Lucayan National Park
Grand Bahama, The Bahamas

General Management Plan
2024-2034

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"*Meeting the Challenge of 2020 in The Bahamas*"

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List of Abbreviations

BNPAS	Bahamas National Protected Area System
BNT	Bahamas National Trust
CBD	Convention on Biological Diversity
DBEF-F	Dry Broadleaf Evergreen Formation – Forest
DBEF-S	Dry Broadleaf Evergreen Formation – Shrubland
DEVCO	Grand Bahama Development Company
ECLSP	Exuma Cays Land & Sea Park
EGA	Ecological Gap Analysis
GBPA	Grand Bahama Port Authority
GEF	Global Environment Facility
GMP	General Management Plan
IDB	Inter-American Development Bank
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
LNP	Lucayan National Park
NISS	National Invasive Species Strategy
PA	Protected Area
REA	Rapid Ecological Assessment
SCTLD	Stony Coral Tissue Loss Disease
TNC	The Nature Conservancy

1.0 Executive Summary

The General Management Plan (GMP) for the Lucayan National Park (LNP) is designed to outline a long-term vision for managing the park over a 10-year period. Its primary objective is to establish a comprehensive management framework that outlines clear and attainable goals. This plan has been developed through a participatory stakeholder engagement process, involving local government, relevant government agencies, the Grand Bahama Development Company (DEVCO), the Grand Bahama Port Authority (GBPA), tour operators, and residents of Grand Bahama including the East End settlements. This collaborative effort aims to ensure the park's protection for the benefit of future generations. The plan actively considers the interests of all stakeholders involved and is intended to remain adaptable to changes over time. Moreover, it strives for accessibility, aiming to be easily comprehensible to the public as a dynamic document.

The Lucayan National Park was officially established in 1982, following the issuance of a lease from The Grand Bahama Development Company (DEVCO) to The Bahamas National Trust, enabling effective management of the area. The primary aim of designating this site as a protected area (PA) is to safeguard one of the world's lengthiest documented underwater cave systems. In 2015, the park's boundaries were expanded to encompass vital marine habitats further east in Gold Rock creek and offshore of Gold Rock Beach. The boundaries also encompass the protection of rare cave-dwelling creatures, such as Remipedia, and the preservation of artifacts and remnants from the early indigenous Lucayan civilization.

The Lucayan National Park encapsulates representative examples of significant ecological, biological, and geological features that persist in a natural state, enabling continuous ecological functions and processes. Presently, the LNP is characterized as a 'National Park', or Category II, in the International Union for Conservation of Nature (IUCN) Protected Area management Category system. This categorization emphasizes the preservation of environmental features and processes while providing opportunities for environmental, cultural, spiritual, scientific, educational, recreational, and visitor activities. It is essential to acknowledge that the current categorization of LNP might change following stakeholder input for the park's zoning plan completion.

Within the park's boundaries, all vegetative zones found in The Bahamas are represented, including pineland, freshwater wetlands, transition zones, mangroves, coastal dry evergreen broadleaf formations, and dunes. Additionally, Lucayan National Park holds the designation of a Key Biodiversity Area (KBA) due to its support of three restricted-range bird species: the Bahama Swallow (*Tachycineta cyaneoviridis)*, Olive-Capped Warbler (*Setophaga pityophila)*, and Thick-Billed Vireo (*Vireo crassirostris crassirostris)*.

The park features boardwalks, staircases leading to two cave entrances, and a 550-foot bridge spanning Gold Rock Creek that provides access to the beach. The LNP ranks as The Bahamas National Trust's second-most-visited park, attracting approximately 30,000 visitors annually.

The park's resources encounter challenges common throughout The Bahamas. These challenges include pollution, incompatible development, the threat of invasive alien species (IAS) jeopardizing native flora and fauna, susceptibility to severe natural hazards like fire, sargassum influxes, hurricanes, and increased pressure on sensitive cave systems and the stony coral tissue loss disease (SCTLD).

2.0 Introduction

This General Management Plan (GMP) describes the park's purpose, values, benefits, significance, and unique characteristics. It aims to provide a long-term vision for the comprehensive management of the park over a 10-year period. This plan has been developed through stakeholder engagement with local government, government offices, the Grand Bahama Development Company (DEVCO), the Grand Bahama Port Authority (GBPA), tour operators, and residents (including the East End communities). This collaborative effort ensures the protection of the park for the benefit of future generations.

The GMP specifies detailed goals, objectives, and the actions necessary for successful implementation. These actions encompass infrastructure enhancements, initiatives for the removal of invasive species, volunteer-driven programs, and continual restoration efforts.

2.1 History of Lucayan National Park

The concept of establishing a park at the Lucayan Caverns emerged in the early 1970s when Peter Barratt, a pivotal figure in Freeport's development, conducted extensive explorations of the area by both land and air. During these explorations, Barratt encountered a stunning beach with some of the highest sand dunes on the island and a thriving creek ecosystem supported by extensive, unspoiled mangroves. Further investigations by Barratt revealed preserved evidence of Lucayan remains and artifacts within the caves. Subsequent discussions between Barratt and Sir Jack Hayward of the Grand Bahama Development Company culminated in an agreement to safeguard the area. In 1982, the lease for the area was granted to the Bahamas National Trust and was named in honor of the indigenous people of The Bahamas.

The park's initial development saw a stroke of luck in 1985 when Operation Raleigh, a multinational Peace Corps organization patronized by the then Prince Charles, expressed interest in potential projects for a youth group on the island. A site plan was devised, including a figure-eight pathway and boardwalk system, the designation of a footbridge location over the creek, and a preliminary design for a visitor center. Within a few weeks and with substantial contributions of materials and labor from the Grand Bahama community, the pathways were carved out, and construction commenced on the bridge spanning Gold Rock Creek. The park underwent recent expansion, to encompass crucial marine ecosystems off the shores of Gold Rock Beach, and a larger portion of Gold Rock Creek.

3.0 Site Description

3.1 Physical Features

The Lucayan National Park, initially spanning 40 acres (16.2 ha), was greatly expanded in 2015, enlarging its total area to approximately 1,937 acres (783.9 ha), incorporating marine habitats adjacent to Gold Rock Beach. The park is located 25 miles (40.2 km) east of the city of Freeport and is bisected by the Grand Bahama Highway into two (2) parts, a northern and southern section. Within the park, two primary visitor-accessible trails, forming a figure-eight pattern, go through the area, along with boardwalks and staircases leading to the entrances of two caves, Ben's Cave and Burial Mound. Additionally, the park boasts the David A.C. Knowles Bridge, spanning Gold Rock Creek and offering access to Gold Rock Beach.

Geology

The limestone present in the Lucayan National Park belongs to the Mid-Pleistocene Formation, representing the oldest among the three primary limestone units discovered in The Bahamas. Elements of this formation trace back to a period between 500,000 to 200,000 years ago (Mylroie, 2006). Comprised of aeolianites, or fossilized carbonate sand dunes, this formation possesses a fragile and brittle nature. The freshwater lens is observable approximately 16.4 feet (5 meters) below the surface level within Ben's Cave and Burial Mound Cave.

Karst windows offer access to an extensive underwater cave system shaped by a combination of rainfall erosion and the collapse of the cavity ceiling from below. Notably, the karst cave system within the LNP stands as one of the world's lengthiest documented underwater cave systems. Its known length surpasses the boundaries of LNP, with certain caves accessible through openings situated within the park, highlighting the interconnectedness of this cave network.

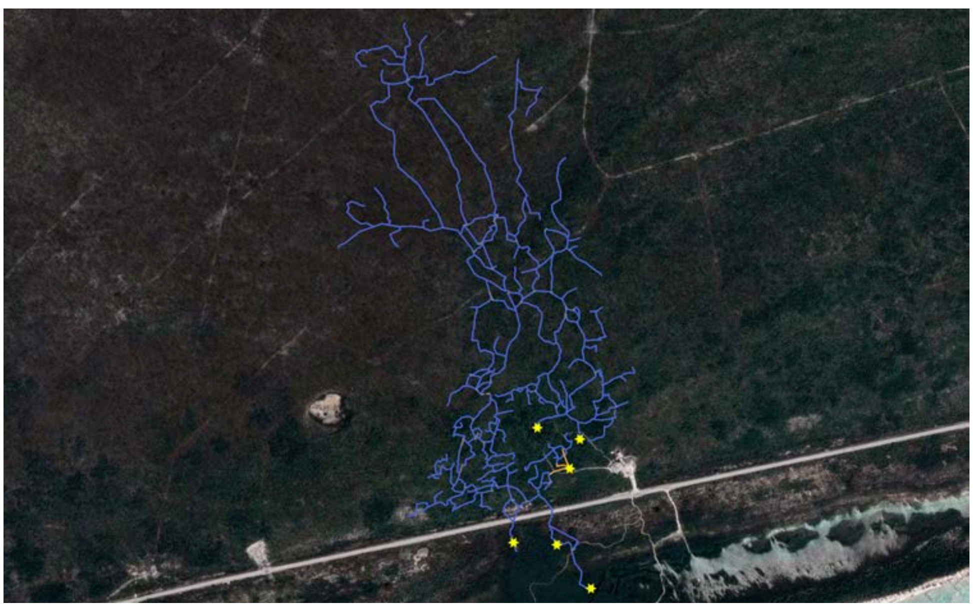

Figure 1: Map of cave system in LNP (blue) and the various cave openings (stars). Image provided by Cristina Zenato.

Climate
The Bahamas experiences a marine tropical climate predominantly influenced by the Atlantic Southeast Trade Winds during the summer and cool, dry North American high-pressure systems in winter. The region observes two distinct weather seasons: wet (May – September) and dry (October – April). Most rainfall transpires in the warm summer months. On average, Grand Bahama experiences roughly 60 inches of rainfall per year with fluctuations from average influenced by tropical storms and hurricane occurrences.

Currents
The park boundary encompasses a small section of Gold Rock Creek, a tidal creek coursing through the mangrove wetlands. This creek serves as a connection to the underwater cave system, supplying plankton-rich seawater crucial for sustaining the diverse array of species inhabiting the cave environment.

Lucayan National Park Expansion
In 2014, a Rapid Ecological Assessment (REA) was conducted at LNP and its surrounding environments. From the assessment, it became apparent that there was a need for expansion. Surrounding the park's boundary lie crucial terrestrial and marine ecosystems. Mapping of the six-mile (9.6 km) long Lucayan Cavern system revealed that a significant portion of the known cave network extended beyond the existing park boundaries. Recent discoveries of additional cave openings, such as the Pirates Mew Cave, were situated farther west of the mapped Lucayan Caverns and were also beyond the park's protective reach.

As a result of the subsequent report, a proposal was formulated for the expansion. This report was supported by the scientific findings and community consensus. The proposed expansion aimed to increase the park's area from 40 acres (16.2 ha) to 2,800 acres (1133 ha). Approximately 980 acres (396.6 ha) of this proposed total area would encompass terrestrial ecosystems, while the remaining portion would encompass marine components such as mangroves, reefs, and Gold Rock Creek. On August 31st, 2015, the expansion of the marine component was officially declared. Consequently, LNP expanded from 40 acres (16.2 ha) to 1,937 acres (783.9 ha), incorporating crucial marine ecosystems adjacent to Gold Rock Beach. The BNT continues its efforts to secure approval for the proposed terrestrial expansion. The terrestrial expansion aims to include the following features:

- A significant addition of pineland and coppice vegetation and the organisms they support.
- The extent of the known karst caves, including a cave opening to the Pirates Mew cave system.
- Extensive freshwater wetlands extending west on the southwestern portion of the park.
- Dune area on the coastline immediately southwest of park boundaries, including a portion of the southern shore Important Bird Area (BS 003), which extends from

the Lucayan Waterway to the west of the existing park boundary (Moore & Gape, n.d.).

- Tidal creek extends east to the mouth of Gold Rock Creek, which is the last intact nursery creek and mangrove wetland on the southern coast of Grand Bahama.

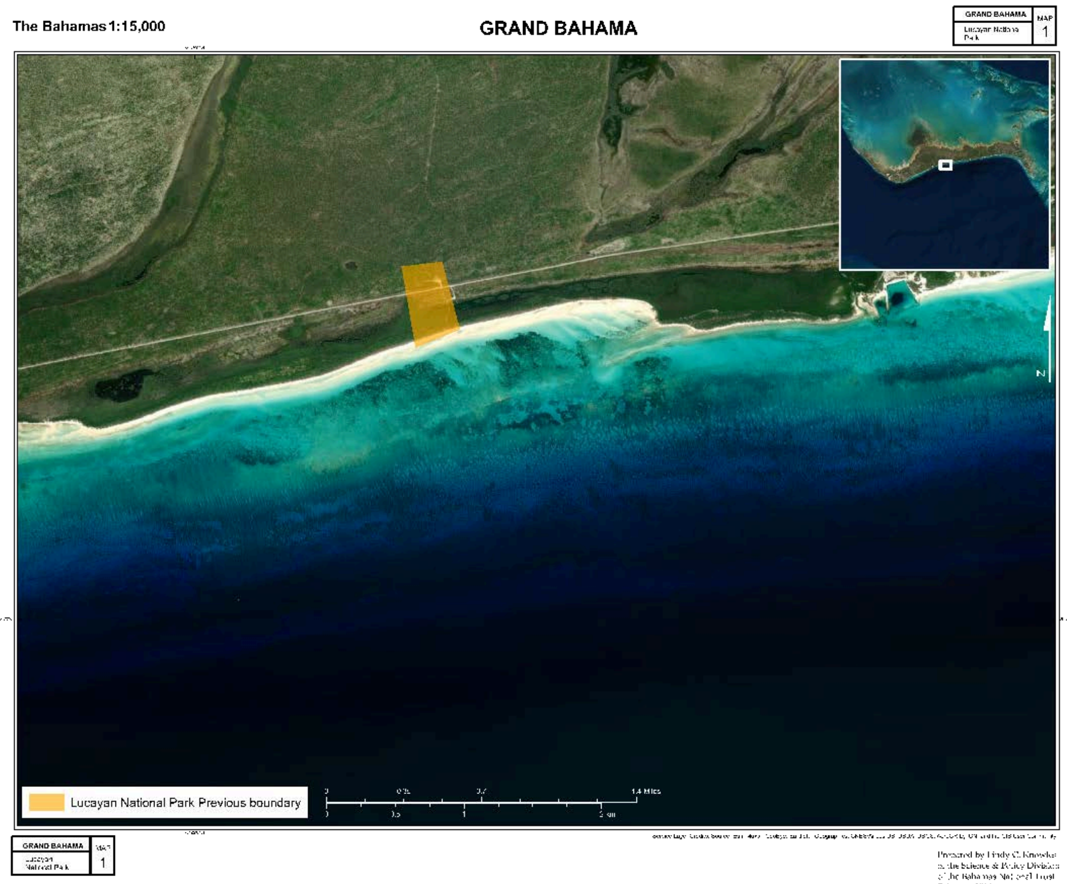

Figure 2: Map of previous boundary of Lucayan National Park.

