



THE BAHAMAS – A LEGACY OF ENVIRONMENTAL STEWARDSHIP

A Response to The Bahamas Matriculation from Overseas Development Assistance & Other International Funds

Abstract

The benefits of The Bahamas' outstanding legacy of environmental stewardship extend to the wider Caribbean & Eastern United States Seaboard. However, these benefits are being threatened by exploitation, climate change and a disproportionate allocation of international funding that makes the sustained management of these resources unattainable. The Bahamas should be eligible to access ODA and other international funds to support its environmental stewardship.

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Executive Summary

The Bahamas' stewardship of the environment is a continuing political legacy. It started when the inhabitants of The Bahamas endowed Harvard University with a gift of dyewoods in return for food, which saved lives. The Bahamas made its contribution to avoid being guilty of the sin of ingratitude. This was followed by the creation of the world's first legally designated marine protected area (MPA), under the Sea Gardens Protection Act of 1892 and continued when Bahamian Geoffrey Johnstone, Oris Russell and Charles Bethel, helped with the establishment of the Exuma Cays Land and Sea Park (ECLSP) and the Bahamas National Trust (BNT) to prevent the sale of The Exumas. It continued when Hubert Ingraham, Prime Minister and avid fisherman, legislated the ban on long-line fishing, championed the establishment of national parks, and increased public funding to BNT and conservation. It continued through successive administrations, resulting in legal infrastructure inclusive of the Planning and Subdivision Act and Forestry Act, which through their provisions, effectively protects all wetlands, mangroves and as much as 50 percent of The Bahamas, from development. It continued through December 2019, with a compendium of necessary new and amended environmental legislations.

The purpose of this paper is to highlight The Bahamas' longstanding environmental leadership and conservation stewardship. It seeks to show the political, ecological and economic benefits that sustained efforts have generated for The Bahamas and its neighbors - both North America and the Caribbean - and to articulate the argument that unilateral exclusion of The Bahamas from international grant funding will result in diminishing the capacity of a unique biological ecosystem which replenishes the region.

The Bahamas contains the largest area of tropical shallow water in the Western Atlantic and is one of the largest shallow water ecosystems in the world. The confluence of the mile deep Tongue of the Ocean along the entire east coast of Andros, coupled with the wide creeks traversing the fifth largest island in the Caribbean and the comingling of fresh and salt water through miles of mangroves, creates the greatest marine estuary in the Western Atlantic Ocean as this system feeds the Great Bahama Bank.

The Great Bahama Bank and the Little Bahama Bank, which together extend 45,000 sq. miles, thrive with commercially and recreationally important fisheries

including the spiny lobster¹, grouper², marlin, dolphin and wahoo. The Bahamas has the largest breeding stocks of spiny lobsters, groupers, conch – the second-largest fishery in The Bahamas³, and many other commercially important fishery resources. These stocks make a significant contribution to replenishment of these resources throughout the region through larval dispersion⁴.

The Bahamas' protection of its national space is unrivaled in the Caribbean and makes a significant and enduring contribution to the survival of species. Its efforts in the management of protected areas and the conservation of natural resources has resulted in the proliferation of marine species and improvements in livelihoods beyond our national boundaries.

The Bahamas directly and indirectly contributes to people and livelihoods across the Caribbean and North American region. The network of marine protected areas not only supports the migration of species but also connects humans and natural resources beyond geographic borders. A fish tagging study in 2012 by the University of Massachusetts Amherst revealed that young bluefin tuna migrate in winter, to areas as far south as the Northwestern Bahamas⁵. A 2016 report by Pew Charitable Trust indicates that bluefin tuna are the most valuable per ton, and though not frequently caught, contribute some US\$2B annually to the global tuna sales.

The connectedness of our resources and our lack of funding for enforcement has resulted however, in the plunder of Bahamian fisheries.

The Bahamas' continued exclusion from Overseas Development Assistance (ODA), and other international and public funding opportunities due to its skewed, average gross national income per capita, will continue to put ecological

¹ The Bahamas is the 4th largest Spiny Lobster fishery in the world - National Geographic - <https://blog.nationalgeographic.org/2013/07/10/analyzing-seagrass-beds-in-the-bahamas-diving-into-field-research-with-shedd-aquarium/>

² Sherman, K.D., Paris, J.R., King, R.A., Moore, K.A., Dahlgren, C.P., Knowles, L.C., Stump, K., Tyler, C.R., Stevens, J.R. (2020) RAD-seq analysis and in situ monitoring of Nassau grouper reveal fine-scale population structure and origins of aggregating fish. *Frontiers in Marine Science* 7:157, doi: 10.3389/fmars.2020.00157

³ Sherman et al (2018) Contemporary and emerging fisheries in The Bahamas – Conservation and management challenges, achievements and future directions. *Fisheries Management and Ecology*, 25(5), 319-331

⁴ Kough, Andrew & Belak, Carolyn & Paris, Claire & Lundy, Agnessa & Cronin, Heather & Gnanalingam, Gaya & Hagedorn, Sam & Skubel, Rachel & Weiler, Amanda & Stoner, Allan. (2019). Ecological spillover from a marine protected area replenishes an over-exploited population across an island chain. *Conservation Science and Practice*. 1. e17. 10.1111/csp2.17.

