffirms Belize's commitment to the Convention on Biological Diversity target for ecosystem representation. This is also integrated into the NPASP ecosystem representation goal for Belize's NPAS - the inclusion of 'high quality examples of the full range of environment types within Belize, with balanced representation of the ecosystem types they represent'.

The NBSAP recommendations recognize the need to strengthen capacity and the framework for protected areas managers to be able to collaborate with the Forest Department to improve enforcement of the mangrove legislation and Environmental Compliance Plans (Walker and Walker, 2013). Also identified was the need for increased coverage of coastal lagoons and mangroves in the NPAS. Mangrove coverage has recently been re-assessed in Belize (Cherrington et al., 2020), demonstrating a national loss of mangrove cover of over 5% between 1980 and 2017 – most of this is outside the NPAS, where protection is generally strong.

Currently, representation of mangroves as a general ecosystem in the NPAS is estimated at 16.6% (WWF) with the recognition that any further conservation or protection may need to come from the private sector or occur on national or community lands.

Mangroves are identified as a component of Belize's forest in the updated **Nationally Determined Contribution** (NDC) report. Contributions commitments under the Paris Climate Change Agreement (NDC, 2019). This states that: "As a Small Island Developing State, Belize recognizes that the health and integrity of coastal ecosystems are vital for the health of people and the planet. "Blue carbon", e.g. basin, fringe and island mangrove and seagrass ecosystems, play many important roles as a nature-based solution to climate change with mitigation, adaptation, and resilience co-benefits. These ecosystems

sequester and store significant amounts of carbon, help to ameliorate flooding of low-lying areas on the mainland, safeguard frontline communities and infrastructure from climate impacts and build greater resilience, making their healthy function a triple-win for Belize by contributing to the national carbon sink, offsetting sea level rise and coastal erosion while expanding habitat for biodiverse resources, and supporting a more resilient tourism and aquaculture industry.' National Targets identified as part of Belize's national contributions) include:

- Protection of at least a further 6,000 hectares of mangroves by 2025, with an additional 6,000 hectares by 2030
- Restoration of at least 2,000 hectares of mangroves, including within local communities, by 2025, with an additional 2,000 hectares by 2030
- Halting and reversing net mangrove loss by 2025 through public measures and partnerships with private landowners, local communities, and other relevant stakeholders
- Completing an in-situ assessment of the below ground carbon stock of mangroves by 2022
- Exploring alongside Article 6 of the Paris Agreement, new financing options to support mangrove protection and restoration, including multilateral and bilateral funds, insurance products, debt-for-nature swaps, private investment, blue carbon credits and bonds, and other innovative conservation financing mechanisms

The **National Environmental Policy and Strategy** (2014-2024) seeks to provide guidance for 'collaborative environmental stewardship for sustainable development'. This sets targets for the protection and rational use of the marine-coastal ecosystems of Belize, including 'reducing the clearance of fringing mangroves, seagrass beds and littoral forest by at least 30%', in recognition of the sensitivity of these ecosystems and the important services they provide.

These national strategies, plans and targets provide the framework under which the Belize Mangrove Action Plan has been developed, identifying the areas in which the BMA is able to use the strengths of its partners to provide meaningful contributions to national and global targets.

Work to support the in-situ assessment of the below ground carbon stock of mangroves has been conducted under the Belize Blue Carbon project, through a collaboration between Smithsonian Institution, WWF, Pew Charitable Trust, Silvestrum, the Belize Government (via the National Climate Change Office, Coastal Zone Management Authority and Institute, the Forest and Fisheries Departments), University of Belize's Environmental Research Institute and local NGOs (SACD, TIDE, CSFI, TASA). This collaborative initiative seeks to increase protection of coastal ecosystems in-country, targeted at:

- Assessing the carbon stocks in Belizean mangroves, and determining the climate change mitigation and adaptation benefits and opportunities for mangroves, seagrass and coral reefs
- Identifying and setting measurable targets and recommendations for coastal ecosystem protection that can be tracked through a monitoring, verification and reporting (MRV) framework
- Building in-country capacity to support research and the MRV process
- Gathering input from wide range of stakeholders

MANGROVE PROTECTION

Mangroves fall under the authority of the Forest Department, with specific regulations detailed in the **Forests (Protection of Mangroves) Act** (revised, 2018) that protect mangroves from clearance, or even alteration, unless conducted with the permits and authorization necessary. This also sets penalties and fines for non-compliance, though it is recognized that whilst significant, these will not become a deterrent until the challenges facing enforcement can be addressed and the first case is taken to trial successfully.

Whilst mangroves are not specified within the **Fisheries Resource Act** (2020), this does make provision for an ecosystem approach that includes designation of marine reserves 'to afford special protection to the flora and fauna of the areas', 'to protect and preserve the natural breeding and nursery grounds and habitats of aquatic life', and penalties for 'taking or destroying any flora or fauna'.

The **Environmental Protection Act (2011)** includes mangroves in its definition of 'Belize Barrier Reef System', and states that 'every person who causes or permits any damage to the Belize Barrier Reef System or any significant coral formation, commits an offence and shall be liable on summary conviction to a fine of not less than five thousand dollars and not exceeding twenty-five thousand dollars per square meter of damage.

The **Environmental Impact Regulations** (last amended, 2020) requires an environmental impact assessment for clearance of mangroves, depending on the location and size of the project, particularly if it is 'on islands adjacent to marine reserves'.

THE GLOBAL MANGROVE ALLIANCE

Photo credit: Anthony B. Rath / WWF

2. THE GLOBAL MANGROVE ALLIANCE

The Global Mangrove Alliance (GMA) was established in 2018 at the World Ocean Summit. It is a collaborative initiative that 'brings together technical experts, civil society organizations, governments, local communities, businesses, funding agencies and foundations to accelerate a comprehensive, coordinated, global approach to mangrove conservation and restoration at a scale that matters'.

The GMA was formed with the goal of 'increasing the global area of mangrove habitat through conservation, restoration and equitable management', and seeks to achieve this using the collective expertise of GMA members through coordination of diverse initiatives into a global portfolio. The diverse global GMA membership provides a presence on the ground across many countries, with activities coordinated under three main objectives:

- Halting mangrove loss
- Implementing science-based restoration
- Building awareness

The Belize Mangrove Alliance has been conceived in the same spirit of collaboration that drives the GMA, and is a step towards Belize becoming a national GMA chapter. As such, the Action Plan strategies are aligned with and contribute towards key GMA objectives. A parallel activity has been the development of a national portfolio of mangrove practitioners that work at national and site level across Belize, spanning national agencies and community-based initiatives, to provide the same engagement of collective expertise from local to national levels.

The GMA has a set of guiding principles that provide a global framework for sustainable ecosystem management – this also provides guidance to the development of this Action Plan, and its implementation.

GLOBAL MANGROVE WATCH
MANGROVE PRINCIPLES
GUIDING PRINCIPLES ON SUSTAINABLE ECOSYSTEM MANAGEMENT

PRINCIPLE #1: PROMOTE GOOD GOVERNANCE

Policy and legal frameworks

1. Adopt national policies that prioritise the reservation of mangroves.
2. Recognise that mangrove ecosystems transcend political, municipal and state boundaries.
3. Put mangrove conservation and restoration at the top of national agendas, and ensure mangrove communities are represented at international conventions.