Figure 3: Map of expanded boundaries of Lucayan National Park that includes the marine components

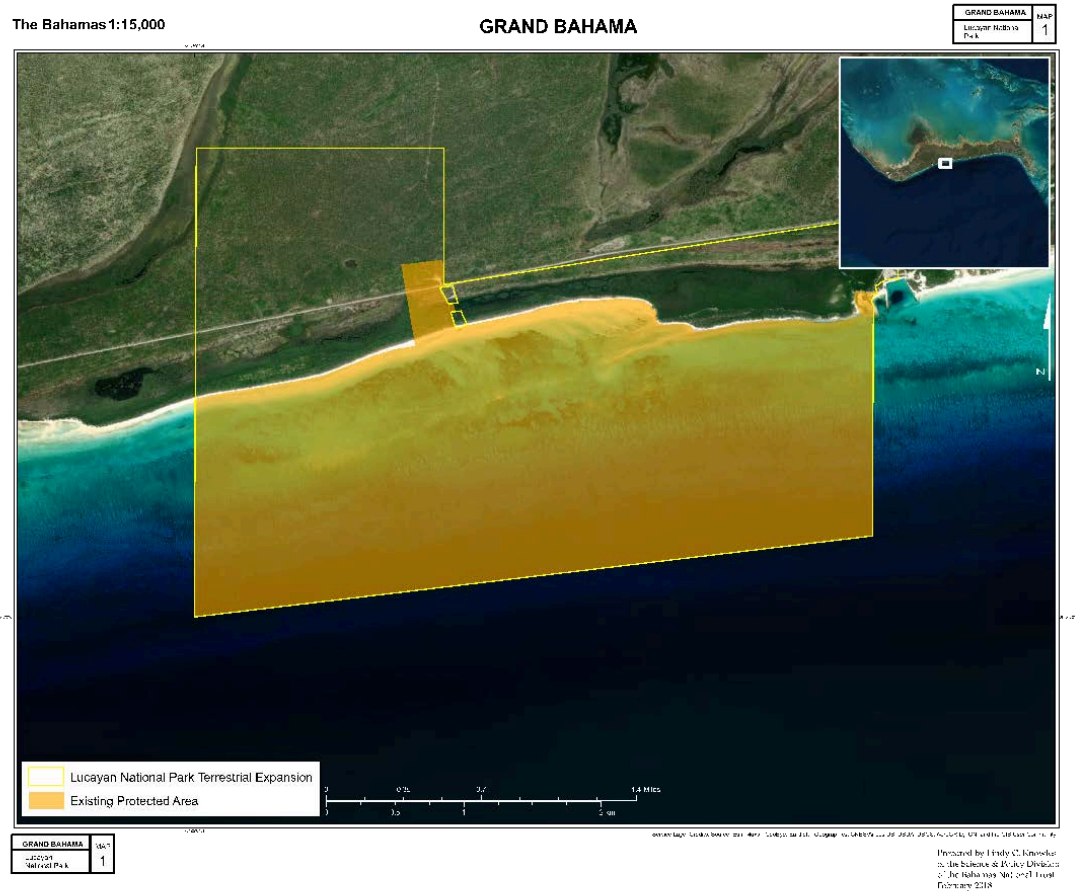

Figure 4: Map of boundary for Lucayan National Park that would include the proposed terrestrial expansion of the site.

3.2 Biological Features

The region inside and surrounding the LNP is defined by several major habitat types commonly found throughout The Bahamas such as pineland, transition zone, coastal dry broadleaf evergreen formation, dune, mangrove, freshwater wetland and coral reef. Each of these habitats are physically and ecologically interconnected with other nearby habitat types, forming larger, integrated coastal ecosystems that support a variety of unique native species.

3.2.1 Terrestrial Habitats

In 2021, Dr. Ethan Freid and Jenny Morris conducted a Rapid Vegetation Assessment at LNP in the aftermath of Hurricane Dorian. This assessment documented the various vegetation and vegetative zones within the park. All the vegetative zones characteristic of The Bahamas are represented in LNP, encompassing pineland, freshwater wetland, transition zone, mangrove, coastal dry evergreen broadleaf formation, and dune habitats. The assessment recorded a total of 120 plant species in 2021 compared to 132 species observed in 2018, signifying a loss of 12 species following Hurricane Dorian.

Pineland

The area is distinguished by a sparse distribution of pine. Nonetheless, the undergrowth in this zone resembles other Bahamian pinelands, featuring a diverse array of shrubs predominantly populated by bracken fern and love vine. Within the heart of the pineland area, there are three cave openings leading to a blue hole system. The vegetation in direct proximity to these cave entrances remains unburned due to heightened humidity levels and access to fresh, open water. The predominant vegetation mainly constitutes a Dry Broadleaf Evergreen Formation Forest (DBEF-F) or Coppice, albeit occurring solely as a narrow strip adjacent to the openings.

Transition Zone

This zone is situated on the south side of the highway, adjacent to the highway itself. The pineland zone gradually gives way to rocky shrubland in this area. Subsequently, the zone undergoes a transition to a wet shrubland predominantly populated by Ming trees *(Polyscias fruticosa)*, with occurrences of sawgrass. Locals commonly refer to the vegetation in this area as "Rocky Coppice".

Coastal Dry Broadleaf Evergreen Formation – Shrubland (DBEF-S)

This zone occurs between the mangrove and dune ecosystem. The vegetation here aids in sediment stabilization and is not dominated by any singular species.

Dune

The entire area has extensive stands of Australian pine (*Casuarina spp*). Throughout the area where the Australian pine has fallen over, herbaceous and vine plant species have started to re-colonize the area.

3.2.2 Marine Habitats

Mangrove

Mangroves are a uniquely adapted group of trees that line coasts in tropical areas. They contribute to the overall health and stability of the ecosystem. They assist in dune stabilizing and sediment trapping, facilitating carbon sequestration, and contributing to biodiversity as many fish and other marine life utilize the root systems for shelter in juvenile stages.

The extensive mangrove area can be subdivided into an eastern and western section. The eastern portion extends outside the park boundary including the mouth of Gold Rock Creek. It is surrounded by large red mangrove shrubs forming the estuary. Toward the western side, there is no open water causing mangroves to form in solid shrub-like masses.

Rapid Ecological Assessments (REA) of the mangrove ecosystem in and around Gold Rock Creek has revealed high diversity and abundance of fish. The Gold Rock Creek mangrove system provides a habitat for a diversity of fish species, including the herbivorous Rainbow parrotfish *(Scarus guacamaia)*. Fish surveys in the mangroves showed rich diversity and abundance of fish. highlighting 18 fish species with the ecosystem (Sherman et al., 2014). The prevalence of snapper species and other commercially important species across most sites underscores the critical role of these mangroves and the creek system as essential nursery habitats for local reefs and supporting the region's fisheries.

Freshwater Wetland
During the construction of the highway along the northern side, a low swale was formed. The swale traps fresh water that runs out of the pinelands during heavy rains. The swale is now an ephemeral freshwater wetland. The area is heavily impacted by the IAS Paperbark tree (*Melaleuca quinquenervia*).

Coral Reef
As part of the 2015 marine expansion, the coral reef ecosystem located off Gold Rock Beach now falls within the park's boundaries. These reefs are diverse in cover and include 3 species that are listed as either critically endangered or vulnerable – staghorn coral (*Acropora cervicornis*), elkhorn coral (*Acropora palmata*), and pillar coral (*Dendrogyra cylindricus*). They support an abundance of fish communities including various reef fish, snappers, groupers, and ecologically important herbivorous fish that facilitate coral recruitment and growth. The similarities of fish species observed on both the coral reef and the mangrove creeks indicates the connectivity of these two habitats.

This reef ecosystem is one of several in The Bahamas that has been affected by Stony Coral Tissue Loss Disease (SCTLD). Preliminary surveys in January 2021 revealed that the disease had spread to 20 coral species, including pillar coral (*Dendrogyra cylindrus)*, maze coral (*Meandrina meandrites)* and brain corals (*Diploria labyrinthiformis*). This disease has resulted in standing dead and recently dead corals all through the reef. Further research and fieldwork are needed to assess the present health status of coral reefs off Gold Rock Beach.

3.2.3 Wildlife

More than 300 bird species have been found in The Bahamas. Lucayan National Park was designated by Birdlife International as an Important Bird Area (BS 001) because it supports 3 of 7 restricted range birds found in The Bahamas: Thick-billed Vireo (*Vireo crassirostris*), Bahama Swallow (*Tachycineta cyaneoviridis*) and Olive-capped Warbler *(Setophaga pityophila)*, all of which are found in pinelands and coppice vegetation in the northern section of the park (Moore & Gape, 2008). Other waterbirds are found in the mangrove wetlands, while shorebirds and seabirds inhabit areas along the shoreline. Important Bird Areas are also national conservation target areas for increased protection in the National Protected Area System (Moultrie, 2012).

Numerous species that have adapted to the cave environment of darkness, like troglobites, are found in the underwater caves within and surrounding the park. Caves often hold species found nowhere else in the world, and species new to science. In fact, in the Lucayan Caverns, a class of crustacean Remipedia, previously thought to be extinct, was discovered.

3.2.4 Species of Concern

Lucayan Cave Brotula

The Lucayan cave brotula (*Lucifuga sp.*) is a species of concern due to its restricted habitat and vulnerability to environmental changes. While specific details about the conservation status of this species may vary, scientific research provides insights into why Lucayan cave brotula is considered a species of concern. Lucayan cave Brotula, like many cave-dwelling species, is highly specialized and adapted to a particular environment. They are found exclusively in caves within The Bahamas, particularly in the Lucayan Cavern, indicating a restricted range and habitat specificity. Any disruption or alteration to these cave ecosystems could pose a threat to their survival (Møller et al., 2006).

Remipedia

Remipedia, a class of crustaceans, has species living in caves and anchialine environments (coastal caves with subterranean connections to the sea) in The Bahamas They first were discovered in the late 1970s during a cave diving expedition in Grand Bahama (Yager, 1981). Remipedia are specialized creatures, often dwelling in specific cave systems or anchialine environments. These habitats are sensitive to disturbances, such as changes in water quality, pollution, or alterations in hydrological conditions. Any disruptions to these environments could threaten the survival of *Remipedia* species. They represent a critical component of biodiversity and play ecological roles within their ecosystems. Protecting these species is essential for maintaining biodiversity and understanding the intricate relationships within cave and anchialine environments.

3.3 Values

The Lucayan National Park is viewed as Grand Bahama in its most natural state. It was established as a national park because of its unique values. These values are outlined below.

3.3.1 Ecological

Representation of all Bahamian vegetative zones

Throughout the LNP is the representation of all Bahamian vegetative zones: pineland, freshwater wetland, transition zone, mangrove, coastal dry evergreen broadleaf formation and dune. The northern portion of the park is coastal dry broadleaf formation dominant with a lower density of pine scattered throughout. During Hurricane Dorian, pineland inside and outside of the park took a devastating blow. Heading towards the southern portion is the transition zone where the pineland and coastal dry evergreen broadleaf formation progresses into the wetland zone. In this wetland is a complex ecosystem of mangroves that supports organisms in Gold Rock Creek and acts as a nursery for juvenile fish. Just beyond the mangrove zone is the dune vegetative zone. Before Hurricane Dorian, this zone was characterized by native vegetation that helped in stabilizing the sediment.

One of the longest chartered underwater cave systems

Inside the Lucayan National Park is one of the longest chartered underwater cave systems in the world. It was in these caves where *Remipedia*, a crustacean species that was formerly thought to be extinct, was rediscovered. These caves also support a complex ecosystem of troglophiles and sensitive underwater organisms.

Supports rich biodiversity
The park supports the biodiversity of various marine organisms. Juvenile fish including snapper and parrotfish have been observed utilizing the mangroves of Gold Rock Creek. The protection of the natural ecosystems in the park has had positive effects on spawning aggregations, egg enhancement and larvae production, and increasing abundance of overfished stocks.

3.3.2 Historical and Cultural

Artifacts and tools used by early day Lucayans
Sacred burial ground
Within the Burial Mound Cave, inside the LNP, are artifacts and tools that were crafted and used by Lucayans. These preserved artifacts give us a glimpse into the past way of life of the indigenous people of the island. Burial Mound Cave is also recognized as a sacred burial ground and contains the remains of six Lucayans.

3.3.3 Economic

The Lucayan National Park stands as the second most frequented park within The Bahamas' National Park System. Prior to the COVID-19 pandemic, the park welcomed an annual count of 30,000 visitors. Presently, park visitation numbers are on the rise, with anticipated revenue growth attributed to the development of a nearby cruise port. Beyond its recreational aspect, LNP serves as an economic catalyst for adjacent communities. The anticipated surge in visitors is likely to elevate the demand for services such as concessions and other amenities.

Opportunities for employment or entrepreneurial ventures are expected to primarily benefit individuals from East End communities. The park's overall economic value is projected to increase with pending infrastructure upgrades, including the scheduled opening of the welcome center and gift shop.

3.3.4 Tourism and Recreational

Lucayan National Park stands as a pivotal tourist attraction on Grand Bahama. Beyond the park's ecological attributes, the prospect of cave diving experiences holds immense appeal for numerous tourists possessing advanced diving skills. Moreover, Gold Rock Beach provides an unrivaled sense of pristine natural beauty that many visitors enjoy, while others take pleasure in exploring the trails and interpretative signage situated across the park.

