## **Environmental Impact Statement**

## Planning Application PR.15987 Hotel Development

Parcel 60813/17,18

Submitted to: The Director of Planning, Department of Planning Turks and Caicos Islands Government Providenciales, Turks and Caicos Islands





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For: Molo Hotels (Turks and Caicos) Limited July, 2023

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#### 1.0 Introduction

Molo Hotels (Turks and Caicos) Limited has been granted conditional outline development permission to construct an EP Hotel on Grace Bay Beach, Providenciales. The Planning Board has conditioned that an environmental impact assessment (EIA) must be carried out on the proposed hotel development.

A well-qualified and experienced group of local and international consultants have been assembled to carryout the assessment and submit to the Director of Planning a statement of findings (EIS).

The consultants were provided with a terms of reference (TOR) and have carried out baseline studies on the site and surrounding locality; assessed the environmental impacts; recommended mitigation measures; and proposed management plans.

It is anticipated that if the findings of this EIS are adhered to, it can be assured that the proposed development can be socially just, economically viable and environmentally sustainable within the community of Providenciales and the wider Turks and Caicos Islands.

#### 1.1 Non-Technical Summary

Under Planning Application PR.15987, Outline Development Permission (ODP) was granted to Molo Hotels (Turks and Caicos) Limited for the proposed development of a 207-Bedroom Hotel over 7 stories with ancillary Facilities of Swimming Pools; Gym, Spa and Wellness Centre; Shops; and other infrastructure on Parcels 60813/17 and 18, fully respecting planning standards in height, density, beach access, and boundary and vegetation set-backs. The ODP was granted on July 15<sup>th</sup>, 2022.

This Environmental Impact Assessment relates to the Outline Planning Permission granted to Molo Hotels (Turks and Caicos) Limited for development of a land area of 4.14 acres. In January 2023 Molo Hotels acquired an additional plot of land, parcel 60813/32, conterminous with parcel 60813/17, and will be merging those titles.

Molo Hotels, following pre-application consultation with the Planning Department on 24<sup>th</sup> November 2022, shall be submitting a Detailed Planning Application for the development which will include the additional 1.03 acres of land.



The hotel bedroom count shall only increase by 44 rooms from 207 to 251 bedrooms, staying below the density standards. The design follows the principles set out in the Outline Application and shall continue to respect all aspects of the planning standards. An environmental impact assessment (EIA) was carried out on the proposed development by well experienced and qualified professionals, and this is the report of findings (EIS).

Presently, the proposed development will be the only beachfront European Plan Hotel on Grace Bay Beach, Providenciales, a monumental achievement against all the existing and planned Condominium-Hotel developments. The development is currently planned on Grace Bay Beach, an excellent location with sufficient acreage. Grace Bay Beach is consistently named one of the best beaches in the world. During 2022, Tripadvisor gave Grace Bay Beach the No. 1 spot on its 'Best Beaches in The World' rankings. Reviewers glowed that it is "what postcards are made for."

Throughout the continuation of the planning and design phases of the proposed development, the effects of Climate Change, the move towards decarbonization by investing in renewable energy and how it is reshaping the natural and built environments and how we create resilience will be the focus. Increasing temperatures; changing precipitation patterns; and more frequent, intense, and unpredictable extreme weather conditions caused by climate change are exacerbating existing risks and creating new challenges in terms of design, engineering, equipment, and use of building materials. Whilst recognizing that climate change is a Global concern and requires Global efforts to comprehensively address it, the proposed development itself must satisfy all parameters within the confines of the boundaries of the site and beyond, during construction and operation in terms of formulation of strategies, plans, capabilities, missions, and actions to mitigate the causes as well as the effects. The proponents are committed to adhering to the Climate Change Charter as a corporation citizen and building relationships with the relevant Government Agencies and other private sector agencies towards the same.

The Hon. Premier of the Turks and Caicos Islands at the 2023 Economic Empowerment Conference (2023) highlighted that despite all the success, the following are serious concerns:

- The unemployment rate is currently at 7 percent.
- The Islands' GDP is expanding but GDP per capita is stagnant (meaning "we are expanding in terms of labour, but salaries and wages remain the same").



• Despite all the investment and economic growth within the Islands, there is a group of people with an entirely different economic reality within our society.

It is anticipated that the proposed development as a private sector component in line with the TCI Governments' overall strategy of development will perform the following, to bring about positive economic and social benefits:

- Comprehensive stakeholder engagement must be the way forward.
- The natural environment must be protected. Everything in the TCI is linked to the natural environment Tourism, Construction, Real Estate, Commerce, Attorneys, etc.
- Investing in renewable energy wherever necessary as the preferred choice.
- Continued development of linkages to the tourism/hotel industry (The Orange Economy).
- Invest in staff housing.
- Foster social cohesion and economic justice.
- Focus on Sustainability.

From the EIA carried out and the findings thereof contained in this report (EIS), the proponents are confident that the proposed development will be economically viable/beneficial, socially just, and environmentally sustainable for the Turks and Caicos Islands and its citizens.

## 1.2 A Brief Description of the Proposed Development and its Relationship with other Development in the Area.

The applicant Molo Hotels (Turks and Caicos) Limited or proponents have been granted Outline Development Permission, dated 15<sup>th</sup> July, 2022 for the development of parcels 60813/17 and 18; and upon submission of the detailed planning application, the applicant will be incorporating parcel 32 into the development proposal. Parcel 32 has a beachfront villa existing on it. The aforesaid Planning Application is registered as PR.15987 for the development of 4.17 acres of land. The development will entail:

## 207-Bedroom Hotel / Swimming Pools / Cabanas / Gym, Spa & Wellness Centre / Shops / Ancillary Facilities.

The Applicant, Molo Hotels (Turks and Caicos) Limited, is part of the Molo Hotel Group, a privately owned hotel development and management company based in Europe. Molo Hotels is a family-owned business, with six trading hotel assets, six hotels under development, and an additional



three hotels in the final stages of the acquisition process. These hotels are located in the United Kingdom, Italy, Poland, and Aruba.

The proponents of the proposed development are responding to current and future market needs for the provision of a beachfront EP Hotel on Providenciales with a wide diversity of services for the customer, whilst minimizing the construction and maintenance cost. The integration of Spa and Wellness developments represents an important component in any upscale development. The Spa, Wellness and Gymnasium components offer a series of treatments, and/or facilities related to health and wellbeing. The amenity of the Spa and Wellness Centre will differentiate the property from other competitive resorts on the Island. The natural attributes and locational characteristics of the site provide an excellent opportunity for the development of the type proposed. The proposed development will offer all the accommodation, food, beverage, leisure and other facilities required by a range of market sectors.

The proposed development will be constructed as a single phased development and will cater to:

- High-spend tourists
- Weekend and short break markets of North America
- European Markets British Airways/Virgin Atlantic making weekly flights to Providenciales
- Incentive groups
- Divers groups and individuals
- Sports fishermen groups and individuals
- Day visitors.

The proposed development will incentivize local entrepreneurs to invest in and provide the needed services of:

- Landscaping
- Housekeeping
- Tour Operators (Water Sports, Leisure Boating, Fishing, Biking, Horse Back Riding, Terrain Vehicles, etc.)
- Taxi Services
- VIP Services
- Construction & Maintenance Trades and Supplies
- Security
- Management and Consultancy Services
- Rental Car Companies
- Waste Disposal.



**Building Height:** The number of floors is approved with seven (7) floors and far below the maximum allowable height of 90 feet. The planting of tall palms and other trees will further mitigate against the impact of height.



Figure 1-1. Number of Floors and Height of the Buildings.

**Building Setbacks**: The minimum allowable building setback distances for all the tall buildings shall be 130 feet measured from the vegetation line along the coast to the furthest projection of the buildings in compliance with the building setback requirements. Small structures such as gazebos and poolside buildings will be at shorter setbacks approved by the Planning Board.

#### 1.3 Aims and Objectives of the Assessment

The aim is to report in this environmental impact statement (EIS) the findings of the environmental impact assessment (EIA), the areas of which are detailed in the terms of reference (TOR). In doing so, the statement will reveal findings which justify why Detailed Development Permission and Building Permit should be granted to the owner of parcels 60813/17 and 18; and the recently purchased parcel 32 for their proposed development. At this time, no environmental assessment of or parcel 60813/32 has been conducted and is not included in this report.

The objectives are primarily as follows:

 For the owner(s) of the subject parcels to construct their development as approved in their Outline Development Permission (Registered as PR.15987) dated 15<sup>th</sup> July 2022.



- That the proposed development is economically beneficial to the developer, TCIG and the citizens of the Turks and Caicos Islands.
- That the proposed development positively impacts upon the nearby and surrounding built infrastructure and natural environment.
- That the development integrates and harmonizes with and enhances the Princess Alexandra National Park through its biodiversity plans and coastal management programmes.
- That any potential environmental or developmental impacts are negligible and mitigated against.
- That the proposed development enjoys the same amenities which are presently enjoyed by all coastal developments along Grace Bay Beach.
- That from the amenities and visitor experience provided by the development, visitors are encouraged to return to the hotel and the Turks and Caicos Islands.
- The proposed development is resilient to sea level rise, coastal erosion, severe weather, and other climatic conditions that may be associated with climate change.
- Beach access and utilization of the existing beach access must always remain unobstructed and accessible.

In a few circumstances, the statement has derogated from the prescribed rigid format of the generic TOR without compromising the integrity of reporting and while addressing all the concerns and requirements of the TOR. The specialists have been constantly reminded of what is proposed i.e., a 207-Bedroom Hotel/Swimming Pools/Restaurant and Bar/Cabanas/ Spa, Gym, Wellness Centre/Shop/Ancillary Facilities.

# OVERVIEW OF THE AREAS/TOPICS TO BE ADDRESSED IN THE EIA (PRESENT THE RESULTS OF THE SCOPING EXERCISE)

In Section 7.5, of the TCI Development Manual, there is no provision for a "Scoping" exercise as prescribed in the TOR and in every book that is written on introduction to EIA, and as is required to happen in practice. This deficiency was recognized by the Department of Planning, Turks and Caicos Islands Government since the early 2000s and was intended to be addressed. Unfortunately, during the last review of the Development Manual in 2014, it was also missed by the consultants.

The TOR provided has been accepted by the applicant/developer. It is recognized that if screening or scoping of the matters to be addressed has been carried out by the Department of



Planning and the Department of Environment and Coastal Resources (DECR), we are unaware and did not participate in that process. We are aware that we should have been invited to participate in that process. We have been provided with an extensive and generic TOR. Notwithstanding the aforementioned, the consultants have had consultations with the Departments of Planning, DECR, and Fire Services in carrying out the EIA. The consultants involved cover the areas of:

- Development and Environmental Planning
- Terrestrial Ecology
- Marine Biology
- Coastal Engineering
- Structural Engineering
- Environmental Health
- Hydrology
- Economy and Society.

The TOR is much improved over the deficiencies evident in some earlier drafts.

Following receipt of the terms of reference (TOR), meetings were convened with the various specialist consultants to discuss matters to be addressed. Site investigations, consultations, desk studies and communications were also carried out by the various consultants engaged in carrying out their specific sections.

#### 1.4 Overview of the EIA

The assessment is to include documentation of the flora and fauna that are present on the site during the field inspection, and the extrapolation of other floral and faunal species that may inhabit the property at other times of the year (e.g., migratory birds, and flowering plants). The assessments are to include landside and marine species that have the potential to be affected by the construction and operation of the project.

Special attention is to occur for species that are listed in "The Schedules", (Appendix F). This 10page identification of plants and animals that are designated by the Turks and Caicos Islands Government (TCIG) as "Protected", including Turks and Caicos Endemic Plants, Endemic and vital species of fungi, Lucayan Archipelago Endemic Plants, Native Plants of Special



Conservation Concern, Turks and Caicos Endemic Fauna, Protected Birds, Protected Reptiles and Amphibians, Protected Mammals and Protected Terrestrial Invertebrates.

#### 1.5 Impact Assessment Methods/Analyses

Site specific field studies were carried out to compile baseline data on the marine, coastal, terrestrial environments, and the built and natural environments. Consultations were carried out with nearby residents and TCIG officials in scoping the issues. Quantitative and qualitative methods and processes have been used in data analyses. Also, photographic evidence has been of paramount importance and utilization, including those using drones.

Desk studies and other literary research were carried out, including but not limited to research of the Ordinances, Regulations, Codes, and Plans for Providenciales and the wider TCI.

To determine floral and faunal species that could be affected by the project, both a literature search and field surveys were completed, as described hereafter.

#### 1.5.1 Literature Search

The literature search involved querying the publicly-accessible databases used by the Government of the Turks and Caicos Islands for information pertinent to the site, including lists of terrestrial and aquatic flora and fauna that are designated as Endangered, Threatened and/or Endemic. It also included querying protected species lists maintained by international conservation organizations to which the Turks and Caicos Islands are signatories, including the International Union for the Conservation of Nature (IUCN) and the Convention on International Trade of Endangered Species (CITES).

#### 1.5.2 Field Surveys-Methods

The field assessments involved visual inspections of terrestrial and marine areas within the footprint of the proposed project and in adjacent marine areas that could be affected by the proposed project.

The landside assessment involved direct visual observation of conditions in the area between the property's south boundary and the Mean High Water line Grace Bay Road and Grace Bay.

Although no construction activities are proposed seaward of the Mean High Water line, pursuant to the Terms of Reference for the proposed project, the marine assessment involved direct visual observation of conditions extending from the water's edge to a minimum of 300 feet from shore.



A Canon EOS Rebel T3i, Olympus TG-870 and Nikon 3A digital cameras were used to photograph representative landside and marine areas and document notable flora and fauna. A hand-held Garmin GPSmap 62sc Global Positioning System (GPS) was used to record latitude and longitude waypoints at landside terrestrial investigation plots and at locations where notable flora and/or fauna or community boundaries were observed.

Nikon Monarch 10 x 42 binoculars were used during bird surveys, which included observations during early morning and late afternoon hours. Records were also kept of observations of birds and other wildlife that were seen while qualitative and quantitative analyses of plots in landside transects were being conducted.

A recent (September 24, 2021) Google Earth image of the site onto which the property lines were superimposed, was used as the base map for field investigations (Figure 1-2). In landside communities, a total of thirty 3 ft. x 3 ft. temporary vegetation analysis plots along five approximately shore-perpendicular transects were established and analyzed (Figure 1-3). A flexible, fiberglass tape measure was extended around the perimeter of each plot and the flora and fauna within the plot were documented.



Figure 1-2. Aerial Image of the Project Property.





Figure 1-3. Landside Vegetation Transects

The abundance of all floral species (actual counts of individual species of trees and shrubs) and estimates of percent cover of groundcover and vine species, indications of faunal use and a qualitative assessment of conditions that occur within each plot were recorded.

Inventorying of flora and fauna also included documentation of observations along pedestrian transects that traversed other areas outside the transects but within various vegetative communities within the assessment area.

Within each plot, all plants were identified to species level, whenever possible. Cumulative percent cover of all vegetation within each plot was estimated. Trees (woody species greater than 2 m (~7 feet) in height, and shrubs (woody species at heights between 0.3 m (~1 foot) and 2 m were counted numerically. Plants less than one foot in height were considered to be "groundcover" species, even if they were young plants that could eventually grow to shrub or tree heights. The percent cover of individual groundcover species and vines was estimated. The presence of fauna observed within the plot or in the vicinity, was recorded. Evidence of human-



related and natural (e.g., hurricanes) impacts was recorded to assist in determining the quality of the vegetative community in each plot.

For marine communities, an underwater Olympus Stylus TG-870 digital waterproof camera and a GoPro Model Hero 10 were used to document existing marine conditions. A 50 cm x 50 cm PVC grid was used as a scale reference to assist in estimating percent cover of benthic resources and as a size reference in underwater photographs. Notes of observations of marine life were recorded on waterproof paper.

Visual inspections of underwater conditions were assessed along the same five mostly shoreperpendicular transects that had been established for the landside assessment. The transects continued through the intertidal zone at the water's edge and extended in a generally northwesterly orientation. Benthic flora and fauna were documented for qualitative purposes along each transect within the project area, which extended to approximately 100 meters (~300 feet) from shore. Underwater photos were taken of representative and notable features and are included in the applicable section of the text and in Appendix K. A list of the marine species observed is provided in Appendix J.

Plant names follow the *Flora of the Bahamas Archipelago*, by D.S. H.B. Correll, *Flowers of the Bahamas and Turks and Caicos Islands* by K. McNary Wood, with updates of plant names where warranted. Additional reference materials for landside flora and fauna included *The Birds of the Turks and Caicos Islands* (Ground, 2001), *Birds of the Bahamas and Turks and Caicos Islands* (Hallett, 2006), *Wildlife of the Caribbean* (Raffaele & Wiley, 2014) and *The Natural History of the Bahamas* (Currie, Wunderle et al., 2019).

Qualitative ratings were based on best professional judgement considering factors such as biodiversity, location-appropriate floral and faunal assemblages, the presence, absence and/or abundance of notable floral and/or faunal species (e.g., endangered, endemic etc.), and the extent to which the area appeared to have been subjected to damage as a result of human and/or natural processes. Note that Hurricanes Irma and Maria caused widespread damage in some areas of the TCI during October 2017. The qualitative rankings vary from Poor (i.e., low biodiversity, absence of notable floral and faunal species, and impacted by human and/or natural processes) to Excellent (e.g., high biodiversity, abundant notable floral and faunal species, pristine condition).



The boundaries of the landside and marine assessment areas were mostly readily visible in the field, as there was a rock wall along the south boundary and a chain-link fence along the eastern boundary and the approximate Mean High Water line on the north. The westerly boundary was estimated in the field using vegetative communities that were visible by overlaying the property size onto the aerial photograph of the site. Locational waypoints were recorded using the GPS unit in the center of each vegetation analysis plot.



#### 2.0 Baseline Studies

Evident from the Development Plans and the Cadastral Plans of the 1960s which followed the land adjudication process and establishment of the Planning and Development Authority, it is clear that Grace Bay Beach was not initially planned for Hotel and Condominium developments. The parcellation shown in Figure 2-1, which is consistent with that of the entirety of Grace Bay shows that single-family residential development was envisaged and approved for Grace Bay. Currently, Planning Applications for major hotel and/or condominium developments are having to subdivide/combine parcels for development to make them of a suitable size.

The aerial photograph (Figure 1-2) shows the site and the existing surrounding developments. In accordance with the Turks and Caicos Islands National Physical Development Plan 2020 (NPDP), the land use zoning for the parcels for development is Tourism/Hospitality. The proposed development is in conformity with the Land Use Zoning for the parcels. These parcels will be combined to form a single parcel for development.

Already existing in the area, many surrounding tourism related developments including but not limited to the Beaches Resort, Windsong Resort, Coral Gardens Resort, Beach House Resort, West Bay Club Resort, Wymara Resort, and many others, are presently under construction and in the planning stages.

#### 2.1 Historical Overview of the Site and Existing Development

The Turks and Caicos Islands is the second most tourism-dependent economy in the world after the Maldives. Turks and Caicos Islands - an archipelago of 40 islands and cays in the North Atlantic, located immediately southeast of the Bahamas, 145 km north of Hispaniola and consisting of two island groups: the Turks Islands (Grand Turk and Salt Cay) and the Caicos group (South Caicos, East Caicos, Middle Caicos, North Caicos, West Caicos and Providenciales). The total land mass of the territory is 430 km<sup>2</sup>.





Figure 2-1. Site Plan Showing Overall Development.



The site for development is located in The Lower Bight, Providenciales, on Grace Bay Beach. The Bight consists of two settlement areas, the "Lower Bight" and "Kingston" (King's Town), previously distinctly defined, but recently through ever expanding development, these areas have coalesced. There are buildings in the Lower Bight dating back to 1918, but many of the older limestone buildings date to the 1940s, including the Church.

The Bight is one of three (3) old and traditional settlement areas of Providenciales. The others are Blue Hills (the Capital) and Five Cays. The Bight settlement presently hosts the bulk of wealth of the Turks and Caicos Islands, including the world-famous Grace Bay Beach. The beach and marine environment of Grace Bay Beach are within the Princess Alexandra Land and Sea National Park.

#### 2.2 Biological Environmental Baseline Assessment

During the week of March 6, 2023, ecological assessments of landside and nearshore marine areas were conducted on the currently-vacant, but previously-developed tract of land on Providenciales where the Molo Hotel complex. The site, which is approximately 4.84 acres (~2 ha) in size is located to the north of the north terminus of Forbes road, and extends northwestward to approximately 340 feet (~103 m) to the shore of Princess Alexandra National Park and Grace Bay (Figure 2-1). The assessments were performed in compliance with a Terms of Reference that had been issued by the Turks and Caicos Government's Planning Department prior to the proposed construction of the hotel resort project that is proposed to include 207 bedrooms, 3 swimming pools, bars, hot tub, kitchen, 23 cabanas, restaurants, a spa, and gym, wellness center and shop. No piers, docks or other in-water structures are proposed.

The assessments included qualitative and quantitative evaluations of the floral and faunal Communities present in landside and an inspection and qualitative assessment of marine areas within the project area and adjacent areas.

The primary aim of the assessments was to accurately document floral and faunal communities present on the site and to apply standard scientific principles to assess the qualitative and quantitative conditions of the property. The results of these field investigations were to then be used to determine the potential environmental impacts of the project. The spatial scope of the assessment area was to include all landside areas of the subject property that could be affected by the proposed project, and to include nearshore marine areas in order to determine the extent



of potential short-term and long-term impacts to the marine environment if the project were to proceed.

The investigations were conducted by staff of Applied Technology and Management (ATM) and Sustainable Ecosystems International, two firms that have extensive experience in coastal and terrestrial ecosystems in the Turks and Caicos Islands, the Bahamas, the Caribbean and the southeastern United States, and whose credentials had been reviewed and approved as part of the acceptance of the EIA team for the MOLO Hotels project. The assessments involved visual inspections of terrestrial and marine areas within the footprint of the proposed activities and in adjacent areas that could be affected by the proposed activities.

#### 2.2.1 Baseline Terrestrial Environment

The Baseline Terrestrial Assessment (including areas that are cleared, bulldozed and disturbed/damaged) – to include a quantitative description of any terrestrial ecological assets (flora and fauna; habitats, rare, threatened and endangered species) to be directly impacted by the project and a qualitative assessment of assets that may be indirectly impacted.

The baseline field surveys in both the landside and marine communities were conducted during the week of March 6, 2023, at which time no construction of the project had been initiated. The results of the literature search and field assessments follow.

#### 2.2.1.1 Results of Literature Search

A literature search and field investigations were completed in order to accurately determine and document existing on-site conditions, including floral and faunal communities. The results of these investigations are to subsequently be used in order to determine the extent of ecological impacts that could result from the construction and long-term operation of the proposed resort community.

A ten-page undated list of flora and fauna that are designated as protected because they are endemic, rare and endangered entitled "The Schedules" (Appendix F) received from the DECR was used as the primary reference list for notable flora and fauna that could potentially be present on the site. The list is not specific to the project area, or even to Providenciales, but is applicable to all areas in the TCI.

A query of the database maintained by the International Union for the Conservation of Nature (IUCN) revealed the potential presence of 1,663 terrestrial, freshwater and marine floral and



faunal species that occur in the Turks and Caicos Islands, and which are designated in descending order of vulnerability, as Critically Endangered, Endangered, Near Threatened, Vulnerable, Least Concern, and Data Deficient. The IUCN database does not allow for filtering by island, so the list (Appendix G) is for all the Turks and Caicos Islands.

Although the IUCN list includes many species that exist in habitats that are not present on the subject property (e.g., mangrove forests, coral reefs) or within the potential sphere of influence of the proposed project, it does include many species of terrestrial and marine flora and fauna that were observed during the assessment and/or have the potential to be affected by the proposed activities. Species that were observed and/or are likely to occur on the subject site and/or within the sphere of influence of the project have been highlighted in the Appendices.

Additionally, columns have been added to the IUCN database to allow potential impacts to be identified as either "Direct" or "Indirect". Direct impacts are primarily landside plants where construction is proposed. Impacts to individuals of these species could be ameliorated if plant salvage/relocation is undertaken. Potential indirect impacts are primarily to marine species, specifically several of the reef fish and corals that are present on/near the submerged rock and submerged aquatic vegetation formations seaward of the mean high water line. Although no structures are proposed in this area, potential impacts could occur as a result of increased visitation by snorkelers and other water recreationists.

Three of the marine species that are designated by the IUCN and were observed in the marine environment fronting the subject property have designations of Endangered; the green sea turtle (*Chelonia mydas*), brain coral (*Pseudodiploria trigose*) and massive starlet coral (*Siderastrea sidera*). The designation of many of these other species that were observed in the marine environment is "Least Concern", "Near Threatened", and "Data Deficient".

The Turks and Caicos Islands are not registered as a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), but a search of their database of listed species was conducted for this project because the TCI are a dependent territory of a signatory party and the DECR has been determined by CITES to be an "authority competent to issue comparable documentation" and "A scientific institution capable of advising that an export is not detrimental to the survival of the species concerned". Similar to the IUCN and DECR's "Schedules", the CITES database does not allow for filtering by island, so the list (Appendix H) is



for all the Turks and Caicos Islands. It identifies numerous species of terrestrial flora and fauna that have the potential to be affected by the proposed activities.

Species that were observed and/or are likely to occur on the subject site and/or within the sphere of influence of the project have also been highlighted in this Appendix. Most of the species that are included on the CITES list for the TCI are also on the IUCN list.

A review of historical Google Earth aerial photographs indicated that as many as seven residential-related structures had formerly been present on the site. These structures, which appeared to have consisted of single-family residences/villas, some with associated out-buildings (perhaps garages) were visible on aerial photographs taken intermittently between 2003 and June 2016. The structures had been removed and much of the land surface had been scarified by September 2017 and remained without structures from then through the present.

The land use on the adjoining tracts to the east and west is residential. A sprawling single-story Villa Oasis residential complex with numerous structures was present on the approximately 1.6 adjoining property to the east, and several two-story, multi-family villas (Grace Too Villas) were present on the adjacent approximately one-acre tract to the west, which has been acquired by the applicant. To the west of that parcel, a multi-story, multiple family residential complex was under construction.

#### 2.2.1.2 Results of Landside Assessment

The landside assessment involved direct visual observation of conditions in thirty 3-foot x 3-foot plots along five shore-perpendicular transects. It also included the recording of observations of additional species that were present on the site, but which did not occur in the plots or along the transects.

Lists of flora and fauna (Appendix I) observed and identified during the landside and marine (Appendix J) assessments are provided in the Appendices.

Overall, the site of the proposed project was found to be in Poor condition, as a result of the previously-existing residences and subsequent land-clearing which occurred during 2016-2017. A brief description of each community present on the site follows, after which a more comprehensive description is provided.



The northwestern boundary of the project (i.e., the frontage on Grace Bay) was a narrow sandy, unvegetated beach that was mostly less than approximately 5-10 meters (~15-30 feet) in width.

The beach was fairly steep in profile and appeared to have been subject to intermittent moderate levels of erosion. An underlying limestone substrate was exposed, and during high tide, no sand was exposed, and waves lapped at the rock. The broad exposure to winds from the northwest, north and northeast appears to expose the nearshore areas to intermittent high levels of sand suspension, preventing, at least at the time of the field investigation, a wide sandy beach.

Landward of the sandy beach, most of the subject property consisted of a Sand Strand community. This backdune vegetative community was not intact, with most naturally-occurring native vegetation having been replaced with invasive pest plants, primarily Australian pine (*Casuarina equesetifolia*) and inkberry (*Scaevola taccada*). No vertical seawalls or rip-rap shore protection structures were visible.

Landward of the invasive-dominated Sand Strand, a mosaic of mostly-impacted Dry Broadleaf Evergreen Shrubland community extended to the southern boundary of the site. Although no paved roads were present on the landside portion of the property, unpaved, at-grade roads which were likely the driveways to the previously-existing residential structures, were present, and were in use by visitors to access the beach and Grace Bay.

No bluffs, blue holes, caves, dissolution holes, wetlands or other particularly notable geologic formations were observed within the landside or marine assessment areas.

A total of thirty 3 ft x 3 ft vegetation analysis plots were established along five transects that generally extended in a shore-perpendicular orientation from near the western property boundary to near the eastern property boundary (Figure 1-3). Floral and faunal species observed in these plots are identified in Appendix L.

Seven distinctive vegetative community types were found to be present within the assessment area. The location of each community type is shown on Figure 2-2, and the corresponding size of each area, its percentage of the overall assessment area, relative quality and comments are identified in Table 2-1, and are described thereafter.