PRINCIPLE #2: ENSURE AN ENGAGED AND EQUITABLE SOCIETY

People's participation and empowerment

1. Ensure that communities are at the centre of mangrove conservation, with environmental and socio-economic goals given equal precedence, and community stewardship legally recognised wherever possible.

PRINCIPLE 3: USE SOUND SCIENCE AND KNOWLEDGE

Credible knowledge base for science-based arguments and capacity-building

1. Use up-to-date scientific research to guide and increase capacity for mangrove conservation and restoration.
2. Make a science-based case for the role of mangrove conservation and restoration in economic resilience of communities.

PRINCIPLE #4: ACHIEVE A SOCIALLY SUSTAINABLE ECONOMY WITHIN ENVIRONMENTAL LIMITS

Sustainable use of natural resources

1. Optimise efficiency in the management of mangrove ecosystems by taking a local approach to conservation and restoration.
2. Ensure that communities and their future generations benefit from the ecosystem services provided by mangroves, by securing commitment of sustainable use to prevent ecosystem exploitation.

PRINCIPLE # 5: IMPLEMENT SUSTAINABLE CONSERVATION FINANCING

Innovative approaches and benefit-sharing

1. Engage communities in the conservation and restoration of mangrove ecosystems through the provision of financial support, including but not limited to the implementation of incentives and benefits in return for responsible management.

DEVELOPING THE BMA ACTION PLAN

Photo credit: V. Rosado / Grassroots Belize

3. DEVELOPING THE BMA ACTION PLAN

The BMA Action Plan provides a framework that will support and strengthen BMA members ability to collaborate across thematic areas such as coastal management, education, climate mitigation and adaptation, and strengthen coordinated scientific research. It also focuses on improving the conservation and restoration of mangroves towards enhanced human well-being through the recognized services that mangroves provide. It provides a framework for advocacy for strengthening relevant national policies and supports the engagement of donor agencies and leveraging funds. A collaborative process in the development of the BMA Action Plan was critical for developing clear, unifying objectives and targets across multiple stakeholders and stakeholder organizations.

The Action Planning process was conducted over two stakeholder workshops held in the first quarter of 2022. These provided a platform for stakeholder input and consensus on the strategies the BMA members would be able to implement to improve the current status of mangroves in Belize. Workshop participants ranged from community groups to technical practitioners in Government departments and non-Governmental organizations. The workshop process and language were designed to be accessible to all participants.

The first workshop was held on the on 22nd March, 2022, and focused on developing a conceptual model to assist in understanding the context in which mangroves exist in Belize – the pressures and threats, and the barriers and opportunities to effective management of this key ecosystem. Participatory development of a situation analysis provided a structured foundation for the Action Planning, based on Conservation Standards practices. The conceptual model produced was based on an assessment of mangrove extent, mangrove condition and the landscape / seascape context in which mangroves exist. Threats to and pressures on mangroves were identified, as was their impact on the extent of mangrove, condition and the landscape / seascape context in which the mangrove exists (Figure 1).

Mangrove Extent:

- The most significant negative impact on mangrove extent is identified as mangrove clearance as a result of coastal / caye development driven by tourism developments, urban expansion, land speculation and clearance for fishing camps.
- Also noted is the weak policy environment – particularly the land use policies, with the need for the integration of mangrove values into the revised Sustainable Land Use Plan to effectively guide development planning in vulnerable coastal areas and cayes.
- The third highest threat to mangrove extent is identified as challenges to enforcement of mangrove legislation – in the Forest Department, the authority responsible for mangroves, this is limited human resources, logistical and financial resource barriers.
- The limited success in prosecution of infractions is identified as a disincentive, with developers often willing to take the risk in clearing mangroves, then pay the fine if caught.