3.4 Benefits of LNP

Marine and terrestrial ecosystems throughout The Bahamas support a variety of species and habitats bearing economic, social and or cultural significance. The Lucayan National Park is unique in that there are representations of all the vegetation ecosystems in The Bahamas including pineland, freshwater wetland, transition zone (locally referred to as

Rocky Coppice), mangrove, coastal dry broadleaf evergreen formation – shrubland (locally referred to as Whiteland coppice), and dune (Freid, 2008).

These ecosystems within the park's boundaries are all currently underrepresented within the National Protected Area System ,aiming for expansion in their protected area coverage (Moultrie, 2012). The mangrove wetland and tidal creek system at Lucayan National Park is the last intact mangrove wetland remaining on the south side of Grand Bahama Island, making effective management, expansion, and protection extremely important.

The benefits provided by LNP are both direct and indirect. Some benefits to this area and the surrounding reef include:

- Fishery – protection of critical juvenile nursery habitats, spawning aggregations, enhancing eggs and larvae production, and increasing abundance of overfished stocks inside and outside of the protected and surrounding areas.
- Management – reducing use and user conflicts, facilitating enforcement and compliance as well as stakeholder involvement.
- Education – providing educational opportunities, long-term monitoring areas and sites for higher-level graduate education and research.
- Cultural – enhancing aesthetic experiences, preserving historical knowledge, and facilitating cultural resource management.
- Process – providing physical refuge, maintaining global climate regulation, and sustaining evolutionary processes.
- Ecosystem – maximizing ecosystem resilience, ensuring biodiversity protection, and maintaining food webs.
- Population – protecting natural population structure, genetic resources, and spawning populations; and
- Species – protecting keystone species, economically important, slow-growth species, and migratory species, while preventing loss of vulnerable species.

3.5 Relevant National Policies and Legislation

There are national policies and legislative instruments that are relevant to the management of LNP. LNP is managed by the BNT with advice from The Regional Committee, a standing committee comprised of volunteers. Legislations and policies relevant to this park's management are as follows:

3.5.1 Policies

The National Environmental Policy

The goal of this policy is the sustainable use of the environment of The Bahamas to meet the needs of the present and future generations through the following specific objectives:

- To prevent, reduce, or eliminate various forms of pollution to ensure adequate protection of the environment and the health of its citizens.
- To conserve the biological diversity of the country and the stability, integrity, resilience, and productivity of ecosystems; and

- To provide for the environment to be fully integrated into policy, plans, programs and development project decisions that might be essential to the continued health safety and productivity of the country's environment.

The Bahamas National Invasive Species Strategy (NISS)

The objectives of the NISS approved in 2003 and revised in 2013 include:

- Identification of priority species for eradication.
- Identification of priority species for control.
- Increasing awareness of invasive species through the development of an IAS database.
- Building capacity amongst officers within the public service about invasive species and how to identify, safely handle, hold, or transfer these species. Officers to be targeted are those within the Customs Department, Ministry of Agriculture and Fisheries and enforcement officers of the Royal Bahamas Police Force and Royal Bahamas Defence Force.
- Prioritization of those sites to be monitored for invasive species. These were identified as all public areas, national parks, protected areas, freshwater sources, and field stations.

The Bahamas 2020 Declaration

The Government of the Commonwealth of The Bahamas, as representatives of the people, is committed to the following:

- Ensuring that critical ecosystem services provided by our forests and oceans are kept intact.
- Acting responsibly as stewards of unique biodiversity.
- Ensuring that we act to sustain our livelihoods and the livelihoods of Bahamians in generations to come.
- Ensuring that our children and our children's children enjoy the quality of life and beauty that our islands have provided us.
- Contributing to global targets set out in the Millennium Development Goals, the Johannesburg Plan of Implementation for the World Summit on Sustainable Development, the Mauritius Strategy for Small Island Developing States and the relevant Programs of Work of the Convention on Biological Diversity and related regional and sub-regional initiatives and obligations.

The Bahamas also commits, among other obligations, to preserve marine and terrestrial environments by meeting the targets established by the Convention of Biological Diversity Programme of Work in Protected Areas (PoWPA) for 2010 and 2012. Furthermore, the nation pledged to effectively conserve at least 20% of near-shore marine resources across The Bahamas by 2020. Additionally, it aims to ensure that a minimum of 50% of existing marine and 50% of existing terrestrial national parks and protected areas are effectively managed by 2020. This will be achieved through the provision and facilitation of necessary core staff, infrastructure, policies, regulations, bylaws, and management plans. These efforts aim to establish functioning protected areas where sustainable activities occur, encompassing research, education, habitat rehabilitation, and conservation, as deemed appropriate.

3.5.2 Legislation

Fisheries Resources (Jurisdiction and Conservation) Act (1986)
This Act concerns the conservation and management of the fishery resources of the Bahamas and the jurisdiction of the Bahamas over such resources. It regards the enforcement of the closed season for spiny lobster (crawfish), all turtle species and stone crab. Other provisions concern the protection of marine mammals, the export of sponges, permits to culture fishery resources, sportfishing, process and preservation of fishery resources and fishery products, quality control of processed or preserved fishery resources and fishery products, permits and licenses.

Antiquities, Monuments and Museum Act (1998)
This Act provides for the preservation, conservation, and restoration of historical, paleontological, and archaeological resources.

Amendment to the Antiquities, Monuments and Museum Act (2012)
This amendment revises the Antiquities, Monuments, and Museum Act, extending its scope to encompass underwater cultural heritage. It mandates individuals who uncover underwater cultural heritage to promptly notify the Minister and addresses the issuance of licenses for surveying or retrieving underwater cultural heritage.

The Bahamas National Trust Act (1959)
This Act establishes The Bahamas National Trust and provides for its operation, including the acquisition of properties, terrestrial or marine, and the development of regulations (bylaws) for their management. Lands or buildings vested in the Trust are to be held for the benefit of The Bahamas and are inalienable.

Amendment to the Bahamas National Trust Act (2010)
This amendment to the BNT Act serves to strengthen the organization's duties and responsibilities to protect Bahamian natural resources. It confirms BNT's role as an advisor to the Government and private sector on development, conservation, and biodiversity issues. It reduces the risk of encroachment on Trust lands and gives the Trust the ability to control activities occurring in the marine environment of its parks, such as dredging and film making. Other aspects of the amendment relate to the operation of the Trust with respect to membership, procedures for Annual General Meetings and execution of contracts for goods and services.

Amendment to the Bahamas National Trust Act (2019)
This amendment expands the BNT Council to 29 members, 15 of whom are elected and 14 of whom are appointed. Audited accounts with a report are to be submitted to the Minister of the Environment and Natural Resources and be laid out in both chambers of Parliament. The amendment also makes provisions for an officer or warden to issue a

written penalty notice for those believed to have committed an offense under the BNT Act or its bylaws.

The Bahamas National Trust (Preservation of National Parks) Bylaws

The Bahamas National Trust (Preservation of National Parks) Bylaws, declared in 2022, were made in consultation with the Minister of the Environment. The Bylaws speak to the conservation, preservation and protection of national parks by setting prohibitions on pollution and restrictions on activities, animals, fishing, plants and other resources in the parks. The Bylaws also describes the authority of wardens and issuance of written penalty notices,

Planning and Subdivision Act (2010)

This Act provides for:

- A land use planning-based development control system led by policy, land use designations and zoning
- Prevention of indiscriminate division and development of land
- Promotion of sustainable development in a healthy natural environment
- Maintenance and improvement of the quality of the physical and natural environment
- Protection and conservation of the natural and cultural heritage of The Bahamas
- Planning for the development and maintenance of safe and viable communities

Wild Birds Protection Act (1952)

The killing or capture of wild birds in the closed season is prohibited and punishable. Hunting of wild birds is not allowed in the park. It shall be lawful for the Minister to establish reserves for the protection of any wild bird and from time to time to vary, enlarge, or reduce the extent of such reserves. Such reserves may comprise any land belonging to the Crown or to any private owner. Several species of birds are listed with a closed season in the Schedule.

3.5.3 Cultural Resource Management Policies

The Lucayan National Park was so named because of the evidence of pre-Columbian settlement found in the park as well as human remains found in Burial mound cave. Some of the human remains were removed for study and returned to their original location. Other artifacts from the rest of the park were at one time removed, stored off site, and then returned to what were believed to be their original locations.

The Lucayans had a complex society and great respect for their dead, placing them in caves, sinkholes and blue holes. (Aarons, 1990). The park provides an outstanding opportunity to tell stories about the pre-Columbian inhabitants of the Bahamas, how colonization impacted these people, how they survived and adapted to the natural environment, and what lessons this experience offers for contemporary society.

Archeological resources will be managed *in situ*, unless the removal of artifacts or physical disturbance is justified by research, consultation, preservation, protection, or interpretive requirements. Preservation treatments will include proactive measures that protect resources from vandalism and looting, and maintain or improve their condition by limiting damage due to natural and human agents. BNT will not normally undertake the rehabilitation, restoration, or reconstruction of archeological resources or features.

Historic shipwrecks and other submerged cultural resources will be protected, to the extent permitted by law, in the same manner as terrestrial archeological resources. Protection activities involve inventory, evaluation, monitoring, interpretation, and establishing partnerships to provide for the management of historic shipwrecks and other submerged cultural resources in units of the national park system. The Antiquities, Monuments and Museum Amendment No. 63 of 2012 revises the Antiquities, Monuments, and Museum Act, extending its scope to encompass underwater cultural heritage. It introduces an additional section, 11(a), mandating individuals who uncover underwater cultural heritage to promptly notify the Minister. Modifications encompass various aspects, including the issuance of licenses for surveying or retrieving underwater cultural heritage. The BNT will not allow treasure hunting or commercial salvage activities at or around historic shipwrecks or other submerged cultural resources.

4.0 Conservation Features and Goals

'The Master Plan for the Bahamas National Protected Area System (BNPAS)' identifies and prioritizes the protection of terrestrial, freshwater, and marine targets, that are designed to protect ecosystems and species within an effectively managed protected area network, built around an Ecological Gap Analysis and a MARXAN (conservation planning software) analysis leading to the identification of high priority sites for conservation and protection to meet national targets (Moultrie, 2012).

Conservation features and targets are important to the implementation of the management plan, identifying potential conflicts or threats, and the development of monitoring and evaluation strategies. Conservation features for LNP, listed in Table 1, are based on those outlined in the 2017 Ecological Gap Analysis and built upon the 2012 Master Plan for The Bahamas National Protected Area System and the 2014 gap assessment. Similarly, the conservation goals detailed in Table 2 are derived from the same sources. These goals will be refined further to suit the area specifically once the rapid ecological assessment for LNP is completed. Consultation with stakeholders will be instrumental in reaching a consensus on these specific goals.

Table 1: Conservation Features of Lucayan National Park

Conservation Features	Definition
Forereef – *Orbicella* reef	Orbicella reefs (the visually dominant coral complex) is a major benthic habitat class of the forereef with a diverse benthic community including corals, sponges, gorgonians and algae.
Patch Reef	A small, isolated, and rounded or irregularly shaped coral reef that rises from the seafloor within the broader ecosystem of a coral reef system.

Mangroves	Mangrove trees grow in shallow, brackish waters along coasts and up creeks of Bahamian islands. Their roots provide nursery habitat for many important fish species. Mangroves in and around estuaries also trap sediments that might otherwise flow onto reefs and smother corals to death.
Sparse Seagrass	This habitat is dominated by the seagrass *Thalassia testudinum*, also called Turtle Grass, but may contain the tube-like seagrass *Syringodium filiforme* (Manatee Grass) and the thin-bladed seagrass *Halodule wrightii* (Shoal grass) Occasionally one also finds small coral colonies within the seagrass. Sparse Seagrass habitats have relatively low biomass (short plants, low density) and a high amount of substratum is visible. This habitat is found in lagoonal environments where sediment is deep enough for the seagrasses to take.
Medium Density Seagrass	This habitat is dominated by the seagrass *Thalassia testudinum*, also called Turtle Grass, but may contain the tube-like seagrass *Syringodium filiforme* (Manatee Grass) and the thin-bladed seagrass *Halodule wrightii* (Shoal grass). Occasionally one also finds small coral colonies within the seagrass. Medium Density Seagrass habitats have medium biomass (medium plant height, medium density) and a medium amount of substratum is visible, when compared to Dense and Sparse Seagrass. This habitat is found in lagoonal environments.
Dense Seagrass	This habitat is dominated by the seagrass *Thalassia testudinum*, also called Turtle Grass, but may contain the tube-like seagrass *Syringodium filiforme* (Manatee Grass) and the thin-bladed seagrass *Halodule wrightii* (Shoal grass). Dense Seagrass habitats have high density and a low amount of visible sand and silt.
Sand/Mud	This habitat includes both clean sand and sand with a sparse algal community. It is found in lagoonal areas and near reefs.
Tidal Creeks	Wetlands situated in channels where water flows both directions due to the tides.
Bonefish flats	Shallow, coastal areas primarily inhabited by bonefish (*Albula vulpes*), a highly prized and sought-after saltwater game fish. These flats are typically characterized by expansive, shallow waters with sandy or grassy bottoms found in tropical or subtropical regions, often within the intertidal zone.
Blue Holes	A blue hole is a submarine cave or sinkhole that develops in carbonate banks and islands. They are open to the earth's surface; contain tidally influenced waters of fresh, marine, or mixed chemistry; extend below sea level for a majority of their depth; and may provide access to cave passages.
Karst Caves	Karst is a distinctive topography in which the landscape is largely shaped by the dissolving action of water on carbonate

	bedrock (limestone). Karst cave features found in The Bahamas include flank margin caves, karren, pit caves, banana holes, and cone karst. Karst ecosystems often support unusual or rare plant and animal species.
Dry Broadleaf Evergreen Formation	A dry broadleaf evergreen formation (DBEF) (otherwise known as “coppice”) is by far the most diverse terrestrial habitat found in the Bahamas. Different types of coppices can be found throughout The Bahamas due to the variability resulting from differing environmental conditions affecting the vegetation structure and floristic composition. Blackland coppice are located on higher elevations or ridges. The flora of the DBEF forests is mainly broadleaved angiosperms, although some areas have scattered pine. The canopy is closed and typically 5-12 meters high. Whiteland coppice occurs at a lower elevation and the canopy is not closed in the woodland but is characterized as having scattered patches of emergent trees with interspersed shrubs.
Sandy Beach	Unconsolidated shorelines which, depending on wave energy, can vary in width and height of the dunes. Shore profiles on beaches begin at the high tide mark and are characterized by distinct zones. Starting from the water, there is a sparsely vegetated pioneer zone, a grassy or shrubby foredune, back dune, and then swale.
Important Bird Areas Habitat/Areas	Sites identified by regular birders and ornithologists using an established criteria that regularly hold significant numbers of a globally threatened species, other species of global conservation concern, or hold a significant component of the restricted range species whose breeding distribution can be defined as an Endemic Bird Area (EBA) or Secondary Area (SA). In The Bahamas, endemics are: Bahama Woodstar, Bahama Swallow and Bahama Yellowthroat. Other species of concern: Bahama Mockingbird, West Indian Whistling Duck, Bahamas Parrot, Olive-capped Warbler, West Indian Woodpecker, Kirtland's Warbler, Brown-headed Nuthatch, Audubon’s Shearwater and the Piping Plover.
Shrub/Scrub	Shrublands are located inland from the beach strand or coastal rock communities. The substrate is a mixture of rocky limestone, sand, or a mixture of the two. Shrubland canopy is 2-4 meters tall. Dwarf shrubland areas are highly influenced by wind and the location of the water table. High winds prune the branch tips and roots are limited by the water table being so close to the surface. Both environmental influences do not allow the plants to grow into shrubs and trees.
Pine Forest	Pinus caribea var. bahamensis (Bahamian Pine) is a variety of Caribbean pine occurring in the northern Bahamas (Andros,