⁵ *Tracking Atlantic Bluefin tuna shows migration secrets* (2012) <https://www.sciencedaily.com/releases/2012/05/120522175408.htm>

and ecosystem benefits for an entire region at risk. Yet there are exceptions to these restrictions, as the country has received support from the World Bank Group, the Global Environment Facility and more recently, the German Government, for environmental management or recovery.

The politics of grants and public funding must be better nuanced and responsive towards supporting more science and resource-based strategies. Failure to act accordingly invites regional catastrophe. A deliberate change in funding strategy that appropriately supports the ecological and environmental benefits of The Bahamas is therefore urgent and essential. The Bahamas will need to diversify or have access to all available funding mechanisms to support national environmental conservation and socioeconomic goals, and work towards minimizing threats and improving climate resilience.

A. Background

The Bahamas, a large ocean archipelago, comprising some 700 islands and over 2,000 rocks and cays, has a storied and compelling environmental legacy. This legacy started with the Sea Gardens Protection Act of 1892 that created the world's first legally established MPA, followed thereafter by the creation of The Exuma Cays Land and Sea Park (ECLSP), in 1958 and the Bahamas National Trust (BNT), in 1959. The ECLSP, a replenishment area for marine life and species, was the first such marine sanctuary in the world. The BNT was established by an Act of Parliament and is an environmental NGO with a mandate for protected area/national park management.

Neither of these actions were taken because it was in vogue to do such things; they were simply, the right things to do. What began in 1892, was followed by a group of forward-thinking Bahamians and North American conservationists, who had concerns about potential threats to the Exuma Cays from developers. Their conservation efforts and the plight of the West Indian flamingo population led to the establishment of the ECLSP and BNT; a choice that has benefited the entire world.

Today, ECLSP is recognized the world over as a model of conservation success, earning the Platinum Global Ocean Refuge (GLORES) Award.⁶ The Bahamas

⁶ In October 2018, the Exuma Cays Land and Sea Park (ECLSP) earned a Platinum Global Ocean Refuge (GLORES) Award. A GLORES award is only given to marine protected areas (MPAs) that meet the highest science-based standards for biodiversity protection and best practices for management and enforcement.

National Trust, which manages the ECLSP, manages 31 other national parks including the Inagua National Park that protects the West Indian Flamingo. The management of this park has resulted in the repopulation of flamingos not only in The Bahamas but also in Cuba and the Dominican Republic⁷. The Bahamas has nurtured an awareness of creeks and wetland restoration; created a network of MPAs, spearheaded an unprecedented national effort of species protection through specific policies and legislation for the Nassau grouper, the queen conch, spiny lobster, sharks, turtles, birds and other wildlife.

The Bahamas has an abundance of natural resources and wonders. Noteworthy among these are the Lucayan National Park, which incorporates the world's longest underwater cave system. The Bahamas has more coral reef, mangroves and seagrass area, than any other country in the region. It is also home to the highest concentration of blue holes globally, including Dean's Blue Hole – the deepest salt water blue hole on earth. The Bahamas is known as the shark capital of the world, being only the second nation in the region to declare its waters as a shark sanctuary⁸.

The Bahamas has consistently set global standards to preserve and maintain the health of its oceans, coral reefs and marine environment. The Bahamas has doubled the area of its national territory under permanent regulatory protection over the last decade. Although The Bahamas has not always been consistent with Nassau grouper regulations and enforcement, it is in its sixteenth year of protection during spawning aggregations...the first country in the world to do so. Through 2016, the Bahamas led worldwide, with the largest number of Nassau grouper spawning aggregations⁹.

Since the 1990s, The Bahamas has been working to establish a network of marine protected areas designed to safeguard the protection of our marine environment and the socioeconomics of these islands. It is because of its rich, enduring conservation legacy that The Bahamas stands out in the Caribbean, with fishery resources that support Bahamian and non-Bahamian livelihoods.

The Bahamas' commitment to conservation is evident in the abundance of policy change and legislation passed over the years. These Acts include:

⁷ <http://parks242.com/blog/bahamian-national-parks-a-source-of-national-pride/>

⁸ Some 654,715 sq kms. <https://www.pewtrusts.org/en/about/news-room/press-releases-and-statements/2011/07/05/bahamas-acts-to-protect-sharks>

⁹ Sherman KD, Dahlgren CP, Stevens JR, Tyler CR (2016) Integrating population biology into conservation management for endangered Nassau grouper *Epinephelus striatus*. *Mar Ecol Prog Ser* 554:263-280. <https://doi.org/10.3354/meps11771>