Figure 2-2. Existing Landside Vegetative communities



Community Type	Size w/in Assessment Area Acres	Percentage of area w/in Assessment Area	Qualitative Rating <sup>1</sup>	Comments
Unvegetated Sandy Beach	0.46	9.49	Fair	Beach subject to moderate or heavy erosion. Naturally less biodiverse than other habitats; beneficial as natural shield for sea level rise/coastal resiliency. No groynes or other man-made structures present.
Sand Strand dominated by native plants	0.09	1.80	Good	Back-dune community mostly dominated by invasive pest plants.
Sand Strand dominated by Casuarina	0.27	5.68	Poor	
Sand Strand dominated by other non-natives	2.03	41.96	Fair	
Dry Broadleaf Evergreen Shrubland	0.69	14.33	Fair	Native geologic & vegetative community substantially impacted by previous human activities & non-native vegetation.
Dry Broadleaf Evergreen Forest	0.82	16.91	Good	Native geologic & vegetative community partially intact, but habitat fragmentation and edge effect adjacent to impacted areas have resulted in moderately degraded habitat.
Roads & Trails - (unpaved)	0.48	9.90		Former driveways to residences
Total:	4.84	100		

Table 2-1. Existing Landside Community Types

#### **Unvegetated Sandy Beach**

Approximately 0.46 ac (9.49 % of the Assessment Area) was found to consist of unvegetated sandy beach located between Mean Low Water and the edge of vegetation (Photo 2-1).

This feature varied from minimal to approximately 20 feet (3 m) in width. No openings of ghost crab (*Ocypode quadrata*) burrows or other typical beach-dwelling species were observed, as most of this habitat was under water during high tide, which severely limits habitat for terrestrial organisms. Ghost crabs must be present in the vicinity, however, as body parts that were remnants of bird feeding were encountered at a considerable distance from the beach. Photo 2-3. Sand Strand dominated by Casuarina. View looking northeast Date of Photo: March 8, 2023

No migratory shorebirds were observed during the assessment, although typically this habitat may be used by species including sanderlings (*Calidris alba*), ruddy turnstones (*Arenaria interpres*), sandpipers (Scolopacidae), plovers (Charadriidae), and oystercatchers (*Haematopus palliatus*) are well documented to be occasionally present and/or to forage in this habitat. Wilson's plovers (*Charadrius wilsonia*) have been known to nest on open sandy beaches in other areas of



Grace Bay, but the stretch of beach on the subject property appeared to be too subject to erosion and heavily used by beach-walkers to be suitable for nesting by this species.



Photo 2-1. Unvegetated Sandy Beach. View looking Northeast Date of Photo: March 7, 2023

Laughing gulls (*Larus atricilla*) and least terns (*Sterna antillarum*) could also use this habitat and nearshore areas, but none were observed and no evidence of nesting of these species was observed.

Marine turtles also are known to nest on sandy beaches. No data was found that indicate that this area is known for sea turtle nesting and in its current, eroded condition, it is unlikely that it would be suitable for turtle nesting.

Most of this community was heavily eroded, and a scarp of 2 - 7 feet, where roots of adjacent vegetation were exposed suggested that shifting sands and storms result in intermittent periods of erosion. The sandy beach was somewhat wider in the westerly portions of the Assessment Area than in the east.



This community was ranked as being in Poor condition. Beach width was very narrow and subject to erosion. The upper limit of this community transitioned into Sand Strand community described hereafter.

#### Sand Strand

Landward of the beach, most of the property consisted of a Sand Strand community with varying abundances native and non-native species. The ground surface was generally flat, but naturally occurring vegetation had apparently been cleared repeatedly in recent history to accommodate several residences that had previously occupied the site. Relatively small areas that had not been cleared provided some insight into the previously-existing vegetative community. Native trees were mostly non-existent, having been replaced by non-native ornamental species, but had apparently included Strongback (*Bouerria succulenta*), cinnecord (*Vachellia choriophylla*), sea grape (*Coccoloba uvifera*), Joewood (*Jacquinia keyensis*) and others. Sub-canopy species in this community included false myrtle (*Stenostomum myrtifolia*), black torch (*Erithalis fruticosa*), seven year apple (*Genipa clusiifolia*), wild thyme (*Euphorbia inaguaensis*) and others. Groundover/herbaceous species in the Sand Strand included sand bur (*Cenchrus* spp.), sea purslane (*Sesuvium portulacastrum*), and others. Photo 2-2 is representative of this community.

Comparatively few birds were observed in this community, but species observed included ospreys, kestrels, ground doves, northern mockingbirds and woodstar hummingbirds.

#### **Qualitative Condition of the Sand Strand community**

This community was ranked as being in Fair condition. This qualitative assessment was based on the highly fragmented islands of this habitat within a mosaic of sand strand that was mostly dominated by non-native plant species and extent to which the waterward boundary of this habitat appeared to be actively eroding.

The presence of a few native shrub and groundcover species suggests that, if the invasives and the Casuarina needles were to be removed, native species could potentially recover. Supplemental planting with native pioneer plants (e.g., sea oats (*Uniola paniculata*), bay cedar (*Suriana maritima*), beach iva (*Iva imbricata*) etc. could enhance restoration, and the use of dune walk-over structures could help reduce the likelihood of continued impacts by trampling.





Photo 2-2. Sand Strand. View looking north Date of Photo: March 7, 2023

#### Sand Strand dominated by Casuarina

Approximately 0.27 acres (5.68 % of the Assessment Area), along the grace-Bay-frontin north portion of the property was found to consist of floral species that are not native to Turks and Caicos and/or Bahamian Archipelago and which have replaced most native plants in the Sand Strand community. This habitat was present in a linear, shore-parallel corridor of variable width that was bounded on the northwest by the unvegetated sandy beach and on the southeast by a transition to the Sand Strand community.

Dominant vegetation included mature Australian pine (*Casuarina equesetifolia*) trees in the canopy, and Beach Cabbage (*Scaevola taccada*) in the sub-canopy. In much of this area, these two pest plants constituted more than 90% of the biomass. Native salt-tolerant and drought-tolerant shrubs and groundcovers in this community included species that were able to tolerate the build-up of acid-rich *Casuarina* duff, included sea grape (*Coccoloba uvifera*), seapurslane



(Sesuvium portulacastrum), burr-grass (Cenchrus sp.), and others. Photo 2-3 is representative of conditions in this area.



Photo 2-3. Sand Strand dominated by Casuarina. View looking northeast Date of Photo: March 8, 2023

#### Qualitative Condition of the Sand Strand dominated by Casuarina community

This community was ranked as being in Poor condition. This qualitative assessment was based on the nearly total absence of native plant species, the abundance of invasive non-native plants and extent to which the waterward boundary of this habitat appeared to be actively eroding.

The presence of a few native shrub and groundcover species suggests that, if the invasives and the Casuarina needles were to be removed, native species could potentially recover. Supplemental planting with native pioneer plants [e.g., sea oats (*Uniola paniculata*), bay cedar (*Suriana maritima*), beach iva (*Iva imbricata*) etc.] could enhance restoration, and the use of dune walk-over structures could help reduce the likelihood of continued impacts by trampling.



#### Sand Strand dominated by other non-natives

Landward of the *Casuarina* and *Scaevola taccada* dominated Sand Strand were areas that had greater biodiversity, but which were also dominated by non-native invasives, including cork tree (*Thespesia populnea*), west Indian almond (*Terminalia catappa*), *Vachellia macracantha*, mature cow bush (*Leucaena leucocephala*) and others. Subcanopy and groundcover species consisted of a mixture of natives [e.g., native inkberry (*Scaevola plumieri*), bay hops (*Ambrosia hispida*) and weedy opportunistic species e.g., wooly Corchorus (*Corchorus hirsutus*)]. Photo 2-4 is representative of this community.

This community was also ranked as being in Poor condition. This qualitative assessment was based on the nearly total absence of native plant species and the abundance of invasive nonnative plants that were out-competing native species.



Photo 2-4. Sand Strand dominated by other non-natives. View looking northeast. Date of Photo: March 7, 2023

#### Dry Broadleaf Evergreen Shrubland (DBES)

Approximately 0.69 acres (14.33 % of the Assessment Area), was found to consist highlyfragmented Dry Broadleaf Evergreen Shrubland. This vegetative community was mostly present



in the central portion of the property. Review of historical Google Earth images suggest that this area was cleared in approximately 2016-2017, and that opportunistic vegetation became established after the area ceased being used for residential purposes.

Shrubs were the dominant land cover in this community, and included black torch (*Erithalis fruticosa*), Cinnecord (aka Leatherleaf Casha) (*Vachellia choriophylla*), pork and dough boy (*Vachellia acuifera*), *Euphorbia inaguaense*, darling plum (*Reynosia septentrionalis*), sea grape (*Coccoloba uvifera*), seven-year apple (*Genipa clusiifolia*), strongback (*Bourreria succulenta*), and others.

Lignum vitae (*Guaiacum sanctum*) were occasionally present, but most were less than seven feet (~ 2m) in height, although they may have been re-growing from roots decades old. Epiphytes in this community included orchids (*Encyclia altissima* and *E. rufa*), air plants, (*Tillandsia utriculata*, *T. flexuosa*, *T circinnata*). Vines, which were common, but usually not present in dense in cover, included *Smilax havanensis*, *Cassytha filiformis*, and various passionvines (E.g., *Passiflora pectinata*, *P. suberosa*, *P. cuprae*).





Photo 2-5. Shrubland. View looking north at Vegetation Analysis Plot 3a. Date of Photo: March 7, 2023

Native salt-tolerant and drought-tolerant shrubs and groundcovers in this community were minimally present. Birds were also minimally present, although a pair of kestrels maintained a nearly constant presence, and appeared to be in courtship behavior. Additionally, an osprey nesting platform was present near the western boundary of the property.

Twelve plant species that are notable because they are on DECR's "The Schedules" list were encountered in the Dry Broadleaf Evergreen Shrubland community: Orchids (*Encyclia altissima and E. rufa*), sea sage (*Lantana involucrata*), Inagua silvertop palms (*Coccothrinax inaguensis*), wild thyme (*Euphorbia inaguensis*), leatherleaf casha/cinnecord – *Vachellia* (formerly *Acacia*) *choriophylla*), and pork and doughboy (*Acacia acuifera*). A few relatively small lignum vitae (*Guaiacum sanctum*) and one large, multi-trunk *Guaiacum officinale* specimen were encountered.



#### Qualitative Condition of the Dry Broadleaf Evergreen Shrubland community

This community was ranked as being in Fair condition, although some individual plots were rated as Good. This qualitative assessment was based on the high degree of fragmentation, but also the presence of orchids and other species designated by the DECR as TCI or Lucayan Endemics and Native Plants of Special Conservation Concern.

#### Dry Broadleaf Evergreen Forest (DBEF)

Approximately 0.82 acres (16.91 % of the assessment area) was found to consist of Dry Broadleaf Evergreen Shrubland (DBES) in which native vegetation was dominant. The diversity of native plants was higher in this community than in other areas of the property, in some places exceeding 20 plant species in a single 3 ft x 3 ft vegetation analysis plot. Plant abundance varied considerably, from a single individual of one species to multiple trees and shrub-size individuals of other species. Those that exceeded seven feet (~ 2.1 m) in height were primarily silver top palms (*Coccothrinax inaguensis*) and poisonwood (*Metopium toxiferum*). Photo 2-6 (Plot 4a) is representative of this community.

Vegetation was mostly 9 - 20 feet (3 - 6 m) in height. Epiphytes were occasionally present but were less common that in other habitats. Vines included *Cassytha filiformis.*, *Smilax havanensis*, wild apricot (*Passiflora pectinata*) and others. Herbaceous/groundcover species were non-existent and/or minimally present.

As described further in the Notable Landside Resources section and Table 2-2, several plant species that are designated by the TCIG as Turks and Caicos Endemic Plants, Lucayan Archipelago Endemic Plants and/or Native Plants of Special Conservation Concern were present in this community.

Comparatively few birds (both in species richness and abundance) were encountered in this habitat, perhaps as a result of the highly fragmented condition of the property. Bird species observed during bird surveys or while the vegetative analyses were being conducted in this area included ground doves, and the kestrels that were reported previously. No active bird nests were observed. Woodstar hummingbirds and migratory warblers (e.g., palm, prairie) were observed. *Cerion* snails were abnormally low in numbers, although shells of many deceased individuals were encountered. Reptiles, including curly-tailed lizards (*Leiocephalus psammodromus*) and Turks and Caicos Anoles (*Anolis scriptus*) and arachnids, including silver argiope (*Argiope*)



*argentata*) and crablike spiny orb weaver (*Gasteracantha elipsoides*) spiders were encountered. Fritillary butterflies (*Agraulis vaniallae*) were common.



Photo 2-6. Dry Broadleaf Evergreen Forest. Date of Photo: March 7, 2023

#### **Qualitative Condition of the Dry Broadleaf Evergreen Forest**

Most of this habitat was ranked as Good. In spite of a lack of diverse forest, it appeared to be in a mostly natural state, although the habitat had been severely fragmented, and consisted mostly of small islands of natural habitat within a mostly-impacted area of previously-existing forest. This community appeared to have been significantly fragmented as a result of previous development on the site and on adjacent properties. Litter and debris were common, although the removal of the previous residences had largely been successful and thorough. Floral and faunal diversity was comparatively high and several plant species that are designated as endemic or protected by international treaties were present. Native coppice vegetation was naturally re-growing in corridors that had been previously cleared.


#### Roads & Trails - (unpaved)

As noted previously, several residences had previously occupied the 4.84-acre site. Several atgrade roads (e.g., Photo 2-7), likely former driveways to the residences were still in passable condition. Although access to one of these from Forbes Road was blocked with a lock and chain, others were in various levels of use. Each day of the assessment, beach-goers were observed accessing the beach using vehicles these semi-abandoned former roads.

Several at-grade paths also allowed pedestrian access across the property to the beach. Unleashed dogs were observed on several occasions, and dog feces had been deposited at various locations on the property, primarily along the edges of these roads and paths.



Photo 2-7. Existing at-grade un-paved road. Date of Photo: March 7, 2023

Although the previously-existing residences had been razed and removed, litter was intermittently present across the property (Photo 2-8), and as noted in the comments in the vegetation analysis plots (Appendix L).





Photo 2-8. Litter near east property boundary. Date of Photo: March 8, 2023

#### Notable Landside Resources

As identified on Table 2-2, several faunal and floral species that are listed in "The Schedules" were observed on the site. The two most notable natural resources on the site are the Osprey nesting platform, which is located near the western property boundary, and one large, multi-trunk True Lignum Vitae located near the southeastern corner of the property (Figure 2-3). Brief descriptions of these and other notable species' presence on the subject property follow.

Species that are included on the IUCN and CITES lists for the Turks and Caicos Islands are included in the Appendices. Species that were observed during the site investigation are highlighted in these Appendices.





Figure 2-3. Notable Landside Resources (osprey platform and Lignum vitae)



Common Name	Scientific Name	Designating Entity	Designation	Abundance within the assessment area			
Fauna							
Nyctanassa violacea	Yellow-crowned Night Heron	DECR	Common year-round resident	Not observed, but remnants of consumed ghost crabs suggests their likely presence, Not likely to nest on the property			
Zenaida macroura	Mourning Dove	DECR	Common year-round resident	No evidence of nesting observed, but suitable nesting habitat exists on subject property			
Columbina passerine	Common Ground Dove	DECR	Common year-round resident	No evidence of nesting observed, but suitable nesting habitat exists on subject property			
Crotophaga ani	Smooth-billed Ani	DECR	Native year-round resident	Several individuals observed, but not likely to nest on the property			
Pandion haliaetus	Osprey	DECR	Native year-round resident	Adult male and female observed. Nest present on platform near west property boundary			
Falco sparverius	American Kestrel	DECR	Native resident bird	Adult male and female observed. May potentially nesting on the property.			
Calliphlox evelynae	Bahama Woodstar	DECR	Native year-round resident	Observed frequently. In various habitats May nest in project area.			
Mimus polyglottos	Northern Mockingbird	DECR	Common year-round resident	No evidence of nesting observed, but suitable nesting habitat exists on subject property			
Dendroica discolor	Prairie Warbler	DECR	Present fall-spring	Uncommon, only one sighting			
Dendroica palmarum	Palm Warbler	DECR	Present fall-spring	Uncommon, only a couple sightings			
Coerba flaveola	Bananaquit	DECR	Common year-round resident	No evidence of nesting observed, but suitable nesting habitat exists on subject property			

# Table 2-2. Notable Species of Flora and Fauna Designated by the Turks and Caicos Government that were Observed on the Site<sup>1</sup>



Common Name	Scientific Name	Designating Entity	Designation	Abundance within the assessment area			
Flora							
Encyclia rufa	Rufous Encyclia	DECR	Lucayan Archipelago Endemic	Uncommon, Epiphyte present in clusters in various habitats			
Lantana involucrate	Sea Sage, Wild Sage	DECR	Lucayan Archipelago Endemic	Common			
Coccothrinax inaguensis	Inagua Silver-top Palm	DECR	Lucayan Archipelago Endemic	Common			
Euphorbia inaguaensis	Wild Thyme	DECR	Lucayan Archipelago Endemic	Common			
Varronia bahamensis	Bahama Cocobey	DECR	Lucayan Archipelago Endemic	Uncommon			
Encyclia altissima	Tall Orchid	DECR	Native Plant of Special Conservation Concern	Common			
Pilocereus polygonus	Old Man Cactus	DECR	Native Plant of Special Conservation Concern	Uncommon			
Guaiacum officinale	True Lignum Vitae	DECR	Native Plant of Special Conservation Concern	Only encountered one, in SE corner of property			
Guaiacum sanctum	Holy Lignum Vitae	DECR	Native Plant of Special Conservation Concern	One saw one; along northern boundary. May be offsite			
Heterosavia bahamensis	Bahama Savia,	DECR	Native Plant of Special Conservation Concern	Uncommon			
Vachellia (fka Acacia) acuifera	Pork-and-doughboy	DECR	Native Plant of Special Conservation Concern	Occasional			
Vachellia (fka Acacia) choriophylla	Leatherleaf Casha, Cinnecord	DECR	Native Plant of Special Conservation Concern	Common			

<sup>1</sup> Lists of species of flora and fauna that are designated by the International Union for the Conservation of Nature and the Convention on International Trade in Endangered Species of Wild Fauna and Flora are included in the Appendices.



Individuals of eleven species of protected birds (see Table 2-2) were observed during the assessment. Early March is too early in the nesting season for many bird species to be nesting, but courtship and/or territorial displays likely related to future nesting were observed for one pair of ospreys, one pair of kestrels, ground doves, mourning doves, and Bahamas woodstar hummingbirds. Potential suitable nesting habitat also exists on the property for Antillean nighthawks, least terns, smooth-billed anis, and thick-billed vireos. Additional species of migratory birds [e.g., shorebirds (e.g., plovers, sandpipers)], may also use portions of the property seasonally, but were not observed during the March 2023 investigation.

An adult osprey was observed at an existing nesting platform located near the western boundary of the property (Photo 2-9). Although normally this would indicate potential nesting, ospreys are well documented to reuse established (and successful) nests year-after-year, but no nest was present on this platform, which appeared to have been present for many years.



Photo 2-9. Adult osprey on platform near west property boundary. Date of Photo: March 7, 2023



Twelve species of plants that are designated by the TCI Government and/or international treaties as Endangered, Threatened or Endemic were observed within the Assessment Area. Brief descriptions of the presence and abundance of these species within the Assessment Area follow.

#### Orchids

Seven species of orchids that are native to the Turks and Caicos and the Lucayan archipelago are designated as Endemics and/or Native Plants of Special Conservation Concern in "The Schedules – a list provided by DECR. Although identification of these species is most accurately done when the plants are in bloom, none were in bloom at the time of the March 2023 property assessment. Visual characteristics of non-flowering plant parts (i.e., leaf dimensions, pseudobulbs etc.) suggest that there are likely to be at least two species present as epiphytes in the Sand Strand, Dry Broadleaf Evergreen Shrubland, and Dry Broadleaf Evergreen Forest communities on the subject property. Pending more definitive identification when the plants are in bloom, the species have been preliminarily identified as *Encyclia altissima* and *Encyclia rufa*. They were present in clusters of 5 to more than 30 individual plants (Photo 2-10) and although they were fairly common, none were present within the randomly-selected vegetation analysis plots. Orchids can be salvaged/relocated with a fairly high level of success.

*Lantana involucrata* (Sea Sage) (Photo 2-11), designated by DECR as a Lucayan Archipelago Endemic Plant was fairly common on the subject property, so common that it was not practical to record GPS Coordinates for each location. It was present in approximately 17% (5 of 30) of the vegetation analysis plots, mostly in the Sand Strand and Dry Broadleaf Evergreen Shrubland communities. A few of those encountered were in bloom during the March 2023 (dry season) investigation, and several had fruits from 2022 blooms.

*Coccothrinax inaguensis* (Inagua silver-top palm) (Photo 2-12), designated by DECR as a Lucayan Archipelago Endemic Plant was so common on the subject property that it was not practical to record GPS coordinates for each plant. It was present in approximately 33% (10 of 30) of the vegetation analysis plots, in the Sand Strand, Dry Broadleaf Evergreen Shrubland and Dry Broadleaf Evergreen Forest communities. The tallest were in the 6-12 foot (~2-4 m) height range, and many seedlings were encountered.





Photo 2-10. Epiphytic Encyclia Orchids Date of Photo: March 7, 2023



Photo 2-11. Lantana involucrata (Sea Sage). Date of Photo: March 8, 2023





Photo 2-12. Coccothrinax inaguensis. Date of Photo: March 7, 2023

Wild Thyme (*Euphorbia inaguaensis*) (Photo 2-13) is designated as a Lucayan Archipelago Endemic by the TCI's Department of Environment and Coastal Resources. It was occasionally present on the subject property, although it was only present in 2 of the 30 (~7%) plots. They were in the Sand Strand Shrubland communities.

*Varronia bahamensis* (Bahama Cocobey) (Photo 2-14), designated by DECR as a Lucayan Archipelago Endemic Plant was uncommon on the subject property. It was present in (~7%) 2 of the 30 vegetation analysis plots, both in the Dry Broadleaf Evergreen Shrubland communities. None were in bloom during the March 2023 (dry season) investigation, but several had fruits from 2022 blooms.





Photo 2-13. Euphorbia inaguaensis. Date of Photo: March 8, 2023





Photo 2-14. Varronia bahamensis (Bahama Cocobey). Date of Photo: March 7, 2023

*Pilocereus polygonus* (Dildo Cactus) (Photo 2-15), designated by DECR as a Native Plant of Special Conservation Concern was uncommon on the subject property. It was present in ~3%, only one of the 30 vegetation analysis plots, in the Dry Broadleaf Evergreen Shrubland community. None were in bloom during the March 2023 (dry season) investigation.

*Guaiacum officinale* (True lignum vitae) (Photo 2-16) is designated as a Native Plant of Special Conservation Concern by the TCI's Department of Environment and Coastal Resources. Only a single mature specimen of this species was encountered on the property, a large, multi-trunk tree located in the southeastern portion of the tract (smaller young specimens were located near by).





Photo 2-15. Pilocereus polygonus. Date of Photo: March 8, 2023



Photo 2-16. Guaiacum officinale (True Lignum Vitae). Date of Photo: March 8, 2023



*Guaiacum sanctum* (Holy lignum vitae) (Photo 2-17) is designated as a Lucayan Archipelago Endemic by the TCI's Department of Environment and Coastal Resources. Large trees of this species were not encountered on the subject property, but several shrub-size individuals, possibly re-covering from surficial ground-clearing were present in 10% (3 of 30) of the vegetation analysis plots.



Photo 2-17. Guaiacum sanctum (Holy Lignum Vitae) in Plot 5a. Date of Photo: March 8, 2023

*Heterosavia bahamensis* (Bahamas Savia) is designated as a Native Plant of Special Conservation Concern by the TCI's Department of Environment and Coastal Resources. It was relatively uncommon in the property, only being encountered in ~7% (2 of 30) of the vegetation analysis plots.

*Vachellia* (*formerly Acacia*) *acuifera* (Pork and doughboy), shrubs were mostly less than 3 meters (~10 feet) in height (Photo 2-18) and were encountered in Dry Broadleaf Evergreen Shrubland community. It was present rare on the property and was not present in any of the 30 vegetation analysis plots.



*Vachellia* (*formerly Acacia*) *choriophylla* (Leatherleaf Casha, Cinnecord), plants mostly less than 3 meters (~10 feet) in height were primarily encountered in Dry Broadleaf Evergreen Shrubland and Forest communities, although some were also present in the Sand Strand. It was present in approximately 23% (7 of 30) of the vegetation analysis plots. Several had seed pods from last year's flowering.



Photo 2-18. Vachellia choriophyla (Leatherleaf Casha, Cinnecord). Date of Photo: March 7, 2023

#### **Invasive Plants**

Populations of three of the six species of non-native plants that are designated by the TCI Government as invasive were observed on the property: Beefwood (*Casuarina equisetifolia*), (aka Australian pine, Casuarina), cow bush (*Leucaena leucocephala*) and beach cabbage (*Scaevola taccada*). The presence of each of these is described hereafter.



Mature and young *Casuarina* trees were abundant just landward of the unvegetated sandy beach, extending in a mostly continuous, shore-parallel corridor from the east property line to the west property line. They were present in five of the six vegetation analysis plots. They have been present (and dropping needles) for so long, that the accumulated duff layer was several inches thick and had acidified the surface soils to such an extent that, in many areas, few native plants were present under their canopy. Near the beach, they were primarily mature, seed-producing plants. Cut stumps of varying diameters indicated that there have some previous attempts to control the spread of this species. More distant from the beach, many sapling-size [i.e., 6-18 feet (3-6 m)] young Casuarina trees were colonizing in areas where it appeared that the ground surface had been disturbed when the previously-existing residences were removed (Photo 2-19).



Photo 2-19. Young Casuarina equisetifolia trees. Date of Photo: March 8, 2023

Mature cow bush trees (Photo 2-20) were present in approximately 27% (8 of 30) of the vegetation analysis plots, in a variety of disturbed habitats across the property, likely as a result of the high



degree of disturbance associated with the residences that had previously been present on the property. Many were mature, seed-producing plants.



Photo 2-20. Mature Leucaena leucocephala trees. Date of Photo: March 8, 2023

Beach cabbage plants (Photo 2-21 from Plot 6e) were present in approximately 37% (11 of 30) of the vegetation analysis plots. They were present in varying densities in most of the habitats on the property from the northernmost beach dune to the southerly property line. Many were old enough that they had re-rooted from branches that were so long and heavy that they had sagged to the ground.

The native *Scaevola* (*S. plumieri*) was very rare on the property. It was found in approximately 3% (1 of 30) of the vegetation monitoring plots.





Photo 2-21. Mature Scaevola taccada bushes. Date of Photo: March 8, 2023

## 2.2.2 Baseline Marine Environment

Visual inspections of underwater conditions were conducted along the continuation of the six landside transects at the site of the proposed MOLO Hotel on March 10 and 12, 2023. Because the project does not propose to make any changes to the marine environmental (i.e., no docks, piers, boat channels, dredging etc.), the Terms of Reference limited the marine assessment to a qualitative assessment, so no epibenthic plots were established or analyzed.

The six generally shore-perpendicular transects extended from the uplands, across the sandy beach, and into the water for a distance to approximately 100 meters from shore (Figure 2-4).





Figure 2-4. Marine Transects

A cumulative list of the marine flora and fauna identified in the Project Area and the qualitative Assessment Area is included as an Appendix.

While no coral reefs, mangroves, blue holes, underwater vents, elkhorn (*Acropora palmata*), staghorn (*Acropora cervicornis*) or other notable reef-building corals, or other particularly notable marine features were observed within the assessment area, beds of Submerged Aquatic Vegetation (SAV), including seagrasses were present.

The assessment area was found to include approximately 178 m (~ 580 feet) of primarily northwest-facing water frontage in the central portion of Grace Bay, part of the 6532-acre (2643 hectares) Princess Alexandra National Park.

The results of the marine investigation benthic community mapping are shown on Figure 2-5.

Four epibenthic communities were present in the assessment area (Table 2-3).



Community	Acres	Condition/Quality
Nearshore Rock	0.15	Poor
Barren Sand	0.69	Moderate
Hardbottom with Macroalgae & Scattered Corals	2.37	Fair
Submerged Aquatic Vegetation	0.50	Good

Table 2-3. Epibenthic Communities within 100 m of Shore



Figure 2-5. Marine Communities

#### **Nearshore Rock**

Just waterward of Mean High Water, a mostly continuous, shore-parallel substrate of consolidated rock was present. Being an intermittently moderately turbulent area, comparatively little marine life was present on the rock. Low-growing macroalgae, mostly *Batophora oerstedi* (Photo 2-22) and phaetophytes, including *Dictyota* sp., *Laurencia* sp. and *Padina sanctae-crucis* were infrequently present.