	Abaco, Grand Bahama, and New Providence). Bahamian Pine is distinguished from other Caribbean pine as having smaller seeds with a completely detachable wing, smaller cones, seedlings with brighter green needles, early formation of secondary needles that are longer and coarser, fascicles primarily of three's, as well as slower growing seedlings that are bushier. Caribbean pinelands are called "fire climax communities" because they depend on fire to remove the shading broad-leafed understory to take hold and replace the adult trees as they die off.

Table 2: Conservation goals guided by the 2012 Master Plan and the 2017 Ecological Gap Analysis

Conservation Features	**Goal (%)**
Forereef – *Orbicella* reef	30 – 60
Patch Reef	30 – 60
Mangroves	30 – 60
Sparse Seagrass	20
Medium Density Seagrass	20
Dense Seagrass	20
Sand/Mud	20
Tidal Creeks	30 – 60
Bonefish flats	30 – 60
Blue Holes	>60
Karst Caves	20
Coppice	30
Sandy Beach	30 – 60
Important Bird Areas Habitat/Areas	50
Shrub/Scrub	20
Pine Forest	25

5.0 Park Purpose

The purpose of Lucayan National Park is:

1. To protect one of the longest charted cave systems in the world
2. To protect rare cave dwelling creatures including *Remipedia*.
3. To preserve artifacts from early indigenous Lucayan burials and the site of a pre-Columbian settlement
4. To conserve the representative example of all vegetative zones found in The Bahamas

6.0 Vision

To conserve the natural, untouched state of Lucayan National Park and the surrounding environment by minimizing threats, promoting eco-friendly uses, and providing entrepreneurial opportunities to neighboring communities.

7.0 Park Mission

To effectively manage and protect the values that Lucayan National Park holds as the welcome mat to Grand Bahama.

8.0 Principles

Management of LNP is based on the same principles as the Master Plan for The Bahamas National Protected Area System:

Principle 1: Representativeness
All major terrestrial habitats are represented in the boundaries of LNP, the park also includes mangrove creek and sandy shore ecosystems. The boundary also includes a cave system.

Principle 2: Replication
LNP is a protected area where the habitats of The Bahamas are replicated. LNP is spatially separate from other protected areas within the network, to safeguard against unexpected failures or collapse of populations.

Principle 3: Viability
Declaration of LNP along with the other protected areas in the network enables the creation of a system of geographically dispersed sites that are self-sustaining and independent (as far as possible) of what happens in the surrounding areas. The system should be ecologically viable with protected areas achieving viability collectively and avoiding (genetic) isolation.

Principle 4: Precautionary design
LNP was declared using the precautionary approach, i.e., use of the best available information to make decisions rather than delaying action while waiting for more and

better information. Where there is uncertainty, the precautionary approach would favor erring on the side of biodiversity protection.

Principle 5: Adaptive Management
Adaptive management enables BNT to function under dynamic and fluctuating ecological resources and conditions. Being successful at adaptive management requires the establishment of a monitoring and evaluation system to track progress in achieving national park goals, objectives, and activities.

Principle 6: Participatory Approach
The management of LNP recognizes the full range of users, uses and the trade-offs between them. BNT promotes management that is inclusive with the participation of all stakeholders, and as such, has convened public meetings to involve locals in the decision-making process for LNP.

9.0 Management Goal and Objectives

The plan includes specific management goals that accomplish international, regional, national, and local objectives. These goals are to:

1. Conserve and protect the natural resources and biodiversity within the park.
2. Conserve historical and cultural resources.
3. Expand park boundaries to include key marine and terrestrial ecosystems.
4. Improve visitor experiences compatible with the park's mission and vision statement.
5. Ensure sufficient capacity for effective park management.
6. Engage in park infrastructural upgrades.
7. Promote education, outreach and interpretation opportunities.
8. Promote volunteer opportunities.

In its management of LNP the BNT seeks to:

- Develop management systems that support the main goals of the park
- Base management decisions on the best available scientific information
- Ensure that park infrastructure will serve as a model of environmentally sustainable development.
- Ensure that environmental resources are managed to benefit surrounding ecosystems not included in park boundaries.
- Incorporate stakeholder input into management and maintenance of the park.

The management goals and objectives set for Lucayan National Park aim to direct management efforts towards realizing the park's envisioned purpose and mission. In formulating these goals and objectives, we have taken into account the local, national, regional, and international significance of the park. These goals are a reflection of stakeholder values and have been customized to meet the unique requirements of the park. Detailed and specific goals and objectives geared toward fulfilling the vision of LNP are outlined in Table 3.

Table 3: Goals and Objectives for Lucayan National Park

Goals	**Objectives**
1. Conserve and protect the natural resources and biodiversity within the park	1.1: Work with GBPA and other agencies to control invasives within the park boundary (2025 - 2027) 1.2: Continue to engage in planting exercises of native vegetation in the dune ecosystem (2025 - 2028) 1.3: Manage invasive animal species within the park (2024 - 2034) 1.4: Protect and strengthen natural buffer zones (2024 - 2034) 1.5: Monitor coral health (2024 - 2034) 1.6: Identify Park carrying capacity (2025) 1.7: Manage fire threat within and around park (2024 - 2034) 1.8: Monitor pressure on sensitive cave system (2024 - 2034) 1.9: Prepare for possible increase in sargassum at Gold Rock Beach and Gold Rock Creek (2028 - 2029)
2. Conserve historical and cultural resources	2.1: Conserve Lucayan artifacts and remains (2024 - 2034)
3. Expand Park boundaries to include key marine and terrestrial ecosystems	3.1: Facilitate legal conversation for marine expansion and receive approval for terrestrial expansion (2025)
4. Improve visitor experiences compatible with the park's mission and vision statement	4.1: Implement non-motorized water sports at Gold Rock Beach (2026)
5. Ensure sufficient capacity for effective park management	5.1: Increase manpower and upgrade infrastructure to minimize security breaches i.e. vandalism, theft, and nighttime fishing in the creek (2025) 5.2: Improve fee collection structure (2025)
6. Engage in park infrastructural upgrades	6.1: Reference conceptual plan for infrastructural upgrades (2025 - 2026) 6.2: Develop and implement signage plan (2025 - 2026)

7. Promote education, outreach and interpretation opportunities	7.1: Educate visitors, local communities, and stakeholders on the importance of LNP (2024 - 2034)
8. Promote volunteer opportunities	8.1: Regularly engage community in volunteerism (2024 - 2034)

9.1 IUCN Protected Area Management Categories

The Bahamas is party to many multilateral environmental agreements including the Convention on Biological Diversity (CBD), which requires regular reporting on protected areas (PAs), as well as members of like minded organizations (such as the International Union for Conservation of Nature [IUCN]). The IUCN is widely recognized as the global authority on the status of the natural world and what measures are needed to maintain it. In 1994, the IUCN developed a protected areas categories system which allows for the classification of protected areas based on their management objectives. International bodies, including the United Nations (UN), recognize this system as the global standard for defining protected areas. The IUCN recognizes six protected area (PA) categories, and a single PA can fit into more than one IUCN category: Category 1a, Category 1b, Category II, Category III, Category IV, Category V, and Category VI.

The BNT is a member of the IUCN and is currently in the process of officially adopting the IUCN category system for categorizing PAs. In 2014, BNT Council approached the IUCN for technical assistance, which led to the collaborative coordination and facilitation of a series of workshops with the goal of reviewing the application of the IUCN categories to the national park system of The Bahamas. LNP was subsequently categorized under category II National Park.

Category Ia

Strict Nature Reserve: Category Ia are strictly protected areas set aside to protect biodiversity and possibly geological/geomorphic features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.

Category Ib

Wilderness Area: Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed to preserve their natural condition.

Category II

National Park: Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

Category III
Natural Monument or Feature: Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small, protected areas, and often have high visitor value.

Category IV
Habitat/Species Management Area: Category IV protected areas aim to protect species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of species or to maintain habitats, but this is not a requirement of the category.

Category V
Protected Landscape/ Seascape: A protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural, and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

Category VI
Protected area with sustainable use of natural resources: Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

9.2 Description of Functional Areas and Programs

Table 4 describes what each functional area and associated program entails. As the General Management Plan is updated and predetermined objectives expand or change, it can be added to the existing areas and programs. This allows for ease of monitoring and tracking by managers over the long term. This system of categorizing management activities can also be replicated across the national park system and by extension the entire Bahamas National Protected Area System to enable comparisons across protected areas.

Table 4. Description of LNP Functional Areas and Program

Functional Area	Program	Description
Conservation Management of Species, Habitats and Ecosystems	a. Invasive Species Control	Removal of invasive plants and animals throughout the park and neighboring ecosystems.

Functional Area	Program	Description
	b. Dune Habitat Restoration	Returning disturbed dune ecosystem to a state in close approximation of its ecological condition prior to the disturbance.
	c. Gold Rock Creek Restoration	Removal of invasive plants along the creek that outcompete native vegetation.
	d. Protect and Strengthen Natural Buffer Zones	Protecting rebounding dune ecosystem and monitoring coral health
	e. Scientific Monitoring and Research	Continued monitoring and necessary research to assess health of various ecosystems within and around the park.
	f. Fire Prevention	Reducing fire threats by utilizing fire mitigation methods.
	g. Threat Management	Creating and utilizing management schemes and tools for potential threats
Resource Management and Protection	a. Surveillance and Enforcement	Use of patrols and technology to monitor and protect park resources against illegal activity
	b. Zoning and Boundaries	Clearly demarcated zones and boundaries that dictate activities and limits
Community Engagement	a. Awareness and Education	Designed to improve local and international awareness and education.
	b. Volunteerism	Engaging communities in volunteer activities in and around the park
	c. Benefit Sharing with Communities	Ensuring tourism and other developments benefits East End communities.
Tourism and Public Use	a. Activities	Expanding available recreational activities to enhance visitor experience.
	b. Visitor Awareness and Interpretation	Designed to increase visitor knowledge and interpretation opportunities at LNP
	c. Infrastructure	Completing and adding infrastructure to enhance visitor experience, educational opportunities, and park productivity.

Functional Area	Program	Description
	d. Impact Management	Monitoring of various ecosystems to assess restoration success and possible effects of visitation.
Management and Administration	a. General Management and Administration	Administrative activities related to operation of field office including procurement of goods and services, recruitment of staff and staff accommodation.
	b. Training	Mainly in-house training to build the capacity of staff to effectively carry out management activities at the park.
	c. Financial Management	Developing systems for managing disbursements, income, and donations for upkeep of the park.
	d. Government Relations	Developing and maintaining relationships with Government agencies and institutions that are directly or indirectly involved in the establishment and management of protected areas.
	e. Partnership Relations	Developing and maintaining relationships with individuals and institutions that can assist in achieving the objectives of the park.
	f. Information Technology	Acquisition, technical support and maintenance of communication systems and equipment.
Facilities Operations and Management	Docking Facilities	Deployment and maintenance of mooring buoys.
	Boat & Vehicle Operations and Maintenance	Acquisition and maintenance of fully equipped patrol boat.
	Trail Operations and Maintenance	Development and maintenance of trail systems, any interpretive signage and associated infrastructure.

10.0 Opportunities and Constraints

10.1 Opportunities

10.1.1 Legislative and Management Authority

The creation of the BNT represented the culmination and integration of the earlier efforts of two groups of conservationists which had been rallying for the conservation of natural resources in The Bahamas. Around 1900, one group formed to protect flamingos in the southern Bahamas. Then in the 1950s, the famous World War II Colonel and Ichthyologist, Ilia Tolstoy, approached a group of Bahamians to discuss setting aside islands which would serve as buffer areas to development, and might eventually become national parks. In 1958, the team's report was received and adopted by The Government of The Bahamas and the Exuma Cays Land and Sea Park (ECLSP), the first of its kind in the world, was officially established.

Following these events and findings, the Bahamas National Trust was created by a special Act of Parliament on July 13, 1959. The Act conferred upon the Trust the powers to manage places of historic interest and natural beauty and was immediately given responsibility for management of the Exuma Cays Land & Sea Park. Thus, was created a unique non-profit, non-governmental, statutory organization, which eventually came to be responsible for the entire National Park System of The Bahamas.