- **The Forestry Act 2010**, which prescribes developments in forests and permanently prohibits mangrove forests and wetlands from development.
- **The Bahamas National Trust Act 1959** authorizes the Trust to manage national parks and advise both the public and private sectors on development issues, biodiversity and resource management.
- **The Wild Birds Protection Act 1952** makes provision for the protection and capture of wild birds.
- **The Fisheries Resources (Jurisdiction and Conservation) Act 1977** established The Bahamas' Exclusive Fisheries Zone and oversees the conservation and management of fishery resources. It also bans long-line fishing and empowers the Minister of Agriculture and Fisheries, to declare marine protected areas.
- **The Wild Animals (Protection) Act 1968** makes provision for the control of the taking and export of wild animals.
- **The Wildlife Conservation and Trade Act 2004** provides for the implementation of CITES¹⁰ with a view to protect wild species from harm through unsustainable exploitation.
- In December 2019, the Government enacted a compendium of urgent environmental bills including the much-anticipated **Environmental Planning and Protection Act 2019** that regulates conservation and the sustainable use of the environment.

Apart from the ban on long-line fishing, none of these enacted laws were celebrated with fanfare or widespread public support. The impulse for legislation was generally the result of enlightened policy making. The specific acts of declaring protected areas, coupled with the comprehensive legislation, effectively protects a significant percent of the archipelago.

¹⁰ Convention on International Trade in Endangered Species of Wild Flora and Fauna

B. International Conventions, the Caribbean Challenge Initiative, Caribbean Biodiversity Fund and Bahamas Protected Areas Fund

i. Ratifications of International Conventions and Protocols

The Bahamas has been an active participant in regional and international negotiations for conservation across successive governmental administrations. As a consequence of the United Nations Conference on Environment and Development (UNCED) held in 1992, The Bahamas signed the United Nation's Framework Convention on Climate Change in the same year, which was subsequently ratified in 1994. The Bahamas also signed the Convention on Biological Diversity in 1992 and ratified it the following year. The very First Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP1), which identified the funding mechanism for the Convention, was held in The Bahamas in 1994, at the invitation of The Government of The Bahamas. It submitted its National Biodiversity Strategy and Action Plan to the UN Environment Programme in 1999.

In 1994 the Government of The Bahamas also established an Environmental Secretariat in the office of the Prime Minister¹¹, which subsequently became The Bahamas Environment, Science and Technology (BEST) Commission in 1995. The BEST Commission is tasked with the provision of technical and scientific expertise to The Government, including the implementation of multilateral environmental agreements and the review of environmental assessments and management plans for major developments within The Bahamas.

The Bahamas is party to the Ramsar Convention for the conservation and sustainable utilization of wetlands, which was signed in 1997. The Bahamas currently has one RAMSAR site – the 32,600 hectares (81,000 acres) Inagua National Park. The Bahamas also ratified the United Nations Convention to Combat Desertification in 2000.

The Bahamas is also party to or in the process of applying to, several protocols including:

¹¹ Wells-Moultrie, S. (2006) *The Evolution of Environmental Management in The Bahamas, 1994-2005* <https://www.open.uwi.edu/sites/default/files/bnccde/bahamas/conference/papers/wellsmoultrie.html>

- **Cartagena Protocol** – promoting biosafety within biotechnology (ratified in 2004)
- **Stockholm Convention** – combating persistent organic chemicals (ratified 2005)
- **Vienna Convention & Montreal Protocol** – protecting the ozone layer (1993)
- **Kyoto Protocol** - combating global warming (acceptance in 2015)
- **Nagoya Protocol** – accessing genetic resources and the fair and equitable sharing of their benefits (in process)

ii. Caribbean Challenge Initiative and Caribbean Biodiversity Fund

In 2008, the Government committed to doubling the target of the Convention on Biological Diversity Programme of Work for Protected Areas by effectively conserving at least 20% of near-shore marine resources across The Bahamas by 2020 through the Caribbean Challenge Initiative (CCI), organized by The Nature Conservancy. The Government of The Bahamas, with The Government of Grenada, successfully championed the adoption of the CCI across the Caribbean. Caribbean Governments also committed to the effective management of a minimum of 50% of existing marine and 50% of existing terrestrial protected areas by 2020. The Government remains committed to this goal¹².

The Bahamas is vital to the overall conservation success of the CCI, given its expansive marine area – 100,000 square miles. Approximately 50% of the total marine shelf area in the Caribbean is within The Bahamas, representing some 71% of the total targeted marine shelf area of the CCI and Caribbean Biodiversity Fund (CBF)¹³, member countries. The Bahamas’ successful attainment of 20% of its marine environment will also contribute to a third of the Caribbean’s CBD¹⁴ goal. The Bahamas’ area is eight times the total shelf area of the Eastern

¹² More recently, In 2018, The Nature Conservancy, Bahamas National Trust and Bahamas Reef Environment Education Foundation under the “Bahamas Protected Project” delivered a marine protection plan to the Government that made the case for 43 new proposed areas which once declared, will create a network of MPA’s encompassing the life cycles and larval dispersal of the Bahamas key fishery resources. Establishment of these areas will achieve the Bahamas’ commitment to protect key biodiversity under the Caribbean Challenge. The plan may be found at: <http://142.93.73.144/wp-content/uploads/2020/02/Bahamas-Protected-Marine-Protection-Plan-Exec-Summary.pdf>

¹³ CBF is the sustainable finance arm of the Caribbean Challenge Initiative, tasked with securing funding for biodiversity, climate resilience and similar, across member countries in the Caribbean.