Photo 2-22. Algae on nearshore rock. Date of Photo: March 12, 2023

The nearshore marine system is highly dynamic – sands are likely continually being moved around by prevailing currents. The low abundance of epi-lithic marine life (i.e., algae, corals, sponges etc.) on the shoreward most rocks suggest that these rocks have fairly recently become exposed. In areas where this feature was not visible, it is likely that it was present, but was covered by a thin veneer of sand.

As the distance from shore increased, where rocks have been exposed for longer periods, they had been colonized by algae, primarily brown algae (Phaeophyta). Small, low-growing stony corals that can withstand intermittently high levels of sand, including mustard hill coral (*Porites astreoides*) (Photo 2-23), massive starlet coral (*Siderastea sidera*) (Photo 2-24) and knobby brain coral *Pseudoploria clivosa* were occasionally present.





Photo 2-23. Small stony corals on algaedominated nearshore rock. Date of photo March 12, 2023



Photo 2-24. *Siderastrea sidera* in nearshore area in nearshore area. Date of photo March 10, 2023

The condition of the nearshore rock community within the Assessment Area was rated as Poor: This low ranking is as a result of low species diversity, intermittently rough seas and the abundance of suspended sediment which appears to have prevented the establishment and longterm survival of notable epibenthic resources. Stony corals that were present were mostly in poor condition.

#### **Barren Sand**

Areas of mostly barren sand (Photo 2-25) were present in most of the nearshore area just waterward of the nearshore rock. These sandy patches were more extensive near the eastern and western boundaries of the Assessment Area, than in the central portion. Coral rubble and/or exposed rock was occasionally present within these mostly barren, sandy patches.

Although none were observed in this community during this assessment, this community type is well documented as preferred habitat for bonefish (*Albula vulpes*) and other fishes that are typically associated with sandy bottoms (e.g., stingrays, jawfish, etc.).

The condition of the sandy bottom community within the Assessment Area was rated as Fair. This ranking is as a result of low species diversity, intermittently rough seas and the abundance of suspended sediment which likely alternatively experiences erosion and accretion, which appears to have prevented the establishment and long-term survival of epibenthic resources.





Photo 2-25. Barren sand. Date of Photo: March 10, 2023

#### Hardbottom with Macroalgae & Scattered Corals

As the distance from shore increased, a hardbottom feature with macroalgae and scattered corals was present. Stony corals were primarily mustard hill coral, fire coral (*Millepora alcicornis*), finger coral (*Porites porites*) and brain corals (*Pesudodiploria strigosa*), most of which were growing atop rock protrusions that elevated them above the sand-washed substrate (Photo 2-26).

Toward the northern boundary of the Assessment Area, sponges, including rope sponge (*Aplysina* spp.) branchlet sponge (*Aplysina insularis*), corky sea fingers (*Briareum asbestinum*) and octocorals, including sea plumes (*Pseudopterogorgia* sp.) increased in size and abundance (Photo 2-27) near the north boundary of the Assessment Area, where water depths were approximately 15 - 25 feet (5-8 m).





Photo 2-26. Corals on elevated rock protrusions. Date of Photo: March 10, 2023



Photo 2-27. Corals and sponges were abundant near the northern boundary of the Assessment Area. Date of Photo: March 12, 2023



Few sea fans were encountered, and those that were present, were in very poor condition (Photo 2-28).



Photo 2-28. Sea fan Date of Photo: March 10, 2023

Fish encountered in this habitat were mostly juvenile reef-fish, including blue tangs, sergeant majors, blue-head wrasses and barracudas.

The condition of the hardbottom community with Macroalgae and Scattered Corals within the Assessment Area was rated as Poor to Fair, with the condition improving as the distance from shore increased. Although species diversity was higher than in the other habitats, these low rankings are as a result of the poor condition of the marine life present.

#### **Submerged Aquatic Vegetation**

The northern portions of Transects 1 and 2 crossed an extensive bed of submerges Aquatic Vegetation. Turtle Grass (*Thalassia testudinum*) was the most abundant species present (Photo



2-29), but manatee grass (*Syringodium filiforme*) and shoal grass (*Halodule wrightii*) were also present.



Photo 2-29. Seagrass-dominated bed of Submerged Aquatic Vegetation. Date of Photo: March 10, 2023

Various rooted macroalgae, including *Penicillus dumetosus*, *P. pyriformis*, *Halimeda incrassata* and *H. monile*, pine cone algae (*Rhipocephalus phoenix*), and *Udotea* were present in significantly lower abundances.

Dead seagrass blades and *Sargassum* (a brown algae) were suspended in the water currents just above the bottom at various locations in the nearshore portions of the Assessment Area.

The condition of the SAV community was rated as Good. Although the edges of the SAV bed were tattered – eroded in some areas and partially covered with sand in others, central portions exhibited good biodiversity and likely provide the habitat structure for juvenile fishes, sea pens (*Pinna carnea*), sea stars and other marine life for which they are so well known and regarded.



It is noted that, at the time of the field investigation, *Sargassum* was almost non-existent along the beach landward of the mean high water line within the project area. *Sargassum* is a non-rooted drift algae that gets transported by winds and waves, which has become an increasingly common problem in the Caribbean in recent years. Its lack of presence at the time of the assessment is not an indication that it will not become a problem in the future. The property's location near a natural curve of the land, may make it vulnerable to the accumulation of *Sargassum*, particularly when winds are from the west and northwest.

#### 2.2.2.1 Sargassum Invasion

This stretch of Grace Bay didn't show evidence of the invasion of *Sargassum* that plagues many areas of the Caribbean. It is likely that the predominantly east winds allows the *Sargassum* to remain offshore of the fringing reef and bypass this well protected bay.

## 2.3 Physical Environmental Baseline Assessment

## 2.3.1 Topography

The topography of the Turks and Caicos Islands is generally very low-lying. Higher terrain for each island is normally near the outside (seaside) of each island. Areas near the Caicos Bank are lower in elevation, with many sections of North Caicos, East Caicos and Middle Caicos being low-lying swamp/marsh areas. The highest points in the country are Blue Mountain on Providenciales and Flamingo Hill on East Caicos, each with a height of approximately 48 m.

The topography of the project site primarily consists of a narrow beach that extends from the shoreline landward to a dune system, with an average elevation of 2 m above mean sea level. The beach along the project site is fairly protected by a manmade T-groyne structure built where Pelican Beach ends and the east end of Grace Bay Beach.

## 2.3.2 Bathymetry for Site Shoreline

The Caicos Islands (Providenciales, North Caicos, West Caicos, Middle Caicos, East Caicos) are located on the Caicos Bank. This area is shallow with depths between 2 m and 4 m. The Turks Islands are located to the east of the Caicos Islands. The joint state has a deep underwater canyon called the Turks Island Passage (34 kilometres long) between the set of islands.

The overall bathymetry of the area is quite varied. From the land to the reef that surrounds most of the Caicos Islands, the water depths are quite shallow, with an average depth of 2.5 m. However, just outside of the reef is a steep drop off. Water depths outside of the reef quickly dive



to 20 m. The reefs provide good protection for coastal areas in the state and help to provide defense against larger waves and swells. This helps to counteract the overall low topography of the islands.

## 2.3.3 Geology

A carbonate formation dominates the geology of the proposed development site. Lithological descriptions of the subsurface geology to an average depth of 12 feet below ground level revealed a relative thin layer of loosely compacted Holocene sand that transitioned to well compacted and well cemented limestone formation. Paleo soil zones were not observed in the excavated test pit. A soil penetrometer was used to measure soil bearing capacity at the test pit location 21°47'10" N / 72°12'06"W. The measured soil bearing capacity was 1220 kN/m2.

## 2.3.4 Hydrology

One (1) test pit situated within the project site was constructed using a Caterpillar Backhoe machine equipped with a 24" wide rock cutting bucket. The test pit was constructed at one-(1) foot intervals where samples of cutting samples were collected and examined. The total depth of investigation was approximately twelve-(12) feet below land surface. The test pit remained undisturbed for a minimum of five-(5) days to allow the groundwater in the test pit to equilibrate. After equilibration groundwater occurring in the test pit was evaluated and depth to the water surface was measured and recorded. Subsequently, a depth versus salinity profile was conducted in the test pit. Additional geophysical logging techniques including, temperature, pH, dissolved oxygen, odor, colour and lithological profiles were conducted. Data collected was used to assess the groundwater configuration, depth to water table and subsurface geology.

Sieve analyses were conducted on samples from individual test pits and grain size distribution curves were generated to get a feel for the characteristics of the sand samples and materials to be used to backfill areas for designated for residential development adjacent to the canal system.

# 2.3.5 Environmental Air Quality

Six criteria pollutants (USEPA) were measured over an eight-(8) hour period using the 'filtration method' and analyzed using a HACH DR/2100 Spectrophotometer. Particulate Matter (10) was assessed using a 'collection jar method' and analyzed using the 'Beam Method'. Air pollution contributes to a wide variety of adverse health effects. EPA has established national ambient air quality standards (NAAQS) for six of the most common air pollutants -carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide -known as "criteria" air



pollutants (or simply "criteria pollutants"). The presence of these pollutants in ambient air is generally due to numerous diverse and widespread sources of emissions. The primary NAAQS are set to protect public health.

## 2.3.5.1 Ozone (0 ppm)

Ground-level ozone forms through the reaction of pollutants emitted by industrial facilities, electric utilities, and motor vehicles; chemicals that are precursors to ozone formation can also be emitted by natural sources, particularly trees and other plants. Ground-level ozone can pose risks to human health, in contrast to the stratospheric ozone layer that protects the earth from harmful wavelengths of solar ultraviolet radiation. Short-term exposure to ground-level ozone can cause a variety of respiratory health effects, including inflammation of the lining of the lungs, reduced lung function, and respiratory symptoms such as cough, wheezing, chest pain, burning in the chest, and shortness of breath.

## 2.3.5.2 Particulate Matter (5 ppm)

Particulate matter (PM) is a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles (liquid droplets or solids) over a wide range of sizes. Particles originate from a variety of man-made stationary and mobile sources, as well as from natural sources such as forest fires. Particles may be emitted directly or may be formed in the atmosphere by transformations of gaseous emissions such as oxides of sulfur (SOx), oxides of nitrogen (NOx), and volatile organic compounds (VOCs).

## 2.3.5.3 Sulfur Dioxide (0 ppm)

Fossil fuel combustion by electrical utilities and industry is the primary source of sulfur dioxide. People with asthma are especially susceptible to the effects of sulfur dioxide. Short-term exposures of asthmatic individuals to elevated levels of sulfur dioxide while exercising at a moderate level may result in breathing difficulties, accompanied by symptoms such as wheezing, chest tightness, or shortness of breath.

## 2.3.5.4 Nitrogen Dioxide (0 ppm)

Nitric oxide (NO) and nitrogen dioxide (NO2) are emitted by cars, trucks, buses, power plants, and non-road engines and equipment. Emitted NO is rapidly oxidized into NO2 in the atmosphere. Exposure to nitrogen dioxide has been associated with a variety of health effects, including respiratory symptoms, especially among asthmatic children, and respiratory-related emergency department visits and hospital admissions, particularly for children and older adults.



#### 2.3.5.5 Lead (0 ppm)

Historically, the major source of lead emissions to the air was combustion of leaded gasoline in motor vehicles (such as cars and trucks). Following the elimination of leaded gasoline by the mid-1990s, the remaining sources of lead air emissions have been industrial sources, including lead smelting and battery recycling operations, and piston-engine small aircraft that use leaded aviation gasoline. Lead accumulates in bones, blood, and soft tissues of the body. Exposure to lead can affect development of the central nervous system in young children, resulting in neurodevelopmental effects such as lowered IQ and behavioral problems.

## 2.3.5.6 Carbon Monoxide (2 ppm)

Gasoline-fueled vehicles and other on-road and non-road mobile sources are the primary sources of carbon monoxide (CO) in the United States. Exposure to carbon monoxide reduces the capacity of the blood to carry oxygen, thereby decreasing the supply of oxygen to tissues and organs such as the heart.

#### 2.3.6 Sediment Analyses

A representative sand sample was collected at GPS coordinates 21°47'12" N / 72°12'06"W and used to conduct a dry sand sieve analysis based on the ASTM (E-11) Standard. Physical observation of the sand sample suggested that the sand could be classified as fine grained and against this backdrop sieve sizes for fine sand were used.

Using the sample data, a particle size distribution curve was created as illustrated in Figure 2-6. The D60, D30 and D10 values were 0.85714286, 0.71428571 and 0.61904762, respectively. The coefficient of uniformity (Cu) was 1.38461538 and the coefficient of curvature (Cc) was 0.36848073. The results from the sieve analysis indicated that the sand sample was uniformly graded, fine grained sand.





#### 2.3.7 Climate and Meteorology

The hydrogeological environment of Providenciales can be described as a semi-arid tropical region (Figure 2-7). The climate conditions are characteristically long hot summers contrast with relatively cooler winter seasons. On average, rainfall is relatively low (20 inches per year) and occurs mostly from August to December.

Climate and meteorological data for the Turks and Caicos Islands are not directly monitored in real-time, instead, data is extrapolated from the southeastern Bahamas region that is monitored by the Bahamas Meteorological Department. Limited data suggests that a wet season extends from May to October and a dry season extends from November to April of each year. The hurricane season that extends from June through November directly impacts the rainfall amount that is derived from passing tropical depressions, tropical storms, and hurricanes. The summer season is characterized by predominant southeasterly winds and rainfall accumulation affected by intense events associated with the passage of tropical waves, tropical storms, and hurricanes.





Figure 2-7. Areas of Semi-arid climates

Historical meteorological data from the southeast Bahamas and Grand Turk (Bahamas Meteorological Department – Bahamas Government) suggests an average annual rainfall of approximately 28 inches with the greatest amount of rainfall occurring during the months of May and October each year. Temperatures average 29°C (85°F) in summer and 21°C (70°F) in winter. Maximum and minimum temperatures seldom exceed 32°C (90°F) or 16°C (60°F). Historical model data from 2009 to 2021 is illustrated in Figure 2-8.



Figure 2-8. Historical Modeled Climate Data for Providenciales, TCI [2009-2021]



#### 2.4 Baseline Aesthetics

The aesthetics of the shoreline will remain natural. The client intends to remove the non-native invasive shoreline species and replace them with non-invasive and endemic dune plantings common to the Turks and Caicos Islands.

#### 2.5 Baseline Coastal Processes and Dynamics

#### 2.5.1 Currents and Tides

Local tides are semi-diurnal (i.e., two high tides and two low tides per day), with an inequality between successive highs and lows. A tide range of 1.8 ft (0.55 m) between mean higher high water (MHHW) and mean lower low water (MLLW) values (ATM, 2012) have been observed along this area of Grace Bay. This is in line with the U.S. National Oceanic and Atmospheric Administration (NOAA) tide predictions for Hawk's Nest Anchorage, Grand Turk (1988), which reports a mean tide range of 2.1 ft and a spring range of 2.6 ft. The site can also be subject to potential storm surge due to tropical storm systems that could produce higher water levels. Surge potential in this region is limited and typically less than 1 m for most storm events.

#### 2.5.2 Sediment Transport

Generally, the sediment transport of material along the shore is from east to west, as is observed in the accretion of sand along the eastern side of sand structures along the coast although no structures are located within the project area. Sediment transport within the project is mostly wind driven (Figure 2-9).





Figure 2-9. Annual Predominant Wave Direction. Source: https://wisuki.com/statistics/936/long-bay

# 2.5.3 Erosion and Accretion

In review of historical imagery for the property, the shoreline has remained predominantly stable to accretionary. The construction of the Coral House groyne to the east around 2006 does not appear to have had a significant downdrift impact into this property, and long term, the shoreline has experienced a slight advance. Planned restoration projects with Leeward (to the east) are not anticipated to have an adverse impact on this shoreline since the planned beach nourishment in concert with structures will provide a net flow of sand to the west towards this property.

# 2.5.4 Coastal Dynamics.

Further to the earlier section 2.5.3, there will be no sand or infrastructure (e.g., groynes, jetties, docks, piers, etc.) proposed seaward of the top of the existing dune, direct impacts to this community are expected to be non-existent. Boardwalks are proposed to be elevated above the coastal dunes to provide access to the beach and allow for coastal processes to take place.

## 2.6 Water Quality

Baseline water quality testing was conducted to document existing water quality conditions prior to project construction. A sample of sea water collected within the project area was tested to determine concentrations of iron, nitrate and nitrite, sulphate and sulphide, phosphate, total dissolved solids, pH and salinity. The results are provided in Appendix E. The sample is



representative of sea water, and the results did not reveal any measured constituents of concern, including constituents indicative of nutrification from upland (terrestrial) sources.

# 2.7 Social-Economics

Post the Covid-19 pandemic, the Turks and Caicos Islands (TCIs) economy has been rapidly expanding. With the assistance from The Caribbean Public Health Agency (CARPHA) and The Pan American Health Organization (PAHO), and human resource assistance from Cuba in the form of medical professionals, the Turks and Caicos Islands "did exceptionally well" (Hon. Shaun Malcolm, Minister for Health and Human Services Briefing, 24<sup>th</sup> March 2023). During 1<sup>st</sup> April 2023 removed all Covid-19 travel restrictions.

"Building on the record breaking first half of the year, Q3, historically our slowest quarter, gained a whopping 319% over Q3 last year (\$158,905,323 vs. \$37,891,750), with year-to-date sales volume up over 150% over the first three quarters of last year (\$496,710,829 vs. \$198,330,657). These numbers represent historic events, of course, and with Canada and other countries now open for travel, we expect a strong fourth quarter with the caveat that all this great sales volume is resulting in constriction of inventory."<sup>1</sup>

At the 2023 Turks and Caicos Islands Economic Empowerment Conference, which was held at the TCI Beaches Resort, 24-25<sup>th</sup> March 2023, the Hon. Premier of the TCI indicated that following the Covid-19 pandemic, the Turks Caicos Islands is currently experiencing a nominal economic growth rate of 13 percent. The TCI has done very well with the opportunities presented to it. The TCI debt/borrowing ratio is less than 1 percent. The TCI has a debt of less than a million dollars. He further stated that the Islands Gross Domestic Product (GDP) is expected to increase by 5 percent this year (2023). The Premier estimated the population of the Turks and Caicos Islands to be 49,300 persons.

The Hon. Premier at the 2023 Economic Empowerment Conference (2023) highlighted that despite all the success, the following are serious concerns:

- The unemployment rate is currently at 7 percent.
- The Islands' GDP is expanding but GDP per capita is stagnant (meaning "we are expanding in terms of labour, but salaries and wages remain the same").

<sup>&</sup>lt;sup>1</sup> TURKS & CAICOS REAL ESTATE MARKET REPORT 3rd QUARTER COMPARISON 2021, Sotheby International Realty



• Despite all the investment and economic growth within the Islands, there is a group of people with an entirely different economic reality within our society.

The Hon. Premier pointed to the future and stressed the following:

- Strategies must be put in place to sustain growth and to remain resilient.
- Comprehensive stakeholder engagement must be the way forward.
- The natural environment must be protected. Everything in the TCI is linked to the natural environment Tourism, Construction, Real Estate, Commerce, Attorneys, etc.
- The TCI Government will be investing heavily in infrastructure (Waste management, Security, Lighting, Roads). Half a billion dollars will be spent over the next ten years and will have no impact on the TCIG recurrent revenue. The TCIG has huge reserves.
- Spending into renewable energy will be increased.
- Continued development of linkages to the tourism/hotel industry. The Orange Economy was referred to as an example<sup>2</sup>.
- Subsidizing the vulnerable rather than being exposed to growing poverty.
- Social cohesion and economic justice must be fostered.
- Strengthen TCI economic balance.
- Sustainability requires proactivity.

# 2.7.1 Demographics

The Turks and Caicos Islands Government "Fiscal and Strategic Policy Statement (FSPS)" 2023/24-2026/27, prepared by the Ministry of Finance, Investment and Trade predicts that in 2022 and 2023, the construction industry is anticipated to maintain its excellent performance. "The actions of enterprises and private persons are expected to drive this sector's growth, which is anticipated to be four percent on average between 2022 and 2025. The Government's new and ongoing capital programmes, which concentrate on infrastructural development, improved physical working conditions, and community-based initiatives, will likely help *the construction industry maintain its good performance*. Foreign direct investment in tourism-related and other projects and a rise in domestic private-sector investments are also *anticipated to boost building activity further*."

The Vision 2040, The Framework Document, and Medium-Term Development Strategy establish the targeted outcomes and align with the Sustainable Development Goals (SDGs). It indicates that in the medium-term, the Government's key focuses are the following:

<sup>&</sup>lt;sup>2</sup> <u>https://investincolombia.com.co/en/articles-and-assets/articles/what-is-the-orange-economy</u>



- 1) Human Capital Development,
- 2) Inflation and Cost of Living Containment,
- 3) Destination Management Reform.
- 4) Public Sector Reform,
- 5) Preservation and Enhancement of National Security,
- 6) Population & Migration Policy Reform,
- 7) Primary Sector Development,
- 8) Housing & Crown Land Management Reform, and
- 9) Critical Infrastructure (Re)Development.

Turks and Caicos Islands 2019 Tourism Statistics Report also shows that the Turks and Caicos Islands welcomed a total of 1,598,557 Visitor Arrivals for 2019. A nine (9) percent increase of arrivals overall to our shores when compared to the previous year's record-breaking figures. This trend has continued.

Sometime ago the The Turks and Caicos Islands Government, through the Ministry of Immigration, Citizenship, Labour and Employment Services announced the commencement of a consultancy for the development of a **National Population Policy** to be carried out by Kairi Consultants Ltd, of Trinidad and Tobago. The policy is intended to direct the actions to be taken explicitly and implicitly by the relevant authorities in order to predict, delay and manage imbalances between demographic changes alongside the social, economic, environmental and political objectives of the Government by contributing to the sustainable development of the Turks and Caicos Islands and the eradication of poverty; increased and improved availability and accessibility of high quality social services; the attainment of gender equity, equality, women empowerment, social justice, youth development and development for all individuals; *harmonious interrelationships between population*, resource utilization and the environment; and development of the education, skills development and the job placement of citizens.

In commenting the Minister of Immigration, Citizenship, Labour, and Employment Service at that time stated; *"That an effective population policy is critical in its own right for maximizing the positive outcome for all Turks & Caicos Islands citizens and the long term development efforts that will guide our country's growth."* The publication of the National Population Policy is still outstanding.

All the preamble points to an anticipated massive further increase in population to support this record setting growth and expansion of development and infrastructure.


The Economic Commission for Latin America and the Caribbean (ECLAC) reported on 20<sup>th</sup> July 2016 that the Turks and Caicos Islands has one of the fastest growing populations in the Caribbean (ECLAC, 2016).

ECLAC worked in collaboration with the Statistics Department of the Turks and Caicos Government to develop the population projections and also provided training to the staff of the Statistics Department in the methods and software used to produce the projections.

ECLAC reported that the population of the Turks and Caicos Islands could reach 55,498 people by the year 2027 – compared with 32,199 in 2012 – according to the medium projection in a joint report by the Economic Commission for Latin America and the Caribbean (ECLAC) subregional headquarters for the Caribbean and the Statistics Department of the Turks and Caicos Government (ECLAC, 2016).

Net migration accounts for 68 per cent of this projected increase with natural change (births less deaths) accounting for the remaining 32 per cent. Immigration of people from neighbouring countries seeking employment created by the development of tourism has been the main driver of population growth in the Turks and Caicos Islands since 1980 when the population was just 7,413.

Citizens of the Turks and Caicos Islands, formerly called Belongers, constitute a declining proportion of the population. They represented 69 per cent of the total in 1990, falling to 37 per cent in 2012 and, if current trends continue, could represent less than a quarter of the population by 2027.

The Turks and Caicos Islands currently have one of the youngest populations in the Caribbean. This is partly because immigrants tend to be younger working age people. In 2012, the most populous age group was persons between 25 and 44 years (comprising 39 per cent of the population). However, the population is ageing; by 2027 the most populous age group will be those between 35 and 54 years (again 39 per cent of the total). The proportion of persons aged over 65 will remain relatively low, increasing from 3.5 per cent to 7 per cent over this period, but continuing to increase rapidly after 2027.

The projections are based on census data, vital statistics and assumptions about future patterns of fertility, mortality and international migration. Population projections are used by policymakers



and planners to analyse population trends and their implications for social and economic development including the future demand for resources and services.

#### 2.7.2 Employment: Labour and Skills Demand at Construction and Operation

The labour and skills demand at construction and operation can be summarised as follows:

**During Construction**: Planners, Architects, Structural Engineers, Real Estate Agents, Attorneys, Environmental Consultants, Masonry and Concrete Workers, Carpenters, MEP Engineers, Landscapers, and other builders and labourers will be employed. Local suppliers of building materials, including but not limited to concrete plants, aggregate suppliers will also be needed.

**During Operation**: Business and Marketing Specialists, Maintenance Personnel, Waiters/Waitresses, landscaping companies, housekeeping, tour operators, taxi drivers, VIP services, construction and maintenance trade and supplies, managers, etc.

## 2.7.3 Safety/Security Concerns Within the Community

The applicant and operator will work in consultation with the Royal Turks and Caicos Islands Police Force to ensure compliance with the laws of the Turks and Caicos Islands. Additionally, a local security firm will be employed fulltime to ensure safe/security in and around the property during construction and operational phases of the development.

## 2.7.4 Economic Impact: Short-Term and Long Term

During construction and operation, wherever possible, both skilled and unskilled labour, every effort and priority will be given to the recruitment of citizens of the Turks and Caicos Islands.

During operation of the development, apart from the economic benefits already mentioned, the proposed development will have ripple economic effects in terms of:

- Guests' expenditure at the hotel and at retailers/shops and restaurants outside the resort.
- Guests' expenditure on taxis and VIP limousine services and other forms of transportation.
- Guests' expenditure on tours, excursions, and other recreational facilities.
- Likely guest purchases of any properties while on island.
- Accommodation tax.
- Environmental tax.
- Payment of salaries of local and foreign staff that will be living on the island.
- Payment of government fees (work permits; insurance contributions [(National Health Insurance Board (NHIB) and National Insurance Board (NIB), vehicle licensing, etc.].
- Rental for housing, if applicable.
- Other ripple effects from the proposed hotel.



Apart from payment of wages and salaries to staff, Government taxation and contributions, fees and license, the construction of the entire development will generate other expenditures, including the following:

- Equipment rental companies.
- Purchasing of cement and aggregate.
- Building materials.
- Other.

Prior to construction and during operation of the development, additional expenditures will be generated, including the following:

- Fees paid to attorneys, architects, planners and environmental consultants.
- Enhancement of the local area and increase in property values.
- Tourism interest and benefits to Government from publicity from awards.
- Local maintenance companies being employed.
- Other.

Specific business that maybe created as a direct result of the proposed development are as follows. These are businesses that do not have to be provided by the hotel itself.

- Landscaping.
- Housekeeping.
- Tour Operators.
- Taxi Services.
- VIP Services
- Construction & Maintenance Trades and Supplies.

## 2.7.5 Others

Other benefits/contributions to be derived from the development will be as follows:

#### Sports and Education

- Molo Hotels commits to sponsoring a local youth sports team for a minimum period of five years from hotel opening.
- Molo Hotels will sponsor a community centre or education facility, where they will send their maintenance team three times per annum for a minimum period of five years from Hotel opening to maintain, tidy and enhance their facilities.



#### Housing

Upon completion of the proposed development, the hotel will employ approximately 150 full-time employees over a range of departments, including but not limited to Food & Beverage, Sales, Management, Leisure, Reception, Housekeeping and Maintenance. The greatest effort will be made to employ Turks and Caicos Islanders who are qualified within the various departments. This will limit the impact on housing availability. Additionally, efforts are being made to secure land for staff housing. The hotel has been designed to accommodate 30 staff members on site, within the proposed hotel buildings.

In addition to the preamble, Molo Hotels has already secured accommodation for a further 20 staff members. It is proposed that this accommodation will be off-site within the vicinity of the proposed development, within walking distance. Provision of this off-site accommodation will be through Molo Hotels redeveloping a small residential complex and partnering with a local accommodation developer elsewhere.

## 2.8 Other Relevant Parameters Identified During the Scoping Exercise by the Consultants

The ToR comprehensively addresses all concerns and parameters.



## 3.0 Legislative and Regulative Context

### 3.1 Turks and Caicos Islands Constitution (2011)

The TCI Constitution (2011) provides for the protection of the environment for the present and for the future generations while promoting justifiable economic and social development.

### 3.2 TCI Development Plan/Master Plan

The proposed development (Tourism Related) is consistent with the provisions of the provisions of the Turks and Caicos Islands National Physical Development Plan, 2020.