The Act also empowers the BNT to create its own subsidiary legislation in the form of bylaws. Once these bylaws are gazetted nationally, they then become part of The Bahamas' national laws. The bylaws prohibit specific actions in national parks and outline the penalties for committing an offense within such parks. Under this authority, the BNT is responsible for managing Lucayan National Park.

10.1.2 Expansion of Protected Area

There is the opportunity to protect more important ecosystems outside of the park's boundary. A proposal has been made to expand LNP to include key terrestrial ecosystems. These ecosystems include 1.6 km (1 mile) of mapped karst cave systems believed to be linked to cave openings in the park and the entirety of Gold Rock Creek to provide better conservation of the last intact creek/mangrove system on the southern part of Grand Bahama.

10.1.3 Natural Resources and Ecosystem Processes

The park serves as one of the last intact tidal creek and mangrove ecosystems in the southern extremities of Grand Bahama Island. This area also gives a representation of all major terrestrial ecosystems found in The Bahamas, and supports an abundance of plant and animal species, including fish, invertebrates, and birds. It also supports 3 of 7 restricted range birds: Thick-billed Vireo (*Vireo crassirostris crassirostris*), Bahama Swallow (*Tachycineta cyaneoviridis*), Olive-capped warbler (*Setophaga pityophila*). All of which are found in pinelands and coppice vegetation in the northern section of the park.

10.1.4 Resource Research and Education

As a park that includes so many integral Bahamian ecosystems, the opportunity exists to utilize this area for research and educational purposes. Areas affected drastically by Hurricane Dorian have shown signs of recovery which offers another area of research on resilience in Bahamian ecosystems.

10.1.5 Cultural Value

Remains of Lucayans and artifacts of their lifestyle were found in this area. These facts are a major opportunity to engage Bahamians and other visitors on the deep cultural value of LNP and all the history and heritage the island has to offer.

10.1.6 Recreational Opportunities and Commercial Benefits

Kayaking already takes place near the park but BNT can also facilitate the provision of this service if the need arises. Opportunities for other recreational services include snorkeling, swimming, birdwatching, paddle boarding, and kite surfing. These activities can be undertaken by locals to provide commercial/economic benefit sharing to neighboring East End communities.

10.1.7 Stakeholder Partnerships

A tract adjacent to the park also has been leased to a private tour operator, Grand Bahama Nature Tours (GBNT), which provides picnic tables and a shelter. Grand Bahama Nature Tours provides guides and excellent interpretation of the natural systems. The potential for expanding and enhancing partnerships with GBNT should be a high priority. Coordinated and consistent management of this area with land inside the park boundary would help avoid confusion for visitors about where park rules apply and where other leaseholders have different management protocols.

Partnerships with other major tour operators will give a more balanced use of the park for recreationalists and provide another avenue of consistent education on park policies, history, and the importance of keeping it pristine.

Engaging locals in the management and decisions for the LNP gives them a vested interest in the park's success. Under the Global Environment Facility (GEF) 2020 Project, the terms of reference (TOR) for a Lucayan National Park advisory committee were created. The advisory committee is intended to act in an advisory capacity, not as a regulatory or decision-making body. It will include members from key stakeholder groups and community representatives with close connections to the park. This committee will provide stakeholder input for the management of the park.

10.2 Constraints

10.2.1 Staffing

At present, LNP has two full-time Park Wardens and additional staff that are shared between the parks within the network on Grand Bahama. On-site wardens also monitor fee payments but are not always on premises.

Being one of the most visited National Parks in The Bahamas, LNP would need increased staff to ensure compliance with user fees, offer scheduled interpretive programs, enforcement of park rules and surveillance patrols.

In September 2016, the BNT through support from the Inter-American Development Bank (IDB), commissioned a cost verifications study to document annual operations, staffing, infrastructural and investment needs and costs for an effectively managed national park in The Bahamas. This study was updated in February 2018 to incorporate the expanded Bahamas National Protected Area System (BNPAS). Through this study, it was determined that for effective management of LNP there is the need for two wardens, two deputy wardens and a clerk for the visitor center. Additional needed staff that would be shared amongst the parks in Grand Bahama include a Parks Administrator, Chief Warden, Science officer, two Education Officers, an office manager, a bookkeeper, two office assistants and six security staff.

10.2.2 Resources

Currently the park is not well equipped to accommodate the large number of visitors who arrive on 40 or 50 passenger tour buses. The double composting restroom, although recently updated in 2023 to accommodate handicapped visitors, has limited capacity to only a few users. The entrances to the cave systems are narrow and can also only accommodate about a few users at one time. If visitors are distributed around the park, larger numbers can be accommodated than if they are concentrated. For example, large tour groups are encouraged to divide into two groups: one visiting the southern park areas on the beach and one visiting the northern park features to visit the caves. A critical need for this park and others in the BNT Network of National Parks, is to undertake a Carrying Capacity Study.

Parking limitations have also been brought to the attention of the BNT and plans for infrastructural improvements have been approved and are scheduled to begin. These improvements will reimagine the parking area, produce a gift shop and improve user experiences. Additional infrastructure and investment needs for LNP based on the cost verifications study include:

- Visitor center with environmental education facility
- Small visitor center on the beach
- Restrooms
- Increased trails, boardwalk and signage
- Demarcation and mooring buoys
- Installation of a Lucayan Village
- Patrol vehicles: ATV and boat
- Non-motorized water vehicles
- Business plan and marketing strategy
- Science equipment

11.0 Critical Threats & Potential Issues

Hurricanes and Major Storms

Grand Bahama has experienced several Category 3 or stronger hurricanes throughout the years. These storms have caused extensive damage to homes, public infrastructure, and natural ecosystems across the island. Lucayan National Park has also borne its share of the adverse effects of hurricanes and major storms. On September 25th, 2004, Hurricane Jeanne made landfall in The Bahamas just three weeks after Hurricane Frances, another Category 3 storm (Bahamas: Hurricane Jeanne Appeal No. 23/2004). Areas already weakened by Hurricane Frances were then struck by Hurricane Jeanne, including Lucayan National Park.

Hurricane Frances and Jeanne caused infrastructural damage to the bridge and boardwalk inside the park, resulting in staff repairs and eventually the "Build-a-Bridge" campaign, aimed at fully restoring the bridge. These storms also led to extreme beach erosion in the dunes, as invasive Casuarinas hindered the growth of critical plants that would normally help to stabilize the sediment. Restoration and cleanup efforts were employed to clear fallen trees and other debris.

On September 2nd-3rd 2019, Grand Bahama experienced Category 5 hurricane conditions with sustained winds of 185 miles-per-hour and gusts upwards of 200 mph as Hurricane Dorian made landfall in Grand Bahama. Hurricane Dorian is documented as the strongest tropical cyclone to impact The Bahamas since records began in 1851. It is also deemed the worst natural disaster in the country's history, as it crossed the island at a speed of 1 mile per hour, remaining over the island for just under 48 hours, and causing substantial damage, flooding, and losses. The social and environmental impact was immense, leaving an estimated 29,500 people homeless, between Grand Bahama and Abaco, and damaging numerous ecosystems including those at Lucayan National Park.

The damage was unbelievable, including damage to natural resources within the national park. In addition to infrastructural loss, the park lost major equipment and field/office supplies, with a replacement value of well over $200,000. Lucayan National Park also incurred the following damages:

- The main Lucayan National Park sign at the park entrance was lost during Hurricane Dorian, most likely to storm surge in the area. This sign identifies the location and entrance of the park and has since been replaced. The pavilion adjacent to the warden's office, heavily used by guests and taxi drivers for shade and resting, was also destroyed along with various educational and directional signage throughout the park.
- A major breach of the sand dune from severe coastal erosion, completely altering what was once one of the tallest dunes on the island of Grand Bahama. This breach had inhibited access to Gold Rock Beach from both the mangrove boardwalk trail and the David A. Knowles Bridge but has since begun to recover.
- Hurricane Dorian felled several large Casuarina trees along the coast of Gold Rock Beach. Some of these trees were transported to the ocean by storm surge, while others fell along the sand dune. This presents another challenge to disposal with as there is no road access to Gold Rock Beach; heavy equipment is an option but there are fears that these could become stuck and/or create additional damage to the site.. Additionally, several red mangroves and other species of Whiteland coppice vegetation were destroyed during the storm and needed to be removed and discarded.

Invasive species

The LNP is threatened by the presence of Invasive Alien species. Marine invasives, the Red lionfish (*Pterois volitans*), is found on the coral reefs of the park. In addition to the invasives found on the reefs, there are terrestrial invasive species such as mammals like racoons, cats, and hogs, and plants such as Paperbark tree (*Melaleuca quinquenervia*), Australian Pine (*Casaurina equisetifolia*), Jumbay (*Leucaena leucocephala*), Scaevola (*Scaevola taccada*), and Brazilian Pepper (*Schinus terebinthifolia*).
Of these invasive trees, Paperbark trees and Australian Pine are of particular concern. Paperbark trees are spreading in the freshwater wetlands, and Australian Pine has established a population along the entire length of the dune area (Freid, 2008). The Australian pine is of particular concern because it undermines the structure of the soils, their acidic needles prevent native vegetation from growing in the general vicinity and they are particularly difficult to fell and remove, especially along the beach and dunes considering there is limited access for heavy equipment to aid in its disposal. Hurricane Dorian further hampered plans for incorporating heavy equipment that could have gained access from roads at North Riding Point Club.

Raccoons are invasive animals that were once numerous in the park. Since Hurricane Dorian, their numbers have decreased significantly, likely due to the major flooding events and low food supply found in and near the site. However, they still pose a threat to the environment. They cause damage to ground nesting birds' eggs and are suspected to prey on native reptiles, amphibians, and other birds. Raccoons are known to scavenge for food in trash bins at the park and guest reports have indicated that raccoons have disturbed their experience by moving personal items and food.

Feral cats pose a threat to the park due to their ability to negatively impact local ecosystems and native wildlife. They are skilled predators and can significantly impact local wildlife populations by hunting and preying upon native species. They pose a threat to various small mammals, birds, reptiles, and insects, sometimes causing declines in native populations or even leading to the extinction of certain species. Feral cats can also contribute to habitat destruction through their activities, such as digging, marking territory, and altering local ecosystems. This behavior can have broader implications for native flora and fauna by disturbing nesting sites or disrupting ecological balances.

Although wild hog sightings within the park boundary are few, these animals remain a potential threat to the ecosystem. Wild hogs are omnivorous and highly opportunistic feeders. They uproot soil in search of food and are known to prey on a variety of species, including ground-nesting birds, reptiles, amphibians, and small mammals. Their predation can negatively impact the population dynamics of native species and can lead to extensive damage to vegetation and soil structure, affecting native plant communities and altering habitats.

The invasive red lionfish continue to threaten the integrity of the coral reef and mangrove systems. They have been observed and documented in the expanded offshore area of the park. These fish are especially voracious and can cause lasting and damaging effects on the nursery habitat that Gold Rock Creek provides.

Stony Coral Tissue Loss Disease (SCTLD)

SCTLD is a lethal disease that is transmitted through touch and water circulation. It is suspected to be caused by a bacterial pathogen but has yet to be confirmed. While the disease was first recognized in Florida in 2014, it was not reported in The Bahamas until 2019. By March 2020, it was confirmed in coral reefs off the southern shore of Grand Bahama in Peterson Cay National Park, Lucayan National Park and East Grand Bahama. At this time, 18 species of corals had been impacted in these areas with up to 95% of some species recently killed by the disease (Dahlgren et al., 2020). Corals infected with the disease have a high mortality rate and can die within weeks to months.

Large scale coral reef loss would have numerous environmental and economic impacts. Reefs protect the coastline by reducing wave power, act as nursery for thousands of organisms, including juvenile fish, and contribute millions of dollars to various industries like tourism and fishing. Additional monitoring and surveys are required to properly assess the spread of SCTLD in the reefs inside and near LNP since 2020.

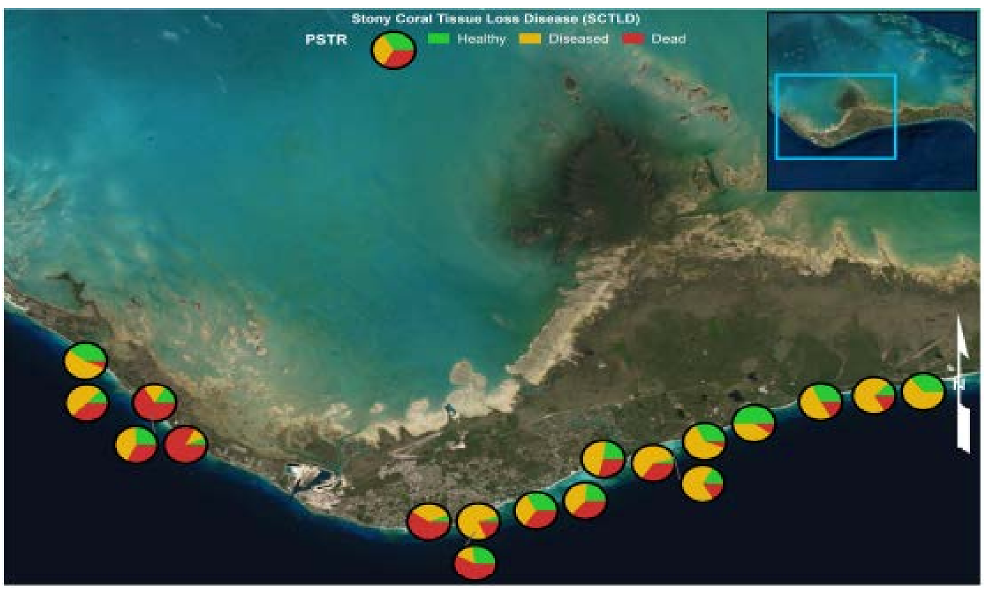

Figure 5: Map depicting spread of SCTLD along the southern coast of Grand Bahama. Source: Bahamas Coral Reef Report Card, 2020.