CONCEPTUAL MODEL FOR THE STATUS OF MANGROVES IN BELIZE - EXTENT

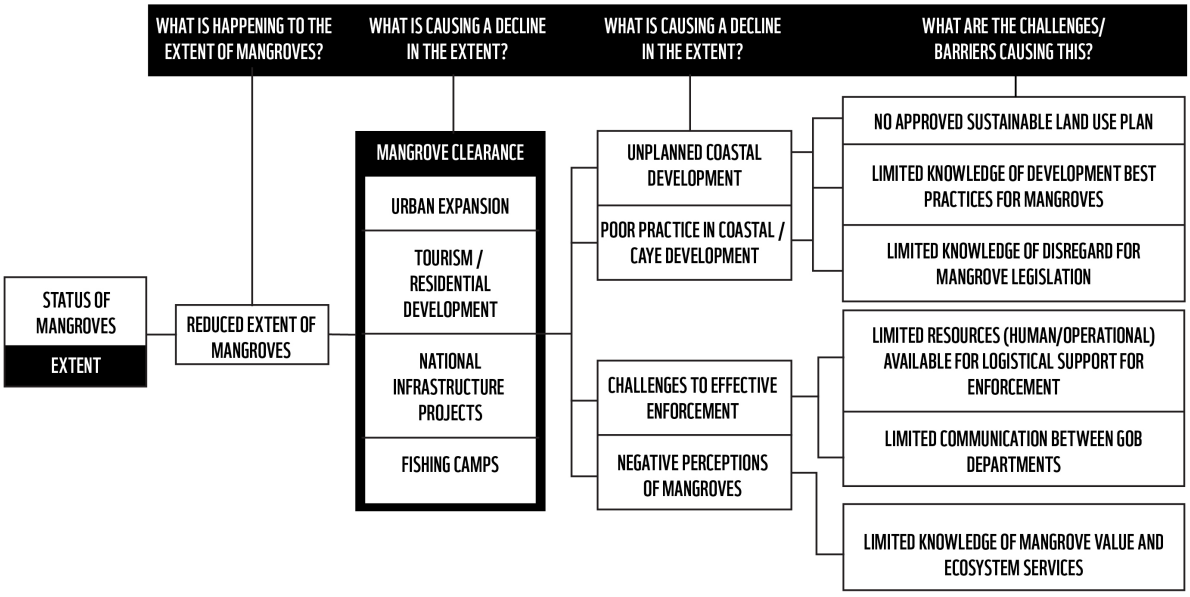

FIGURE 1a: SIMPLE CONCEPTUAL MODEL FOR REDUCED EXTENT OF MANGROVE

CONCEPTUAL MODEL FOR THE STATUS OF MANGROVES IN BELIZE - CONDITION

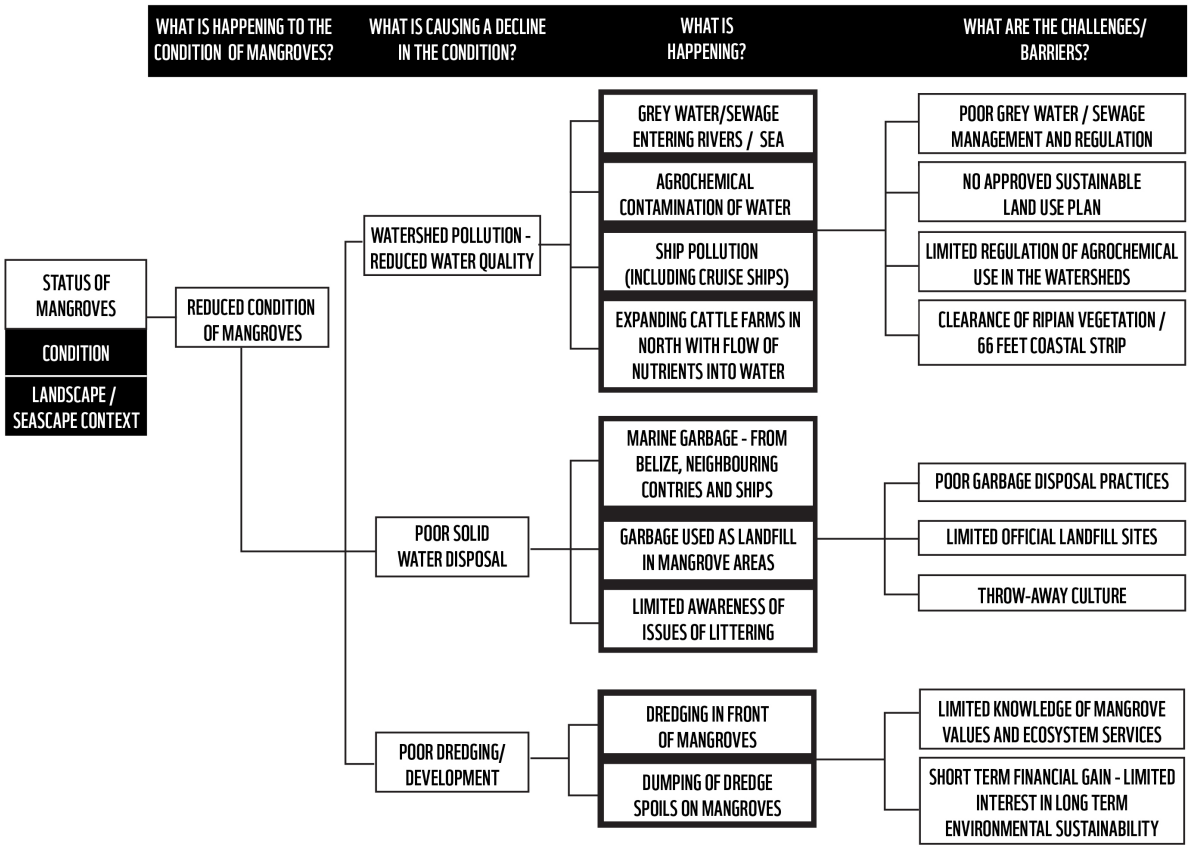

FIGURE 1b: CONCEPTUAL MODEL FOR REDUCED CONDITION OF MANGROVE

Mangrove Condition / Mangroves in the Landscape / Seascape:

- Key influences on mangrove condition are identified as watershed impacts on water quality in the landscape / seascape, resulting in the merging of the Condition and Landscape / Seascape Context criteria.
- Key impacts on water quality were identified as agrochemical runoff into rivers, poor sewage management in urban areas, coastal and caye communities, and poor solid waste disposal by sectors working around mangroves – particularly coastal communities and the tourism sector.

Using the basic situation analysis, a Target output was identified for each of the identified challenges and barriers – the change that the BMA participants would like to see happen in the next five years (Figure 2). Also identified were the BMA members Government authorities, NGOs, Protected Area managers, community groups, civil society organizations and academia that are in a position to effectively implement each of the identified strategic priorities.

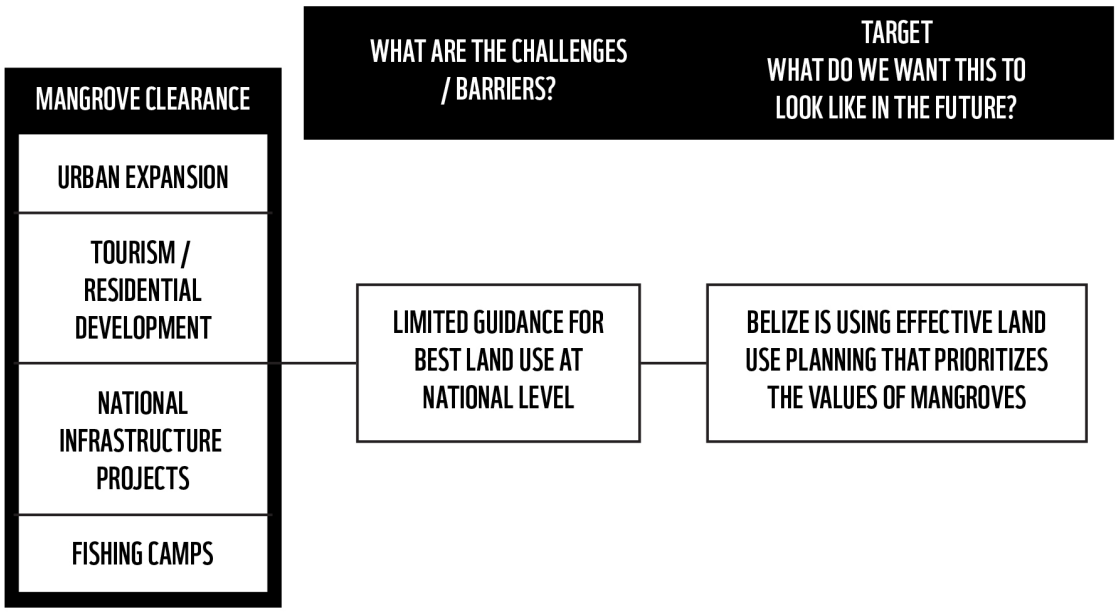

FIGURE 2: EXAMPLE OF CURRENT AND TARGET STATUS – REDUCED EXTENT OF MANGROVES

The second workshop was conducted in two half day sessions – the first on the 22nd March, 2022, and the second on the 5th April, 2022. The workshop focused on validating each of the strategies and identifying any gaps that required additional strategies. A prioritization exercise was then conducted, rating each strategy based on: Feasibility, Urgency, Impact, and Chance of Success of Outcomes. A Theory of Change model was developed from the workshop output (Figure 3). Annex 1: Workshop Report.