### 3.3 Physical Planning Ordinance and Subsidiary Legislations

The following relevant and necessary sections of the Physical Planning Ordinance, 2018 and Regulations thereunder have been adhered to and complied with:

Regulations 8 and 9 of the Development Permission Regulations, 2018 (Advertising and Consultations).

Section 44(2), of the Physical Planning Ordinance, 2018 (Minister's Certificate of Approval).

Section 47, of the Physical Planning Ordinance, 2018 (Matters for Consideration of the Board).

#### 3.4 Turks and Caicos Islands Development Manual

All relevant planning standards have been complied with, those that are applicable to the proposed development in terms of:

- The height of the buildings.
- The proposed development is compliant with the building setback requirements, including one hundred and thirty (130) feet measured from the highwater mark in this location.
- Site coverage does not exceed sixty (60) percent.
- The aesthetics, including architectural design is very modern, high end, the building contains all the modern conveniences, but it also incorporates traditional elements of architecture, for example, the cantilevered verandas, balconies, and the plentiful use of wood.



- The garbage storage facility shall be fully enclosed and of a suitable height to prevent scavenging by feral animals.
- An adequately sized mechanical wastewater plant will be provided for the proposed development to sufficiently dispose of the wastewater.
- All transmission lines, including utility lines, will be placed underground in conduit and to the requirements and standards of the relevant suppliers.
- Upon completion of the development, the entire site will be revegetated and landscaped with native vegetation.
- Prior to development, the site was a brown field site, with buildings already existing and denuded of native vegetation. It is currently used as a staging area for the existing development under construction.
- Boardwalks will be constructed for pedestrian access around the site and onto the beach to prevent trampling and degradation.
- All other relevant planning standards provided within the TCI Development Manual, 2014 will be complied with.

## 3.5 TCI Building Code

The proposed development will be carried out in strict compliance with the provisions of the TCI Building Code. Renowned Structural Engineer, Mr. Peter Kerrigan of EDS and the International Firm of Arup has been employed to ensure the same. Other engineers including Mechanical, Electrical and Plumbing Engineers have been employed to ensure compliance and the integrity of means of escape; fire safety; structural design; use of building materials; water and sanitary requirements; stairways and balconies; environmental health; etc.

Upon completion of the development, an Occupancy Certificate (Completion Certification) will be required from the Director of Planning prior to operation of the facility.

## 3.6 Coast Protection Ordinance and Subsidiary Legislations

Under the Coast Protection Ordinance "coast" means land bordering on the sea or any tidal water and having its seaward boundary at the low water mark.



There are no planned components or phases of this development, or any operations associated with the proposed development that will be in contravention of the Coast Protection Ordinance or prejudicial thereto; and no development or developmental components or operations of the development are being proposed within the coastal zone. The proposed one hundred and thirty (130) feet and one hundred (100) feet building setback distances for buildings and other ancillary development respectively, measured from the highwater mark, will be strictly adhered to.

## 3.7 Mineral Ordinance and Subsidiary Legislations

All aggregate and other construction materials which will be used in the construction will be purchased from approved local suppliers on island; and any sand generated from trenching and/or digging will be used in the development for refilling and compaction on the site. The project will be completed as per the approved drawings to a high standard and all measures detailed in this environmental statement will be implemented to ensure zero or minimal environmental impact.

## 3.8 Marine Pollution Ordinance and Subsidiary Legislations

There will be no marine vessels or ships used in the construction of the development. There will be no discharge or dumping of oils, waste, or other pollutants into the coastal or marine environment.

The proposed construction and operation of the development will not cause any environmental harm or negative environmental impact, whether: a) means of livelihood for persons; b) damage to mangroves, coral reefs or beaches; c) damage to the marine environment; d) tourists' attractions or the health and well-being of citizens and residents.

Containers for collection and storage of solid waste will be provided on the site, within the confines of the parcel boundaries. During construction, portable latrine(s) will be provided and maintained on site by one of the local Sanitary Companies for liquid waste disposal. The contractor will be required to maintain acceptable environmental health and safety standards during construction. Containers of oils and other similar effluent will be collected, bagged, and disposed of separately at the public landfill facility. There will be zero tolerance for depositing of any garbage, rubbish, litter, or derelict article, which could eventually make its way into the coastal or marine environment. This includes any broken bottles or other glass or ceramic.

Solid waste debris is often problematic on construction sites and of particular concern when working in near coastal environments due to the increased incidence of debris either blowing or



floating away. Not only is it not aesthetically pleasing washing up on our shores but can injure and kill marine organisms if they ingest it or are inadvertently trapped somehow in the wastes. Hoarding will be erected to enclose the entire property to prevent debris leaving the site.

All waste generated during construction, whether from daily food and beverage consumption of those working at the site or construction waste will be containerized and disposed of at the public landfill site daily. A lidded refuse bin will be provided and easily accessible to workers with clear instructions for immediate disposal. Inspections will be made at the end of the day to ensure that no waste remains behind on the jobsite.

## 3.9 Fisheries Protection Ordinance and Subsidiary Legislations

Fishing activities or the taking of marine products from the Ocean are not associated with the proposed development. The proposed development will not have any environmental impact on the island's fisheries. There will not be any disturbance to coral and other parts of the seabed.

## 3.10 International Treaties and Conventions

### Environmental Charter – Turks and Caicos Islands

- To recognize that all people need a healthy environment for their well-being and livelihoods and that all can help to conserve and sustain it.
- To use our natural resources wisely, being fair to present and future generations.
- To identify environmental opportunities, costs and risks in all policies and strategies.
- To seek expert advice and consult openly with interested parties on decisions affecting the environment.
- To aim for solutions which benefit both the environment and development.
- To contribute towards the protection and improvement of the global environment.
- To safeguard and restore native species, habitats and landscape features, and control or eradicate invasive species.
- To encourage activities and technologies that benefit the environment.
- To control pollution, with the polluter paying for the prevention or remedies.
- To study and celebrate our environmental heritage as a treasure to share with our children.

## 3.11 Environmental Health Ordinance

The Environmental Health Ordinance is critical for adherence during construction and operational phases of the proposed development in the following ways, some of which will be detailed elsewhere in this report:

- Solid waste management (Storage and Disposal).
- Landscaping and Green Waste.



- Hazardous Waste Zone.
- Liquid waste management (Storage, Treatment and Disposal).
- Stormwater Discharge and Drainage.
- Fire and Safety Requirements (Sections 4,5 and 6, of the TCI Building Code) This relates many areas, including but not limited to pull stations and hoses for fire; extinguishers, full and comprehensive exit plans for emergency, muster station for fire and/or emergency, etc.
- Back of House Facilities (Laundry Facilities and chemical waste).
- Vector and Pest Control.

## 3.12 Turks and Caicos Island Climate Change Charter

Small Island States, such as the Turks and Caicos Islands have characteristics that make them especially vulnerable to the effects of climate change, such as sea level rise and extreme meteorological events (Hurricanes – Extreme Winds and Floods). The Turks and Caicos Islands is characterized by fragile terrestrial, marine and coastal ecosystems, and a high biological diversity. Economic activities in the Turks and Caicos Islands involves direct exploitation of the natural resources such as coastal and marine ecosystems for tourism. Tourism is the major and most rapidly growing sector, the engine of economic growth and development.

The following are the strengths that attract tourists and investors to the Turks and Caicos Islands (A Strategic Plan for 1998-2001 Tourism inti the 21st Century, August 1998, Turks and Caicos Tourist Board):

- The pristine natural environment (The Beaches, The Sea (Diving), Sun, Sand).
- Safe Destination.
- Proximity to the USA.
- The US Dollar as currency.
- The language English.
- Excellent Air Transportation.
- Modern Communications.
- The Brand.

Global Climate Change can have a direct catastrophic impact on the Islands' natural capital mentioned earlier, from natural hazards such as hurricanes and sea level rise, and heavily expose other environmental vulnerabilities faced by these Islands. When examined, the Turks and Caicos Islands are very vulnerable for the following reasons:



- Key economic sectors dependent solely on limited natural resources (Example tourism and fishing).
- 100 percent Import Economy especially of strategic imports such as food and fuel.
- Susceptibility to economic fluctuations and events of the US economy.
- High energy costs.
- Serious vulnerability to extreme climate events.
- Increasing pressures on coastal and marine environments and resources.
- Small domestic markets.
- Limited economic diversification possibilities.
- Inability to influence international prices.
- Uncertainties of supply or Imports.
- Shifting rainfall patterns and hurricanes.

During 22<sup>nd</sup> April 2022, the Hon. Minister for Tourism, Environment, Fisheries and Marine Affairs, Culture and Heritage, Agriculture, Religious Affairs and Gaming signed the Turks and Caicos Islands Climate Change Charter. Other signatories were Fortis TCI, Provo Water Company Ltd., Turks and Caicos Hotel and Tourism Association, and Turks and Caicos Reef Fund. This was to acknowledge that each has an important role to play in addressing climate change amongst other important obligations.

Keynote speaker at the event, Deputy Premier of Bermuda, Walter Roban stated that he was encouraged by the regional conversation around the impacts of Climate Change and that the Turks and Caicos Island's Climate Change Charter had not only set the standard but was one that he would take back to Bermuda to inform the drafting of their own Charter. "It is important that the same work you have put into attracting development, you put into environmental protection. That the same enthusiasm with which you craft proposals for international development, you must put the same energy into environmental investment and protection, internally and internationally. This is the new philosophy that we must pursue," said Roban. He continued to motivate for robust environmental policy that would enhance and not hinder the livelihoods of the Caribbean region, including green energy solutions, improved air quality and effective land management. "We, we the Caribbean, must become the strong voices in the campaign for Climate Action... We must become our own advocates in the global fight against Climate Change," said Roban. (The Sun Newspaper, TCI., Mon, May 02, 2022).



The close relationship between tourism, the Islands key economic sector, and the natural resource base demands strategic sustainable management. It is the prime reason for Climate Change Adaptation being integrated into the planning and design processes of the proposed hotel development. Sea-level rise accelerated beach erosion, degradation of coral reefs and the loss of the heritage landscape along the coasts makes the Islands less attractive to tourists. Increases in the frequency and/or intensity of hurricanes strongly affect the tourism industry. The examination of all the following have been carried out and are continuing with the design processes of the proposed development for implementation during construction and operation:

- The height of the finished ground floor levels for all the buildings above the mean sea level must far exceed the minimum allowable requirements provided in the TCI Building Code to avoid inundation of flood waters which may be caused by rising sea levels.
- The minimum allowable building setback distances measured from the vegetation line to the furthest projection of all buildings must be strictly complied with. This will allow for fluctuations in the coastal that may be caused by erosions during storms.
- The Building Technologies to be used in the construction must be certified for use by a qualified and experienced Structural Engineer. Mr. Peter Kerrigan, of CSE, a reputable local Structural Engineering firm in the Turks and Caicos Islands has been employed to ensure the aforementioned and ensure compliance with the TCI Building Code.
- Improving energy efficiency. Energy in the Turks and Caicos Islands is produced mainly through burning fossil fuels products such as gas and diesel oil. Diesel is used in the generators at the electricity supply plant, liquefied petroleum gas (LPG) is used for cooking, while gasoline (petrol) and diesel oil are used for transportation. These account for overwhelmingly the total carbon dioxide emissions in the Islands. The TCI Climate Charter encourages the transfer of technology and cooperation to reduce greenhouse gas emissions, especially from energy, transport, industry, and waste management, which together produce nearly all greenhouse gas emissions attributable to human activity.
- The Building Technology used in the exterior and interior walls and cladding must ensure efficient use of energy and climate resilience.
- Conservation.
- Utilization of energy efficient appliances and utilities.



- Use of renewable energy sources.
- Recycling of waste.
- Establish effective systems of waste collection.
- Effective and efficient waste-water treatment system.
- Water conservation.
- Recycling of grey water.
- Low flush toilets.
- Relieve anthropogenic stresses on nearby reef systems.
- Work with the DECR regarding environmental protection and management within the Princess Alexandra Marine Park.
- Efficient and effective AC Systems in the buildings for cooling.

During 11<sup>th</sup> April, 2022, Americas Environment, reported that Sea Level has risen by five inches (12 centimeters) since 2010 in the coastal areas of the US southern and southeastern states, according to a Study. Given the closeness to the Turks and Caicos Islands, this must be taken seriously and planned for.

#### 3.13 National Parks Ordinance

The site for development borders the *Princess Alexandra Land and Sea National Park* and therefore requires special procedures, practices, and plans to ensure preservation and enhancement of the National Park.



# 4.0 Project Description and Construction and Operation and Alternatives

## 4.1 Description of the Proposed Project

The applicant Molo Hotels (Turks and Caicos) Limited or proponents have been granted Outline Development Permission, dated 15<sup>th</sup> July, 2022 for the development of parcels 60813/17 and 18. The aforesaid Planning Application is registered as PR.15987 for the development of 4.14 acres of land. The development will entail:

## 207-Bedroom Hotel / Swimming Pools / Cabanas / Gym, Spa & Wellness Centre / Shops / Ancillary Facilities.

In January 2023 Molo Hotels acquired an additional plot of land, 60813/32, conterminous with 60813/17, and will be merging those titles.

Molo Hotels, following pre-application consultation with the Planning Department on 24<sup>th</sup> November 2022, shall be submitting a Detailed Planning Application for the development which will include the additional 1.03 acres of land. At this time, no environmental assessment of or parcel 60813/32 has been conducted and is not included in this report.

The hotel bedroom count shall only increase by 44 rooms from 207 to 251, staying below the density standards. The design follows the principles set out in the Outline Application and shall continue to respect all aspects of the planning standards.

The Applicant, Molo Hotels (Turks and Caicos) Limited, is part of the Molo Hotel Group, a privately owned hotel development and management company based in Europe. Molo Hotels is a family-owned business, with six trading hotel assets, six hotels under development, and an additional three hotels in the final stages of the acquisition process. These hotels are located in the United Kingdom, Italy, Poland, and Aruba.

The proponents of the proposed development are responding to current and future market needs for the provision of a beachfront EP Hotel on Providenciales with a wide diversity of services for the customer, whilst minimizing the construction and maintenance cost. The integration of Spa and Wellness developments represents an important component in any upscale development. The Spa, Wellness and Gymnasium components offer a series of treatments, and/or facilities



related to health and wellbeing. The amenity of the Spa and Wellness Centre will differentiate the property from other competitive resorts on the Island.

## 4.2 Project Justification

The proposed development is a high-end 207-Bedrooms EP Hotel with recreational, wellness and spa facilities. This is the type of development that is envisaged by the Turks and Caicos Islands Government and the Hotel and Tourism Association. There are no justifiable planning and/or environmental grounds on which detailed development permission should be withheld.

The proposed development is consistent with the Land Use Zoning for the locality. The applicant has detailed in the environmental statement specific plans and programmes towards the protection and enhancement of the Princess Alexandra Land and Sea National Park. There are no developments that are planned outside the confines of the applicant's coastal parcel boundaries and pedestrian and/or other access to the beach environment will be by way of an elevated boardwalk.

The Windsong Resort and its major expansion which is presently under construction is of a similar scale, characteristics of site and in the immediate vicinity next to the development. Coral Gardens Resort and Reef Residences are also within the immediate vicinity. The Beach TCI Resort partially shares the easternmost boundary. Therefore, the proposed development does not detract from the built character of the surrounding locality.

The applicant is committed at their expense to developing the nearby public beach access in consultation with the DECR.

The site on which the building is proposed was previously cleared. Given conversation planning and design measures stipulated in the environmental statement for implementation, the proposed development will enhance biodiversity on the site.

Apart from job creation during the construction and operational phases of the development, there are further positive ripple effects resulting from the proposed development. The benefits to be derived to the Turks and Caicos Islands from having the proposed development far outweigh the minimal environmental impacts. There will not be any negative environmental impacts caused by the proposed development. Any unforeseen impacts from the proposed development will be



minimal, mitigated and monitored. There are no substantial environmental impacts associated with the proposed development and justifications are given for it being allowed.

## 4.3 Effects on Erosion or Accretion

As no modifications to the beach or shoreline are proposed in this project development plan, there are no expected effects regarding erosion or accretion.

## 4.4 Coastal Engineering Plans

There are no developments including any beach restorative works planned within the coastal environment other than the proposed boardwalks to access the beach, which will be suspended above the sand dunes and dune vegetation. The full and detailed engineering and construction are being prepared and designed. These will be submitted to the office of the Director of Planning for consideration of detailed development permission and building permit.

## 4.5 Coastal/Beach Development and Management

The aim of a coastal or beach management plan is "to maintain or improve the conditions of a beach as recreational resource and means of coast protection while providing facilities that meet the demands of those who use the beach (Bird, 1996). The objective will be to continually develop the Plan as problems are found, addressed, and procedures developed to ensure no reoccurrences.

#### Beach

- In consultation with the Department of Planning and the Department of Environment and Coastal Resources (DECR) the applicant and/or representatives will be working with the DECR to provide a space for 3-5 beach vendors that is properly sited, aesthetically developed and does not infringe on the coastal dunes and dune vegetation. It is intended that the DECR will be responsible for the operation and management of the space for vending.
- Suspended boardwalks will be built for the proposed development and the beach access lane to lessen the impact on the natural environment by firstly preventing alteration of the coastal dune's formation, which may be caused by trampling; and secondly allow for undergrowth of grasses, vines and other types of strand vegetation.
- 3. The boardwalks once constructed will direct and control pedestrian access to the beach and prevent widespread trampling of the primary dune. All these measures are intended to protect and enhance the natural environment and ecology of the development site.



- 4. Other than areas for siting of boardwalks and smaller structures, the building setback zone of 130 feet will be cordoned off. Everywhere within the zone will be accessible by boardwalks. The proposed development is setback far inland from our coastal boundaries and/or vegetation line.
- 5. Beach furniture, small structures for towels and other usage, shade structures, recreational equipment (hobby cats, windsurfs, water cycles, and other wind powered boats, kayaks, etc.) will be strictly prohibited from being stationed on the dunes and dune vegetation during daylight and night hours. The dune and vegetation areas will be cordoned off to prevent trampling and destruction.
- 6. The use of heavy equipment within the coastal environment will be strictly prohibited.
- 7. Garbage containers at Strategic Locations or points along the beach will be provided.
- 8. Beach attendants will also be available to ensure that there is no pollution of garbage into the marine environment.

#### Marine

- 1. Reduce plastics and keep throw-aways from coral reefs.
- 2. No bilge or washing of boats shall be allowed within the marine environment fronting the resort.
- 3. Reduce throw aways.
- 4. Boats will not be allowed to anchor within the marine environment near the property. Mooring will be approved and installed in consultation with the DECR.
- 5. Drinks to be consumed on the beach must be of recyclable material. Straws must be of recyclable materials.
- 6. Jet skis are not allowed within the National Park boundaries.
- 7. A swim zone will be demarcated in consultation with the DECR and all boating activities will take place outside the swimming area.

## 4.6 Source and Quality of Beach Sand and Fill

Beach nourishment or beach extraction of beach sand is NOT included as part of the proposed development.

## 4.7 Solid Waste Management During Construction and Operation

Solid Waste Management – Generated During Construction: All waste generated during construction, whether from daily food and beverage consumption by those working at the site or



construction waste will be containerized and disposed of at the public landfill site daily. A lidded refuse bin will be provided and easily accessible to workers with clear instructions for immediate disposal. Inspections will be made at the end of the day by the Contractor to ensure that no waste remains behind on the jobsite, including near the coastal. Solid waste debris is often problematic on construction sites and of particular concern when working within proximity to the marine environment due to the increased incidence of debris either blowing or floating away. Not only is it not aesthetically pleasing washing up on our shores, but can injure and kill marine organisms if they ingest it or are inadvertently trapped somehow in the wastes.

No hazardous materials or substances will be used for the construction. The changing of oils and similar servicing of vehicles will only take place off site. If refuelling or addition oils are needed in construction equipment or machinery, the containers will be collected, bagged, and disposed of separately at the public landfill facility. There will be zero tolerance for any waste being disposed of in the terrestrial, marine, or coastal environments.

## 4.8 Surface Runoff Management/ Storm Water Runoff and Treatment

The roofs of all the buildings will act as catchment areas for collection of rainwater which will be directed to water cisterns. Hard surfaced areas around the property will be designed to direct storm water to holding tanks and subsequently used for irrigation for landscaping. There will not be any runoff from the development site onto neighbouring properties.

## 4.9 Traffic Flow and Safety

Marine Environment: There is no portion of the proposed development that involves development or operations within the marine environment; and no proposed or existing jetties are associated with the proposed development. Guests interested in doing sea excursions and ventures will be transported away to the location of their respective activity. A swimming area will be cordoned off in consultation with the DECR to prevent accidents with watercraft and vessels. A specially designated path in the marine environment will be cordoned off for tour boats and other boat traffic visiting the hotel.





Figure 4-1. Cordoned Off Swim Zones.

Terrestrial Environment: Forbes Road where the development is proposed, is a middle to high end mixed residential community, with multifamily residences, rental villas, and homes of varying prices. The entire Lower Bight area is in a positive state of transformation of the built character and increased property values. The impact of traffic has been negligible, and the area can still be described as a quiet residential community.



Figure 4-2. Forbes Road.



Figure 4-3. Cul-de-sac & Beach Access, Forbes Road



On Stubbs Road (cul-de-sac), which is approximately 200 feet to the west and of similar character and appearance to Forbes Road, construction of a similar scale is currently taking place (Expansion to the Windsong Resort). Reef Residences and Windsong Resort are the major tourism related developments on Stubbs Road.





Figure 4-4. Vehicles of Construction and Hotel Workers/Existing Windsong Resort on the (L) & Windsong 2<sup>nd</sup> Phase to the(R).

Notwithstanding the absence of traffic management, the area is relatively quiet. No arrangements appear to have been made for the onsite parking of construction vehicles, but there were no noticeable obstructions or nuisances to private property observed during the site visits.

The opposite is evident on Penn's Road, of similar distance to the west from Stubbs Road. The Coral Gardens Resort is on Penn's Road and is also one of the most popular snorkeling sites on Providenciales. The traffic situation unfortunately requires intervention and management.

Forbes Road upon completion of the proposed development will be like Stubbs Road – Quiet. The impact of traffic will be negligible, and the area will still be described as a quiet residential community. The ambient noise levels of traffic generated are unlikely to be substantially different that already existing for the area.







Figure 4-5. Beach Access Land similar in size to Forbes Road/Windsong Resort and Windsong Bungalows dominate Stubbs Road.

During the construction phase, the Contractor will give special attention to threats posed by movement of heavy vehicles, machinery, and equipment to avoid accidents, spillage, noise and dust nuisances or degradation of asphalt surfaced roads. Heavy vehicles trucking fill to the area will be covered to prevent dust nuisances. All drivers will be required to exercise caution, sensitivity, and restriction to ten (10) mph when driving through the residential area. The existing residential access roads are likely to see a major upgrade in terms of asphalt resurfacing and landscaping.

## 4.10 Water and Electrical Demand and Source

Electricity, telecommunications, and Cable TV services will be placed underground in conduit and to the standards and requirements of the relevant suppliers. These services are already fully supplied to the locality. Underground piped water, provided by Provo Water Company, is currently provided for the locality and will be extended to the proposed development.



## 4.11 Landscaping

On this site, despite it being previously impacted, great pains and much effort will be taken to ensure retention of a substantial number of the native trees existing on the site. Landscaping and revegetation will be carried out using native vegetation and plants to enhance biological diversity on the site. Any tall trees that are within the footprint of the proposed buildings will be tagged and temporarily placed in a local nursery for replanting later on the site.

Elsewhere, tall trees will be retained on the site. During construction, the entire 100 feet setback zone will be cordoned off with hoarding to prevent any damage to the vegetation within the setback zone.



Figure 4-6. Landscaping with Native Plants.

The protection and enhancement of the ecology of the site and the nearby coastal and marine environments are of paramount importance. The 100 feet setback zone will be known as a green zone/common area/amenity area consisting of lush untouched native vegetation and of great biological diversity.



### 4.12 Construction Phase Activities

The proposed development will be constructed as a single phase development.

### 4.12.1 Construction Methods and Program

The proposed development will be constructed using a Modular Steel Frame Structure (Hotel room modules are self-stable structures stacked on top of each other). This is a new construction technology for the Caribbean, and it is Molo Hotel's intention to recruit local workforce during the Hotel construction period and train them in the specialist areas of modular construction installation. The proposed development is expected to be completed within a 24-month time frame.

### 4.12.2 Site Security and Hoarding

Site Security and Hoarding: The entire parcel will be enclosed with environmentally friendly green hoarding, which will be removed prior to an occupancy certificate being sought and obtained. Security personnel will be employed to cover the security of the site, materials, and equipment.

#### 4.12.3 Sources of Sand for Beach Nourishment

Beach nourishment or beach extraction of beach sand is NOT included as part of the proposed development.

## 4.12.4 Storage of Materials and Equipment

The storage of materials and equipment will be within the confines of the parcel boundaries. Consideration will be given to the unsightly storage of equipment and/or machinery, which may appear injurious and/or unsightly. Effort will be made to store equipment and/or machinery away from the boundaries of adjoining properties. Stockpiling of any materials including aggregate and sand will require regular wetting to prevent any dust nuisances to the adjoining properties. Construction hours will be limited to starting not earlier than 7:30am for noise generating equipment and/or machinery and finishing not later than 6:30pm. During Sundays, noise generating equipment will be strictly prohibited.

## 4.12.5 Beach Traffic Impact and Safety

In other sections of this environmental statement, including the sections on mitigation and monitoring; management of the dune system plans; environmental monitoring; and the environmental management plans, the measures for beach traffic impact and safety, including within the marine environment have been detailed.



#### 4.12.6 Temporary Sanitary Facilities

Temporary sanitary facilities will be established on site. Portable latrines, the number to be determined by the Contractor will be provided and maintained by an approved Provider on the property for liquid waste disposal. The contractor will be required to maintain acceptable environmental health and safety standards during construction.

#### 4.12.7 Access and Staging

Access to the construction site will be via Forbes Road. No staging will be outside the premises of the construction site. It is envisaged that temporary off-street parking for the vehicles of some of the construction workers may take place. This will be managed to prevent any obstructions, congestion, visual impacts or nuisances to the existing residents.

### 4.12.8 Mineral (Sand) Placement and Distribution

There are no plans involving beach restorative works or sand placement and distribution. The storage of sand for building purposes will be within the confines of the parcel boundaries. Stockpiling of any aggregate and sand will require regular wetting to prevent any dust nuisances to the adjoining properties.

#### 4.12.9 Protection of New Sand from Erosion during Swells

This section appears to be associated with beach restorative works. There are no plans associated with the proposed development for beach restorative work.

## 4.12.10 Solid Waste Management during Construction

All waste generated during construction, whether from daily food and beverage consumption by those working at the site or construction waste will be containerized and disposed of at the public landfill site daily. A lidded refuse bin will be provided and easily accessible to workers with clear instructions for immediate disposal. Inspections will be made at the end of the day by the Contractor to ensure that no waste remains behind on the jobsite, including near the coastal. Solid waste debris is often problematic on construction sites and of particular concern when working within proximity to the marine environment due to the increased incidence of debris either blowing or floating away. Not only is it not aesthetically pleasing washing up on our shores but can injure and kill marine organisms if they ingest it or are inadvertently trapped somehow in the wastes.

No hazardous materials or substances will be used for the construction. The changing of oils and similar servicing of vehicles will only take place off site. If refuelling or addition oils are needed in



construction equipment or machinery, the containers will be collected, bagged, and disposed of separately at the public landfill facility. There will be zero tolerance for any waste being disposed of in the terrestrial, marine, or coastal environments.

#### 4.12.11 Liquid Waste Management during Construction

Temporary sanitary facilities will be established on site. Portable latrines, the number to be determined by the Contractor will be provided and maintained by an approved Provider on the property for liquid waste disposal. The contractor will be required to maintain acceptable environmental health and safety standards during construction. Containers of oils and other similar effluent which will be used in construction equipment and machinery will be collected, bagged, and disposed of separately at the public landfill facility in consultation with the Chief Environmental Health Officer.

### 4.12.12 Control of Air, Dust, Water and Noise Pollution

The storage of materials and equipment will be within the confines of the parcel boundaries. Consideration will be given to the unsightly storage of equipment and/or machinery, which may appear injurious and/or unsightly. An effort will be made to store equipment and/or machinery away from the boundaries of adjoining properties. Stockpiling of any materials including aggregate and sand will require regular wetting to prevent any dust nuisances to the adjoining properties.

## 4.12.13 Control/Storage of Fuels and Other Dangerous Substances

There will be no hazardous materials, waste, fuels, lubricants, or substances stored on the construction site or in the vicinity.