Pollution

The main source of pollution inside LNP is marine debris that washes up on shore from a nearby cargo shipping lane. Since the mouth and most of the length of Gold Rock Creek are not under any kind of protection, there exists the potential for pollutants and siltation to enter this waterway and cause serious environmental damage to the mangrove wetlands and the fragile cave ecosystem. Additionally, there is the potential for an increase in noise pollution and waste production with the imminent development of a Carnival Cruise port near the park.

Fire

Pine woodlands are a fire dependent community, and benefit from periodic fires hindering the growth of competing coppice forests. Natural fires usually occur at intervals spanning from 1 to 10 years. Both areas within and beyond the boundaries of the LNP are densely populated with pine trees. Following Hurricane Dorian's impact in 2019, a substantial portion of the pine forests located in the eastern region of Grand Bahama has transitioned into deceased stands that eventually collapse, thereby escalating the potential for fires due to an abundance of fuel accumulating on the forest floor. Notably, no prescribed or naturally occurring burning has taken place within these pine stands situated inside or adjacent to the park since Hurricane Dorian, therefore intensifying the threat of fires within these areas.

To address and alleviate this imminent threat, it is imperative to regularly execute fuel removal initiatives and clear surplus vegetation from the vicinity of structures within the park. Furthermore, the installation of a watering system represents a crucial measure to counteract the inherent flammability of pine trees.

Increased Pressure on Sensitive Cave System

Caves are formed through various geological processes, and the stability of their roofs can vary. Increased pressure, whether due to human activities or natural forces, such as construction or heavy loads on the surface, may exceed the structural integrity of the cave ceiling, causing it to cave in or collapse. These caves are connected directly under the only road providing access to the park and the eastern end of Grand Bahama. This creates a safety risk for not only those above the cave but explorers or researchers inside of the cave.

Additionally, caves often contain delicate formations like stalactites, stalagmites, and delicate mineral deposits. Increased pressure from above can cause these formations to crack, break, or collapse, resulting in the loss of unique geological features and disrupting the cave ecosystem.

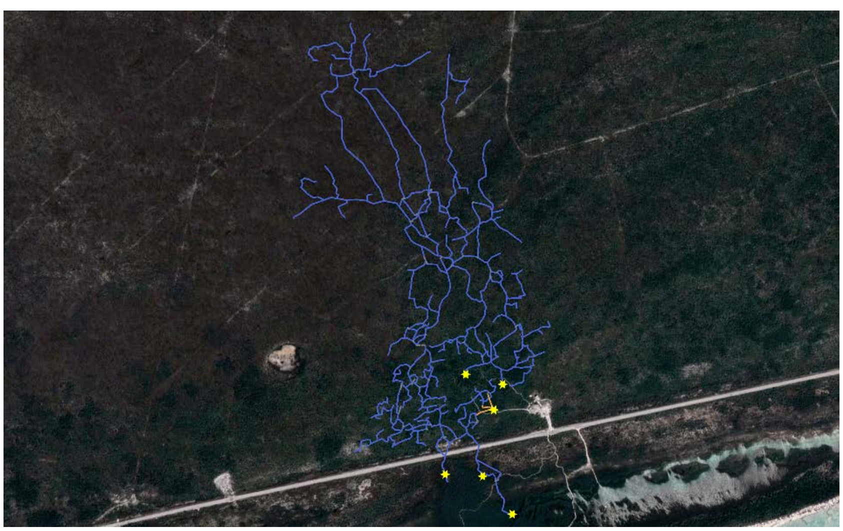

Figure 6: Map depicting connectivity of caves (blue) underneath the Grand Bahama Highway. Image provided by Cristina Zenato

Sargassum
Sargassum is a type of brown macroalgae or seaweed with over 300 species around the world. Many species are found near the surface of the water column, forming large floating mats or rafts, while others are found in the benthic zone attached to hard substrate for their life cycle.

Sargassum is thought to be beneficial or detrimental, depending on who is asked. In the open ocean, sargassum is beneficial as it provides habitat and protection for different marine species. However, in coastal ecosystems, the effects of sargassum are much deadlier. Sargassum, in large quantities near the coastlines, prevents sunlight from reaching important ecosystems, like mangroves, seagrasses and coral reefs, reducing photosynthesis and increasing die-off events (van Tussenbroek et al., 2019). Decaying sargassum can also result in oxygen deprived water and the release of hydrogen sulfide that can potentially kill marine life. Sargassum has also been the cause of smothering and tangling events of dolphins, sea turtles and fish (United Nations Environment Programme-Caribbean Environment Programme, 2021).

Currently across the Caribbean, influxes of sargassum have risen to unprecedented levels. 2018 produced record breaking levels as high as 20.4 million metric tons while years like 2019 and 2020 followed closely behind. Influxes of sargassum has various socioeconomic impacts on coastal communities, marine transportation, public health, fisheries and tourism. Large quantities of sargassum can negatively impact air quality with extended exposure impacting those with respiratory issues. It disrupts the pristine aesthetic of key tourism areas with unpleasant odors and increases difficulty accessing these areas. Sargassum blooms can make it harder for fisherfolk to access fishing grounds and can cause mortality events reducing fish stocks. Sargassum removal also has a direct impact on expenditure by government and/or hotels to restore affected areas to what they once were.

Additional research and long-term monitoring are required to properly assess and fill knowledge gaps on the potential threat of sargassum at LNP. The development of a sargassum management plan will increase preparedness and ability to handle any future influxes of sargassum inside the national park.

Incompatible Development
As the recreational value of the area is recognized, there is the constant threat of development just outside the park's boundary. Gold Rock Creek is not included in the park boundary and can be seen as a prime area for coastal development.

The most imminent development threat to LNP is the development of a Carnival Cruise port in proximity to the park. There are numerous potential impacts to the value of the park to be considered with the development of the port.

- Noise pollution affects the peace and natural value of the area.
- Increase in suspended sediment in the water column due to dredging.
- Increase in pressure for access to the park.
- Increase in waste production from increased capacity.

- Increase in disturbance to the natural biological processes.

There is a knowledge gap in the carrying capacity of the park and how to properly manage the impending increase in annual visitors.

Other Visitor Threats

Use by recreationalists, if not appropriately managed, can result in negative impacts to park values, such as further dune degradation, trash accumulation, and unnatural concentrations and behaviors of animals because of visitor feedings and other human interactions. None of these effects are consistent with the goal of preserving the natural system with as little human impact as possible.

Climate Change and Global Warming

Anthropogenic Climate change represents a serious threat to small island developing states like The Bahamas, and the ecosystems that can be found here. However, we recognize that this issue is too broad in scope to be addressed in this management plan. The Bahamas National Trust, as part of a larger national effort, works closely with appropriate government and non-government organizations on the development of national strategies to address this global challenge.

The impacts of climate change are already being experienced. Increases in the intensity and frequency of extreme weather events, sea level rise, coastal erosion, elevated sea surface temperatures and ocean acidification are the realities we are facing today.

Management Resources

The lack of financial resources creates challenges with the management of the area. Financial constraints might limit the ability to effectively manage and protect natural resources in the park. This can include challenges controlling invasive species, conducting conservation programs, implementing fire management practices and law enforcement. Limited funding may lead to staffing shortages, reducing the capacity to carry out essential tasks and jeopardizing the overall management of the park. Additionally, the lack of financial resources can impact visitor services and community engagement, like interpretive programs, education and outreach and warden-led activities. Lastly, inadequate funding can hinder emergency response capabilities within the park. This includes fire suppression, search and rescue operations and disaster recovery.

To address this challenge, sustainable funding must be accessed and maintained over time to support ongoing initiatives and projects. Sustainable funding can present itself in the form of grants, memberships, income from products and services, corporate partnerships, government grants and contracts and/or long-term partnerships and multi-year grants.

12.0 Management Zones

Zoning is a very important tool for achieving the goals set out in the general management plan. Final zoning plan will be made through a collaboration with The Nature Conservancy (TNC) and the BNT under the GEF 2020 Project.

13.0 Management Strategies

Natural Resource Management and Protection
LNP holds significant environmental importance due to its diverse ecosystems and vital habitats that support various flora and fauna. The park encompasses an Important Bird Area designated by BirdLife International. This designation indicates its significance as a habitat for critical breeding, feeding and resting grounds for various bird species, including both resident and migratory birds. LNP harbors rare and endemic cave-dwelling species, such as the Lucayan cave Brotula and *Remipedia.* The park is unique as it represents all five vegetative zones found within The Bahamas. This diversity showcases various ecosystems within a relatively small area, providing a haven for a wide array of plant species and associated wildlife. The presence of mangroves within Lucayan National Park is particularly significant due to the nursery habitat they create. Mangroves serve as critical nursery areas for various marine species, including fish, crustaceans, and mollusks that are vital to the fishing industry in The Bahamas.

Based on the significance of the natural resources found within the park, the BNT will engage in a variety of management activities to ensure adequate safeguarding of these resources. These activities are components of structured programs such as invasive species control, restoration efforts, protecting and strengthening buffer zones, fire prevention, scientific monitoring and research, as well as threat management.

Cultural Heritage and Historic Landscape Preservation
The park holds significant cultural importance primarily due to its connection to the Lucayan people, the indigenous inhabitants of the Bahamas. The caves located inside of the park contain significant archaeological remains, including artifacts, tools, and evidence of pre-Columbian Lucayan life. The presence of these artifacts provides insights into the cultural practices, daily life, and history of the Lucayan indigenous population.
Preserving the park and its associated archaeological sites is crucial for safeguarding the cultural heritage of the Lucayan people. Efforts to protect and conserve these sites ensure that future generations have access to this valuable cultural legacy. BNT will continue to work alongside Antiquities, Monuments and Museums Corporation to manage the cultural resources found within the park.

Tourism, Recreation and Sustainable Use
The LNP is the second most frequented national park in The Bahamas. The substantial visitation rates are not only vital to park general management and operations, but to the livelihoods of many tour operators that facilitate excursions. Often characterized by its pristine allure and tranquil ambiance, the area is renowned for attracting both tourists and locals seeking recreational activities.

Due to the importance of tourism and recreational engagement, BNT had prioritized sustainable use strategies in the comprehensive management of the area. These strategies are integrated into programs that evaluate and monitor visitor impacts while implementing sustainable infrastructure to improve visitor experience.

Education and Outreach
Educating communities about the importance of conservation practices and sustainable resource management is vital. By understanding the value of preserving these areas, locals are more likely to engage in activities that protect the environment and cultural heritage within the parks. Additionally, it keeps the public informed and interested in park-related activities such as volunteering, conservation projects and cultural events. This engagement fosters a sense of ownership, cooperation, and collaboration between the park management and residents.

BNT recognizes the importance of education and outreach and is utilizing programs to continue this engagement. These programs include education and awareness and benefits sharing with communities.

General Management and Administration
The general management and administration are critical components to the effective functioning and long-term sustainability of the national park. General management ensures adherence to local and national regulations governing environmental protection, wildlife conservation, and cultural preservation. Administration ensures the provision of high-quality visitor services, including facilities, interpretive programs, and information centers. It also speaks to budgets, funding allocations and sustainable revenue generating strategies. Effective financial planning ensures adequate resources for conservation, maintenance, and park operations.

As a part of the long-term management strategy, several programs have been established to aid in the general management and administration of the park. These programs include government relations, partner relations and financial management.

14.0 Management Plan Implementation

Management Goal	Management Objective	Management Activity	Functional Area	Functional Program
Conserve and protect the natural resources and biodiversity within the park	Work with GBPA and other agencies to control invasive plants within the park boundary	1. Remove 3 acres of invasive plants per year from Gold Rock Beach	Conservation Management of Species, Habitats and Ecosystems	Invasive Species Control
		2. Remove 3 acres of invasive plants per year from Gold Rock Creek	Conservation Management of Species, Habitats and Ecosystems	Gold Rock Creek Restoration
		3. Remove stumps and treat with herbicides	Conservation Management of Species, Habitats and Ecosystems	Invasive Species Control
	Continue to	1. Plant 3 acres of	Conservation	Dune Habitat

	engage in planting exercises of native vegetation in the dune ecosystem	native vegetation per year	Management of Species, Habitats and Ecosystems	Restoration
		2. Monitor growth of native vegetation and possible invasive recolonization	Conservation Management of Species, Habitats and Ecosystems	Dune Habitat Restoration
		3. Maintain rope barriers that prevent trampling of native saplings	Conservation Management of Species, Habitats and Ecosystems	Dune Habitat Restoration
		4. Include sand traps to help in dune restoration	Conservation Management of Species, Habitats and Ecosystems	Dune Habitat Restoration
	Manage invasive animal species within the park	1. Set traps regularly for feral cats, raccoons, and wild hogs	Conservation Management of Species, Habitats and Ecosystems	Invasive Species Control
	Protect and strengthen natural buffer zones	1. Continue planting native vegetation to stabilize sediments	Conservation Management of Species, Habitats and Ecosystems	Protect and Strengthen Natural Buffer Zones
		2. Remove invasive species that cause extensive damage during extreme weather events	Conservation Management of Species, Habitats and Ecosystems	Invasive Species Control
		3. Update and resubmit proposal to DEVCO for terrestrial expansion to include mangroves in park boundary	Conservation Management of Species, Habitats and Ecosystems	Protect and Strengthen Natural Buffer Zones
	Monitor coral health	1. Conduct additional scientific research to fill gaps in knowledge of the extent of infection of	Conservation Management of Species, Habitats and Ecosystems	Scientific Monitoring and Research