THE BMA ACTION PLAN

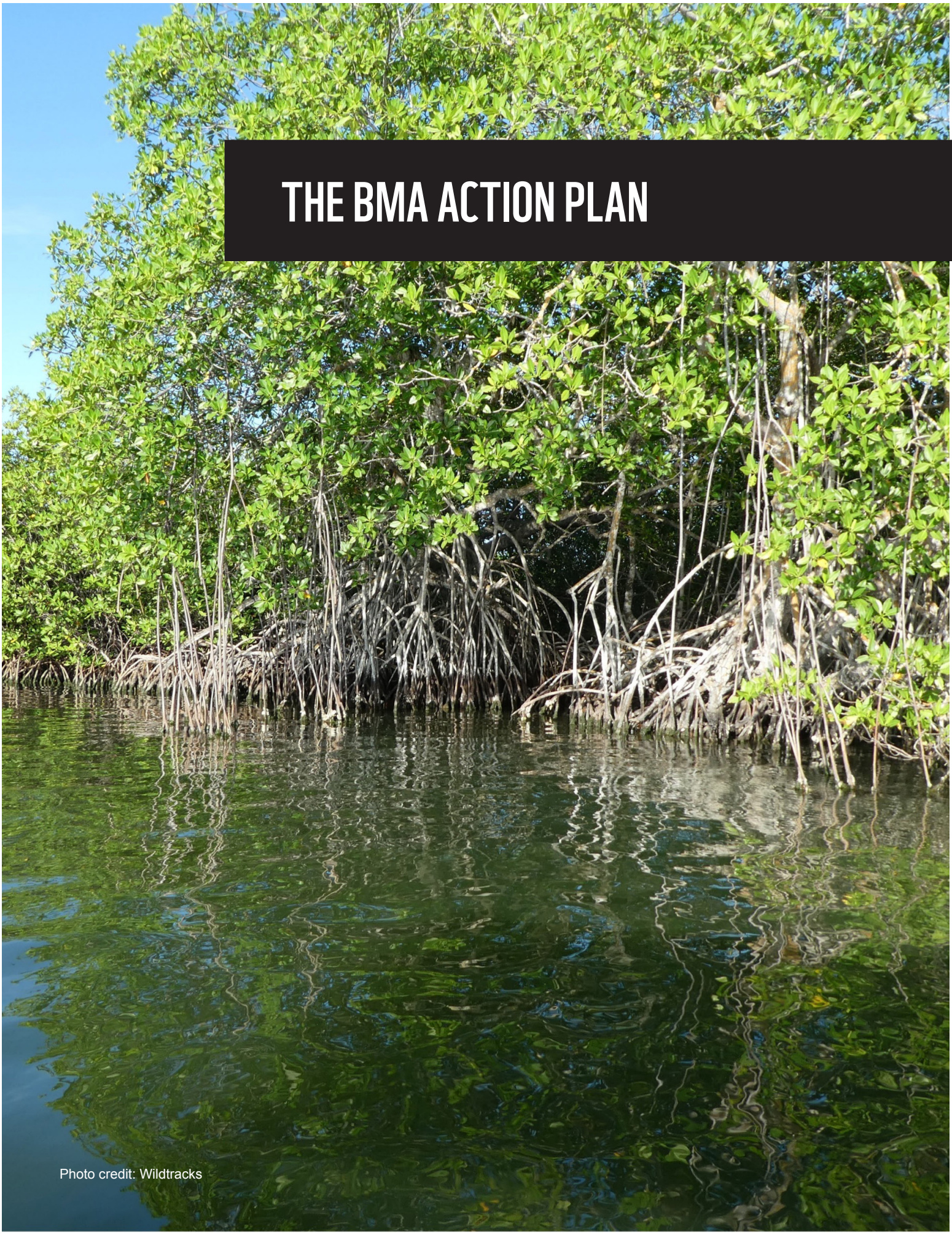

Photo credit: Wildtracks

4. THE BMA ACTION PLAN

A total of thirty-six prioritized strategies were identified as relevant to the BMA Action Plan, to guide the Belize-based activities and collaborations over the five-year timeframe (2022 – 2027), spread across five thematic areas:

- Government Policies and Legislation
- Strengthening Enforcement
- Outreach and Awareness
- Mangrove Restoration
- Contamination in the Watersheds

These strategies are aligned with one of twelve Outputs that, together, contribute to achieving the Action Plan Outcomes, and follow the GMA guiding principles on sustainable mangrove ecosystem management. This is presented in the Action Plan Theory of Change (Figure 3) and the Action Plan itself.

Also identified is the need for a BMA structure and a coordinator that supports the Alliance, coordinates the collaborative implementation of the Action Plan, maintains open communication with BMA members and engages new members (Table 2). This is captured in the four identified Outputs:

- The BMA has an operational structure that supports implementation of the Action Plan.
- The BMA has increased its membership by at least 25% over the 5-year implementation period.
- The BMA has identified financial sustainability mechanisms to cover annual administration costs.
- The BMA has developed and is implementing a Monitoring and Evaluation Plan.

IMPLEMENTING THE ACTION PLAN

The Administration framework assumes that the coordinator would be part-time and housed within one of the BMA member organizations. The Coordinator is responsible to the members and guided by an annual workplan developed towards the end of the preceding year in preparation for the start of the new year, and based on the Action Plan. Workplan development should be informed by a review of implementation of the previous year's workplan and lessons learnt, and will be more detailed than the Action Plan, with activities identified for each strategy. Whilst the Action Plan has a broad identification of responsibility, the workplan should identify people / organizations specifically responsible for implementation of each strategy – people who have agreed to take on the implementation role during the annual workplan planning sessions.

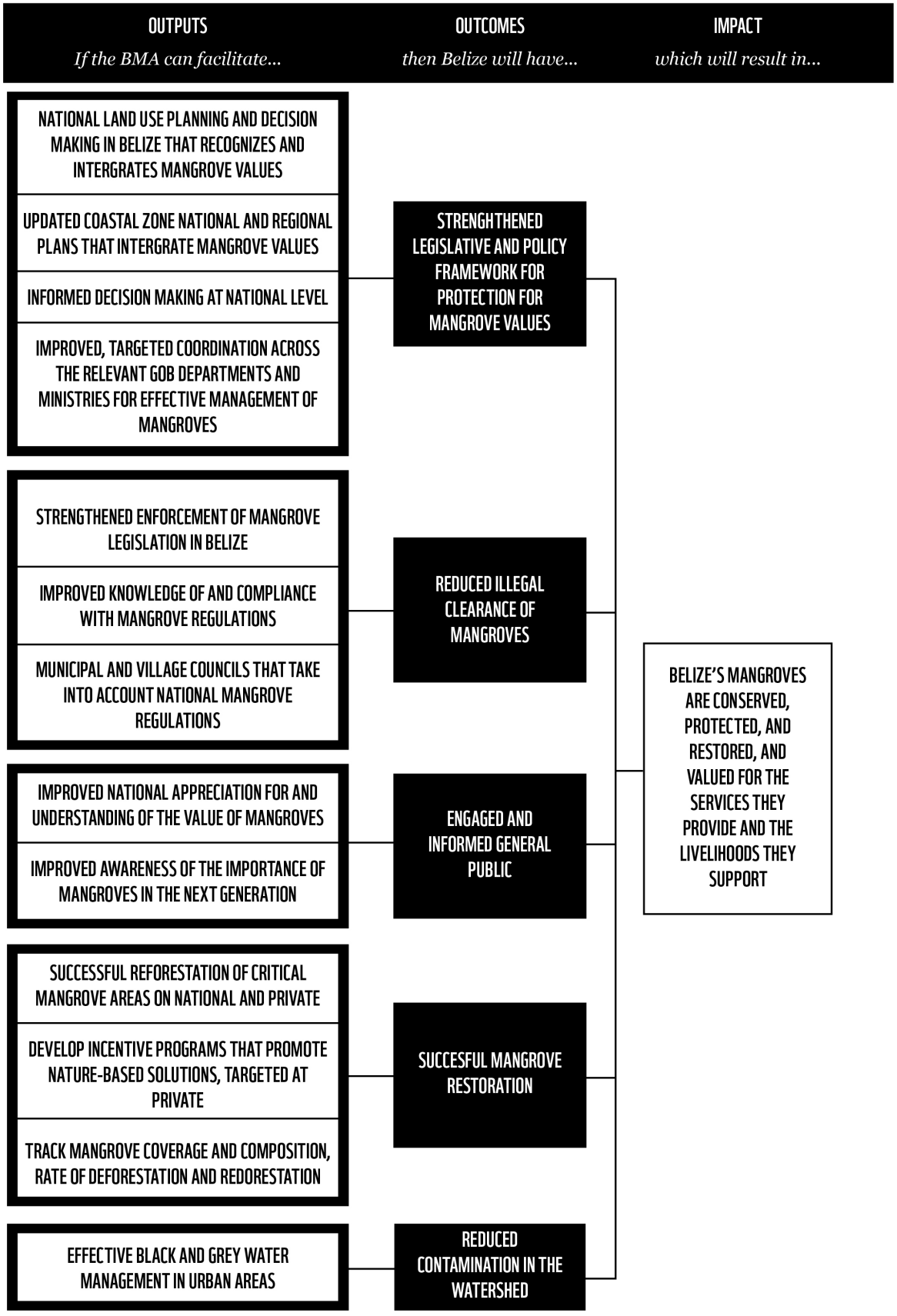

FIGURE 3: BMA ACTION PLAN THEORY OF CHANGE, 2022

HIGH PRIORITY STRATEGY	MEDIUM PRIORITY STRATEGY	LOW PRIORITY STRATEGY
Strategies are prioritized and implmented	Strategies may be harder to implement with lower success, but output are still important	Strategies are important but have a low feasibility and should be implemented opportunistically