## 4.12.14 Emergency Mitigation Plan

The Contractor will always be at a high level of emergency preparedness and readiness to deal with accidents, evacuation in the event of a storm and any other incidents. The emergency plan will include the establishment of a network of communications with Police, Medical and Ambulance and Fire Services during construction and operation of the proposed development. A full nursing station will be opened during the operation of the proposed development. First Aid Kit will be permanently kept on the construction site in a strategic location easily accessible to all workers.



At the end of each day during construction, a chain barrier will be locked in place at the entrance to the site to prevent unauthorized access and for security reasons. The building contractor will be held to best practice performance requirements.

Fire extinguishers will be fixed on all heavy machinery, i.e. tractors, bulldozers and trucks in the unlikely event of a fire. Appropriate instructions about fire risks must be given to all construction staff prior to commencement of construction. There will be no hazardous materials, waste, fuels, lubricants, or substances stored on the construction site or in the vicinity. All vehicles, equipment and machinery will be refueled by a fuel/maintenance truck owned and operated by the Contractor, which will be called to the construction site on a need's basis. There will be no contamination or pollution of soil or water.

The Contractor must be responsible for ensuring that there is absorbent material available on site to manage and clean up any accidental spillages of oils, fuels, lubricants, or other hazardous substances.

Upon completion, the Contractor will be required to reinstate all areas affected by construction to its original condition. Revegetation will not only be required in areas affected by the road construction, but also in areas used for the parking and storage of machinery during the day. The area for daily parking of vehicles must be allocated by the Contractor and agreed with the Directors of Planning and DEMA. Reinstatement and revegetation must also occur in the aforesaid areas.

A Fire Plan will be developed in consultation with the office of the Chief Fire Officer for operation of the proposed development.

## 4.13 Social-Economic Impacts

Post the Covid-19 pandemic, the Turks and Caicos Islands (TCIs) economy has been rapidly expanding. With the assistance from The Caribbean Public Health Agency (CARPHA) and The Pan American Health Organization (PAHO), and human resource assistance from Cuba in the form of medical professionals, the Turks and Caicos Islands "did exceptionally well" (Hon. Shaun Malcolm, Minister for Health and Human Services Briefing, 24<sup>th</sup> March 2023). During 1<sup>st</sup> April 2023 removed all Covid-19 travel restrictions.



"Building on the record breaking first half of the year, Q3, historically our slowest quarter, gained a whopping 319% over Q3 last year (\$158,905,323 vs. \$37,891,750), with year-to-date sales volume up over 150% over the first three quarters of last year (\$496,710,829 vs. \$198,330,657). These numbers represent historic events, of course, and with Canada and other countries now open for travel, we expect a strong fourth quarter with the caveat that all this great sales volume is resulting in constriction of inventory."

At the 2023 Turks and Caicos Islands Economic Empowerment Conference, which was held at the TCI Beaches Resort, 24-25<sup>th</sup> March 2023, the Hon. Premier of the TCI indicated that following the covid-19 pandemic, the Turks Caicos Islands is currently experiencing a nominal economic growth rate of 13 percent. The TCI has done very well with the opportunities presented to it. The TCI debt/borrowing ratio is less than 1 percent. The TCI has a debt of less than a million dollars. He further stated that the Islands Gross Domestic Product (GDP) is expected to increase by 5 percent this year (2023). The Premier estimated the population of the Turks and Caicos Islands to be 49,300 persons.

The Hon. Premier at the 2023 Economic Empowerment Conference (2023) highlighted that despite all the success, the following are serious concerns:

- The unemployment rate is currently at 7 percent.
- The Islands' GDP is expanding but GDP per capita is stagnant (meaning "we are expanding in terms of labour, but salaries and wages remain the same").
- Despite all the investment and economic growth within the Islands, there is a group of people with an entirely different economic reality within our society.

The Hon. Premier pointed to the future and stressed the following:

- Strategies must be put in place to sustain growth and to remain resilient.
- Comprehensive stakeholder engagement must be the way forward.
- The natural environment must be protected. Everything in the TCI is linked to the natural environment Tourism, Construction, Real Estate, Commerce, Attorneys, etc.
- The TCI Government will be investing heavily in infrastructure (Waste management, Security, Lighting, Roads). Half a billion dollars will be spent over the next ten years and will have no impact on the TCIG recurrent revenue. The TCIG has huge reserves.



- Spending into renewable energy will be increased.
- Continued development of linkages to the tourism/hotel industry. The Orange Economy was referred to as an example.
- Subsidizing the vulnerable rather than being exposed to growing poverty.
- Social cohesion and economic justice must be fostered.
- Strengthen TCI economic balance.
- Sustainability requires proactivity.

#### **BENEFITS/IMPACTS FROM THE DEVELOPMENT**

A healthy environment is a prerequisite for a healthy economy. The economy relies on the planet's ability to provide resources and the necessities of life. The TCI Government has determined and developed tourism as the basis for economic development. By the policies and actions must ensure that "we do not kill the goose that lays the golden egg" by making our development and growth truly sustainable. It's nature and natural features – beaches, pristine clear seawater, coral reefs, native vegetation, landscapes, and biological diversity that are at the basis of the tourism industry and visitor experience.

The vast majority of vacation accommodation is built within the coastal zone where biodiversity is very rich. Conservation and management of the health of the region's coastal ecosystems are critical to the prosperity of hotels as well as the region's overall development. The proposed 207-Bedroom Hotel is a European Plan Hotel will make a positive and welcomed contribution to the TCI tourism and hotel industry, which is predominantly condo-hotel based.

"European Plan means only the stay is included in the rates and you will have to pay extra for using the dining facilities at the hotel. In general terms, it can be called the "Room Only" Plan. Continental Plan is where the hotel includes a daily breakfast with your rooms stay."

The proposed hotel will have the following positive economic impacts:

#### DIVERSIFICATION

This study has identified five (5) areas whereby the proposed development will make a contribute to the diversification of the economy of the TCI, namely:

- New Building Technologies and Techniques.
- Arts, Crafts and Culture (The Orange Economy).



- Agriculture Linked Directly to Tourism.
- Lifestyle / Health Services.
- The Blue Economy.

New Building Technologies: The proposed development will be constructed using a Modular Steel Frame Structure (Hotel room modules are self-stable structures stacked on top of each other). This is a new construction technology for the Caribbean, and it is Molo Hotel's intention to recruit local workforce during the Hotel construction period and train them in the specialist areas of modular construction installation.





Figure 4-7. Modular Construction and Shipping.





Figure 4-8. Modular Steel Frame Stacking.



New building technologies will:

- Dramatically reduce the cost of construction making it easier for the citizens of the Turks and Caicos Islands.
- Substantially reduce the construction timeframe.
- Minimize noise nuisances on surrounding properties.
- Reduce waste.
- Minimize impact on roads and lessen traffic congestion.
- Lessen the dependency on shipping and trucking of aggregate and therefore lessen the impact of emissions, pollution, and invasive species.

Arts, Crafts and Culture (The Orange Economy): As a form of planning gain, the hotel will be developing and enhancing the existing beach access lane, which dissects the applicant's property. The aforementioned will be carried out in consultation with the Department of Planning and the Department of Environment and Coastal Resources (DECR). Molo Hotels will work with local artists to provide, market, and sell artwork and sculpture projects within the Hotel.





Figure 4-9. Examples of Utilization of Paintings by Local Artists and Jewellery Made Locally.





Figure 4-10. Venders can be formerly and properly presented to paying guests.





Figure 4-11. Existing Undeveloped Beach Access Dissecting the Property to be Developed.



Figure 4-12. Illustration of an Example of the standard of Development of the Beach Access Lane. Few Parking Spaces will be Allocated for Beach Users.



Agriculture Linked Directly to Tourism: The "farm-to-table" concept is becoming very popular in tourism and locally The Providenciales Farmer's Market and other community agriculture groups are setting themselves up to satisfy the demand. The applicant intends to source locally grown produce.

This is a major opportunity for the hospitality industry. Many major hotels such as the Four Seasons is an example of hotels already featuring locally sourced food on their menus. This would be a creative and major incentive for farmers, creating more locally grown produce and is in line with TCIG's goal of creating food security, becoming more resilient and sustainability. A relationship with local farmers is intended to be forged. By using locally sourced foods, it can improve both the environment and the local economy.





Figure 4-13. Local Produce.

#### **Issues Raised in the Public Consultation**

The planning application was advertised pursuant to the Development Permission Regulations and the consultants have considered the representations made and factored the concerns into the design/planning stages and the proposed construction operations in order to mitigate the potential impacts. During site investigations and visits informal discussions were held with few owners of the neighbouring properties.

#### Impacts to Terrain

The development site is considered flat land with existing and previous developments. Full compliance with the existing planning standards and the conditions imposed by the Planning Board on the grant of consent, and the recommendations arising out of this environmental statement will mitigate impact the potential negative impacts on the terrain.



#### 4.14 Potential Alternatives

The Turks and Caicos Islands National Physical Development Plan 2020 emphasizes the importance of diversification of our economy and of the tourism product or offering. The demand for a beachfront, Grace Bay Beach European Plan Hotel is long outstanding. The alternative is to continue with the development of a Condo-Hotel (Condotel) or Villas on the site. The proposed development is intended to diversify the development within the TCI and offer something different to that existing to remain competitive, maximize the use of the land, create an attractive product, and increase profitability.



## 5.0 Impact Assessment

#### 5.1 Impact Identification

For most projects, overlaying the proposed development onto the results of landside and marine investigations reveals the extent to which a project would have direct impacts on landside vegetative communities, intertidal communities, and nearshore sub-tidal marine areas.

### 5.2 Description of Impact

### 5.2.1 Potential Impact to the Biotic Environment

Potential impacts to the biotic environment, including predicted direct, indirect and secondary impacts to coastal, and marine assets.

Because no structures (piers, docks, boat slips etc.) are proposed to be constructed waterward of the mean high water line, no direct impacts are expected to the marine environment.

Based on these assumptions, the extent of the direct impacts of the project on landside and marine communities are shown on Figure 5-1 and Table 5-1.



Figure 5-1. Proposed Impacted Area



Community Type	Existing Size Acres	Direct Impact Acres	Comments	
Unvegetated Sandy Beach	0.46	0.01	Community is northwest of project limits	
Sand Strand Dominated by native plants Dominated by <i>Casuarina</i> Dominated by other non-natives	0.09 0.27 2.03	0.09 0.04 1.67	Setbacks 130 ft from shore to habitable structures Casuarina to be removed Invasives to be removed	
Dry Broadleaf Evergreen Shrubland	0.69	0.69	To be replaced with buildings, parking and landscaped areas	
Dry Broadleaf Evergreen Forest	0.82	0.82	To be replaced with buildings, parking and landscaped areas	
Roads and paths	0.48	0.41	To be replaced with buildings, parking and landscaped areas	
Marine Impacts	N/A	0	No structures/changes proposed	

Table 5-1.	Direct Impacts on	Landside and	Marine	Communities

Descriptions of the results of these direct, indirect and secondary impacts on each community type follow.

#### Direct, Indirect and Secondary Impacts to the Sandy, Unvegetated Beach

As no sand or infrastructure (e.g., groynes, jetties, docks, piers etc.) is proposed seaward of the top of the existing dune, direct impacts to this community are expected to be non-existent.

Indirect and/or secondary impacts to this community will occur, however, as the result of increased human use of the beach that will take place after the hotel, villas and townhomes become inhabited. This increased use will likely result in reduction in available foraging for resident shorebirds birds (e.g., Wilson's plovers) and migratory shorebirds (e.g., sanderlings, ruddy turnstones, willets, semi-palmated plovers, etc.).

Additional secondary impacts could occur as the result of increased lighting and noise and for beach management purposes. Although "seaweed" (actually *Sargassum*, dead blades of seagrass and other flotsam and/or jetsam) had not accumulated in large quantities during or immediately prior to the March 2023 site investigation that was conducted for this EIA, seaweed piling up on beaches in the tropics has been an increasing problem in recent years, particularly when winds and ocean currents deposit these materials on beaches in large quantities. While this may not be a problem on beaches adjacent to undeveloped tracts (and may actually be



beneficial for natural recycling of nutrients and when amphipods, small crabs and other marine organisms provide prey for foraging shorebirds), it can be objectionable when it accumulates in large amounts on beaches that are used by property owners and vacationers.

Beach management techniques to address this problem certainly vary based on the extent of the problem on a day-to-day, week-to-week, and/or seasonal basis. For minimal or relatively light build-ups, taking no action may be appropriate. When build-ups get to be objectionable, addressing them may be as simple as a deploying an individual or two with a rake and hauling the material off-site for disposal (or composting). When build-up is heavy, a small army of laborers (rakers, baggers, hole diggers) and equipment (e.g., tractors fitted with rakes) may be necessary to deal with the problem. It is recommended (See Mitigation section) that a beach management plan be developed in advance of unit occupancy, in order to be prepared when, sooner or later, this problem arises.

#### Direct, Indirect and Secondary Impacts to the Sand Strand Community

With the exception of four at-grade, shore-perpendicular access corridors that will allow hotel and townhouse occupants to access the beach, the proposed site plan has been designed to provide a minimum 130 foot setback from the seaward vegetation line to the most waterward habitable structures. A pool, beach bar cabanas, and at-grade footpaths are proposed within the setback.

However, because the existing vegetative community within this setback area is dominated by *Casuarina* trees and the invasive beach cabbage, replacement of these undesirable species with site-appropriate dune vegetation (e.g., sea oats, bay tansy, dune sunflower, etc.), will result in the project providing a net positive benefit in the area closest to the beach. Impacts in other Sand Strand areas will also result in the removal of invasive pest plants. The loss of 1.80 acres of Sand Strand habitats will result in a corresponding reduction in habitat for native birds, butterflies and other wildlife.

Indirect and/or secondary impacts are not expected to be significant in this area, but could include potential nutrient loading if fertilizers and/or other chemicals are needed to keep the new landscaping in an aesthetically-appealing condition, and potential hydrologic changes that may result from the addition of several feet of fill that will be necessary to meet building requirements.



#### Direct, Indirect and Secondary Impacts to Dry Broadleaf Evergreen Shrubland

Impacts to the 0.69 acres of Dry Broadleaf Evergreen Shrubland pose the most significant ecological impact of the proposed project. Extrapolation of the results of the vegetation analysis plots suggest that, of the applicant must initiate proactive mitigation measures to prevent native orchids, air plants and other vegetation that is designated on the TCIG's list of endemic and/or notable flora and fauna being damaged or destroyed. Observations of fauna in this area, including curly-tailed and Anolis lizards, butterflies and other insects indicate that there is likely to be a nearly total loss of these species when the land is cleared and fill is deposited to bring the ground surface up to buildable standards.

Motile species (e.g., common ground-doves, mourning doves, woodstar hummingbirds, etc.) will need to either find other suitable habitat that is unoccupied or persist until after re-vegetation work is completed, at which time foraging and nesting habitat may be re-created. Based on observations in the field, and publicly-available data, it is likely that, in its present condition, the property likely provides habitat for small sustainable populations of 1-3 families of these species.

Indirect and secondary impacts that are likely to result from the loss of this habitat includes the reduction (or temporary loss) of habitat for insects and insectivores, including migratory birds that may use existing vegetation for foraging and/or roosting during their annual migrations.

#### Direct, Indirect and Secondary Impacts to Dry Broadleaf Evergreen Forest

Similarly, although to a lesser extent based on the smaller area of impact, the loss of 0.82 acres of Dry Broadleaf Evergreen Forest is likely to pose the second-most significant ecological impact of the proposed project. As described above in the impacts to the Dry Broadleaf Evergreen Shrubland, extrapolation of the results of the vegetation analysis plots suggest that, the applicant must initiate proactive mitigation measures to prevent impacts to orchids, air plants and other vegetation that is designated on the TCIG's list of endemic and/or notable flora and fauna. Observations of fauna in this area, which also included curly-tailed and Anolis lizards, butterflies and other insects and migratory and resident birds indicate that there is likely to be a nearly total loss of these species when the land is cleared and fill is deposited to bring the ground surface up to buildable standards.

Motile species (e.g., thick-billed vireos, common ground-doves etc.) that inhabit this area will also need to either find other suitable habitat that is unoccupied or persist until after re-vegetation work is completed, at which time foraging and nesting habitat may be re-created.


Indirect and secondary impacts that are likely to result from the loss of this habitat include the reduction (or temporary loss) of habitat for insects and insectivores, including migratory birds that may use existing vegetation for foraging and/or roosting during their annual migrations.

#### Direct, Indirect and Secondary Impacts to the Marine Environment

Because no structures (piers, docks, boat slips, discharge pipes, etc.) are proposed to be constructed waterward of the mean high water line, the project is not expected to have any direct impacts on the marine environment.

Indirect and secondary impacts to the marine environment may occur. These could include potential eutrophication of the nearshore marine ecosystem if nutrients associated with the project find their way into the aquatic environment. Future owners and visitors also have the potential to affect the marine environment through their use of the water. The presence of marine life, including corals, sponges and juvenile reef-fish located in shallow waters in close proximity to the site is likely to attract snorkelers who wish to see these resources.

Impacts could occur either through direct impact (i.e., blunt force trauma if an inexperienced or non-conscientious snorkeler steps on or kicks corals), or if non-reef-safe sunscreens are used underwater. Although these potential impacts may seem in-consequential based on the low likelihood of damage from a single individual, the cumulative results of potentially hundreds of users visiting the site daily for the foreseeable future increases the likelihood of damage.

Additionally, although rooted epibenthic natural resources are currently minimally present in the nearshore areas, they could be subject to trampling if they colonize nearshore areas.

The addition of innumerable new visitors over the lifetime of the facility and the possibility that some of them will partake in water-based recreational activities (e.g., snorkeling, SCUBA diving, para-sailing, kayaking, stand-up paddleboarding, etc.) will have an additive effect to the stressors on existing resources.

### 5.2.2 Potential Impact to Coastal Environment and Processes

There are no proposed development of the coast or changes to the shoreline proposed in the project plans. No impacts to the coastal environment or coastal processes are expected from this development.



### 5.2.3 Potential Impact to Geological Environment

There are no anticipated geological impacts. The project area surficial substrate is primarily sandy with occasional limestone outcrops. There are no known karstic features in the project vicinity.

### 5.2.4 Potential Impacts to the Aesthetic and Other Built Environment

The aesthetic impacts are anticipated to be positive and will include removal of exotic vegetation and planting of native dune plants. The project is designed to be aesthetically pleasing from all vantage points and will conform to established building standards for the area.

### 5.2.5 Water Quality and Noise Pollution

The perceived potential impacts to groundwater quality would derive from:

- I. Saltwater encroachment
- II. Nutrient loading
- III. Accidental fuel spills

These potential impacts will directly relate to activities taking place during the construction and post-construction phases of the proposed development. Each impact can range from low to high, short-term, and reversible using appropriate mitigation measures, Table 5-2. The areas subjected to groundwater quality impacts are:

- a. Immediate and surrounding
- b. Immediate marine environment



Project Phase	Impact	Area of Impact	Impact Rating	Mitigation Measure
Pre-Construction		N/A	N/A	N/A
Construction	Groundwater	Immediate and surrounding	L/ST/R	EMP
Post Construction		Immediate and surrounding	L/LT/R/	EMP

Table 5-2. Impact Assessment

Impact Rating: L – low, H- high, LT- long term, ST- short term, R – reversible

### **EMP – Environmental Management Plan**

These impacts can be effectively mitigated by ensuring that groundwater abstraction is minimized and exploited in small volumes over extended time periods. Fresh groundwater should be extracted and stored in a cistern where abstraction for general use should occur. General water quality monitoring should form part of the Environmental Management Plan.

### 5.2.6 Ecosystem and Economic Analyses

The proposed development will have a positive socio-economic impact on the economy and residents of the Turks and Caicos Islands. The economic impacts are associated with the potential for increased property values of adjacent upland properties, employment opportunities, off property spending of guest at local shops and restaurants.

The coastal marine environment, in particular, the coral reef ecosystems in the Turks and Caicos Islands, are vulnerable environmental resources that provide significant economic goods and services to the economy.

### 5.2.7 Socio-Economic Impact

During the development and subsequent operation of the Project, the Developer will use its best efforts to promote employment, for TCI Belongers. Approximately 300 jobs are expected to be supported by the project.

A large proportion of the construction staff are anticipated to be individuals who have long-term residence status in TCI, whether that be by virtue of having Permanent Residency Certificates with the right to work and/or Naturalisation.



The proposed development will support regional employment through contributions to established businesses. In addition to guest expenditure at the hotel, hotel guests will also spend on non-hotel related activities such as tours, entertainment, shopping. The Project will generate tax revenues for TCIG from business licenses, work permits, accommodation tax, stamp duty, and airport taxes.

### 5.2.7.1 Public Beach Access

The hotel will be developing and enhancing the existing beach access lane, which dissects the applicant's property. The beach access lane will be carried out in consultation with the Department of Planning and the Department of Environment and Coastal Resources (DECR).

5.2.7.2 Potential Impact to Neighboring Developments, Businesses and Residential Houses The potential impacts to neighboring developments and residential houses include:

- 1. The restriction of the public beach access at Forbes Road during construction.
- 2. Increased noise pollution during construction phase.
- 3. Increased beach use by guests during operational phase.

### 5.3 Derivation of Significance

It is important to acknowledge that the project area has already been impacted by a range of prior activities.

Impacts from the project are primarily associated with construction and can be minimized through appropriate monitoring and best management practices.



### 6.0 Mitigation and Monitoring

# 6.1 Proposed Actions and Schedule to Mitigate Against Anticipated Environmental Impact

Potential activities that could be considered to minimize and/or offset ecological impacts could include:

- 1. Salvaging and relocating minimally-motile intertidal organisms (e.g., *Cerion* and *Hemitrochus* snails) to suitable off-site receiver locations prior to land clearing;
- 2. Pro-actively planning to enhance plant abundance and biodiversity by planting siteappropriate native vegetation and/or integrating other species of native plants that are not presently on the property (e.g., Turks cap cactus (*Melocactus intortus*)) into the landscape plan for the project;
- 3. Ensuring that field monitoring is conducted to avoid impacts to nesting birds during land clearing;
- 4. Removing all pest plants from the site and implementing a monitoring programme to prevent their re-establishment;
- 5. Incorporating state-of-the-art environmentally conscious design and management techniques into the project;
- Considering development of educational materials notifying future residents of the presence of species of notable plants and that the collection and transport of endemic, endangered and/or threatened species is prohibited;
- 7. Ensuring coordination with the landscape team to ensure that no ornamental species that are on the list of invasive plants are introduced onto the property;
- Consider development of educational materials notifying residents of the presence of seagrasses, macroalgae and/or drift algae on the nearshore bottoms and advising that stepping on rooted individuals of these species should be avoided as it will result in damage to these valuable resources;



- Although no sand dollars, sea biscuits and other motile and/or sedentary marine organisms were observed during the marine investigation, species such as these are known to inhabit the sandy nearshore bottoms that will potentially be accessed by residents for recreational purposes. Collection of live specimens as souvenirs should be prohibited;
- 10. Notify DECR if nesting marine turtles, nesting birds (e.g., nighthawks on coastal rock, plovers on sandy beaches), or piping plovers are observed within coastal portions of the property and implement appropriate countermeasures (e.g., prohibition on unleashed dogs) to eliminate or minimize adverse impacts on these resources;
- 11. Conduct periodic beach clean-ups to remove flotsam, jetsam and/or other solid waste or debris that may accumulate on the shore; and
- 12. Resist beach management initiatives that would mechanically remove naturally-occurring tidal wrack (e.g., seaweed) from the beach, as it harbors prey for foraging shorebirds and is beneficial to the localized ecology, except when situations warrant more aggressive management.

### 6.2 Storm Surge Analysis and Mitigation Plan for Sea Level Rises

As with all coastal properties within TCI, the study area is vulnerable to impacts from hurricanes and, in particular, direct impact from waves and storm surge. In general, storm surge values are limited for the region and are generally on the order of 1 m or less for typical hurricane conditions. The presence of deep water adjacent to the archipelago and the ability of surge to flow around the islands limit the potential for the creation of extreme storm surges in this area. Tide gauge data collected during the passing of Hurricane Frances (a direct major hurricane impact) on September 1 and 2, 2004, recorded a rise in sea level from storm surge of only 1.5 ft. Similar surge magnitudes have been reported in the area for historical storm impacts. This does not preclude the potential for significant impacts from a major hurricane, as even limited increases in storm surge in combination with waves can result in damage to upland properties. This risk is further exacerbated by the continued increase and possible acceleration of sea level rise.

A coastal storm vulnerability analysis was performed on a representative project cross-section shore profile for the project area. The profiles were created from topographic, and wading-depth bathymetric survey data collected near the property beachfront. The analysis was performed



using the two-dimensional SBEACH (Storm-induced BEAch CHange) cross-shore transformation model. The shoreline profile was analysed for four different return interval storm events (Figure 6-1). Representative data from the Caribbean was used to develop the storm parameters for the simulation, which included storm surge and waves. Analysis considered both existing and with-project conditions. It is additionally noted that the shoreline in general for this property is long-term stable/accretional and, as such, use of the existing beach profile is appropriate for projections of future storm scenarios.

Consideration of the increased storm-induced impacts to the project area related to sea level rise was incorporated into the simulations. The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report includes ranges for projected global mean sea level rise associated with differing scenarios. An average of the range associated with scenarios RCP2.6 (low) and RCP8.5 (high) were incorporated into the simulations. Fifty years of the average sea level rise measurements associated with the low and high scenarios were applied to the simulated storm surge values for the 50-year storm, and simulations were run comparing the base 50-year storm and the low sea level rise and high scenarios.

For the existing site conditions, the analysis suggests that erosion into the upland beach profile will occur for a 50-year event. The extent of incursion increases with estimates of future sea level rise, with a maximum landward incursion (relative to mean sea level) on the order of 30 m for the 50-year high estimate of sea level rise. In all cases, the model predicts both a landward progression of dune material and erosion on the beach face. This is consistent with observations of impacts from major storms. The existing primary dune on the property is of sufficient volume and elevation to withstand this impact, and development is proposed behind the primary dune at sufficient setback to suggest a limited risk from wave and surge attack. This includes consideration of future sea level rise scenarios. As such, preservation and enhancement of the existing dune feature is the primary mitigative action required to adapt to increases in sea level rise and storm surge/wave impact risk. At present, the primary dune is dominated by inappropriate invasive species. Replacement of these species with native, appropriate dune vegetation will both increase the stability of the dune feature and allow for dune adaption to sea level rise increases through capture of windblown beach sand. In addition, conformance to the required development setback for critical infrastructure is key to management of this risk.

An additional site concern relative to sea level rise is the low elevation of interior portions of the property that, at present, are on the order of +2 ft relative to mean sea level. As overall raising of



the property grade, particularly within these areas, is proposed, site development incorporates appropriate strategies for adaption to increases in sea level rise.



Figure 6-1. SBEACH Modelling of Shoreline Response for a 50-Year Storm Event for a Range of SLR Projections

# 6.3 Building Around, or Rescue and Removal of Rare, Threatened, and Endangered Species of Plants, where Possible

The owner has advised that fill must be brought in to raise the elevation of the ground surface on the entire property to meet building standards. This requirement pre-empts the typical sequential process of attempting to first avoid, then minimize impacts on environmentally sensitive resources.

The ecological assessment that was competed as part of the Environmental Impact Assessment process at this site revealed the presence of populations of twelve species of plants that are notable for their inclusion on the TCIG's lists of Endemic Plants, Lucayan Archipelago Endemics and/or Native Plants of Special Conservation Concern (Table 2-2). While it is recognized that individuals of several of these species may not transplantable due to their unique biology, other species can be salvaged and/or relocated with a comparatively high level of success and confidence. Activities that are recommended to further reduce impacts include:

1. Salvaging all individuals of all native orchids prior to undertaking any land clearing activities;



- 2. Existing tall trees on the site that are not within the footprint of the buildings and which are potentially worthy of preservation (with the exception of *Metopium toxiferum*) should be tagged prior to construction.
  - a. Those plants that are native to the TCI and which are within the footprint of the buildings and are worthy of transplanting should be related into areas that are to be landscaped.
  - b. Plants that are native and/or endemic to the Turks and Caicos should be used in the landscaping and revegetation to enhance biodiversity on the site.
  - c. Native plants that are present within areas that are to be developed on the site, but which are not suitable for on-site relocation should be offered to local landscape professionals to salvage and use at other sites.
- 3. Salvaging all individuals of all native *Tillandsia* air plants prior to undertaking any land clearing activities;
- 4. Working with landscaping and native plant professionals to assess the individual biology of the other species identified in Table 2-2 to determine the extent to which they can be salvaged and/or transplanted with a high enough expectation of success that a plant salvage undertaking would be practical;
- 5. Developing and implementing a programme to relocate all notable plants, including the identification of a location and procedure for temporary relocation of floral species that could be removed from the site prior to land clearing, and then moved back onto the site following the addition of fill;
- 6. Ensuring that additional ecological mapping of the location of notable plants be performed to prepare for relocation of individuals of notable plant species prior to construction;
- Schedule the clearing of vegetation to avoid be performed during the bird nesting season, ensure that no active nests (i.e., nests with eggs or young incapable of sustained flight) will be damaged or destroyed.