¹⁴ CBD – Convention on Biological Diversity

Caribbean islands combined. There can be no ecological success for the CCI within the Caribbean, without the contributions of The Bahamas. These relationships are displayed in Table 1 below.

Description	Total Area (km 2)						
	EEZ w/o Land	Nursery Habitat	Shallow	Shelf	Oceanic	CCI Goal	CBD Goal
Bahamas	620,157	6,095	104,128	124,877	495,526	24,975	62,016
Percentage of Bahamas to CBF & CCI Countries	35.1%	65.7%	78.3%	70.7%	31.2%	70.7%	35.1%
Percentage of Bahamas to Eastern Caribbean Countries - Martinique excluded	152.8%	699.2%	1479.5%	796.8%	127.0%	796.8%	152.8%

Table 1. The Bahamas’ contribution to the CCI and CBD Goals.

Despite the goals and commitments under the CCI, Caribbean Governments struggled with funding for management effectiveness. Discussions ensued regarding long-term funding for biodiversity conservation administered by the Caribbean Development Bank. However, the Bank was not ratified as the administrator of donor funds, which set in motion a fragmented system leading to significant political losses for the CCI. The loss of the opportunity to strengthen an existing regional organization has had a negative impact on capacity building in the region.

In 2012, The Nature Conservancy and the German Development Bank (KfW), supported by the Global Environment Facility (GEF), World Bank and UNDP, established the Caribbean Biodiversity Fund as a non-resident administrator of some \$42M in funding pledged to catalyze sustainable funding for biodiversity across the region. Despite this off-shore administration, the Government of The Bahamas, again the champion of regional conservation, indicated its commitment to the CCI and CBF by establishing and supporting the capitalization of the first National Conservation Trust Fund within the CBF’s Sustainable Financing Architecture – the Bahamas Protected Areas Fund.

iii. Bahamas Protected Areas Fund

The Bahamas Protected Area Fund (BPAF), was enacted in 2014 to “ensure sustainable financing into perpetuity” for scientific and policy research, education, conservation and management of protected areas, including national parks. It is also mandated to support areas established for biodiversity conservation generally, the protection of carbon sinks, water resources, wetlands and blue holes, degraded or threatened ecosystems as well as areas established for adapting to and mitigating against climate change.

BPAF was initially capitalized by \$2M from the Government of The Bahamas and \$500K from the Global Environment Facility. Income from the resultant endowment is earmarked to support conservation actions in keeping with the Fund’s purpose – primarily, the management of The Bahamas National Protected Areas System.

C. Productivity of The Bahamas National Protected Areas

The Bahamas’ protection of its national space is unrivaled in the Caribbean and makes a significant and enduring contribution to the survival of species. Its efforts in the management of protected areas and the conservation of natural resources has resulted in the proliferation of marine species and improvements in livelihoods beyond our national boundaries. The Bahamas contains the largest area of tropical shallow water in the Western Atlantic and is one of the largest shallow water ecosystems in the world.

Bahamas Banks – Supporting the Region

Much of this shallow water is concentrated on the Great Bahama and Little Bahama Banks. The Great Bahama Bank is less than 20m in depth, which has created a valuable ecological and economical resource. Coral reefs cover 1,987 km² (2.2%) of the Great Bahama Bank and 324 km² of the Little Bahama Bank. Coral reefs provide habitat and shelter for marine organisms and are an essential source of nitrogen for the food chain¹⁵. This, along with the confluence of the mile

¹⁵ Biodiversity and the Great Barrier Reef: The Importance of Coral Reefs
<https://www.qm.qld.gov.au/microsites/biodiscovery/05human-impact/importance-of-coral-reefs.html>

deep Tongue of the Ocean, along the entire east coast of Andros, coupled with the wide creeks traversing the fifth largest island in the Caribbean, and the comingling of fresh and salt water through the miles of mangroves, creates the greatest marine estuary in the western Atlantic Ocean as this system feeds the Great Bahama bank.

These banks, which extend 45,000 sq. miles, thrive with recreational species including marlin, dolphin and wahoo, and commercially important fisheries including the spiny lobster¹⁶, grouper, conch and snapper. The Bahamas has the largest breeding stocks of spiny lobsters, groupers, conch, and many other commercially important fishery resources. Sherman et al. (2018), note that lobsters, groupers and conch are the most commercially valuable species with a combined annual landing value of \$1.4B¹⁷.