OUTCOME 1:
STRENGTHENING THE LEGISLATIVE AND POLICY FRAMEWORK FOR PROTECTION OF MANGROVE VALUES

OUTPUT	STRATEGY	INFLUENTIAL BMA MEMBERS	TIMELINE	BMA PRIORITY
1.1 By the end of 2024, national land use planning and decision making in Belize recognizes and integrates mangrove values	1.1.1 Advocate for updating the national land-use policy and plan, with integration of mangrove priority areas for protection and the goods and services they provide	NGO community, Forest Department, Fisheries Department		
	1.1.2 Advocate for and inform the Blue Bond Marine Spatial Plan	WWF, NGO community, Forest Department, Fisheries Department		
1.2 By the end of 2023, Belize's updated Coastal Zone national and regional plans integrate priority sites and mangrove values	1.2.1 Provide recommendations during CZM national and regional planning consultations to strengthen integration of mangrove values in coastal / caye planning	WWF, Forest Department, Fisheries Department, NGO community, Protected Area managers, Community groups		
	1.2.2 Advocate for strengthening of the Coastal Zone Management Act as it relates to guidelines for development in mangrove areas	WWF, Forest Department, Fisheries Department, NGO community		
1.3 By the end of 2026, the CZM plans are well socialized and being implemented	1.1.1 Provide support for socialization of the CZM plans and advocate for implementation	All BMA members		
1.4 Between 2022 and 2027, the BMA is providing technical input on mangrove and riparian forest issues that is used in national decision making	1.4.1 Provide information and capacity building for relevant GoB departments and NEAC members on mangrove trends, coastal vulnerability, risk management, climate change threats and adaptation, and benefits of mangroves for carbon sequestration	WWF, NGO community, Forest Department, Fisheries Department		
	1.4.2 Advocate for protection of riparian forests and 66' in updating of the land use policy and plan (opportunistic)	All BMA members		

OUTCOME 1: STRENGTHENING THE LEGISLATIVE AND POLICY FRAMEWORK FOR PROTECTION OF MANGROVE VALUES								
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**					**BMA PRIORITY**
1.5 By 2023, targeted coordination across the relevant GoB departments and Ministries has improved, with structures in place for effective communication and action on mangrove issue	1.5.1 Advocate for the creation of a National Mangrove Task Force under the Forest Department to improve collaboration on mangrove issues (incl. Forest, Fisheries and Lands Departments, and Department of the Environment)	WWF, NGO community, Forest Department, Fisheries Department						
	1.5.2 Advocate for the creation of a permanent Mangrove Unit under Forest Department to address mangrove-related issues	WWF, NGO community, Forest Department, Fisheries Department						
	1.5.3 Advocate for financing of the Mangrove Unit enforcement activities through use of permit fees and fines, supplemented by other external funding sources	WWF, NGO community, Forest Department, Fisheries Department						

OUTCOME 2: REDUCED ILLEGAL CLEARANCE OF MANGROVES				
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**	**BMA PRIORITY**
2.1 Between 2022 and 2027, enforcement of Belize's mangrove legislation has improved outcomes	2.1.1 Provide resources, information sharing and capacity building support to the Mangrove Task Force and Mangrove Unit for improved management of mangroves and enforcement of mangrove legislation	WWF, NGO community, Forest Department, Fisheries Department		
	2.1.2 Support the Forest Department in sensitizing other permitting and enforcement agencies in the mangrove regulations and permitting procedures	WWF, NGO community, Forest Department, Fisheries Department		
	2.1.3 Collaborate with the Forest Department to engage and build capacity of relevant enforcement agencies (Forest, Fisheries and Police Departments) in reporting protocols and case file development for to improve prosecution success	Forest Department, Fisheries Department		
	2.1.4 Advocate with Forest Department to empower relevant NGO co-management partner enforcement staff through delegation of authority, training (Special Constable) and information to ensure effective reporting and collection of evidence for successful prosecution of mangrove infractions inside protected areas	Forest Department		
	2.1.5 Sensitize the judiciary / magistrates on the importance of mangroves and the need for higher penalties	Forest Department, Fisheries Department		
	2.1.6 Support Forest Department in establishing and implementing a citizen 'mangrove watch' system with a simple, clear, anonymous reporting process for infractions	Forest Department, Fisheries Department, Protected Area managers		
	2.1.7 Build capacity of and support leaders in key communities/ locations for recognizing and reporting mangrove infractions			

OUTCOME 2: REDUCED ILLEGAL CLEARANCE OF MANGROVES									
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**					**BMA PRIORITY**
2.2 By the end of 2023, there is improved knowledge of and compliance with mangrove regulations across Belize	2.2.1 Support the Forest Department in strengthening the mangrove permit application process through establishing an online platform for improved accessibility to information to guide applicants on mangrove values, the regulations and the permitting process, linked to BMA, DoE and BELAPS (Belize Electronic Licensing and Permitting System) sites	WWF, Forest Department							
	2.2.2 Support Forest Department in operationalisation of online applications and payments for mangrove clearance permits under BELAPS linked to the Mangrove Management site	WWF, Forest Department							
	2.2.3 Improve awareness of mangrove regulations, including restrictions, permitting and mangrove values, of private land owners and the Association of Realtors	All BMA members							
	2.2.4 Coordinate a collaborative, targeted national communication campaign on media, PSAs, billboards and social media to foster general public sensitization on mangroves, mangrove values and legislation	All BMA members							

OUTCOME 2: REDUCED ILLEGAL CLEARANCE OF MANGROVES				
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**	**BMA PRIORITY**
2.3 By 2027, municipal and village councils and the Ministry of Infrastructure and Development will be compliant with national regulations and the need for permits.	2.3.1 Collaborate with FD for coordinated, targeted outreach and engagement of municipal and village councils to improve understanding of mangrove regulations, community monitoring and reporting of infractions.	Forest Department, NGO community, Protected Area managers		
	2.3.2 Collaborate with FD for coordinated outreach to and engagement of the Ministry of Infrastructure and Development to improve understanding of and compliance with mangrove regulations			
	2.3.3 Advocate for EIAs to be required and implemented for GoB in coastal mangrove areas projects (incl. roads)	Forest Department, Fisheries Department		