### 6.4 Landscaping/Replanting Plan Utilizing Native Species

It is recommended that the project team work with professionals who are knowledgeable about plant species that are native to the Turks and Caicos Islands and that a minimum of 80% of the species and numbers of plants be natives.

A monitoring program should be developed and implemented to maximize the rate of survival for the native plants that are to be salvaged.

### 6.5 Management of Dune System

Management of the dune system; especially the area between registered parcel boundary (which is on beach and within Princess Alexandra Land and Sea National Park [NP-09]) and coastal setback limit; with restoration or maintenance of dunes with dune flora and removal and control of invasive dune-threatening flora (including *Casuarina equisetifolia* and *Scaevola taccada*).

It is recommended that:

- The project team work with landscape professionals who are knowledgeable about plant species that are native to the Turks and Caicos dunes and that 100% of the species and numbers of plants be either nursery-grown natives or plants that have been salvaged from the site; and
- 2) A monitoring programme be developed to ensure that invasive pest plants do not become re-established on the site.

### 6.6 Financial Resources for Mitigation

The applicant is committed to following the designed and approved plans and conditions and/or principles set out in the Outline Development Permission Application and shall continue to respect all aspects of the planning standards and compliance with recommendations arising out of this environmental statement. The applicant has developed a very good working relationship with the Office of the Director of Planning. The applicant is committed to being responsible and capable of allocating whatever resources deemed necessary to ensure compliance with the requirements of the Director of Planning.

In a major way, following consultations with the Deputy Director of Planning, the applicant is committed to alleviation of concerns related to staff housing for the proposed development.



Upon completion of the proposed development, the hotel will employ approximately 150 full-time employees over a range of departments, including but not limited to Food & Beverage, Sales, Management, Leisure, Reception, Housekeeping and Maintenance. The greatest effort will be made to employ Turks and Caicos Islanders who are qualified within the various departments. This will limit the impact on housing availability. Additionally, efforts are being made to secure land for staff housing. The hotel has been designed to accommodate 30 staff members on site, within the proposed hotel buildings.

In addition to the preamble, Molo Hotels has already secured accommodation for a further 20 staff members. It is proposed that this accommodation will be off-site within the vicinity of the proposed development, within walking distance. Provision of this off-site accommodation will be through Molo Hotels redeveloping a small residential complex and partnering with a local accommodation developer elsewhere.

### 6.7 Environmental Monitoring and Financial Requirements

It is recommended that:

A biological monitoring programme be developed and implemented such that monitoring for invasive species is completed not less than quarterly, and that protocols are implemented to ensure that invasive pest plants do not become re-established on the site and that the uses of chemicals (e.g., herbicides, pesticides, rodenticides, fertilizers, etc.) be prohibited or minimized.

Other Mitigation Opportunities (including marine)

Given no changes to the shoreline and no need for any mitigation from construction activities, there are several mitigation opportunities along the coastline the Developer can consider:

- a. Notifying DECR if nesting marine turtles, nesting birds (e.g., nighthawks on coastal rock), or piping plovers are observed within coastal portions of the property.
- b. Identifying and implement appropriate countermeasures (e.g., prohibition on unleashed dogs) to eliminate or minimize adverse impacts on these resources if they are documented to occur within the project area.
- c. Conducting periodic beach clean-ups to remove flotsam, jetsam and/or other solid waste or debris that may accumulate on the shore.



d. Resisting beach management initiatives that would mechanically remove naturally occurring tidal wrack (e.g., seaweed) from the beach because it harbours prey for foraging shorebirds and is beneficial to the localized ecology.

### 6.8 Public Consultation/Social Listening/Monitoring

Engagement with the Department of Planning and DECR are ongoing and will continue through the review process regarding this study. A public consultation will be held upon receipt and resolution of comments from the Department of Planning and DECR regarding the EIA. The public consultation will be added as an appendix to this study. Comments that result in significant revision to the document will be implemented and an amended document will be issued if appropriate.

### 6.9 Environmental Management Plan (EMP)

Construction and operation of the Resort can have the potential to result in decreased biodiversity and adverse ecological impacts unless appropriate precautions are implemented. Development of an EMP for both construction and operational phases of the development is warranted.

6.9.1 Description of Potential Impacts and the Recommended Mitigation Measures See Table 6-1.



Resource	Potential Impacts	Overall Significance	Proposed Management	Schedule	Cost	
		orginiteance	1. Perform thereugh increations for the presence, distribution & abundance of endemic species and Plants of Special Conservation			
	Adverse Impacts on Populations of Endemic Species & Native Plants of Special Conservation Concern	Moderate	Concern prior to initiating land clearing.	Pre-construction & Construction	Low	
			2. To the extent desirable or necessary to maintain biodiversity on the site, relocate transplantable Endemic species and Native Plants of Special Conservation Concern out of areas to be developed and maintain temporarily until they can be replanted into suitable areas onsite following construction.	Pre-construction & Construction	Low	
			3. Develop educational materials (e.g., kiosks, printed matter, etc.) about Endemic Species and Native Plants of Special Conservation Concern and make these materials readily available to residents and visitors in hard-copy and/or electronic versions	Post-construction	Moderate	
			1. Minimize clearing of native vegetation to only those areas necessary for grading and construction of proposed facilities.	Construction	Low	
	Clearing of Vegetation	Moderate	2. Where possible, maintain native landscapes and use native drought-tolerant and salt-tolerant plant materials for landscaping.	Pre-construction	Low	
Terrestrial Resources			3. Preserve and transplant, to the extent practical.	Construction	Low	
	Risk Introducing Non- Native		1. Develop strict inspection systems at Customs and entry points to eliminate or minimize the risk of unintentional introduction of undesirable flora, fauna and pathogens.	Construction	Low	
	Species, Foreign M	Moderate	2. Ensure that construction equipment is clean and pest free before entering and leaving the property.	Construction	Low	
	Diseases, And Escape of Pests		3. Employ Early Detection-Rapid Response protocols to eradicate or control undesirable species.	Construction & Operation	Low	
			1. Landscape setback areas for conservation, as these areas will serve to preserve native plant species and habitats.	Pre-construction & Construction	Low	
	Impacts to Wildlife Habitat	Low	2. Wherever possible, maintain native landscapes and use native plant materials for landscaping.	Pre-construction & Construction	Low	
			3. Minimize clearing of native vegetation to only those areas necessary for construction of proposed facilities.	Construction	Low	
			4. Design and construct beach access pathways to minimize the footprint in environmentally sensitive areas.	Construction	Low	
			5. Implement an environmental monitoring program to include the monitoring and eradication or control of non-native species	Construction & Operation	Low	
			6. Adopt and enforce covenants and protocols prohibiting the presence of unrestrained domestic pets.	Construction & Operation	Low	
			7. Maintain floral and faunal lists and update them as new species are encountered.	Pre-construction, Construction & Operation	Low	
			8. If possible, avoid land clearing during the bird nesting season in areas where birds are actively nesting.	Construction	Low	
			9. Consider the rescue of <i>Cerion</i> and <i>Hemitrochus</i> snails and their relocation to suitable receiver sites.	Construction	Low	
Marine	Prevent Adverse	e	1. Develop and implement a hurricane preparedness protection plan.	Des souste stien 9 during Ossister til	Maderata	
Resources	Quality	Quality	пıgri	2. Install and nurture dune plantings to create a vegetated buffer between the construction area and the sea.	Pre-construction & during Construction	woderate





### 6.9.2 Statement of Their Compliance with Relevant Standards

The applicant is committed to following the designed and approved plans and conditions and/or principles set out in the Outline Development Permission Application and shall continue to respect all aspects of the planning standards.

### 6.9.3 Allocation of Resources and Responsibilities for Plan Implementation

The applicant has developed a very good working relationship with the Office of the Director of Planning. The applicant is committed to being responsible and capable of allocating whatever resources deemed necessary to ensure compliance with the requirements of the office of the Director of Planning.

### 6.9.4 Contingency Plan When Impacts Are Greater Than Expected

The applicant has the resources and/or contingencies available to mitigation any impacts that may be associated with the proposed development.



### 7.0 Conclusions and Recommendations

There are no justifiable planning and/or environmental grounds on which detailed development permission should be withheld for the following reasons:

Established Precedents: The Windsong Resort and its major expansion which is presently under construction is of a similar scale, characteristics of site and in the immediate vicinity next to the development. Coral Gardens Resort and Reef Residences are also within the immediate vicinity. The Beach TCI Resort partially shares the easternmost boundary.

Development Plan Policy: The proposed development is consistent with the Land Use Zoning for the locality.

National Park: The applicant has detailed in the environmental statement specific plans and programmes towards the protection and enhancement of the Princess Alexandra Land and Sea National Park.

Beach Access: The applicant is committed at their expense to developing the nearby public beach access in consultation with the DECR.

Tourism Product and Planning: The proposed development is a high-end 207-Bedrooms EP Hotel with recreational, wellness and spa facilities. This is the type of development that is envisaged by the Turks and Caicos Islands Government and the Hotel and Tourism Association.

Ecological: The site on which the building is proposed was previously cleared. Given conversation planning and design measures stipulated in the environmental statement for implementation, the proposed development will enhance biodiversity on the site.

Economic and Social: Apart from job creation during the construction and operational phases of the development, there are further positive ripple effects resulting from the proposed development.

Impacts of the Development: The benefits to be derived to the Turks and Caicos Islands from having the proposed development far outweigh the minimal environmental impacts. There will not be any negative environmental impacts caused by the proposed development. Any unforeseen impacts from the proposed development will be minimal, mitigated and monitored. In conclusion,



there are no substantial environmental impacts associated with the proposed development and justifications are given for it being allowed.



### 8.0 Statement of Understanding of Environment Charter (2001) and Climate Change Charter (2022)

### 8.1 Statement of Understanding of Terms of Environment Charter 2001

The Environmental Charter (2001) and Climate Change Charter are both importantly highlighted in this EIS. The applicant is fully aware of the importance of both Charters and has made commitments to cooperate, participate and mitigate. Under the Environmental Charter, the applicant fully endorses the concept of the polluter must pay.

### 8.2 Statement of Understanding of Terms of Climate Change Charter 2022

The applicant has highlighted commitments and actions that they are intending to initiate towards decarbonization.

8.3 Proponent's Declaration of Intent to Guide the Development by the Recommendations of the EIA Consultant, With Updated Declaration Following Response to Public or TCIG Commentary Requesting or Requiring Alterations to Any Part of the EIA

The applicant intends to fully comply with all requests of the office of the Director of Planning.



### 9.0 References

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## Appendix A

Terms of Reference



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### Terms of Reference for an Environmental Impact Assessment MOLO HOTEL PR15987

**General:** The Environmental Impact Assessment (EIA) must be conducted for this development with emphasis on the marine and terrestrial areas directly affected by the proposed project. The cumulative impact of all projects in the area must be analysed (with new data and information). All environmental studies/data prior to this application must be re-validated, in consultation with Department of Environment and Coastal Resources (DECR) and Department of Planning (DoP).

Qualification: EIA process shall be carried out by fully qualified consultants in all areas of study as per these Terms of Reference.

Scientific Research Permit: All scientific field research in Turks and Caicos Islands requires a Scientific Research Permit. This includes field research towards an Environmental Impact Assessment, to be licensed with a commercial Scientific Research Permit from the Department of Environment and Coastal Resources. The EIA consultant shall apply for this permit through the Office of the Assistant Director of Environmental Research & Development in DECR using the most current application form.

Formatting Requirements: All documents shall be submitted as digital files to the *Department of Planning* in electronically shareable format; that is, either by email or reference to an online website from which the documents may be downloaded (not read online only, nor password-protected). Each document, report, and appendix shall be submitted in either consistently portrait or landscape layout throughout, with all images and sections in parallel alignment and proper, upright orientation (including tables and maps); and with all sections (including text within images) clear and readable. Maps (other than aesthetic representation figures) shall be presented with conventionally representative orientation (north-up). Currently accepted zoological and botanical names shall be used adjacent to common names throughout documents; valid synonyms are acceptable but not required. All documents must be submitted with security settings to allow both internal commenting and copying of text; the use of which will be restricted to within DECR and DoP to internally share comments and extract passages for responses. Documents not submitted within these requirements may be rejected and subject to review delay.

**Submission:** Complete Environmental Impact Statement (EIS) must be submitted to the **Department of Planning** Documents shall not be submitted directly to DECR. All documents shall be submitted digitally in addition to the number of printed copies required by DoP. DoP may request additional or hard copies of documents.

Tel. +1 (649) 338-4170/ Fax. (649) 946-4793 Email: environment@gov.tc



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#### 1. Introduction and Overview

- 1.1 Reference page with names and contact information of development proponent and EIA contractor; Department of Planning reference number; block and parcel numbers concerned; island and general location; and date completed/ submitted.
- 1.2 Non-technical summary (including aims, objectives and scoping).
- 1.3 A brief description of the proposed development and its relationship with other development in the area; including adjacent development in the geographic area.
- 1.4 Aims and objectives of the assessment.
- 1.5 Overview of the areas/topics to be addressed in this EIA (present the results of scoping exercise).
- 1.6 Impact Assessment methods/analyses.

#### 2. Baseline Studies

- 2.1 Historical overview of the site and existing development- use historical and current aerial maps (time-series visualization) and official TCI generated map (Block/Parcel). Describe the historical ownership and land-use of the proposed development, including the surrounding areas.
- 2.2 Biological environmental baseline assessment:
  - 2.2.1 Baseline terrestrial environment (including areas that are cleared, bulldozed and disturbed/damaged) to include a quantitative description of any terrestrial ecological assets (flora and fauna; habitats; rare, threatened, and endangered species) to be directly impacted by the project and a qualitative assessment of assets that may be indirectly impacted.
  - 2.2.2 Baseline marine environment (including the coast, ironshore, beach and seaward) to include a quantitative description of marine ecology, within all areas to be directly impacted by the project and a qualitative assessment of areas that may be indirectly impacted. Describe sargassum invasion in the area. Map the marine habitats in the area directly affected by the proposed development. The map should be geo-referenced.
- 2.3 Physical environmental baseline assessment to include topography, soil type, structure, geotechnical study, sediments and profile:
  - 2.3.1 Topography of the area. It is recommended to use drone-imagery and processed by professionals.
  - 2.3.2 Bathymetry for site shoreline, any other underwater areas conceivably affected by the project, extending at least 500 meters from the coast and within the entire footprint of proposed project.
  - 2.3.3 Geology (check previous EIA or nearby projects, if any, validate when necessary).
  - 2.3.4 Hydrology.



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- 2.3.5 Sediment analyses, including grain size (beach) and testing for contaminants (if any).
- 2.3.6 Climate and meteorology. Meteorological parameters within the area- at least for the last 10 years.
- 2.4 Baseline aesthetics this should be supported by drone/UAV imageries plus ground photography and descriptions/characterizations.
- 2.5 Baseline coastal processes and dynamics (this should be factored in the design of the project and maintenance/operation of the beach, if applicable):
  - 2.5.1 Currents and tides.
  - 2.5.2 Sediment transport.
  - 2.5.3 Erosion and accretion, as applicable.
  - 2.5.4 Coastal dynamics.
- 2.5 Water quality from within the area to be directly impacted by the project (e.g. marina, nearshore areas) parameters to include dissolved oxygen (mg/l), temperature (°C), salinity (ppt), pH, turbidity (NTU), total dissolved solids (mg/l), ammonia (as mgN/l), nitrate/nitrite (as mnN/l), nitrite (as mgN/l), total dissolved phosphorus (mg/l), total chlorophyll (µg/l), pheophytin (µg/l), active chlorophyll (µg/l) and total Coliform. Nutrient loads are to be tested to an ultra-low level.
- 2.6 Social-economic:
  - 2.6.1 Demographic.
  - 2.6.2 Employment: labor & skills demand at construction and operation; local and foreign workers needed.
  - 2.6.3 Safety/security concerns within the community.
  - 2.6.4 Economic impact: short-term and long-term.
  - 2.6.5 Others.
  - 2.7 Other relevant parameters identified during the scoping exercise by the consultants.
  - Legislative and Regulative Context to include a discussion of any aspects of law, regulation and/or policy relevant to the project, such as, but not limited to the following (including limits/ zones designated under any legislation, regulations, or policy relevant to the subject area):
    - 3.1 TCI Development Plan/Master Plan.
    - 3.2 Physical Planning Ordinance and subsidiary legislations.
    - 3.3TCI Development Manual.
    - 3.4TCI Building Code.
    - 3.5 Coast Protection Ordinance and subsidiary legislations.
    - 3.6 Mineral (Exploration and Exploitation) Ordinance and subsidiary legislations.
    - 3.7 Marine Pollution Ordinance and subsidiary legislations.



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3.8 Fisheries Protection Ordinance and subsidiary legislations.

- 3.9 International treaties and conventions.
- 3.10 Other relevant laws and regulations.

This section shall point out the section of the laws that are permissible or otherwise with this proposed development.

### 4. Project Description and Construction and Operation and alternatives

- 4.1 Description of the proposed project/components.
- 4.2 Project Justification socio-economic, ecological, etc.
- 4.3 How the proposed project will affect erosion or accretion.
- 4.4 Describe the coastal engineering plans, including modeling of how these plans (for example engineering structures) will affect the flow of currents and transport of sediments both within the area of work and including potential areas of impact.
- 4.5 Coastal/beach development and management including beach access.
- 4.6 Source and quality of beach sand, fill and other materials to be used for coastal structures and terraforming, if applicable.
- 4.7 Solid waste management during construction and operation.
- 4.8 Surface-run-off management/ Storm water runoff and treatment.
- 4.9 Traffic flow and safety (marine, coastal).
- 4.10 Water and electrical demand and source (construction and operations).
- 4.11 Landscaping (initial phase and maintenance/operation).
- 4.12 Construction phase activities:
  - 4.12.1 Construction methods and program, including phasing of the development.
  - 4.12.2 Site security and hoarding.
  - 4.12.3 Sources of sand for beach nourishment.
  - 4.12.4 Storage of materials and equipment (including soil and excavated (dry) materials).
  - 4.12.5 Beach traffic impact and safety.
  - 4.12.6 Temporary sanitary facilities.
  - 4.12.7 Access and staging.
  - 4.12.8 How the minerals (sand) are placed, and spread.
  - 4.12.9 How the new sand will be protected from erosion during swells.
  - 4.12.10 Solid waste management- those generated during construction, if any.
  - 4.12.11 Liquid waste management, including control of runoff- those generated during construction, if any.
  - 4.12.12 Control of air, dust, water and noise pollution (generated by the project/heavy equipment, if any).
  - 4.12.13 Control/storage of fuels and other dangerous substances, if any.
  - 4.12.14 Emergency mitigation plan.
- 4.13 Social-economic:



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- 4.13.1 Demographic.
- 4.13.2 Employment labor & skills demand at construction and operation; availability of local workforce and need for foreign workers.
- 4.13.3 Safety/security concerns within the community (construction and operation).
- 4.13.4 Issues raised in the public consultation (written and verbal/oral concerns). 4.13.5 Others.
- 4.14 Impact to terrain including method of clearing of site and quantified description of natural vegetative cover to be removed, retention of natural vegetation cover, disposal of removed vegetation and soils, and statement of understanding of limitations of wholesale land clearance as per Development Manual and Planning legislation and regulations.
- 4.15 Potential Alternatives.
- 4.16 Others.

#### 5. Impact Assessment.

- 5.1 Impact identification.
- 5.2 Description of impact:
  - 5.2.1 Potential impacts to the biotic environment, including predicted direct and indirect impacts coastal, and marine assets.
  - 5.2.2 Potential impact to coastal environment and processes (beach creation, beach nourishment, etc.). In the case of coastal works, for 500 meters along coast each direction from limits of project site; with additional requirement for 5km in both directions for any site on the northern coast of Providenciales or western coast of Grand Turk.
  - 5.2.3 Potential impact to geological environment, particularly taking into consideration any karst, cavern, cave, or solution hole/ sinkhole on site.
  - 5.2.4 Potential impacts to the aesthetic and other built environment.
  - 5.2.5 Water quality and noise pollution (construction and operation).
  - 5.2.6 Ecosystem and economic analyses (may summarize above; valuation is needed) to determine the best use of the area.
  - 5.2.7 Socio-economic impact Socio-economic and cultural baseline (including labor, tourism, public infrastructure, crime, etc., Predicted impacts (positive and negative- influx of population/ workers, safe & security) to the above baseline, Identification and involvement of stakeholder groups:
    - 5.2.7.1 Public beach access considering that the beach is public in TCI.
    - 5.2.7.2 Potential impact to neighboring developments, businesses and residential houses.
    - 5.2.7.3 Other Impacts.
- 5.3 Impact assessment.
- 5.4 Derivation of significance.

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Note: Use computer modelling, as appropriate, for wind-wave prediction, wave energy dissipation, waves and currents and sediment transport and shoreline changes, etc. Particular attention should be given to sensitivity and vulnerability of important geomorphological features and processes; how these are likely to respond to particular impact, regardless of whether the effects are temporary, long-term, reversible or permanent. The potential cumulative impacts of and to other project components and nearby developments (as applicable) must be noted and addressed.

#### 6. Mitigation and Monitoring

- 6.1 Proposed actions and schedule to mitigate against any environmental impact (including proposed monitoring activities).
- 6.2 Storm surge analysis and mitigation plan for sea level rises.
- 6.3 Building around, or rescue and removal of rare, threatened, and endangered species of plants where possible.
- 6.4 Landscaping/ replanting plan utilizing native species.
- 6.5 Financial resources for mitigation.
- 6.6 Environmental monitoring and financial requirements.
- 6.7 Public Consultation/social listening/monitoring.
- 6.8 An Environmental Management Plan (EMP) must be prepared with the following minimum components:
  - 6.8.1 Summary of the potential impacts of the proposal;
  - 6.8.2 Description of the recommended mitigation measures;
  - 6.8.3 Statement of their compliance with relevant standards;
  - 6.8.4 Allocation of resources and responsibilities for plan implementation;
  - 6.8.5 Schedule of the actions to be taken;
  - 6.8.6 Programme for surveillance, monitoring and auditing; and
  - 6.8.7 Contingency plan when impacts are greater than expected.

The EMP Environmental management plan (EMP) for pre-, during- and postconstruction phases (contents may be modified, as applicable).

#### 7. Recommendations and Conclusions

# 8. Statement of Understanding of Environment Charter (2001) and Climate Change Charter (2022)

8.1 Statement of Understanding of terms of Environment Charter 2001 from proponent, with explanation of how this development approaches best practices towards the protection of biodiversity and the environment as noted in the Charter.

8.2 Statement of Understanding of terms of Climate Change Charter 2022 from proponent, with explanation of how this development approaches best practices toward mitigation, adaptation, and resilience to climate change as noted in the Charter.

8.3 Proponent's Declaration of Intent to guide the development by the recommendations of the EIA consultant, with updated Declaration following response to public or TCIG commentary requesting or requiring alterations to any part of the EIA.

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### 9. Appendices

- 9.1 The Terms of Reference (ToR) for the EIA, as issued by DoP, TCIG.
- 9.2 Qualifications of the EIA team of experts and the special requirements and information needed to form the team to conduct the EIA for this project. The contact information (functional phone numbers and email addresses) must be provided. Curricula vitae and résumés should be relevantly abridged to no more than two pages for each consultant.
- 9.3 Government Permits (e.g. work permit, research permit, etc., if required)
- 9.4 Site Plan, project plans, architectural drawing and other related documents.
- 9.5 Portable data format (pdf) file of the reports of independent consultants involved in the EIA.
- 9.6 Scientific analyses reports (pdf copy from the Laboratory that analyzed the samples, and the like), if any.
- 9.7 Standards or protocols and assumptions used in predicting the environmental impacts.
- 9.8 Public Consultative Meeting and Stakeholders meeting reports. Include evidence of advertisement for Public Consultative Meetings, the names and contact information for those who attended the meetings, issues raised and conclusions.
- 9.9 Photo documentations (with captions dates, place, description of the subject of the photo).
- 9.10 Certification/legal document from the EIA group/company that submits the EIS, that all submitted reports/documents and etc. as part of the EIA report/EIS were first-hand information and if it taken from secondary source, the authors should be properly acknowledged or compensated.

Prepared by:

Department of Environment and Coastal Resources Turks and Caicos Islands Government

Date:

Checklist of items for EIS	
Cover/ reference page as described in 1.1	
All images and sections in upright orientation, clear and readable	N
Maps oriented conventionally, north-up	
Saved in manner to allow for text copying and comments to be inserted	
All sections in ToR addressed by EIS	10 00 00 00 1
All appendices attached (may be in separate files) as described in 9	





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## Appendix B

Resumes

## **CLYDE BRADLEY ROBINSON**

70 Old Grace Drive, Long Bay, Providenciales, Turks and Caicos Islands

E-mail: paradise.solutions.tci@gmail.com

Mobile: 649 331 3420 649 231 3420

#### **PERSONAL STATEMENT**

During these global changing times, it is my goal to work tirelessly within my community to ensure a sense of place, environmental sustainability, social responsibility and economic prosperity for all, whilst simultaneously maintaining a personal life with family and friends.

### WORK EXPERIENCE

- 2012 Present **Owner,** Paradise Solutions Sales Associate, Century 21 Adviser, Beach Enclave Resorts Adviser, HAB Investments Ltd.
- 2010 2012 **Under Secretary,** Ministry of the Environment and District Administration, Turks and Caicos Islands Government, Turks and Caicos Islands
- 2003 2010 **Director of Planning,** Department of Planning, Turks and Caicos Islands Government, Turks and Caicos Islands
- 2000 2003 **Deputy Director of Planning,** Department of Planning, Turks and Caicos Islands Government, Turks and Caicos Islands
- 1995 2000 Assistant Director of Planning, Department of Planning, Turks and Caicos Islands Government, Turks and Caicos Islands
- 1991 1995 Assistant Planning Officer, Department of Planning, Turks and Caicos Islands Government, Turks and Caicos Islands
- 1990 1991 Junior Planning Officer, Department of Planning, Turks and Caicos Islands Government, Turks and Caicos Islands
- 1986 1990 **Trainee Technician,** Department of Planning, Turks and Caicos Islands Government, Turks and Caicos Islands

### **EDUCATION**

- 1994 1995 Oxford Brookes University, Oxford, England \*\*\*Postgraduate Diploma in Town and Country Planning Specialization: Environmental Impact Assessment and Management
- 1991 1994 Oxford Brookes University, Oxford, England \*\*\***B.A. (Hons) Town and Country Planning** Specialization: **Environmental Design**
- 1988 1990Central Manchester College of Technology, Manchester, England\*\*\*BTEC National Diploma in Land Administration

### TRAINING

2010 – 2021	Century 21 Online courses and training in Real Estate
1996 – 2010	Extensive and invaluable experience gained from managing the phenomenal growth of the Turks and Caicos Islands, one of the fastest growing economies within the Caribbean
2004, March 21 – 26	"White Water to Blue Water Conference", Miami, Florida, USA
2000, November 20 – 24	Certificate course in "Introduction to Environmental Health Impact
	Assessment", Castries, St. Lucia, Sponsored by CEHI, Centre Hospitalier
	Universitaire de Quebec, Health Canada
2000, July 16 – 20	Planning Workshop 2000, Caribbean Conference for Town & Country Planning, Barbados
1998, March 09-11	Certificate course in "Advanced Topics in Environmental Impact
	Assessment", Taught by L.W. Canter and S.F. Atkinson, Irving, Texas, USA
1998, May 18 –22	Workshop on "Siting and Design of Tourism Facilities", Tobago, Trinidad and Tobago, sponsored by UNEP/USAID and organized by Caribbean Hotel Association
1991, March 04 – 22	Certificate course in "Public Sector Investment Planning, Programming and Management", Grand Cayman, Cayman Islands, sponsored by Caribbean Development Bank

### MAJOR PUBLICATIONS

- Turks and Caicos Islands Development Manual (1996 to 2010), most notably:
  - Introduction of the Standards and Procedures for EIA.
  - Development of typical/mandatory conditions that may be placed on various types of development.
  - Planning Standards for various residential locations on the Islands.
- *"Architectural Heritage of the Turks and Caicos Islands"*, Turks and Caicos Islands 2002-2003 Annual Visitors Guide
- Various Publications on Paradise Solutions' Facebook page
- Presenter at many Seminars on Planning and the Environment, including "Introduction of EIA into the Planning Process 1995"
- A Dissertation with Distinction: "The impacts of development on the landscape of the Turks and Caicos Islands. To what extent has there been a change." Supervised by **Ms. Riki Therival**, Lecturer, Author and one of the World's leading experts in EIA and SEA.