		SCTLD		
	Identify Park carrying capacity	1. Partner with various organizations to fill gaps in knowledge on park carry capacity	Management and Administration	Partnership Relations
		2. Conduct studies to determine carrying capacity	Conservation Management of Species, Habitats and Ecosystems	Scientific Monitoring and Research
		3. Engage in long term resource monitoring	Tourism and Public Use	Impact Management
	Manage fire threat within and around park	1. Regularly remove excess fuel	Conservation Management of Species, Habitats and Ecosystems	Fire Prevention
		2. Educate staff and public about fire prevention methods	Community Engagement	Awareness and Education
		3. Provide fire safety and fighting training for staff	Management and Administration	Training
	Monitor pressure on sensitive cave system	1. Continue partnership with cave experts to monitor stress and pressure on sensitive areas	Management and Administration	Partnership Relations
		2. Conduct regular research to advise on stress reduction tactics	Conservation Management of Species, Habitats and Ecosystems	Scientific Monitoring and Research
	Prepare for possible increase in sargassum at Gold Rock Beach and Gold Rock Creek	1. Monitor and assess threat of sargassum at LNP	Conservation Management of Species, Habitats and Ecosystems	Scientific Monitoring and Research
		2. Develop a sargassum management plan	Conservation Management of Species, Habitats and Ecosystems	Threat Management
Conserve	Conserve	1. Continue to	Resource	Surveillance

historical and cultural resources	Lucayan artifacts and remains	protect cave system that houses remains and artifacts	Management and Protection	and Enforcement
		2. Work cooperatively with the Antiquities, Monuments and Museums Corporation to identify and manage any additional historical and prehistoric cultural resources	Management and Administration	Government Relations
		3. Where appropriate, make recommendations for restoration	Management and Administration	Government Relations
Expand Park boundaries to include key marine and terrestrial ecosystems	Facilitate for marine expansion and receive approval for terrestrial expansion	1. Coordinate with relevant government departments, the legal instruments required for the marine expansion	Management and Administration	Government Relations
		2. Update and resubmit proposal to DEVCO for terrestrial expansion	Management and Administration	Partnership Relations
Improve visitor experiences compatible with the park's mission and vision statement	Implement non-motorized water sports at Gold Rock Beach	1. Design plan on details of water sports i.e., the number of vehicles allowed on the beach at a time	Tourism and Public Use	Impact Management
		2. Receive bids from different tour companies to facilitate non-motorized water activities	Community Engagement	Benefit Sharing with Communities
Ensure sufficient capacity for effective park managemen	Increase manpower and upgrade infrastructure to minimize	1. Obtain funding to increase park staffing	Management and Administration	Financial Management
		2. Build a warden's cabin to facilitate a 24-hour presence at	Tourism and Public Use	Infrastructure

t	security breaches (vandalism, theft, and nighttime fishing in the creek)	the park		
		3. Engage in nighttime patrols	Resource Management and Protection	Surveillance and Enforcement
		4. Establish neighborhood park watch with incentives	Community Engagement	Benefit Sharing with Communities
		5. Install security cameras to deter criminal activity	Tourism and Public Use	Infrastructure
		6. Install gate at main entrance and kayak entrance	Tourism and Public Use	Infrastructure
	Improve fee collection structure	1. Tie all transactions to a point-of-sale system	Management and Administration	Financial Management
		2. Reference business plan	Management and Administration	Financial Management
Engage in park infrastructural upgrades	Reference conceptual plan for infrastructural upgrades	1. Complete welcome center	Tourism and Public Use	Infrastructure
		2. Identify concessions that will include snacks/meals	Tourism and Public Use	Infrastructure
		3. Revamp parking lot in a semi-circular shape to increase capacity	Tourism and Public Use	Infrastructure
		4. Build pavilion on beach to provide shade	Tourism and Public Use	Infrastructure
		5. Addition of composting restrooms on beach to minimize visitor walk to restroom	Tourism and Public Use	Infrastructure
		6. Obtain access to a water supply system	Tourism and Public Use	Infrastructure
		7. Kiosk by main entrance to control flow in and out	Tourism and Public Use	Infrastructure
	Develop and implement signage plan	1. Replace damaged and old signs	Tourism and Public Use	Infrastructure
		2. Display pre and post Hurricane	Tourism and Public Use	Infrastructure

		Dorian interpretative signage		
Promote education, outreach and interpretation opportunities	Educate visitors, local communities, and stakeholders on the importance of LNP	1. Mandatory educational video before entering park	Tourism and Public Use	Visitor Awareness and Interpretation
		2. Hold community/stakeholder meetings twice per year	Community Engagement	Awareness and Education
		3. Continue to give presentations on LNP at local schools	Community Engagement	Awareness and Education
		4. Provide educational tours to various stakeholders	Community Engagement	Awareness and Education
		5. Partner with the Ministry of Tourism's promotional board to provide international education	Management and Administration	Government Relations
		6. Initiate citizen science program to support species and habitat monitoring initiatives	Community Engagement	Awareness and Education
Promote volunteer opportunities	Regularly engage community in volunteerism	1. Conduct 2 volunteer days per year	Community Engagement	Volunteerism

15.0 Monitoring and Evaluation

Functional Area	Program	Indicators of Progress
Conservation Management of Species, Habitats and Ecosystems	Invasive Species Control	☐ Number of acres of invasive plants removed ☐ Number of stumps treated with herbicides ☐ Number of traps set for invasive animals ☐ Number of invasive animals removed
	Dune Habitat	☐ Number of acres of native

	Restoration	vegetation planted ☐ Number and location of monitoring stations ☐ Number and type of monitoring measurements taken ☐ Data analysis reports on native vegetation growth ☐ Number of rope barriers maintained ☐ Number of sand traps included
	Gold Rock Creek Restoration	☐ Number of acres of invasive plants removed ☐ Number of stumps treated with herbicides
	Protect and Strengthen Natural Buffer Zones	☐ Number of planting exercises conducted ☐ Resubmission of proposal for terrestrial expansion
	Scientific Monitoring and Research	☐ Number of research activities initiated into SCTLD ☐ Studies conducted to determine carrying capacity ☐ Number of research activities to aid in the creation of stress reduction tactics ☐ Sargassum threat monitored and assessed
	Fire Prevention	☐ Number of fuel removal exercises in the pine forest
	Threat Management	☐ Development of a sargassum management plan
Resource Management and Protection	Surveillance and Enforcement	☐ Number of daytime patrols ☐ Number of nighttime patrols ☐ Number and type of park rules violations ☐ Number and type of follow-up action with offenders
	Zoning and Boundaries	☐ Zoning plan completed ☐ Trial and implementation of zones
Community Engagement	Awareness and Education	☐ Number of community/stakeholder meetings held per year ☐ Number of presentations given at local schools ☐ Number of educational tours to stakeholders ☐ Use of citizen science program ☐ Education of staff and public on fire

		prevention
	Volunteerism	☐ Conduct 2 volunteer days per year
	Benefit Sharing with Communities	☐ Bidding conducted for non-motorized water activities ☐ Neighborhood watch with incentives established
Tourism and Public Use	Activities	☐ Implement new activities to improve visitor experience
	Visitor Awareness and Interpretation	☐ Implement mandatory educational video before entering park
	Infrastructure	☐ Warden's cabin built ☐ Gate installation at main entrance ☐ Gate installation at kayak entrance ☐ Completion of welcome center ☐ Snack and meal concessions ☐ Revamping of the parking lot ☐ Pavilion built on beach ☐ Addition of composting restrooms ☐ Accessible water supply system ☐ Installation of kiosk at main entrance ☐ Development of an interpretative signage plan ☐ Number of interpretative signage repaired/replaced
	Impact Management	☐ Non-motorized water sports plan developed ☐ Number of monitoring exercises to assess impact of use on resources
Management and Administration	General Management and Administration	☐ Number of new hires for LNP ☐ Type of equipment procured
	Training	☐ Fire safety and fighting training provided for staff ☐ Number and type of additional training sessions held per year
	Financial Management	☐ Number of funding received towards increasing park staffing ☐ Point-of-sale system implemented ☐ Use of business plan to continually improve fee collection
	Government Relations	☐ Manage historical and pre-historic cultural resources with Antiquities, Monuments and Museums Corporation ☐ Recommendations made where needed for cultural resources restoration

		☐ Coordinate with government to achieve marine expansion ☐ Partnership with the Ministry of Tourism's promotional board
	Partnership Relations	☐ Partnership with various organizations to assess park carrying capacity ☐ Collaborate with cave experts in ecosystem stress monitoring ☐ Update and resubmit documents for terrestrial expansion
	Information Technology	☐ Number and types of equipment procured ☐ Number of staff trained to use equipment
Facilities Operations and Management	Docking Facilities	☐ Number of demarcation buoys acquired and deployed ☐ Number of mooring buoys acquired and deployed
	Boat & Vehicle Operations and Maintenance	☐ Fully equipped patrol boat acquired ☐ Regular maintenance of boat performed
	Trail Operations and Maintenance	☐ Number of trail maintenance exercises performed ☐ Type of maintenance conducted on additional infrastructure

16.0 Financial Plan

APPENDICES

Appendix I – Species List

Bird Species List for Lucayan National Park

Common Name	Scientific Name
Bahama Swallow	*Tachycineta cyaneoviridis*
Black-and-white Warbler	*Mniotilta varia*
Black-bellied Plover	*Pluvialis squatarola*
Black-faced Grassquit	*Tiaris bicolor*
Black-necked Stilt	*Himantopus mexicanus*
Blackpoll Warbler	*Setophaga striata*
Black-throated Blue Warbler	*Setophaga caerulescens*
Black-whiskered Vireo	*Vireo altiloquus*
Blue-gray Gnatcatcher	*Polioptila caerulea*

Common Name	**Scientific Name**
Blue-winged Teal	*Spatula discors*
Bobolink	*Dolichonyx oryzivorus*
Bridled Tern	*Onychoprion anaethetus*
Brown Pelican	*Pelecanus occidentalis*
Cape May Warbler	*Setophaga tigrina*
Cattle Egret	*Bubulcus ibis*
Chestnut-sided Warbler	*Setophaga pensylvanica*
Chimney Swift	*Chaetura pelagica*
Chuck-will's-widow	*Antrostomus carolinensis*
Clapper Rail	*Rallus crepitans*
Common Gallinule	*Gallinula galeata*
Common Ground-Dove	*Columbina passerina*
Common Tern	*Sterna hirundo*
Common Yellowthroat	*Geothlypis trichas*
Cuban Emerald	*Chlorostilbon ricordii*
Cuban Pewee	*Contopus caribaeus*
Double-crested Cormorant	*Phalacrocorax auritus*
Eurasian Collared-Dove	*Streptopelia decaocto*
European Starling	*Sturnus vulgaris*
Glossy Ibis	*Plegadis falcinellus*
Gray Catbird	*Dumetella carolinensis*
Gray Kingbird	*Tyrannus dominicensis*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Greater Antillean Bullfinch	*Melopyrrha violacea*
Greater Yellowlegs	*Tringa melanoleuca*
Green Heron	*Butorides virescens*
Hairy Woodpecker	*Dryobates villosus*
Herring Gull	*Larus argentatus*
Hooded Warbler	*Setophaga citrina*
House Sparrow	*Passer domesticus*
Indigo Bunting	*Passerina cyanea*
Key West Quail-Dove	*Geotrygon chrysia*
Killdeer	*Charadrius vociferus*
La Sagra's Flycatcher	*Myiarchus sagrae*
Laughing Gull	*Leucophaeus atricilla*
Least Grebe	*Tachybaptus dominicus*
Least Tern	*Sternula antillarum*
Lesser Black-backed Gull	*Larus fuscus*
Lesser Yellowlegs	*Tringa flavipes*
Little Blue Heron	*Egretta caerulea*
Loggerhead Kingbird	*Tyrannus caudifasciatus*

Common Name	**Scientific Name**
Louisiana Waterthrush	*Parkesia motacilla*
Magnificent Frigatebird	*Fregata magnificens*
Magnolia Warbler	*Setophaga magnolia*
Merlin	*Falco columbarius*
Mourning Dove	*Zenaida macroura*
Northern Mockingbird	*Mimus polyglottos*
Northern Parula	*Setophaga americana*
Northern Waterthrush	*Parkesia noveboracensis*
Olive-capped Warbler	*Setophaga pityophila*
Osprey	*Pandion haliaetus*
Ovenbird	*Seiurus aurocapilla*
Palm Warbler	*Setophaga palmarum*
Peregrine Falcon	*Falco peregrinus*
Pied-billed Grebe	*Podilymbus podiceps*
Pine Warbler	*Setophaga pinus*
Piping Plover	*Charadrius melodus*
Prairie Warbler	*Setophaga discolor*
Prothonotary Warbler	*Protonotaria citrea*
Purple Martin	*Progne subis*
Reddish Egret	*Egretta rufescens*
Red-eyed Vireo	*Vireo olivaceus*
Red-legged Thrush	*Turdus plumbeus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ring-billed Gull	*Larus delawarensis*
Rock Pigeon	*Columba livia*
Royal Tern	*Thalasseus maximus*
Ruddy Turnstone	*Arenaria interpres*
Sanderling	*Calidris alba*
Semipalmated Plover	*Charadrius semipalmatus*
Semipalmated Sandpiper	*Calidris pusilla*
Short-billed Dowitcher	*Limnodromus griseus*
Smooth-billed Ani	*Crotophaga ani*
Snowy Egret	*Egretta thula*
Sora	*Porzana carolina*
Spotted Sandpiper	*Actitis macularius*
Swainson's Warbler	*Limnothlypis swainsonii*
Thick-billed vireo	*Vireo crassirostris crassirostris*
Tree Swallow	*Tachycineta bicolor*
Tricolored Heron	*Egretta tricolor*
Turkey Vulture	*Cathartes aura*
Virginia Rail	*Rallus limicola*

Common Name	**Scientific Name**
Western Sandpiper	*Calidris mauri*
Western Spindalis	*Spindalis zena*
White Ibis	*Eudocimus albus*
White-cheeked Pintail	*Anas bahamensis*
White-crowned Pigeon	*Patagioenas leucocephala*
White-eyed Vireo	*Vireo griseus*
Willet	*Tringa semipalmata*
Wilson's Plover	*Charadrius wilsonia*
Wilson's Warbler	*Cardellina pusilla*
Worm-eating Warbler	*Helmitheros vermivorum*
Yellow Warbler	*Setophaga petechia*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Yellow-billed Cuckoo	*Coccyzus americanus*
Yellow-crowned Night-Heron	*Nyctanassa violacea*
Yellow-rumped Warbler	*Setophaga coronata*
Yellow-throated Vireo	*Vireo flavifrons*
Yellow-throated Warbler	*Setophaga dominica*
Zenaida Dove	*Zenaida aurita*