OUTCOME 3: AN ENGAGED AND INFORMED GENERAL PUBLIC				
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**	**BMA PRIORITY**
3.1 By 2027, there will be improved national appreciation for and understanding of the value of mangroves	3.1.1 Assessment of general public perception of mangroves to provide an understanding of the target audience and reasons behind mangrove removal at local level, on which to base a targeted communication campaign	All BMA members		
	3.1.2 Develop a Communication Campaign Plan for coordinated, collaborative, targeted national communication campaign to foster sensitization on mangroves, mangrove values and legislation	All BMA members		
	3.1.3 Collaborate in implementation of the Communication Campaign Plan, with targeted outreach to improve awareness and understanding of mangroves and mangrove values by key stakeholder groups (coastal communities, fishing and tourism sector, developers and real estate agents advising developers) guided by the communication campaign plan	All BMA members		

OUTCOME 3: AN ENGAGED AND INFORMED GENERAL PUBLIC				
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**	**BMA PRIORITY**
3.2 By 2027, there will be improved awareness of the importance of mangroves in the next generation	3.2.1 Advocate for inclusion of mangroves in the school science curriculum (mangrove values, protection, conservation, restoration)	All BMA members		
	3.2.2 Produce BMA mangrove modules and supplementary information to provide inspirational training and learning aids etc. for BMA members, NGOs, teachers and students to use in school activities	Forest Department, Fisheries Department, NGO community, Protected Area managers		
	3.2.3 Implement coordinated outreach and awareness activities in schools through the BMA membership	Forest Department, Fisheries Department, BMA members		

OUTCOME 4: SUCCESSFUL MANGROVE RESTORATION				
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**	**BMA PRIORITY**
4.1 By 2027, there has been successful reforestation of critical mangrove areas on national and private lands	4.1.1 Assist Forest Department in developing a National Mangrove Restoration Plan linked to the National Restoration Strategy, the National Land Use Plan, and Marine Spatial Plan.	Forest Department, Fisheries Department, NGO community, Protected Area managers		
	4.1.2 Identify and engage with researchers for strengthened mangrove reforestation initiatives through integration of mangrove community genetics and other biological diversification to maintain a healthy gene pool stock	WWF, Forest Department, Fisheries Department, NGO community		
	4.1.3 Develop and disseminate best practice guide for mangrove restoration projects to improve success	WWF, Forest Department, Fisheries Department, NGO community		

	4.1.4 Provide support for and investment in community initiatives in mangrove restoration / nature-based solution projects	WWF, Forest Department, Fisheries Department, NGO community						
4.1 By 2027, there has been successful reforestation of critical mangrove areas on national and private lands	4.1.5 Design, promote and socialize best practice models for integrating mangroves into natural landscaping in coastal urban green spaces and private lands	WWF, Forest Department, Fisheries Department, NGO community						
4.2 By 2027, Belize will have developed at least two incentive programs that promote nature-based solutions, targeted at private sector and business	4.2.1 Support and promote innovative blue carbon initiatives and incentives to recover critical and sensitive mangrove areas on private lands	WWF, Forest Department, Fisheries Department, NGO community						
4.3 Between 2022 and 2027 the BMA will track mangrove coverage and composition, rate of deforestation and reforestation on a biennial basis	4.3.1 Agreement on and dissemination of standardized protocols for baseline data collection and ongoing monitoring							
	4.3.2 Coordinate standardized baseline data collection with BMA partners, with centralized data collection, management and dissemination, and standardized monitoring of success rates for reforestation							

OUTCOME 5: ADDRESSING CONTAMINATION IN THE WATERSHED				
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**	**TIMELINE**	**BMA PRIORITY**
5.1 Between 2022 and 2027, BMA members will advocate for effective black and grey water management in urban areas and watersheds when opportunities arise	5.1.1. Advocate for improved planning and implementation for urban sewage treatment (opportunistic)	All BMA members		

BELIZE MANGROVE ALLIANCE ADMINISTRATION		
OUTPUT	**STRATEGY**	**INFLUENTIAL BMA MEMBERS**
The BMA has an operational structure that supports implementation of the Action Plan	Employ a BMA coordinator to for coordinated actions for implementation of the Action Plan	WWF, All BMA members
	Establish annual workplan of priority activities, budgets	BMA coordinator, All BMA members
	Ensure BMA members are kept engaged, involved and informed	BMA coordinator, All BMA members
	Increase recognition of the BMA	BMA coordinator, All BMA members
The BMA has increased its membership by at least 25% over the 5-year implementation period	Encourage organizations and individuals in Belize to join through a structured joining process	BMA coordinator, All BMA members
	Targeted engagement of private sector landholders	BMA coordinator, All BMA members
	Engage the Belize Association of Planners to become a part of the BMA.	WWF, BMA coordinator
The BMA has identified financial sustainability mechanisms for covering annual administration costs	Seek funding support to cover annual administration costs of BMA	BMA coordinator, All BMA members
The BMA has developed and is implementing a Monitoring and Evaluation Plan	Hire facilitator to facilitate Monitoring and Evaluation workshop for plan development	BMA coordinator, All BMA members
	Ensure baselines required for the Monitoring and Evaluation indicators are in place	BMA coordinator, All BMA members