Bahamian stocks also make a significant contribution to their replenishment throughout the region through larval dispersion. Callwood (2010) research demonstrated that larval particles from spiny lobster in The Bahamas, were seen to travel on average, 4000km from the source¹⁸. The Bahamas' critical fish nursery habitats are believed to support the entire Caribbean. Mangroves in and around Bimini are important nursery habitats for various sharks including hammerheads (Guttridge et al, 2017¹⁹), lemon sharks, other fish stock, plus numerous birds and reptiles. Mangroves in The Bahamas are an essential nursery habitat for over 100 species of fish and marine invertebrates, including the critically endangered Nassau grouper and the smalltooth sawfish. The Bahamas has the most expansive seagrass beds in the Caribbean²⁰. These beds serve as important habitats for numerous marine species including the queen conch and sea turtles, and are being increasingly considered for carbon sequestration²¹.

¹⁶ The Bahamas is the 4th largest Spiny Lobster fishery in the world - National Geographic - <https://blog.nationalgeographic.org/2013/07/10/analyzing-seagrass-beds-in-the-bahamas-diving-into-field-research-with-shedd-aquarium/>

¹⁷ Sherman, K. et al (2018) *Contemporary and emerging fisheries in The Bahamas—Conservation and management challenges, achievements and future directions*. Available at: <https://onlinelibrary.wiley.com/doi/10.1111/fme.12299>

¹⁸ Callwood, K. A. (2010) *Use of Larval Connectivity Modeling to Determine Settlement Habitats of Panulirus Argus in The Bahamas as a Pre-Cursor to Marine Protected Area Network Planning*. N.p.,

¹⁹ Guttridge et al (2017), *Philopatry and regional connectivity of the Great Hammerhead Shark, Sphyrna mokarran in the U.S. and the Bahamas*, *Frontiers in Marine Science*. Available at: <https://www.frontiersin.org/articles/10.3389/fmars.2017.00003/full>

²⁰ Expanding The Bahamas Marine Protected Area Network to Protect 20% of the Marine and Coastal Environment by 2020: A Gap Analysis

²¹ Seagrass holds up to 83,000 tonne of carbon per square kilometer - <https://www.nature.com/articles/ngeo1477>

The Little Bahama Bank, rich in nutrients and bait fish, supports much of the diet of pelagic fish and predatory species that thrive along this bank²². The Gulf Stream moves this nutrient dense and fertile water along its way²³. This and the restriction on long-line fishing²⁴ imposed in The Bahamas, has contributed to the productivity of the Northern Atlantic Ocean - one of the most valuable commercial fisheries in the world.

ii. Importance and Plunder of Bahamian Fisheries

Sherman et al.(2018), indicated that through 2010, 35,000 Bahamians, particularly in the Family Islands depended on local fisheries for subsistence and livelihoods. These islands directly and indirectly contribute to people and livelihoods across the Caribbean and North American region. The network of marine protected areas not only supports the migration of species but connects humans and natural resources beyond geographic borders. A fish tagging study in 2012 by the University of Massachusetts Amherst revealed that young bluefin tuna migrate in winter, to areas as far south as the Northwestern Bahamas²⁵. A 2016 report by Pew Charitable Trust indicates that bluefin tuna are the most valuable per ton, and though not frequently caught, contribute some US\$2B annually to the global tuna sales.

The connectedness of our resources and our lack of funding for enforcement, has resulted however, in the exploitation and plunder of Bahamian fisheries. A review of illegal fishing and those involved, would illustrate the need for shared responses and shared allocation of resources. Cay Sal Bank, a marine managed area that lies between Cuba and the US is known for coral reefs systems, sea grass, marine mammals, sea turtles and an abundance of fish species. Established as a protected area in 2015 and presented to The Government of The Bahamas for a 2.8M acre expansion in 2018, Cay Sal and the Bahama Banks are being plundered by illegal unauthorized and unregulated (IUU), fishing activities²⁶. In 2014, Mission Blue reported seeing hundreds of IUU boats from

²² Sun Sentinel (1992), *Location, respect make for big fish*

²³ Great Hammerhead Sharks of Bimini <https://indopacificimages.com/great-hammerhead-sharks-of-bimini/>

²⁴ Chapter 244, Fisheries Resources (Jurisdiction and Conservation) Act, 1977, Section 22.

²⁵ *Tracking Atlantic Bluefin tuna shows migration secrets* (2012) Available at: <https://www.sciencedaily.com/releases/2012/05/120522175408.htm>

²⁶ Blue Mission (2014) *Encounter at Cay Sal Reveals Poachers in the Bahamas* Available at: <https://mission-blue.org/2014/08/open-ocean-encounter-at-cay-sal-reveals-poachers-in-the-bahamas/>

the Dominican Republic around Cay Sal harvesting grouper, parrot fish, mutton snappers and other snappers. Illegal fishing by Dominicans has been an historical challenge. So, inadvertently and through illegal fishing by neighboring countries (many of which benefit from the posterity of Bahamian conservation stewardship) The Bahamas makes a contribution while the resources face mounting fishing pressure. Sherman et al. (2018), point to declining trends in fisheries stock that will persist without “strategic management”. Strategic management however requires strategic resources. Clearly the need for expanded and directed funding is self-evident.