### **MAJOR PROJECTS**

- 2008 2010 Preparation of "Turks and Caicos Islands National Sustainable Development Plan (2008 – 2018)"
- Introduction of Environmental Impact Assessment (EIA) and Procedures into the TCI Development Manual

- Overseen the period of the greatest physical development within the Turks and Caicos Islands as Director of Planning.
- Environmental Impact Statement (EIS), Shrimp Facility, Parcels 60514/5,9 and 11 (109 acres), Providenciales, Turks and Caicos Islands, 2015.
- Environmental Impact Statement (EIS), Large Dwelling Home and Groyne on Parcels 61005/28,29, Providenciales, Turks and Caicos Islands, 2013.
- Environmental Impact Statement (EIS), Groyne and Beach Creation, Parcel 60506/42, Providenciales, Turks and Caicos Islands, September 2013.
- Environmental Impact Statement (EIS), Construction of a Service Road to Access Parcel 60606/77 (Cay), September 2014.
- Environmental Impact Statement (EIS), Infill Development & Beach Enhancement, Parcels 61002/105-108, 111-113, May 2013.
- Environmental Impact Statement (EIS), Service Station, Leeward Highway, Parcel 60812/12, November 2014.
- Environmental Impact Statement (EIS), Service Station, Parcel 60810/10, Providenciales, Turks and Caicos Islands, December 2015.
- Environmental Impact Statement (EIS), Service Station, Parcel 60707/183, Providenciales, Turks and Caicos Islands, March 2019.
- Report of the State of Leeside Estates, Long Bay, Providenciales, Turks and Caicos Islands, December 2014.
- Environmental Impact Statement (EIS), Boutique Hotel Development, Long Bay Beach, Parcels 61113/410 and 411, August 2021.
- Master Plan, The Port at Bellefield Landing, North Caicos, Turks and Caicos Islands, November 2021.
- Environmental Impact Statement (EIS), EP Hotel, The Lower Bight, Providenciales, 60813/17,18,32, June 2023.

### **AFFILIATIONS**

Turks and Caicos Real Estate Association (TCREA)

REFERENCE: MR. OSWALD WILLIAMS Planning Consultant/Former Director of Planning Tel. 649 231 0371 Brief background:

Lorne Robinson is a career public Health professional 25 years of experience in the field of public health. Lorne has served for 12 years as the Director of the Turks and Caicos Islands Government Environmental Health Department, that has direct responsibility for Solid Waste Management in the Turks and Caicos Islands.

He has overseen and been the focal point for three studies carried out on the Waste Management system and has worked with a consultant team brought in by him to address the development of a Solid and Liquid Waste Management within the Turks and Caicos Islands.

He left the field of Public Health and is currently based in Providenciales and working as a Hospitality professional, where he has applied public health principles to the hospitality industry, he started her career working as a trainee public health inspector and oversaw waste management operations throughout the Turks and Caicos Islands.

Motivated by his mission to help individuals with whom he works achieve success in their job areas, he has developed several new leaders in his current field.

Career and educational Highlights are as follow:

University of the Technology, Jamaica	
Bachelor of Health Science (Environmental	
Health)	1998 - 2000
Barbados Community College, Barbados	
Certificate in the Inspection of Meat & Other	
Foods	1997
West Indies School of Public Health, Jamaica	
Diploma in Public Health Inspection	1992 - 1995
College of the Bahamas, Nassau, Bahamas	
Associates Degree in History	1989 – 1992
Turk & Caicos High School	
High School Class 1 Diploma and 8 O'Level	
Passes	1983 - 1988

### Professional Certifications

Certificate in Hospitality Supervision	2015
Certificate in Management Leadership – Performance Management, Chartered Management Institute	2012
Affiliate Member, Chartered Management Institute	2011 -
Disaster Risk Reduction Leadership and Strategic Planning Training Course BVI Malaria Workshop, Jamaica	2011-
TCI Government Leadership Development Program, National School of Government	2009
Caribbean Community Pandemic Influenza Workshop, Kingston, JA	2009
Poultry Compensation Workshop, Panama	2008
Avian Influenza Workshop, Argentina	2006
WHO Global Salm –Surv (Salmonella Surveillance) Level 111 Training Course CAREC/PAHO/WHO	2005
2nd International Conference On Food Safety & Occupational Health Food Hygiene Bureau in association with the Chartered Institute of Environmental Health (CIEH UK), Kingston Jamaica	2003
Regional Training Course In Landfill Monitoring Techniques CEHI, St Lucia	2002
Training in the Application of HAACP To National Food Service Establishment CEHI, Bahamas	2002
Certification/Training in Laboratory Techniques for Landfill Monitoring CEHI, St Lucia	2002
Performance Appraisal Training and Education Programme Turks and Caicos Islands Government	2001
ServSafe Certification Food Protection Management Certification NRA	2000

Certification/Introduction to Environment Health EIA CEHI, St Lucia	2000
Effective Supervisory Management Skills for 21 <sup>st</sup> Century MDR Bahamas Ltd	1999
Employment History	
Chairman, Board of Public and Environmental Health 2017-2021	
General Manager, The Oasis at Grace Bay 2017-Present	
Operations Manager, Private Estates, Parrot 2016 -2017	
Custodial Manager/Executive Housekeeper, Parrot Cay	2014 - 2016
Assistant Executive Housekeeper, Parrot Cay	2013 - 2014
Chief Environmental Health Officer	2001 - 2012
Environmental Health Officer	1996 - 2001
Public Health Trainee, TCI Government	1988 - 1996
<u>Policies</u> TCI National Food Safety Policy	
Draft Initial Sanitation Standards for Fish Processing Establishments	
Sanitation Standards for Beauty and Barber Shops	
TCI National Food Importation Standards	
TCI National Requirements for Animal Importation	
TCI National Standards for Meat and Meat Products Importation	
TCI National Standards for Plant and Plant product Importation	

Professional Associations and Boards	
Chairman of Communicable Disease Surveillance Committee	2010 - 2012
Member TCI Water and Sewerage Board	Since 2001
Caribbean Water and Waste Water Association	Since 2003
Chairman of Public and Environmental Health Board	2001 - 2008
Member of TCI Physical Planning Board	2001 - 2004

National & Community Involvement

<u>Social</u>	
Former President and Secretary and Current Member	
Kiwanis Club of Grand Turk	Since 1990
# Ezekiel E. Hall, MSc, IAH

Consulting Hydrogeologist – Environmentalist #6 Flame Tree Circle Long Bay Hills, Providenciales Turks and Caicos Islands, B.W.I. Tel: 649.246.8263 Email: hallenvironment1@gmail.com

#### <u>Summary</u>

Ezekiel Hall is a practicing environmentalist with over 25 years experience working in Small Oceanic Islands environments in the Bahamas and Turks and Caicos Islands. Mr. Hall's experience includes consultative services for private utility companies, government agencies, property owners and tourism developers who wish to design, construct and manage operation facilities with a focus on protection of natural resources and compliance with applicable Ordinances, Regulations and environmental best practices.

#### Education

**1991 – 1992**: Mr. Hall attended the University of Birmingham, UK and obtained a Master of Science Degree in Hydrogeology, specializing in the Hydrogeology of Small Oceanic Islands.

**1981 – 1985**: Mr. Hall attended St. Lawrence University, Canton, New York, USA and obtained a Bachelor of Science Degree in Geology.

#### **Employment**

# December 2012 – Present: Operations Manager, Grand Bahama Utility Company[GBPA]

Mr. Hall holds management responsibility for the daily operations of the Water Company including the direct supervision of 21 members of staff, seven water plants and one sewerage plant.

# April 2012 – August 2012: Deputy Permanent Secretary, Ministry of Border Control & Labour [Turks and Caicos Islands Government]

Mr. Hall held a leadership role and was responsible for establishing Policy, Guidelines and Procedures for Immigration and Labour enforcement. Mr. Hall had daily responsibility for a staff compliment of 68 Immigration Officers including Senior Officers & Line Staff. A list of responsibilities included work task planning, tracking work progress, performance evaluations, customer service management, budget preparation, public awareness program and report writing.

# July 1997 – Present: Hydrogeologist-Environmentalist, EnvironmentALL TCI.

Mr. Hall is the Principal of EnvironmentALL Ltd and provides Environmental and Geotechnical Consulting Services throughout the Bahamas and Turks and Caicos Islands. The scope of services includes Environmental Impact Assessments, Geotechnical Evaluations, Drilling and Well Design, Pump Tests & Injection Well Tests, Groundwater Resources Evaluation, Water & Wastewater Quality Monitoring and Testing, Evaluation of Water & Sewerage Plant Operations, Wellfield Design, Wellfield Construction, Wellfield Management, Sewerage Disposal Well Design/Construction/Management, Stormwater Disposal Well Design/Construction/Management, Marine Assessments, Socio-economic & Cultural Assessments, Hydrogeological Assessments, Hydrographic & Bathymetric Surveys, Coastal Processes Evaluation and Building Permit Processing.

# 1986 - 1997: Assistant Hydrologist, Bahamas Water & Sewerage Corporation, Nassau, New Providence, Bahamas.

Mr. Hall applied his hydrogeological experience and knowledge of the natural environment in support of various freshwater resources evaluations, wellfield designs, Sewerage and Stormwater deep disposal well designs and evaluations, pump tests and water & wastewater quality testing throughout all inhabited islands of the Bahamas.

#### CERTIFICATIONS & PROFESSIONAL MEMBERSHIP

PADI Certified SCUBA Diver: Dive Master.

Member of the International Association of Hydrogeologists.

NASTeC Certified Major Appliance Repair Technician [B981174]

GCAP Graduate Technician Certified Appliance Technician [Reg #: TC21727]

#### PUBLICATION(S)

"Saltwater Intrusion in the Bahamas: A case study of the Grand Lucayan Waterway, Grand Bahama, The Commonwealth of the Bahamas." *Proceedings of the AWRA Conference (1989), Puerto Rico.* 

"An appraisal of the Application of Surface and Borehole Geophysical Techniques to Groundwater assessment in Wellfields in The Bahamas." *Proceedings of the WMO/IDB Conference (1995), Costa Rica.* 

#### PROJECTS AND STUDIES

- 1. Water Quality Monitoring: Providenciales Hospital Project, TCI, 2009.
- Environmental Impact Assessment: The Shore Club, Providenciales, TCI, 2008-09
- 3. Environmental Impact Assessment: East Bay Resort and Marina, South Caicos, TCI, 2008-09
- 4. Environmental Impact Assessment: Terrestrial and Hydrogeological Input into EIA for CMK Developments at South Caicos Islands, TCI 2008 to present.
- 5. Hydrogeological Assessment: Input into the Environmental Impact Assessment for PPC Limited Bulk Fuel Storage Facility, Providenciales, TCI 2008
- 6. Seawater Quality Monitoring: Carnival Cruise Lines (Grand Turks Cruise Port), Grand Turks Island, TCI 2008-2009.
- 7. Environmental Impact Assessment: Leeward Lake; Providenciales, TCI, 2008
- 8. Environmental Impact Assessment: Leeside Canals; Providernciales, TCI 2008
- 9. Seawater Quality Monitoring: Carnival Cruise Lines (Grand Turks Cruise Port), Grand Turks Island, TCI 2007-2008.
- 10. Seawater Quality Monitoring: Carnival Cruise Lines (Grand Turks Cruise Port), Grand Turks Island, TCI 2006-2007.
- 11. Feedwater and Disposal Wells design and construction: Beaches Resort Italian Village, Providenciales, Turks and Caicos Islands, 2008
- 12. Environmental Impact Assessment: Bone Fish Point, Providenciales, TCI, 2007

- 13. Hyrogeological, Terrestrial and Marine Assessments: CMK Tourism Developments, South Caicos Island, Turks and Caicos Islands 2007 ongoing.
- 14. Environmental Impact Assessment Update: Ritz-Carlton Hotel, West Caicos Island, TCI, 2006
- 15. Seawater Quality Monitoring: Carnival Cruise Lines (Grand Turks Cruise Port), Grand Turks Island, TCI 2005-2006.
- 16. Seawater Quality Monitoring: Leeward Marina (Johnston International Ltd.), Providenciales Island, TCI 2006.
- 17. Hydrogeological Assessment: EIA for the Albany House Marina [Park Ridge Securities Group], Nassau, Bahamas, 2005
- Solid Waste Management Project: Project Coordination and Management; Hydrogeological and Legal Assessments, Turks and Caicos Islands Government, Turks and Caicos Islands, 2005.
- 19. Environment Impact Assessment: Royal Reef Resort, North Caicos Island, TCI, 2005.
- 20. Marine Assessment (Seagrass Removal for Blue Resort), Blue Hills, TCI, 2005
- 21. Hydrogeological Evaluation: Mare Bello Tourism Development, East Bay, TCI, 2004.
- 22. Environmental Impact Assessment: The Tuscany, Providenciales, TCI, 2004
- 23. Groundwater Resources Evaluation: New Providence Development Co., Nassau, Bahamas, 2004.
- 24. Environmental Impact Assessment: Ritz-Carlton Hotel, West Caicos, TCI, 2004.
- 25. Hydrographic Survey: Grand Turk Cruise Ship Facility, Grand Turk, TCI 2004.
- 26. Bathymetric Survey: Grand Turk Cargo Pier, Grand Turk, TCI, 2004.
- 27. Environmental Consultant: St James Development, Providenciales, 2003
- 28. Environmental Consultant [EIA]: Leeward Marina/Condo Development, Providenciales, TCI 2003 ongoing.
- 29. Hydrogeological Assessment: Inland Marina Basin for Pericles Maillis' property, Adelaide, New Providence, Bahamas.
- 30. Environmental Consultant [EIA]: Beach Oasis Development, Providenciales, TCI 2002
- 31. Environmental Consultant [EIA]: Grand Turk Cruise Port, Grand Turk, TCI, 2002.
- 32. Environmental Consultant: Sand Mining and Dredging, Sand Pit, Providenciales, TCI 2002.
- 33. Environmental Consultant: Bahamas Electricity Corporation Cooling Water Wells Project, New Providence, Bahamas, 2002.
- 34. Consultant for EIA: West Caicos Island-wide Development, West Caicos, TCI, 2001- present.
- 35. Consultant for EIA: West Caicos Marina, West Caicos, TCI 2000-'01.

- 36. Consultant for EIA: Hawksbill Marine Basin, Providenciales, TCI, 2001.
- 37. Consultant for EIA: Somerset Hotel Development, Providenciales, TCI, 2001
- 38. Consultant for EIA: Leeward Canal Extension, Providenciales, TCI, 2000.
- 39. Consultant for EIA: Babaloo Beach Resort, Providenciales, TCI, 1999.
- 40. Consultant for EIA: Cooper Jack Marina, Providenciales, TCI, 1999.
- 41. Consultant for EIA: Grand View Condominium, Providenciales, TCI, 1999
- 42. Consultant for EIA: Discovery Beach Club, Providenciales, TCI, 1999
- 43. Consultant for EIA: Ocean Club West, Providenciales, TCI, 1999.
- 44. Consultant for EIA: Newport Harbour & Bulk Fuel Storage Facility, Providenciales, TCI, 1998.
- 45. Implementation of National Parks System: Coastal Resources Management Project/ Chief Park Warden, Providenciales, TCI, 1998-'99.
- 46. Rehabilitation of Deep Cooling Wells for Power Generation Plant: Bahamas Electricity Corporation, New Providence, Bahamas, 1997.
- 47. Design, construction and evaluation of feedwater wells for R.O. plant: Half Moon Cay, Bahamas, 1997.
- 48. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Andros Island Potable Water Supply, 1986-97Groundwater
- 49. Resources Exploration for Bahamas Water & Sewerage Corporation: Mayaguana Potable Water Supply, Mayaguana, Bahamas, 1997.
- 50. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Inagua Potable Water Supply, Inagua, Bahamas, 1996.
- 51. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Abaco Potable Water Supply Expansion, Abaco Bahamas, 1995.
- 52. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Exuma Potable Water Supply, Exuma, Bahamas, 1986-'95
- 53. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Rehabilitation of Old Southwest Wellfield, New Providence, Bahamas, 1993.
- Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Long Island Potable Water Supply, Long Island, Bahamas, 1986 -'97.
- 55. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Rehabilitation of Windsor Wellfield, New Providence, Bahamas, 1993 '97.
- 56. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Rehabilitation of Government Wellfields, Grand Bahama, Bahamas, 1986-'97.
- 57. Groundwater Resources Exploration for Bahamas Water & Sewerage

Corporation: Eleuthera Potable Water Supply, Eleuthera, Bahamas, 1986 - '97.

- Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Ragged Island Potable Water Supply, Ragged Island, Bahamas, 1986 - '97.
- 59. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Black Point, Exuma Potable Water Supply, Exuma, Bahamas, 1986 '97.
- 60. Groundwater Resources Exploration for Bahamas Water & Sewerage Corporation: Bimini Water Supply, Bimini, Bahamas, 1986 '97.
- 61. Rehabilitation and expansion of the Bogue Wellfield, North Eleuthera for Bahamas Water and Sewerage Corporation: Eleuthera, Bahamas, 1989.
- 62. Evaluation of New Providence Sewerage Treatment facility, Bahamas Water & Sewerage Corporation 1995-1997
- 63. Rehabilitation of Deep Sewerage Disposal Well: Pinewood Gardens, Nassau, Bahamas, 1987-'96.
- 64. Rehabilitation of Deep Sewerage Disposal Well: Flamingo Gardens, Nassau, Bahamas, 1993-'96.
- 65. Design, Construction and Evaluation of Deep Sewerage Disposal Wells: Yellow Elder Gardens, Nassau, Bahamas, 1990-'92.
- 66. Design, Construction and Evaluation of Deep Sewerage Disposal Well: Malcolm's Park, Nassau, Bahamas, 1990-'91.
- 67. Saltwater Encroachment: Grand Lucayan Waterway, Grand Bahama, Bahamas, 1987-'91.
- 68. Fuel Spill Assessment and Recovery: Bahamas Electricity Corporation, Nassau, Bahamas, 1987-'95.
- 69. Fuel Spill Assessment: Burma Oil, East End, Grand Bahama, Bahamas/ Water & Sewerage Corporation 1989.
- 70. Fuel Sill Assessment: Carmichael Road/BEC, Nassau, Bahamas/ Water & Sewerage Corporation, 1995.
- 71. Fuel Spill Assessment & Recovery: Nassau International Airport, 1988, Water & Sewerage Corporation.
- 72. Hydrogeological Maps of The Bahamas for inclusion the Hydrogeological Atlas of the Caribbean; UNESCO, 1986-'87.
- Flectro Magnetic Ground Conductivity Profiling: Bahamas Water & Sewerage Corporation / Groundwater Exploration Exercises. All inhabited islands of the Bahamas, 1988-'1997.



#### July, 2023

#### Re: Environmental Impact Assessment MOLO HOTEL, PR 15987

**Team Details** 

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Michael Jenkins	mjenkins@appliedtm.com	+1 561-472-2144
John Waszak	jwaszak@appliedtm.com	+1 561-899-0542
Greg Braun	dgregbraun@aol.com	+1 561-575-2028
Steven Jachec	sjachec@appliedtm.com	+1 561-472-2147
Melissa Hensley	MHensley@Geosyntec.com	+1 321.747.1910
Berenice Milgrom	bmilgrom@appliedtm.com	+1 561-659-0041

Sincerely, ATM, a Geosyntec Company



#### PROFESSIONAL EXPERIENCE

Total Years: 32 Years with ATM: 19

#### AREAS OF SPECIALIZATION

- Coastal Engineering
- Coastal Analysis and Numerical Modeling
- Beach Nourishment Design and Permitting
- Coastal Structures
- Environmental Restoration
- Project Management and Construction Administration

#### **EDUCATION**

- PhD, Ocean Engineering, Florida Institute of Technology, 1998
- MS, Ocean Engineering, Florida Atlantic University, 1993
- BS, Ocean Engineering, Florida Atlantic University, 1991

#### **PROFESSIONAL REGISTRATION**

Prof. Eng., FL, No. 58072, 2002

#### **PROFESSIONAL AFFILIATIONS**

- Southeast Florida Coral Reef Initiative Team Member
- Florida Shore and Beach Preservation Association
- American Shore and Beach Preservation Association
- American Society of Civil
   Engineers
- Engineers without Borders USA

#### SUMMARY OF QUALIFICATIONS

Dr. Jenkins is a recognized expert in the field of coastal engineering and has an extensive background in modeling dynamic coastal systems, including earning a PhD within the field. Over his career he has directed the placement of more than 15 million cubic yards of cumulative volume through multiple nourishment and maintenance dredging efforts. He has served as the engineer-of-record for numerous coastal and estuarine projects involving inlet management, structure design, evaluation and permitting. Projects include beach nourishment, dredging, and structures such as rock groins and revetments, composite groin structures, breakwaters and geotube structures. Further, Dr. Jenkins has significant experience in the development of environmental assessments and environmental impact assessments in the U.S., Bahamas, and Caribbean. Dr. Jenkins maintains successful proactive relationships with multiple federal, state, and international regulatory agencies within the coastal field.

#### **PROJECT EXPERIENCE**

Third Turtle Beach, Structures, and Inlet Maintenance, Providenciales, Turks and Caicos: Provided the design and engineering of a beach nourishment, new groin, and jetty structures, and the maintenance dredging of the existing inlet channel. Efforts included development of a supplemental environmental impact assessment (SEIA) and development of maintenance and EMP protocol as well as construction observation and review.

<u>Orion Environmental Impact Assessment (EIA), Turks and Caicos</u>: Principal for the preparation of the project EIA.

Wymara Beach Feasibility Study, Turks and Caicos: Principal conducting a beach feasibility study that considers landward regrading of the beach profile and construction of terminal rock structures to facilitate sand retention in concert with the placement of sand.

Amanyara Villas Wave Vulnerability Assessment, Turks and Caicos: Conducted wave runup assessment and analyses.

Amanyara Dune Assessment, Turks and Caicos: Study principal.

Amanyara Coastal Assessment 1 & 2, Turks and Caicos: Study principal.

Carnival Grand Turk Berth Dredging, Turks and Caicos: Study principal.

<u>Northlake Dredge Feasibility, Grand Turk, Turks and Caicos:</u> Performed an engineering evaluation of the expansion of the navigation channel and implementation of jetty structures to improve navigability and access. Directed initial field investigations in support of project development. Directed conceptual design of marina and access channel improvements.

<u>Special Inspector, Thompson Cove Beach and Dune Restoration, Providenciales, Turks and Caicos:</u> – Served as government representative (special inspector) for the inspection of a beach and dune restoration project that included breakwater, dune geotube and beach nourishment elements. Duties included field inspection and coordination with Owner and government representatives regarding construction and conformance to the project EIA.

<u>Beach Design, Third Turtle, Providenciales, Turks and Caicos:</u> Conducted design analysis and beach renourishment design for an existing nourishment project.

<u>EIA Development and Beach Enhancements, Ginn Sur Mer, Grand Bahama:</u> Directed the beach assessment and coastal impact studies in support of EIA approval for this major development project. Developed coastal enhancement alternatives to mitigate impacts from the construction of two new stabilized coastal inlets. Design included beach nourishment, jetty and groin design, and construction.

<u>Coco Point Coastal Vulnerability Study, Barbuda</u>: Conducted a coastal hazard analysis of the project site that included: storm surge regional extreme event analysis, site wave analysis, nearshore wave transformation modeling, coastal hazard assessment, risk mapping, design recommendations, and sea level rise scenarios.

<u>Coastal Engineering EIS Support, Port Moin, Costa Rica:</u> Supported the successful acquisition of the environmental permit for port expansion. Work involved the coastal engineering review of the project and development of monitoring and mitigation protocols for construction and coastal protection.

<u>Beach Enhancement and EIA Development, Big Stirrup Cay, Bahamas:</u> Developed alternatives to address existing beach erosion issues including EIA project support.

<u>True East Development, Grand Bahama, Bahamas</u>: – Provided EIA and permitting support for the development of a new marina basin and inlet cut. Project included development of project plans and an Environmental Management Plan (EMP). Considerable negotiation and consultation with the BEST commission was required and formal approval of the EIA has been received.

<u>Playa Angosta, Panama</u>: Performed a coastal assessment and developed alternatives for beach restoration and enhancement for a planned coastal development.

<u>Viceroy Resort Storm Protection and Shoreline Stabilization, Anguilla, BWI</u> – Conducted the design and analysis of a breakwater structure to reduce wave impacts to existing upland structures and the design of beach stabilization alternatives.

<u>Coco Plum Island Resort Beach Assessment, Providencia, Belize:</u> Conducted site inspection and analysis of an erosive beach under consideration for future development. The study included an assessment of underlying coastal process and development of remediation alternatives including beach nourishment and coastal structures.



#### PROFESSIONAL EXPERIENCE

Total: 40 ATM: 24

#### AREAS OF SPECIALIZATION

- Habitat Assessments
- Natural Resource Surveys
- Wetland and Habitat
   Restoration
- Environmental Planning and Permitting
- Environmental Education
- Expert Witness Testimony

#### **EDUCATION**

BS, Biological Oceanography, Florida Institute of Technology, 1978

#### PROFESSIONAL REGISTRATION

Certified Environmental Professional, Florida, No. 03040418

#### AFFILIATIONS

- National and Florida Associations of Environmental Professionals
- Florida and Martin County Native Plant Societies
- Florida Oceanographic Society
- The Nature Conservancy
- Bahamas National Trust

#### SUMMARY OF QUALIFICATIONS

Mr. Braun is a senior ecologist with experience as the lead scientist in environmental projects and assessments in Florida, the Bahamas and the Caribbean. He specializes in natural resource assessments, plant and animal inventories, coastal and freshwater wetland assessments, habitat restoration projects, and projects that link man with the environment. Mr. Braun works extensively with the conservation community, governmental agencies, and private developers who seek to exceed minimum environmental requirements and create projects that feature environmental protection and sustainability.

Mr. Braun's experience also includes estuarine and marine ecosystems, where he has conducted numerous assessments of benthic conditions. Mr. Braun has been the primary author on manatee protection plans for three counties in southeast Florida and served on the Manatee Regulatory Working Group, one of several federally-appointed subcommittees that were established as part of the Manatee Recovery Team that is coordinated by the state of Florida and the U.S. Fish and Wildlife Service. Mr. Braun provides expert witness testimony at quasijudicial hearings and circuit court hearings regarding ecological issues on a variety of projects and is well respected for his detailed knowledge and forthright explanation of ecological issues. He has also given over 250 public education programs on environmental topics.

Mr. Braun has authored numerous environmental impact statements and works with governmental entities in their review of applications for development.

#### **PROJECT EXPERIENCE**

Marine and Shoreline Assessments, Providenciales, Turks and Caicos: Evaluated existing marine and shoreline conditions within and adjacent to a navigation channel dredging project. Contributed ecological sections of an environmental impact assessment (EIA).

Marine and Terrestrial Assessments, South Caicos, Turks and Caicos Islands: Conducted marine and landside assessments of existing marine and upland habitats associated with development of resorts on South Caicos. Results of the investigations were included initially in a strategic EIA; conducted follow-up detailed investigations specifically for the Sailrock project.

<u>Ecological Evaluations, Children's Bay Cay and Williams Cay, Bahamas</u>: Conducted investigations of terrestrial and marine habitats on two small islands in the Exumas. Developed habitat community maps to assist planners in the design of resort improvements and as baseline for EIAs.

<u>Marine Assessments, Coco Cay, Bahamas:</u> Evaluated a +215-acre tract of submerged resources adjacent to Coco Cay. Mapped and provided a qualitative assessment of coral reef/hardbottom, seagrasses, and coastal rock communities and provided ecological components of an EIA of a proposed cruise ship pier.

Environmental Impact Assessment, Bock Cay, Exumas, Bahamas: Conducted landside investigations including qualitative and quantitative habitat mapping on a ~500-acre island proposed for resort development. Field work in development of floral and faunal inventories revealed the presence of various species protected by Bahamas laws and international conservation treaties.

<u>Ecological Assessments, Egg Island, Bahamas:</u> Qualitative and quantitative assessments of terrestrial, marine, and tidally influenced natural resources of a small island in the Bahamas considered for resort development. Developed vegetative community maps and an EIA.

<u>Blowing Point, Anguilla, British West Indies</u>: Conducted terrestrial and marine ecological assessments and developed ecological components of an environmental impact assessment associated with the relocation of a "Dolphin Discovery" facility.