TABLE 2: IDENTIFIED STRATEGIES FOR A BMA ADMINISTRATIONAL STRUCTURE

MONITORING AND EVALUATION

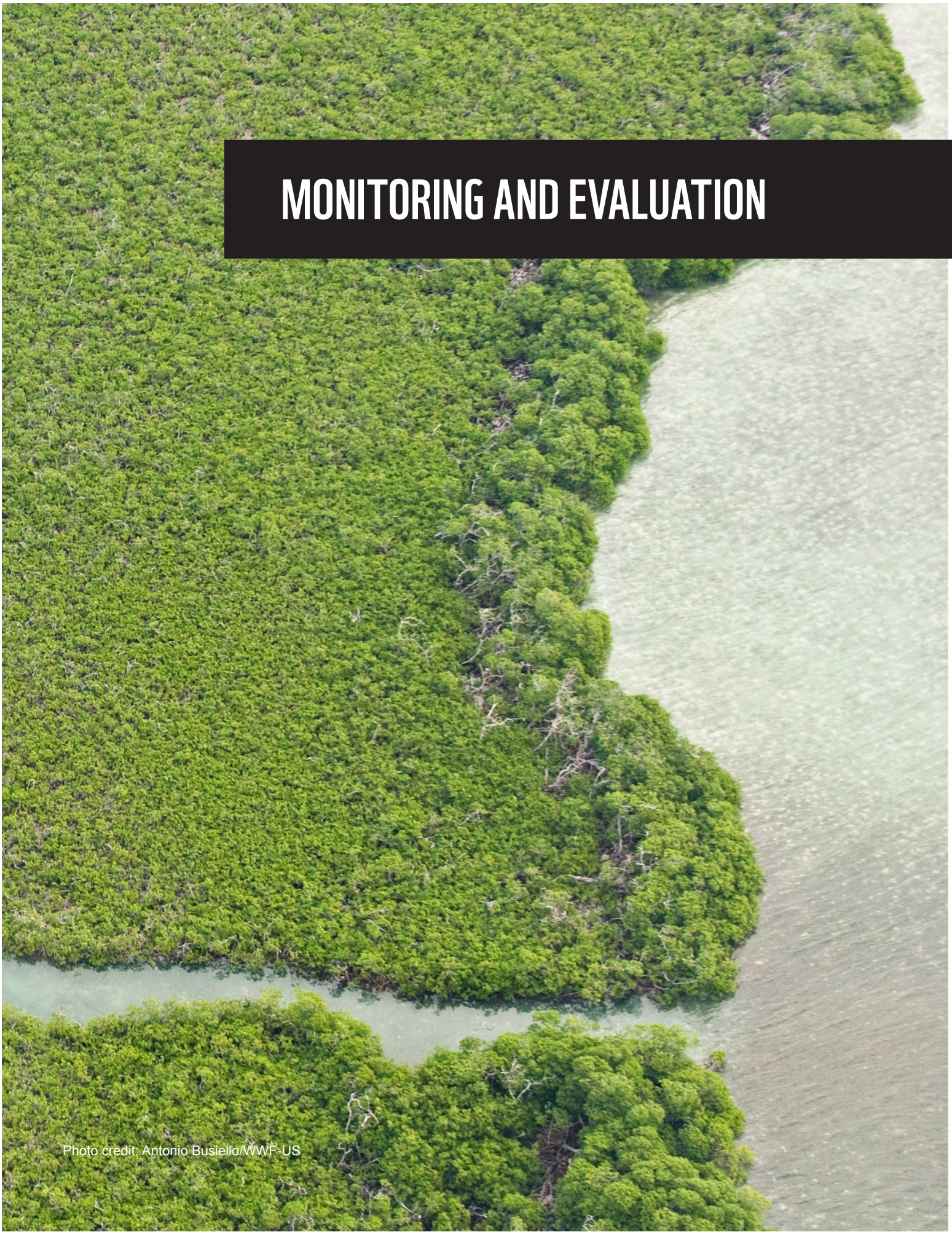

Photo credit: Antonio Busiello/WWF-US

5. MONITORING AND EVALUATION

Monitoring and evaluation of the Action and Annual Work Plans is essential in order to ensure that strategies and activities are effective in achieving the desired Outputs and Outcomes. It provides an opportunity for adaptive management - for amending strategies or activities to respond to changes in the operating context (e.g. to fast-tracking activities to maximise on a new, emerging opportunity). This can be achieved through the use of a 'Measures of Success' monitoring and evaluation framework.

A tracking matrix can be used for tracking the status of implementation of strategies and activities (Table 3). This should be done at the end of each year in preparation for the revision of the Annual Workplan. One of the benefits of active tracking is that it ensures that lessons have been captured, and that there is a record of what has been achieved. It also provides a mechanism for adaptive management, with discussions on the status of strategies, successes and challenges at the end of the year resulting in recommendations and identification of the activities that need to be planned for or strengthened in the coming year, ensuring that experience and lessons learnt are not lost, but are integrated into the next Annual Workplan. Capturing this information can also assist in ensuring there is a record of the activities implemented that can be shared with the membership that extends beyond the life of individual BMA coordinators.

The second Measure of Success evaluates whether the strategies have been successfully implemented, based on the desired status (e.g. Improved understanding of the reasons behind mangrove removal at the local level). This highlights activities and strategies that are falling behind in terms of implementation (those that score as 1 or 2), and indicating where greater effort (investment of time and funds) needs to be focused (Table 4).

Measuring success of Outcomes is perhaps the most important of the monitoring processes, but has a longer-term focus, so may only be evaluated once every two or three years. This evaluates whether, following implementation, the Outputs have improved the status of the five Outcomes of the BMA Action Plan. A series of indicators assist in the assessment, and should be developed during a monitoring and evaluation workshop at the start of Action Plan implementation (Table 5).

TRACKING STATUS OF IMPLEMENTATION OF THE BMA ACTION PLAN / ANNUAL WORKPLAN								
OUTCOME 3: AN ENGAGED AND INFORMED GENERAL PUBLIC								
STRATEGY	ACTION	DESIRED STATUS	STATUS AT END OF 2022	STATUS AT END OF 2023	STATUS AT END OF 2024	STATUS AT END OF 2025	STATUS AT END OF 2026	NOTES
3.1.1 Assessment of general public perception of mangroves to provide an understanding of the target audience and reasons behind mangrove removal at local level, on which to base a targeted communication campaign	3.1.1 Design survey instrument and plan for assessment	Improved understanding of the reasons behind mangrove removal at the local level	Completed: Workshop to design survey instrument					
	3.1.2 Implement the survey instrument in coastal communities through BMA members		Designated BMA members agree to implement the survey in their areas	Completed: BMA members implement surveys – gap in Stann Creek addressed by engaging UB students				Stipend for UB students from WWF
	3.1.3 Analyse the data from the survey instrument and report on the outputs			Completed: Data analysed by BMA intern Report on outputs completed by BMA Coordinator				
	3.1.4 Disseminate the report to BMA members			Completed: Report disseminated to all BMA members and relevant partners				
	3.1.4 Use outputs to inform outreach materials			Completed: Outputs used to inform development of Communication Campaign				

TABLE 3: EXAMPLE OF TRACKING OF STATUS OF IMPLEMENTATION OF ACTION PLAN / ANNUAL WORKPLAN TRACKING TABLE

TRACKING SUCCESS OF IMPLEMENTATION OF THE BMA ACTION PLAN / ANNUAL WORKPLAN
1 Not Started
2 Planning but no implementation
3 Implementation, but behind schedule
4 Implementation on schedule
5 Completed / ongoing

OUTCOME 3: AN ENGAGED AND INFORMED GENERAL PUBLIC								
STRATEGY	ACTION	DESIRED STATUS	STATUS AT END OF 2022	STATUS AT END OF 2023	STATUS AT END OF 2024	STATUS AT END OF 2025	STATUS AT END OF 2026	NOTES
3.1 Assessment of general public perception of mangroves to provide an understanding of the target audience and reasons behind mangrove removal at local level, on which to base a targeted communication campaign	3.1.1 Design survey instrument and plan for assessment	Improved understanding of the reasons behind mangrove removal at the local level	5	-	-	-	-	
	3.1.2 Implement the survey instrument in coastal communities through BMA members		2	5	-	-	-	Repeat at the end of 5 years to measure success
	3.1.3 Analyse the data from the survey instrument and report on the outputs		1	5	-	-	-	
	3.1.4 Disseminate the report to BMA members		1	5	-	-	-	
	3.1.4 Use outputs to inform outreach materials		1	5	-	-	-	

TABLE 4: EXAMPLE OF TRACKING OF SUCCESS OF IMPLEMENTATION TABLE

TRACKING SUCCESS OF OUTCOMES OF THE BMA ACTION PLAN					
OUTCOME	**DESIRED STATUS**	**INDICATORS**	**MEANS OF VERIFICATION**	**BASELINE**	**5-YEAR TARGET**
OUTCOME 3. AN ENGAGED AND INFORMED GENERAL PUBLIC	Increased recognition of mangroves and mangrove values	% survey responses indicating level of recognition of mangroves and mangrove values	Baseline survey outputs from Strategy 3.1. 5-year survey outputs (repeat Strategy 3.1).	Baseline survey outputs from Strategy 3.1.	A 30% increase in recognition of mangroves and mangrove values
	Reduced mangrove clearance in urban areas	Ha of mangrove in urban areas	Satellite mapping of mangrove extent	2022 Satellite mapping of mangrove extent in urban areas	Less than 20% decline of mangrove coverage in urban areas
	Reduced mangrove clearance outside the NPAS	Ha of mangrove outside the NPAS	Satellite mapping of mangrove coverage	2027 Satellite mapping of mangrove extent outside of the NPAS	Less than 5% decline of mangrove coverage in urban areas

TABLE 5: EXAMPLE OF OUTCOME INDICATOR TABLE

REFERENCES

1. Acosta A., J. Burgos, J. Chanona, C. Gonzalez, N. Auil, N. Bood, V. Shal, R. Rudon and E, Khishchenko (2017). How is Belize Protecting Our Heritage? Belize Scorecard, 2017.