The Bahamas Lobster Fisheries Improvement Project opined that “poaching by commercial fisherman from the Dominican Republic is the greatest threat to Bahamian seafood resources. The number of lobsters removed illegally from Bahamian waters by poachers was estimated at a staggering 35 per cent (or 4.3 million) of the known export of 12.5M lobsters from The Bahamas”²⁷. Despite not having any commercially viable stock of spiny lobster, the Dominican Republic exports tens of thousands of lobster tails to the US every year. Dominican fishermen are “decimating the Bahamian Fisheries” - removing undersized conch, lobster and young grouper. Further, even with the US’ “Lacey Act” which aims to prevent illegal trading, Bahamian fisherman also complain about illegal poaching from South Florida and Cuba.

Per the Royal Bahamas Defence Force website, records of Cuban poaching in Bahamian waters date back to 1971²⁸. It also details one of the most notorious and unforgettable incidents involving Cuban poaching in Bahamian waters, the “Flamingo Incident”. In May 1980, the Royal Bahamas Defence Force, on routine patrol of Bahamian territorial waters, arrested and attempted to convey eight Cuban fisherman caught poaching in waters some 500 yards north of Cay Santo Domingo. Shortly after the arrest of the fisherman, Cuban military jets opened fire on the Defence Force patrol, eventually sinking one vessel - the Flamingo - and killing four marines. The Cuban military continued their aggression until a US military plane interrupted their attacks, which by now had moved on to Ragged Island. It was later determined that the Cuban vessel was confiscated and at least two of the men were routinely caught poaching in Bahamian waters.

Funding for monitoring and enforcement is therefore essential to the preservation of Bahamian fisheries.

²⁷ <https://mission-blue.org/2014/08/open-ocean-encounter-at-cay-sal-reveals-poachers-in-the-bahamas/>

²⁸ <https://rbdf.gov.bs/the-flamingo-incident/>

D. Climate Change – “An Existential Threat”

“Climate change is altering ocean climate, chemistry, circulation, sea level and ice distribution. Collectively, these system changes have critical impacts on the habitats, biological productivities and species assemblages that underpin many of the economic benefits of the sea.”²⁹

Climatic events including massive hurricanes, extensive floods, coral bleaching, blizzards and droughts have devastated various countries within our region. No country is spared the “existential threat” from climate change. Bleaching, a leading threat to coral reefs over the past three decades, kills corals directly and increases their vulnerability to disease. For example, in 1998, bleaching and subsequent diseases reduced coral cover at monitoring sites on the Andros Barrier Reef, by up to 50%³⁰. Since 1995, there have been more than 17 above average - more intense - hurricanes in the Atlantic³¹.

Climate change is not a respecter of race, ethnicity, nations or income; we are all increasingly, at risk.

- In August 2017, **Hurricane Harvey** left a trail of death and destruction across the Windward Islands, Latin American, and the Southern and Eastern US – 109 dead and \$125B in damages.
- In September 2017, **Hurricane Irma** devastated Barbuda, Saint Barthélemy, Saint Martin, Anguilla, and the Virgin Islands, not including extensive damage in the contiguous US. It took 134 lives and resulted in \$77.16B in damages.
- Days later, **Hurricane Maria** devastated Dominica, St Croix, Puerto Rico, parts of The Bahamas, Haiti and the US leaving 3,059 persons dead and \$91.61B in damages.
- In 2018, **Hurricane Michael** tore across Central America, the Southern US and the East Coast, leaving 74 dead and \$25.1B in damages.
- Also, in 2018, a **tropical storm** brought severe flooding to Trinidad and Tobago.
- In 2019 **Hurricane Dorian** - tied as the strongest hurricane to make landfall in the Atlantic, was a devastating indicator of the power of

²⁹ High Level Panel for a Sustainable Ocean Economy (2018), Blue Paper - *Expected Impacts of Climate Change*

³⁰ Per Dr. Craig Dahlgren, Executive Director, Perry Institute of Marine Science.

³¹ <https://climate.nasa.gov/blog/2956/how-climate-change-may-be-impacting-storms-over-earths-tropical-oceans/>

anthropogenic influences. Hurricane Dorian intensified from a category 2 to a 5 hurricane in one day, striking The Bahamas as a deadly 185 mph event. Some 70 persons died, others remain missing while damages were estimated at \$3.4B by the Inter-American Development Bank.

Science suggests that extreme storms are becoming the new norm³². As sea levels rise due to global warming, millions will be at risk for flooding and or displacement. Within the Caribbean, a diaspora of coastal countries, 43.5M³³ persons, are increasingly exposed to the extreme dangers of climatic events.