Fish Species List for Lucayan National Park

Common Name	**Scientific Name**
Bahama Cavefish	*Lucifuga spelaeotes*
Banded butterflyfish	*Chaetodon striatus*
Bandtail puffer	*Sphoeroides spengleri*
Bar Jack	*Caranx latus*
Beaugregory	*Stegastes leucostictus*
Bermuda chub	*Kyphosus sectatrix*
Bicolor damselfish	*Stegastes partitus*
Black grouper	*Mycteroperca bonaci*
Blue chromis	*Chromiis cyanea*
Blue tang	*Acanthurus coeruleus*
Bluehead wrasse	*Thalassoma bifasciatum*
Bluestriped grunt	*Haemulon sciurus*
Bridled goby	*Coryphopterus glaucofraenum*
Brown chromis	*Chromis multilineata*
Butter hamlet	*Hypoplectrus unicolor*
Caesar Grunt	*Haemulon carbonarium*
Checkered Puffer	*Sphoeroides testudineus*
Cleaning goby	*Gobiosoma genie*
Clown wrasse	*Halichoeres maculipinna*
Cocoa damselfish	*Stegastes variabilis*
Creole wrasse	*Clepticus parrae*

Common Name	**Scientific Name**
Cubera Snapper	*Lutjanus cyanopterus*
Doctor fish	*Acanthurus chirurgus*
Fairy basslet	*Gramma loreto*
Foureye butterflyfish	*Chaetodon capistratus*
French angelfish	*Pomacanthus paru*
French grunt	*Haemulon flavolineatum*
Glasseye snapper	*Heteropricanthus cruentatus*
Gray angelfish	*Pomacanthus arcuatus*
Gray Snapper	*Lutjanus griseus*
Graysby	*Cephalopholis cruentata*
Great barracuda	*Sphyraena barracuda*
Grunt	*Haemulidae*
Harlequin bass	*Serranus tigrinus*
Hogfish	*Lachnolaimus maximus*
Juvenile grunt	*Haemulon spp*
Keeltail Needlefish	*Platybelone argalus*
Lionfish	*Pterois volitans*
Longfin damselfish	*Stegastes diencaeus*
Mahogany Snapper	*Lutjanus mahogoni*
Masked/Glass goby	*Coryphopterus personatus*
Mutton Snapper	*Lutjanus analis*
Nassau Grouper	*Epinephelus striatus*
Ocean surgeonfish	*Acanthurus bahianus*
Ocean triggerfish	*Canthidermis sufflamen*
Palometa	*Trachinotus goodei*
Princess parrotfish	*Scarus taeniopterus*
Puddingwife	*Halichoeres radiatus*
Queen angelfish	*Holacanthus ciliaris*
Queen parrotfish	*Scarus vetula*
Queen triggerfish	*Balistes vetula*
Rainbow wrasse	*Halichoeres pictus*
Red hind	*Epinephelus guttatus*
Redband parrotfish	*Sparisoma aurofrenatum*
Redfin (Yellowtail) parrotfish	*Sparisoma rubripinne*
Redtail parrotfish	*Sparisoma chrysopterum*
Reef squirrelfish	*Sargocentron hastatum*
Saddled blenny	*Malacocentus triangulatus*
Sand tilefish	*Malacanthus plumieri*
Saucereye porgy	*Calamus calamus*
Schoolmaster Snapper	*Lutjanus apodus*
Sergeant Major	*Abudefduf saxatilis*
Sharpnose Puffer	*Canthigaster rostrata*
Shortnose Batfish	*Ogcocephalus nasutus*

Common Name	Scientific Name
Slippery Dick	*Halichoeres bivittatus*
Spanish grunt	*Haemulon macrostomum*
Spanish hogfish	*Bodianus rufus*
Squirrelfish	*Holocentrus adscensionis*
Stoplight parrotfish	*Sparisoma viride*
Striped parrotfish	*Scarus iserti*
Threespot damselfish	*Stegastes planifrons*
Tiger grouper	*Mycteroperca tigris*
Tomtate	*Haemulon aurolineatum*
Trumpetfish	*Aulostomus maculatus*
White grunt	*Haemulon plumieri*
Yellow goatfish	*Mulloidichthys martinicus*
Yellowfin Mojarra	*Gerres cinereus*
Yellowhead wrasse	*Halichoeres garnoti*
Yellowtail damselfish	*Microspathodon chrysurus*
Yellowtail snapper	*Ocyurus chrysurus*

Coral Species List for Lucayan National Park

Common Name	Scientific Name
Blade fire coral	*Millepora complanata*
Blushing star coral	*Stephanocenia intersepta*
Boulder brain coral	*Colpoophyllia natans*
Boulder star coral	*Orbicella franksi*
Branched finger coral	*Porites furcata*
Branching fire coral	*Millepora alcicornis*
Clubtip finger coral	*Porites porites*
Common star coral	*Orbicella sp.*
Elliptical star coral	*Dichocenia stokesi*
Fused staghorn coral	*Acropora prolifera*
Golfball coral	*Favia fragum*
Great star coral	*Montastrea cavernosa*
Grooved brain coral	*Diploria labrynthiformis*
Knobby brain coral	*Pseudodiploria clivosa*
Lesser starlet coral	*Siderastrea radians*
Lettuce coral	*Undaria agaracites*
Lobed star coral	*Orbicella annularis*
Low relief lettuce coral	*Undaria humilis*
Massive starlet coral	*Siderastrea siderea*
Maze coral	*Meandrina meandrites*
Mountainous star coral	*Orbicella faveolata*
Mustard hill coral	*Porites astreoides*
Pillar coral	*Dendrogyra cylindrus*

Riged cactus coral	*Mycetophyllia lamarckiana*
Rose coral	*Mancinia areolata*
Smooth flower coral	*Eusmilia fastigiata*
Staghorn coral	*Acropora cervicornis*
Sunray lettuce coral	*Helloseris cucullata*
Symmetrical brain coral	*Pseudodiploria strigosa*
Ten-ray star coral	*Madracis decactis*

Plant Species List for Lucayan National Park

Common Name	**Scientific Name**
Asiatic Pennywort, Gotu Kola	*Centella asiatica*
Australian Pine, Beach Sheoak	*Casaurina equisetifolia*
Bahama Bluestem	*Sporobolus domingensis*
Bahama Nightshade	*Solanum bahamense*
Bahama Wild Coffee	*Psychoteria ligustrifolia*
Bamboo Grass, Wild Cane, Cane Grass, Tibisee	*Lasiacis divaricata*
Barbados Juniper, West Indian Cedar	*Juniperus barbadensis*
Bay Cedar	*Suriana maritima*
Bay Lavender	*Tournefortia gnaphalodes*
Beach Cabbage Tree, Beach Naupaka	*Scaevola taccada*
Beach Ironweed	*Vernonia arbuscula*
Beach Morning Glory	*Ipomoea pes-capre*
Beach Naupaka, Naupaka kahakai	*Scaevola plumeiri*
Biscayne Prickly Ash	*Zanthoxylum coriaceum*
Bitter Bush, Tonka Bean	*Eupatorium odoratum*
Bitter Panic Grass	*Panicum amarulum*
Black Mangrove	*Avicennia germinans*
Black Olive Tree	*Bucida spinosa*
Blackbead	*Reynosia septentrionalis*
Blazing Star, Garber's Blazing Star	*Liatris garberi*
Blolly	*Guapira discolor*
Bluehearts	*Buchnera floridana*
Bracken Fern	*Pteridium aquilinum*
Brittle Thatch Palm, Old Man Palm	*Coccothrinax morrisii*
Brown Veined Encyclia	*Encyclia fucata*
Bully Tree, Hog Plum	*Sideroxylon americana*
Buttonsage, Wild Sage	*Lantana involucrata*
Buttonwood	*Conocarpus erectus*
Cabbage Palmetto	*Sabal palmetto*
Caribbean Pine	*Pinus caribaea var. bahamensis*
Cheeseberry, Yellowroot	*Morinda royoc*
Cinnecord, Tamarindillo	*Acacia choriophylla*

Common Name	**Scientific Name**
Coastal Ragweed	*Ambrosia hispida*
Coastal Sandbur	*Cenchrus incertus*
Cocoplum	*Chrysobalanus icaco*
Colicwood	*Myrsine floridana*
Corkystem Passionflower	*Rhabdadenia biflora*
Crossopetalum	*Crossopetalum coriaceum*
Cuba Root	*Smilax havanensis*
Dahoon Holly	*Ilex cassine*
Devils Potato, Wild Potato, Rubber Vine, Danish	*Echites umbellata*
Devils Pumpkin, Wild Watermelon	*Passiflora cupraea*
Erithalis fruticose	*Erithalis fruticosa*
False Willow	*Bacchaaris angustifolia*
Five Finger	*Tabebuia bahamensis*
Florida Fishpoison Tree, Jamaican Dogwood	*Piscidia piscipula*
Florida Privet, Wild Olive	*Forestieria segregata*
Fly Marsh Elder	*Iva cheiranthifolia*
Fringe Rush	*Fimbristylis spathacea*
Giant Airplant	*Tillandsia utriculata*
Golden Creeper, Beach-creeper	*Ernodea littoralis*
Golden Dewdrop, Pigeon Berry	*Duranta erectus*
Granny Bush, Cocobey	*Cordia bahamensis*
Groundsel Tree	*Baccharis hamifolia*
Gulf Coast Spikerush	*Eleocharis cellulosa*
Gumbo Limbo, Tourist Tree	*Bursera simaruba*
Havanna Cluster Vine	*Jacquemontia havanensis*
Jack-Ma-Da, Bitter Sage, Thoroughwort	*Eupatorium villosum*
Jamaica Vervain	*Stachytarpheta jamaicensis*
Jamaica White Wood	*Sideroxylon salicifolia*
Jew's Mallow, Tossa Jute	*Corchorus hirsutus*
Joewood	*Jacquinia keyense*
Key's Beeblossum	*Schaefferia frustecens*
Lancewood	*Nectandra coriacea*
Leadtree, White Popinac	*Leuceana leucocephala*
Leather Fern	*Acrostichum sp.*
Linden's Cattleyopsis	*Cattleyopsis lendenii*
Love Vine	*Cassytha filiformis*
Maiden Bush	*Savia bahamensis*
Maidenhair Anemia	*Andemia adiantifolia*
Marsh Mestastelma	*Cynanchum angustifolium*
Milkwood	*Exothea paniculata*
Milky Weed, Milky Bush, Coast Spurge	*Chamaesyce mesembrianthemifolia*

Common Name	Scientific Name
Mountain Guava	*Psidium longipes*
No commonly recognized name	*Cassia lineata*
No commonly recognized name	*Cynanchum bahamense*
No commonly recognized name	*Ernodea cokeri*
No commonly recognized name	*Ficus perforata*
No commonly recognized name	*Ilex repanda*
No commonly recognized name	*Oeceoclades maculata*
No commonly recognized name	*Pavonia spicata*
No commonly recognized name	*Rhyncospora sp.*
Oceanblue Morning Glory	*Ipomoea indica*
Pale Lidflower	*Calyptranthes pallens*
Pigeon Plum	*Coccoloba diversifolia*
Pineland Allamanda	*Angadenia sagraei*
Poison Ivy, Eastern Poison Ivy	*Rhus radicans*
Poisonwood	*Metopium toxiferum*
Polypod Golden-scaled Fern	*Polypodium aureum*
Punk Tree, Broad-leaved Paperbark	*Melaleuca quinquenervia*
Rams Horn	*Pithecellobium keyense*
Red Mangrove	*Rhizophora mangle*
Red Milk Pea	*Galactia rudolphoides*
Red Powderpuff	*Calliandra haematomma*
Rough Velvetseed	*Guettarda scabra*
Rusty Fimbristylis	*Fimbristylis ferruginea*
Saltmarsh False Foxglove	*Agalinis maritima*
Saltmarsh Fleabane	*Melanthera aspera*
Satinleaf	*Chrysophyllum oliviforme*
Sawgrass	*Cladium jamaicensis*
Sea Grape	*Coccoloba uvifera*
Sea Oxeye Daisy	*Borrichia arborescens*
Sea Pink	*Sabatia stellaris*
Sea Purslane	*Sesuvium portulacastrum*
Sea Rocket	*Cakile lanceolata*
Sea Torchwood	*Amyris elemifera*
Showy Milkwort	*Polygala grandiflora*
Slender Bluestem	*Schizachyrium gracile*
Snake Root, Bitter Bush, Doctor Bar	*Picramnia pentandra*
Snowberry, David's Milkberry	*Chiococca alba*
Soldier Vine	*Tournefortia volubilis*
Southern Wax Myrtle	*Myrica cerifera*
Spanish Needle	*Bidens alba*
Spanish Stopper or Boxleaf Stopper	*Eugenia foetida*
Spider Lily, Bay Lily, Sea Lily	*Hymenocallis arenicola*
St. Augustine Grass	*Stenotaphorum secundatum*

Common Name	Scientific Name
Star Rush	*Dichromena colorata*
Stinking Pea, Bahamas Senna	*Cassia chapmanii*
Strongbark	*Bourreria succulenta*
Sweetscent	*Pluchea odorata*
Turk's Cap Mallow	*Malvalviscus arboreus*
Virginia Glasswort	*Salicornia virginica*
Water Cowbane, Water Dropwort	*Tiedemannia filiformis*
West Indian Whitewood	*Tetrazygia bicolor*
White Colic-root, Star Grass	*Aletris farinosa*
White Indigoberry	*Randia aculeata*
White Mangrove	*Laguncularia racemosa*
White Stopper	*Eugenia axillaris*
Wild Tamarind, False Tamarind	*Lysiloma latisiliquum*
Yellow Alder	*Turnera ulmifolia*
Yellow Allamanda	*Urechites lutea*

Appendix II – Summary of Related Guidelines, Rules and Regulations

Fishing Regulations
Lucayan National Park is a designated **no-take area.**

Wild Bird Protection Act
All wild birds are protected in The Bahamas, with the exception of designated game birds. Hunting of wild birds is **not** allowed in the park.

Antiquities, Monuments, and Museum Act
The removal or physical disturbance of archaeological artifacts and/or remains is **illegal** unless justified by scientific research and approved by the relevant authorities.

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