2. Cherrington, E.A., R. E. Griffin, E. R. Anderson B. E. Hernandez Sandovalac A.I. Flores-Anderson, R. E. Muench. K.N. Markert, E.C. Adams, A. S.Limaye, D.E. Irwin (2020). Use of public Earth observation data for tracking progress in sustainable management of coastal forest ecosystems in Belize, Central America

3. Cherrington, E.A., B. E. Hernandez, N. A. Trejos, O. A. Smith, E. R. Anderson, A. I. Flores, and B. C. Garcia (2010). Technical Report: Identification of Threatened and Resilient Mangroves in The Belize Barrier Reef System. Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC).

4. Cherrington and Cho-Ricketts, 2010. 2010 Belize Mangrove Map Validation Summary. Environmental Research Institute. http://community.eldis.org/.59c095ef/Mangrove%20manpping%20validation%20booklet_final.pdf

5. Cissell, J.R.; Canty, S.W.J.; Steinberg, M.K.; Simpson, L.T. Mapping National Mangrove Cover for Belize Using Google Earth Engine and Sentinel-2 Imagery. Applied Science 2021, 11, 4258.

6. Global Mangrove Alliance (Undated). Global Mangrove Alliance Strategy

7. Global Mangrove Alliance (Undated). Mangrove Principles

8. Global Mangrove Alliance (Undated). Mangrove Principles

9. Government of Belize (2021). Belize's Updated Nationally Determined Contribution

10. Government of Belize (2018). Forests(Protection of Mangroves) Regulations, 2018

11. Government of Belize (2016). National Biodiversity Strategy and Action Plan. Walker Z. and P. Walker, Contracted by the Forest Department

12. Government of Belize (2013). Rationalization of the National Protected Areas System. Walker Z. and P. Walker, Contracted by the Ministry of Natural Resources for the Government of Belize

13. Guevara, O. C. (2020). Regional Strategy for Mangrove Management, Conservation, Restoration and Monitoring in the Mesoamerican Reef, 2020-2025

14. Nawaz, S.N., N. Bood, and V. Shal (2017). Natural Heritage, Natural Wealth: Highlighting the economic benefits of the Belize Barrier Reef Reserve System Works Heritage Site. Technical Report. World Wildlife Fund.

15. Northrop, E., S. Ruffo, G. Taraska, L. Schindler Murray, E. Pidgeon, E. Landis, E. Cerny-Chipman, A. Laura, D. Herr, L. Suatoni, G. Miles, T. Fitzgerald, J.D. McBee, T. Thomas, S. Cooley, A. Merwin, A. Steinsmeier, D. Rader, and M. Finch (2020). "Enhancing Nationally Determined Contributions: Opportunities for Ocean-Based Climate Action" Working Paper. Washington, DC: World Resources Institute. Available

16. Spalding, Mark D and Leal, M. (editors) (2021). The State of the World's Mangroves 2021. Global Mangrove Alliance

17. 2021: Belize Forest (Protection of Mangroves) Regulations 2018: an Overview

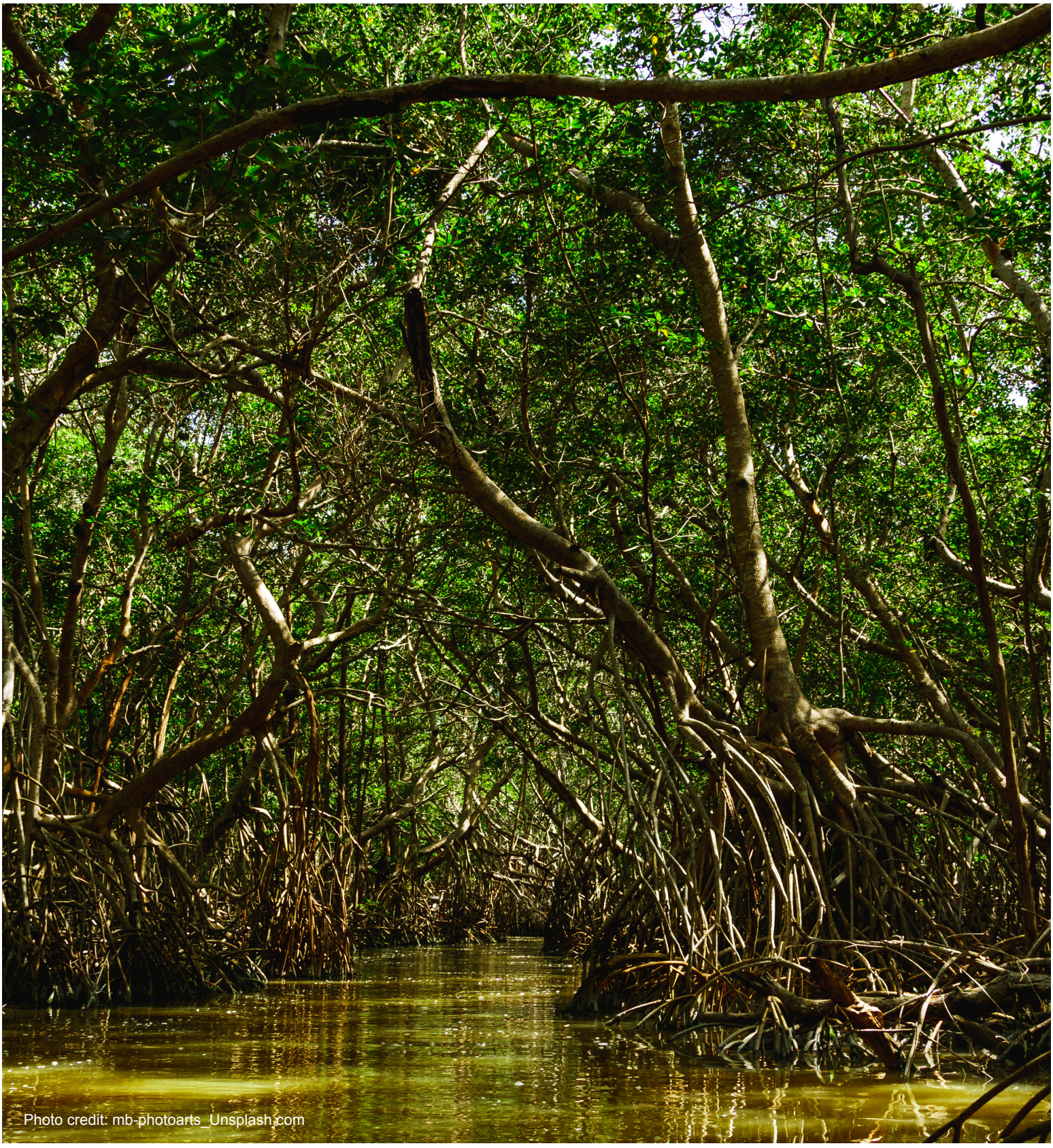

Photo credit: mb-photoarts_Unsplash.com

Working to sustain the natural world for the benefit of people and wildlife.

together possible™ panda.org

WWF, Belize City

For contact details and further information, please visit our international website at www.wwfca.org