All will be affected and therefore all must work together. Extreme storm events can have significant impacts on hard and soft infrastructure – roads, buildings, technology and systems, in addition to the human capacity needed for socioeconomic recovery. Recovery can be arduous. Since 2017, four major hurricanes have had severe impacts on The Bahamas: each one redirecting funds away from critical biodiversity conservation and climate resilience. Each one increasing the risk for greater exposure and reductions in the security and quality of life for Bahamians and their neighbours alike.

E. Management Costs & Economic Benefits of Bahamian Protected Areas

i. Management Costs

The financial cost of managing protected areas is significant globally. In The Bahamas, this cost in 2018 for status quo management of the BNPAS was estimated at \$18.78M annually³⁴. However, the annual cost to achieve management effectiveness, which includes strong management plans and operational capacity (surveillance, enforcement, monitoring and evaluation, outreach and stakeholder support), was projected at \$70.93M. This gap demonstrates significant underfunding of protected area managers and the protected areas system. In fact, the projected cost to effectively manage the protected areas system for 2020 is \$73.01M moving to \$157.98M by 2027. This accelerated cost includes the projected 10% increase in declared MPAs and the associated capital infrastructure and operational needs of management agencies

³² Bonjour R.N, (2020) *Climate Gentrification: Flooding the Cities*
https://scholarship.shu.edu/cgi/viewcontent.cgi?article=2037&context=student_scholarship

³³ <https://www.worldometers.info/world-population/caribbean-population/>

³⁴ Blue Earth Consultants (2017) “*Interim Report: Sustainable Financing for the Bahamas National Protected Areas System*”

including the Department of Marine Resources, the Forestry Unit at the Ministry of Environment, the Bahamas National Trust and the Clifton Heritage National Park³⁵. Conversely, funding identified for managing protected areas was estimated at \$10.58M in 2018, \$10.75M in 2020 and \$15.38M for 2027. These funding projections however were estimated prior to the devastation of Hurricane Dorian which is slated to have a significant negative impact on their realization.

ii. Economic Value of Ecosystem Services of MPAs

Management costs, though expensive, are necessary. The Bahamas is an archipelago, which requires more resources to distribute across a large area. This geological dispersion also extends the need for technical capacity required for effective research, monitoring, enforcement and outreach. These costs however, do not compare with the value of protected areas (PAs) across The Bahamas. The 2017 Natural Capital Project's "*Economic Valuation of Ecosystem Services in Bahamian Marine Protected Areas*" stressed that the benefits of PAs extend beyond ecology to direct benefits for people. While MPAs protect critical spawning and nursery habitats (IUCN-WCPA 2008) and serve as safe havens for exploited species (Kelleher 1999), the protection of near-shore habitats support fisheries, tourism, coastlines and communities, carbon sequestration and water quality. Per the Natural Capital Report, MPAs within The Bahamas contribute \$23.5M to lobster export values annually, \$67.6M to tourism, \$806M in coastal protection and capture over \$5B annually in carbon sequestration. With MPAs contributing almost \$6B in ecosystem services, the management costs pale in comparison – some 2.63% of total eco-system benefits.

F. Exclusion from Overseas Development Assistance and other International Sources of Funding

The Bahamas' continued exclusion from Overseas Development Assistance (ODA) and other international and public funding opportunities due to its skewed, average gross national income (GNI), per capita, will continue to put ecological and ecosystem benefits for an entire region at risk. The nominal GNI per capita within The Bahamas was \$30,330 for 2018³⁶. This does not consider the disparity between wealthy, second-home owners or professional expatriate workers (whose salaries and benefits that typically include housing and transportation,

³⁵ Due to a lack of available information, the cost of managing the Clifton Heritage National Park was significantly understated in these numbers as are support costs provided by the Royal Bahamas Defence Force.

³⁶ World Bank - <https://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD>

also exceed the benefit packages of their local peers), and the salaries of the average Bahamian worker. Nominal GNI per capita also does not consider the exorbitant cost of living. The Bahamas was recently identified as the sixth most expensive place to live in the world by CEO Magazine (The Tribune, 2020)³⁷. The paper stressed that Bahamian businesses and residents are struggling with the rising cost of living. Per capita GNI also ignores spatial distribution of wealth – The Bahamas has more area and more islands than the Eastern Caribbean yet is treated as one unit. If Bahamian islands were to be treated individually, most would likely be below the per capita threshold for funding. This has real consequences for Bahamian environmental NGOs whose mission is often relegated behind public health, education and national security, as it relates to subventions from The Government or contributions from private donors.

To note, the real GNI per capita (which considers the cost of living), for 2018 was \$10,133.26 and 10,264.81 for the previous year³⁸. These figures generated from CEIC Data drawn from The World Bank, indicated that the highest level of Real GNI for The Bahamas since 1989, was \$10,614.21 which occurred in 2007. In fact, Real GNI has averaged only \$9,923.99 annually since 1989.

Compounding the issue are exogenous shocks, including economic downturns such as the 2008/2009 financial crisis and the growing pattern of extreme events, which exacerbate reductions in funding available for environmental conservation. Hurricane Dorian for example, eroded the output of two of the three most economically productive islands in The Bahamas. The expected impact of Covid-19 is beginning to crystalize across the nation, with thousands already laid off and businesses closing. The Tribune's March 23, 2020 editorial stated that The Minister of Tourism, Dionisio D'Aguilar has indicated that some 30% of the workforce is already unemployed as the tourism sector plunged in the wake of the widening pandemic.

It is important to note exceptions to The Bahamas' disqualification from ODA. In 2019, following the devastation of Hurricane Dorian, the Bahamas Protected Areas Fund lobbied and secured EUR 1M, from the German Federal Ministry of Economic Cooperation and Development through the German Development Bank (KfW), for hurricane assessments and recovery. Furthermore, The World Bank Group is committed to assist The Bahamas and others, through its Small

³⁷ The Tribune (2020), *Economy Fears: Bahamas Ranked World's Sixth Most Expensive State* <http://www.tribune242.com/news/2020/feb/05/economy-fears-bahamas-ranked-worlds-sixth-most/>

³⁸ CEIC Data <https://www.ceicdata.com/en/bahamas/gross-domestic-product-real/bs-gdp-real-gross-national-income>.

States policy. One of their priority areas for such assistance is developing innovative disaster and climate financing mechanisms.

An option for consideration for ODA could be to adopt project funding eligibility criteria similar to that of the Global Environment Facility. This would not only be a plus for The Bahamas, but other countries as well.

Conclusion

This paper sought to capture the environmental legacy of The Bahamas by highlighting the political leadership and environmental stewardship of The Bahamas since the 1950s. It showed the productivity and value of our marine areas and species, not merely to The Bahamas, but to the region - both ecologically and economically. It showed the abundance, biodiversity and connectivity – ecological significance and contributions, that Bahamian protected species and ecosystems have at a regional and global scale.

It also showed that the benefits are under threat from exploitation, massive and illegal plunder, critically low levels of funding for management effectiveness and exogenous threats, in particular, climate change. The Bahamas is one of the most vulnerable countries to impacts of climate change – despite not being a major contributor. Bahamian species and natural resources are under increasing and relentless attack, with far reaching impacts that will ripple across the region.

Available funding is grossly inadequate to support current and future needs for technical capacity and the resources needed to sustain research, monitoring, effective protected area management and enforcement, and public engagement. Inadequate funding will generate failures in species and ecosystem conservation.

This is a frightening reality, an unsustainable outlook! We encourage the Government of The Bahamas and international and public sector funders, to revisit what is at risk, if management agencies are no longer able to protect our natural environment, people and resources. The gradation of nations from international assistance based on Nominal GNI per capita without consideration for the cost of living and the diminishing purchasing power, is short-sighted. Failure to consider relevant factors is contradictory to global goals for biodiversity conservation, sustainability and climate resilience.

There is an urgent and significant need for regional scientific collaboration to

ensure integration of efforts across the region to prepare and fight against the ravages of climate change. As species migrate in response to global changes, management efforts must be adaptive and transparent because of the uncertainties ahead. We must evaluate and strengthen the link between environmentally sustainable activities, food security and livelihoods – there is a wealth of opportunity for example in marine renewable energy, mariculture, blue carbon markets and marine biotechnology. We must become more egalitarian in the support of science. We must encourage research that leads to innovative new products and services in anticipation of climatic impacts. One good example of this is the reengineering of sargassum (a growing threat to health and tourism in the Caribbean), as a pesticide and fertilizer in St. Lucia.

The politics of grants and public funding must be better nuanced and responsive towards more science and resource-based strategies. Improved collaborations and projects may encourage tougher enforcement³⁹ and the protection of our environment and natural resources. Finally, within the Caribbean there must be shared policies and institutions that support a healthy response to climate resilience.

Funding allocations must be revisited to assess nations based upon their “global benefits” - the size and ecological and economic productivity of their protected areas (both locally and regionally), the expected cost of effective management, and clear and strategic plans for establishing sustainable levels for the future. Failure to act accordingly invites regional catastrophe. A deliberate change in funding strategies that appropriately supports the ecological and environmental benefits of The Bahamas is therefore urgent and essential.

This access to additional international funding will be used to systematically help to reduce the threats and needs. Environmentalists can begin prioritizing the implementation of key national environmental strategies, research and development of critical data repositories, monitoring, and species conservation and management plans for key species and ecosystems. Increased focus can be given to scaling up and increasing capacity for enforcement of protected areas, national fishery and wildlife regulations and developing and implementing regional and international strategies to combat IUU fishing.

³⁹ K. Callwood(2010) *Use of Larval Connectivity Modeling to Determine Settlement Habitats of *Panulirus argus* in The Bahamas as a Pre-cursor to Marine Protected Area Network Planning* Available at: https://scholarlyrepository.miami.edu/cgi/viewcontent.cgi?article=1058&context=oa_theses