Environmental Impact Assessment, Sky Beach, Eleuthera, Bahamas: Conducted terrestrial assessments of existing conditions on a  $\pm$  22-acre site in central Eleuthera. Developed inventories of flora and fauna observed and assessed potential ecological impacts of construction and operation of a 35-unit residential development. Conducted follow-up inspections during construction to monitor compliance with environmental components of governmental approvals.

<u>Bimini Bay Resort, Bimini, Bahamas</u>: Conducted an ecological assessment on a 700-acre tract on the north portion of the island. Developed an EIA for a proposed resort complex, and worked with representatives from the Bahamas government during their review of the proposed project. Later hired by the government to conduct a natural resources damage assessment to determine the extent to which non-compliance with governmental permits had caused damage to mangrove communities.

<u>Ecological Assessment, New Providence, Bahamas:</u> Conducted due diligence investigation of ecological conditions on an abandoned resort property to identify potential ecological constraints for redevelopment of the property. Identified and mapped the boundaries of environmentally sensitive resources, including several plant species that are protected by regulations of the Bahamas government. Conducted follow-up EIA-level analyses for construction of a marina and entrance channel.

<u>Savannah Bay, Anguilla, British West Indies</u>: Conducted terrestrial and marine ecological assessments as part of due diligence and EIA for a proposed resort development project. Habitats evaluated included nearshore marine, terrestrial, mangrove wetlands, and an open-water salt pond.

<u>Mangrove Assessment, Whale Cay, Bahamas</u>: Conducted qualitative and quantitative assessments of tidally influenced and landlocked mangrove communities on Whale Cay as part of an EIA for a proposed marina project.



#### PROFESSIONAL EXPERIENCE

Total Years: 22 Years with ATM: 18

#### AREAS OF SPECIALIZATION

- Data Collection
- Construction Layout
- Construction Phase Services
- AutoCAD
- Tide studies
- Surveys RTK, GPS, Boundary
- HYPACK MAX Hydrographic Survey Software
- AgGPS
- Innerspace Fathometer
- Trimble Geomatics Office Software
- ADCP, current meters

#### PROFESSIONAL CERTIFICATIONS

- USACE Construction Quality Management Certified, 2019
- First Aid and CPR Certified, 2009
- PADI Open Water SCUBA Diver, 2000
- PADI Advanced Open Water SCUBA Diver, 2002
- NITROX Certification, 2002
- DAN Member, 2002

#### SUMMARY OF QUALIFICATIONS

Mr. Waszak provides project coordination and technical support on engineering and environmental projects, including beach renourishment and shoreline stabilization studies. He has extensive experience as a surveyor, boat operator, field diver, and engineering technician. He conducts and supervises numerous hydrographic, topographic, boundary control, and erosion control line surveys. He has expertise in real-time kinematics and differential global positioning system surveying.

Mr. Waszak's environmental experience includes hardbottom assessments and mapping, seagrass mitigation and monitoring, sand compaction testing for suitability of sea turtle nesting, and underwater photography and videography. His geotechnical skills range from wet and dry sand sample collection, jet probing and vibracore retrieval and cataloging, to turbidity sampling and monitoring.

#### **PROJECT EXPERIENCE**

<u>Grand Turk Cruise Center Berth Expansion Environmental Impact</u> <u>Assessment (EIA), Turks and Caicos:</u> Conducted assessment of the cruise center, collected water and sand samples for lab analysis, and coordinated with biologists in developing a supplemental EIA for the berth expansion and pier extension.

<u>Ritz Grace Bay Environmental Impact Assessment (EIA), Turks and</u> <u>Caicos:</u> Conducted an environmental assessment of a previously developed property for an EIA associated with the development of a Ritz Carlton property.

<u>Orion Environmental Impact Assessment, Turks and Caicos:</u> Conducted an environmental investigation for the potential widening of an existing channel and the excavation of material for the creation of a mixed-use area including a marina, resort and retail space.

<u>Six Senses Project, Turks and Caicos:</u> Conducted an environmental investigation for the development of an environmental impact assessment (EIA) for potential resort and associated amenities including the potential for enhancing an inland pond for recreational use.

Amanyara Expansion Environmental Impact Assessment (EIA), Turks and Caicos: Assisted in the collection of data to develop an EIA for the potential expansion of the Amanyara Resort. e 2

<u>Amanyara Villas Wave Vulnerability Study, Turks and Caicos:</u> Assessed the Amanyara Resort shoreline to evaluate the condition of the dunes and the proximity of certain villas to the shoreline. Also assessed damage to villas from waves and flooding.

<u>Amayara Coastal Assessments, Turks and Caicos:</u> Conducted a shoreline assessment of the Amanyara Resort property to assess potential erosion to dunes and assess risk to structures during storm events.

<u>Leeward Environmental Impact Assessment, Leeward, Providenciales, Turks and Caicos:</u> Conducted an environmental investigation for the maintenance dredging of sections of the Leeward Going-Through Channel with focus on the potential effects related to erosion to upland resources.

<u>North Creek Dredging Design, Grand Turk, Turks and Caicos:</u> Conducted an environmental investigation for the potential widening of an existing channel and the excavation of material for the creation of a marina.

South Caicos Environmental Impact Assessment (EIA) Field and Modeling, South Caicos, Turks and Caicos: Assisted in the collection of data and preparation of an EIA specific to the creation of a mile-long beach within the Bell Sound Nature Reserve.

<u>Hawkes Nest Plantation, Grand Turk, Turks and Caicos:</u> Conducted an extensive survey of the nearshore reef system and seagrasses to determine potential impact of proposed construction activities. Underwater photography and characterization maps created.

<u>Leeward Jetty Design Revisions and Construction, Turks and Caicos:</u> Conducted construction observations to maintain that the project location and grades were met per project documents.

<u>Choc Bay Coastal and Hydrologic Assessment, St. Lucia:</u> Conducted surveys of the beach and nearshore environments, deployed tide gauges for tidal studies. Assisted in the assessment of the upland, marine and riverine environments; collected water samples along the river and offshore for lab analysis; the results were summarized in an environmental impact assessment.

<u>Coco Point Dredge Design and Environmental Impact Assessment (EIA) Support, Barbuda:</u> Conducted desktop analysis of potential sand sources along Coco Point, Barbuda. Analyzed potential upland stockpile/dewatering areas based on current upland uses and taking into account the dredge capabilities. Conducted jet probes within areas of potential sand sources and field analyzed the material for suitability of project needs. Assisted in the writing of relevant EIA sections.

<u>Palmetto Point Dredge and Environmental Impact Assessment (EIA) Support, Barbuda:</u> Conducted desktop analysis of potential sand sources along Palmetto Point, Barbuda. Analyzed potential upland stockpile/dewatering areas based on current upland uses and taking into account the dredge capabilities. Conducted jet probes within areas of potential sand sources and field analyzed the material for suitability of project needs. Assisted in the writing of relevant EIA sections.

<u>Runaway Beach Marina, Antigua:</u> Responsible for conducting beach, offshore and pone surveys and collected a long-term tide study. Data was used in modeling studies for the potential development of an inland marina.

<u>Caye Chapel Master Plan, Belize:</u> Conducted bathymetric and topographic surveys of the island to enhance and protect the shoreline.

#### PROFESSIONAL EXPERIENCE

Total Years: 27 Years with ATM: 1

#### AREAS OF SPECIALIZATION

- Coastal Engineering & Processes
- Coastal Structure Design
- Tidal & Nearshore Hydrodynamics
- Internal Waves
- Hydrodynamic Modeling
- Wave Modeling
- Sediment Transport Modeling
- Flushing Studies
- Field Data Collection & Analysis
- Expert Witness Testimony

#### **EDUCATION**

- PhD, Civil & Environmental Engineering, Stanford University, 2007
- MS, Ocean Engineering, Florida Institute of Technology, 2001
- BS, Applied Mathematics, University of South Carolina-Coastal Carolina College, 1995
- BS, Marine Science, University of South Carolina-Coastal Carolina College, 1995

#### PROFESSIONAL REGISTRATIONS

- Professional Engineer, CA #69818, 2006
- Professional Engineer, FL #67859, 2008
- Professional Engineer, MD #47865, 2015
- PADI Divemaster

#### FEDERAL CLEARANCES

- Top Secret (TS)
- Specialized Compartmental Information (SCI)

#### SUMMARY OF QUALIFICATIONS

Dr. Jachec joined ATM in February 2022 to provide expertise in coastal engineering and processes, including advanced hydrodynamic and numerical modeling, data analysis, and design. These technical skills support work in beach nourishment, coastal structure design, marsh restoration, storm surge assessments and mitigation plans, climate change adaptation (urban and rural environments), sediment transport, water quality, and littoral processes. Dr. Jachec serves as either a project manager and/or technical lead. Dr. Jachec served as a senior research physicist within the modeling and simulation group of a private company that provides mission-critical support to the U.S. Department of Defense. He also served as an associate professor of ocean engineering with the U.S. Naval Academy and Florida Institute of Technology after serving several years as a staff coastal engineer.

#### **PROJECT EXPERIENCE**

<u>A Sand Truck Haul Project for a Bypass Project, (south of) Sebastian Inlet, FL.</u> A sand bypass project was designed and undertaken for an area south of an inlet (downdrift direction). 30,000 cy of beach compatible sand was trucked in from an upland sand mine source and distributed on the beach above the MHW line. The design template was produced to accommodate the volume and minimize scarps.

Diffusion modeling of molecular concentration and flux through a sand cap volume, Cocoa Beach, FL. A one-dimensional (vertical) diffusion model was constructed to estimate the concentration and flux of molecular compounds through a porous sand layer. Peer-reviewed diffusivity through sediments was used to build an analytical solution of this steady state process. The diffusive time scale was also computed to provide guidance on the time it would talk the passive scalar to traverse through the vertical sand cap.

Assessment of sand mobilization in anticipation of a sand capping project,

<u>Cocoa Beach, FL</u>. In anticipation of placement of a sand cap in a coastal lagoon setting, a reduced-physics sand mobilization modeling study was carried out. Given the environmental site conditions, bedload sediment transport mobilization was assessed via modified Shields criteria for water waves. Incorporating likely flow regimes, such as naturally occurring wind waves, boat wakes, and propellor thrust, and sediment sand cap characteristics, calculations could be made under what flow conditions sediment could mobilize, which would reduce the effectiveness of the sand cap to protect the underlying muck lagoon sediment. A range of flow and sediment scenarios were assessed to determine these conditions with results guiding sediment selection for the sand cap material.

<u>Design of Coastal Groins, Turks and Caicos</u>. A series of nine rubble-mound structures were designed to attenuate waves and reduce erosion. These included (shore-parallel) breakwaters, (shore-perpendicular) groins, and T-

# A Geosyntec Company

head groins that include both features. The designs were carried out for functionality and structural stability. Designing the lengths, heights, and orientations were key during the functional design (confirmed with model results), while rock armor and core sizes, and bedding material were designed to sustain the daily and storm wave conditions. These structures on the north side of Turk and Caicos are paired with a beach nourishment.

#### PROJECT EXPERIENCE (PRIOR TO ATM)

Wave Attenuation Experiments on Living Shorelines over Time: A Wave Tank Study to Assess Recreational Boating Pressures, Brevard County, FL. Evaluated the wave energy attenuation associated with living shorelines that contained various combinations of eastern oysters and smooth cordgrass in a wave tank. Wave energy was calculated for each newly deployed and one-year old shoreline stabilization treatment using capacitance wave gauges and generated waves that were representative of boat wakes in Mosquito Lagoon, Florida. Therefore, the wave transformation was captured as a model for boat wakes. Natural resource managers and landowners facing shoreline erosion issues can use this information to create effective stabilization protocols that preserve shorelines while conserving native intertidal habitats.

<u>Coastal Investigation, Vessigny Beach, Trinidad</u>. Conducted an initial coastal investigation of the Vessigny Beach within the Guapo Bay area in anticipation of an artificial island creation. The limited beach profile data were supplemented with existing reports and data supplied by the client and the Institute of Marine Affairs. Recommended next steps pertaining to data collection, engineering, architectural design, and permitting.

<u>Assessment of the 32nd Street Breakwater System, Miami, FL.</u> Performed a team-lead study to assess beach processes, sediment budget, and wave transformation in the presence of underperforming breakwaters.

<u>Beach Assessment of the Hillsboro Pressure Equalization Modules (PEMs) Project, Broward County, FL.</u> Provided an unbiased assessment of the beach performance in and adjacent to areas of the PEMs located in Hillsboro Beach. Used client-supplied data performed by a professional land surveyor, shoreline change, volume change, and evenodd analyses were assessed prior to and post-PEM installation.

<u>Tidal Water Level Assessment and Culvert Design, Wild Harbor, MA</u>. An existing marsh is experiencing poor performance of tidal flushing and an existing small-diameter pipe is not providing the needed performance. To address this, a site visit was performed and marsh/creek and culvert elevation data were gathered. These data combined with existing data tides data allowed culvert sizing to be performed in terms of size, length, and slope (elevations) to improve the flushing.

Environmental Survey of Identified Sand Resource Sites: Offshore Alabama, North Carolina, and New Jersey. Addressed environmental concerns raised by the potential of dredging sand from the outer continental shelf offshore the states of Alabama, North Carolina, and New Jersey for beach replenishment. Primary concerns focused on physical and biological components of proposed sand resource areas. Wave transformation and sediment transport numerical modeling were employed to simulate the physical environmental effects of proposed sand dredging operations to ensure that offshore sand resources are developed in an environmentally sound manner to preclude long-term adverse environmental impacts at potential borrow sites and excess wave energy along the shorelines.

<u>Revetment Assessment and Design, New Seabury, MA.</u> Assessed existing (erosion) conditions and assisted in designing a revetment to protect several residential homes. Surveys, design, permitting, and construction were undertaken.



#### **PROFESSIONAL EXPERIENCE**

Total Years: 31 Years with Geosyntec: 19

#### AREAS OF SPECIALIZATION

- GIS
- ESRI ArcMap and ArcGIS Pro
- Trimble Pathfinder Office
   Software

#### PROFESSIONAL CERTIFICATIONS

• First Aid and CPR Certified

#### SUMMARY OF QUALIFICATIONS

Melissa Hensley, a scientist for Geosyntec Consultants based in Florida, has more than 31 years of experience assisting clients with Geographic Information Systems (GIS) data presentation and analysis as well as analytical data analysis and management for environmental impact assessments; remediation design and treatment system optimization; environmental management systems; sustainable remediation designs; and regulatory compliance projects. Ms. Hensley has assisted with the sampling, analysis, and reporting efforts associated with soil, sediment, surface water, and groundwater delineation and cleanup at a multitude of sites for federal, state, county, and private clients within and outside Florida. Ms. Hensley generates GIS figures used to assess vegetative and nearshore communities and impacts to those communities based on proposed development as well as to assess plume distributions and stability that include but are not limited to inland and near shore community types, proposed development plans, boundary surveys, historic photography, historic areas of concern in relation to current site conditions, groundwater elevation contours, analytical summary figures, parameter specific iso-concentration contours, well surveys, and lithologic and contaminant cross sections for a multitude of sites overseen by Geosyntec's Florida and Gulf Coast operations. Ms. Hensley is proficient with ESRI ArcMap, ArcGIS Pro, and Trimble GPS pathfinder office software as well as the proper use of Trimble handheld GPS for data collection and navigation

#### **PROJECT EXPERIENCE**

Environmental Assessment at Kennedy Space Center, Florida: Ms. Hensley has conducted biological and environmental assessments for numerous projects on Kennedy Space Center (KSC). Ms. Hensley has conducted threatened and endangered species surveys on KSC, Cape Canaveral Space Force Station, and Patrick Space Force Station as well as collected surface water and sediment sampling for KSC's Long Term Water Quality Program. Ms. Hensley has performed sea turtle nesting surveys, collected aquatic vegetation samples, light attenuation measurements, marine mammal stranding specimen collection, sand temperature readings used for sea turtle sex determination study supplement, Florida Scrub Jay nesting and territory mapping, wading bird surveys, gopher tortoise field surveys and relocations, as well as Southeastern beach mouse surveys. Ms. Hensley supported GIS figure preparation of KSC's Environmental Resource documentation which included but was not limited to soil type, landcover classifications, surface water bodies, bald east nesting, floodplains, fire management units, and rainfall collection stations. Ms. Hensley has assisted in the preparation of NEPA and regulatory permit applications

Soil, Groundwater, Surface Water, and Sediment of Kennedy Space Center, Florida: Background Chemical and Physical Characteristics: Ms. Hensley was the co-principal investigator for this project. She was responsible for coordinating data collection, lab analysis and reporting, database input and management. She collected the coordinate information for soil (200) and groundwater (51) sampling locations with a Trimble GPS unit, prepared and formatted all required reports, prepared all GIS figures included in the reports. She created a GIS soil data layer that combined all soil types of KSC into 10 categories. This coverage also took land use into account as a few soil classifications were based on agriculture land use.

Site Investigation and Remediation Program Management, NASA, Kennedy Space Center, Florida: Ms. Hensley provided assistance for all aspects of NASA/KSC's RCRA site investigations and remediation contract which includes but is not limited to: obtaining badges for site access of Geosyntec and subcontractor personnel, coordination of utility locates, preparation of work orders, maintaining contact with NASA project and facility managers throughout project life cycle, as well as managed large databases of analytical results that are in compliance with the very prescriptive requirements of NASA/KSC's Remediation Information System. Ms. Hensley provided GIS support for reporting all aspects of project work conducted for NASA which has included: SWMU Assessments (equivalent to a Phase I ESA), Confirmatory Sampling Studies/Reports (equivalent to a Phase II ESA), RFIs/RFI Addendums, Interim Remedial Action Plans/Reports, environmental project feasibility studies, Remedial Action Plans (Corrective Measure Designs), remedial implementation work plans, risk assessment studies, construction completion reports, institutional/engineering control plans, and Site Rehabilitation Completion Orders. Ms. Hensley prepared a RCRA Facility Investigation (RFI) Addendum conducted to re-evaluate soil/sediment results from a previous RFI against the most current soil screening values, calculated Benzo(a)Pyrene Total Equivalents, characterized the nature and extent of contaminated soil, collect additional soil data to delineate the vertical and horizontal extent of contamination, as well as prepared an Interim Measures Workplan for excavation of contaminated soil. Ms. Hensley prepared a Confirmatory Sampling Report and Interim Measures Workplan addressing soil impacts of metals and Benzo(a)Pyrene Total Equivalents. Ms. Hensley assisted with development of Standard Operating Procedures for PFAS sampling.

# Appendix C

Permits





# **Employment Services Department**

Ministry of Immigration & Border Services

Turks & Caicos Islands Government 96 Labour House, Government Business Park Airport Road, Providenciales Telephone: (649) 338-4564 / 338-4113 Website: www.gov.tc

Ref #: 644

DATE: 2 March 2023

The Manager

PARADISE SOLUTIONS

#### EMERGENCY / TEMPORARY WORK PERMIT

Permission is hereby granted for the person named below to be gainfully employed as a **CONSULTANT** with **PARADISE SOLUTIONS** for a period of (10) days.

NAME OF EMPLOYEE:DAVID GREGORY BRAUNDATE OF BIRTH:17/09/1956COUNTRY OF BIRTH:United States of America (USA)NATIONALITY:AmericanPASSPORT NUMBER:546173859COMMENCING DATE:06 March 2023THIS PERMISSION EXPIRES ON:16 March 2023

Yours Sincerely

Edwin Benjamin FranklynTaylor Commissioner of Labour

Cc: Director of Immigration Enforcement Manager

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Please Note: The Expiration of this Document renders your status in the Turks & Caicos Islands null and void.





MINISTRY OF EDUCATION, LABOUR, EMPLOYMENT & CUSTOMER SERVICE EMPLOYMENT SERVICES DEPARTMENT TURKS & CAICOS ISLANDS GOVERNMENT PROVIDENCIALES, TURKS & CAICOS ISLANDS, BRITISH WEST INDIES TELEPHONE: 649-338-4113, EXT: 4113 WEBSITE: www.gov.tc

Your Ref: A22012/4<sup>TH</sup> APRIL, 2022

Our Reference: A22012/TW P FILE DATE: 4<sup>TH</sup> APRIL, 2022

The Manager

BLUE CONCH HOLDINGS IV LTD.

NAME of Company:

BLUE CONCH HOLDINGS IV LTD.

#### REF: A22012 EMERGENCY/ TEMPORARY WORK PERMIT

Permission is hereby granted for the person named below to be gainfully employed as a **CONSULTANT with BLUE CONCH HOLDINGS IV LTD.** for a period of for forty-two (42) days.

DAVID GREGORY BRAUN

NAME O	FEMP	LOYEE:	
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DATE OF BIRTH: 25 SEPTEMBER, 1956

COUNTRY OF BIRTH: OHIO, U.S.A.

PASSPORT NUMBER: 546173859

COMMENCING DATE: 5<sup>TH</sup> APRIL, 2022

THIS PERMISSION EXPIRES ON:

17<sup>TH</sup> MAY, 2022

Yours Sincerely,

Edwin Benjamin Franklyn Taylor
 Commissioner of Labour
 Ce: Director of Immigration



#### Department of Environment and Coastal Resources Ministry of Tourism, Environment, Fisheries, Maritime Affairs, Culture & Heritage, Agriculture, Religious Affairs and Gaming. Turks and Caicos Islands Government Lower Bight Road, Providenciales

Turks and Caicos Islands

SCIENTIFIC RESEARCH PERMIT

SRP No.: 2023-03-09-13

Main Title of Research:	MOLO Hotel EIA PR15987		
	$M_{I}M_{I}$		
Principal:	Michael Jenkins, PhD, PE; Applied Technology and		
	Management		
Other applicants:	John Waszak; Applied Technology and Management		
	D. Greg Braun; Applied Technology and Management		
Partners/collaborators in TCI (if any):	Clyde Robinson; Paradise Solutions		
Type of application:	Comm		
Location:	Forbes Road, The Bight Settlement		
Total duration of application:	One Year		
	(90 days active)		
Period covered by this application:	1 March 2023 – 29 February 2024		
	Active 6 March 2023 3 June 2023)		
Research Fee:	\$500.00 Treasury Receipt		

Authorized Approving Officer:

LORMEKA WILLIAMS, MSc. Director, DECR

Date: 09 March 2023



Note:

This Permit should be presented to authorized-DECR Officers or TCIG officials when requested during monitoring activities which may be done anytime throughout the duration of the approved activities. The Application for Research Permit, Conditions of Approval and required attachments may be requested too.

# Appendix D

Drawings



# OUTLINE PLANNING PACK - MOLO EP HOTEL (TCI) FORBES ROAD, GRACE BAY PROVIDENCIALES, TCI





GENERAL PROJECT DATA

AGENT INFORMATION Name: Profession: Address:

Tel:

# Fax:

APPLICANT / OWNER Applicant Name:

Conservative Architects Lt Architect Horizon House, Leeward HW Providenciales, Turks and Caicos Island (649) 941-4040 (649) 941-4041

Ross Morrow On behalf of Molo Hotels SITE LOCATION AND REQUIREMENTS

BLOCK AND LOT: LOT SIZE TOTAL: LOCATION: SPECIFICATION:

PERMITTED DENSITY PER ACRE: PROPOSED DENSITY PER ACRE:

Grace Bay, Providenciales, Turks and Caicos Island BWI Hotel Development 50 no. per acre

60813 / 17 & 18

4.14 acres

33 no. per acre TOTAL NO. BEDROOMS: 207 no. bedrooms PRESENT LAND USE: VACANT USE

CISTERN SIZE: SPRINKLER CISTERN SIZE: TBC

TBC

SIDE SETBACKS REQ. MIN.: PROPOSED MIN
REAR SETBACKS REQ. MIN.:

PROPOSED MIN.:

30 ft. 30 ft. 30 ft. 30 ft.

PARKING REQUIREMENTS PARKING REQUIRED HOTEL (1 every 3 bedrooms) TOTAL PARKING REQ.: 69 TOTAL PARKING PROVIDED : 100



# TOPOGRAPHY OF SITE

Scale 1:300

Ica Architects Ltd. registered in Scotland company no 267727 Do not scale from this drawing. If in doubt, ask. This drawing is the property of ica and must not be copied, reproduced or disclosed without written permission. revisions // by // date // Topography survey predates demolition of built structures on the site, marked as Houses and Sheds on the plan.

NOTE :



# TURKS AND CAICOS ISLAND



# PROVIDENCIALES





# PROJECT SITE MAP

issue stage //

Site Area

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Topography and Location Plans

Outline Planning date // scale @ ARCH D / drawn // MAY19 NVR VARIOUS project // dwg number // revision // 1250 AL(00)001 A







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- ---- Site Boundary
- ---- Vegetation Line & Offset



# BLOCK PLAN

Scale 1:1500

- 1 Sewage Water Treatment Plant Below Car Park Size TBC
- 2 Sprinkler Pump Room Basement
- 3 Sprinkler Tank
- Basement
- 4 Cold Water Storage Tank Booster
   Set / Pumps Treatment Plant
   Basement
- 5 Pool Plant Room Basement Size TBC
- 6 Fortis Transformer Placement TBC by provider

---- Site Boundary 30ft./15ft. Offset

Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Landscaping Plan issue stage // Outline Planning

date // drawn // scale @ ARCH D // MAY19 NVR 1:300 project // dwg number // revision // 1250 AL(00)005 A







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- — — Site Boundary

- - - Vegetation Line & Offset



# BLOCK PLAN

Scale 1:1500

SCHEDULE OF ACCOMMODATION

BLOCK A

01 - 05 (per floor) BoH/Plant

### BLOCK B

01 - 02 (per floor) 12 no. TYPE 01 03 - 05 (per floor) 16 no. TYPE 01 06 - 07 (per floor) 8 no. TYPE 03

1 no. TYPE 04 Meeting Room/Club Lounge

# BLOCK C

01 - 02 (per floor) Welcome/BoH 03 - 05 (per floor) 6 no. TYPE 01 06 (only) Sun-Set Terrace

6 no. TYPE 01

Fitness/Spa

### BLOCK D

01 - 02 (per floor) Restaurant/Kitchen/BoH 03 - 05 (per floor) 14 no. TYPE 01 06 - 07 (per floor) 14 no. TYPE 01 BLOCK E

2 no. TYPE 04

TOTAL

01 - 05

178 no. TYPE 01 10 no. TYPE 02 16 no. TYPE 03 3no. TYPE 04

207 no. Overall Guest Beds

### NOTES

Feasibility based on drawings by others. Scheme subject to survey, planning, boundary confirmation, vehicle tracking & brand approval. All dimensions and areas are approximate

1 - Sewage Water Treatment Plant Below Car Park Size TBC

- 2 Sprinkler Pump Room Basement
- 3 Sprinkler Tank Basement
- 4 Cold Water Storage Tank Booster Set / Pumps Treatment Plant Basement
- 5 Pool Plant Room Basement Size TBC
- 6 Fortis Transformer Placement TBC by provider

---- Site Boundary 30ft./15ft. Offset

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Level 01 Outline Planning date // drawn // scale @ ARCH D // MAY19 NVR 1:300 project // dwg number // revision // 1250 AL(00)010 A



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issue stage //



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— — — — Site Boundary ---- Site Boundary 30ft./15ft. Offset ---- Vegetation Line & Offset



# BLOCK PLAN Scale 1:1500

# SCHEDULE OF ACCOMMODATION

BLOCK A

01 - 05 (per floor) BoH/Plant

### BLOCK B

01 - 02 (per floor) 12 no. TYPE 01 03 - 05 (per floor) 16 no. TYPE 01

BLOCK C

1 no. TYPE 04 06 - 07 (per floor) 8 no. TYPE 03 Meeting Room/Club Lounge

Fitness/Spa

01 - 02 (per floor) Welcome/BoH 03 - 05 (per floor) 6 no. TYPE 01 06 (only) Sun-Set Terrace

## BLOCK D

01 - 02 (per floor) Restaurant/Kitchen/BoH 6 no. TYPE 01 03 - 05 (per floor) 14 no. TYPE 01 06 - 07 (per floor) 14 no. TYPE 01 BLOCK E

2 no. TYPE 04 01 - 05

TOTAL

178 no. TYPE 01 10 no. TYPE 02 16 no. TYPE 03 3no. TYPE 04

207 no. Overall Guest Beds

### NOTES

Feasibility based on drawings by others. Scheme subject to survey, planning, boundary confirmation, vehicle tracking & brand approval. All dimensions and areas are approximate

Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Level 02

issue stage // Outline Planning date // drawn // scale @ ARCH D // MAY19 NVR 1:300 project // dwg number // revision //

A





# 1250 AL(00)011 A



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---- Site Boundary ---- Site Boundary 30ft./15ft. Offset ---- Vegetation Line & Offset



# BLOCK PLAN Scale 1:1500

SCHEDULE OF ACCOMMODATION

BLOCK A

01 - 05 (per floor) BoH/Plant

### BLOCK B

01 - 02 (per floor) 12 no. TYPE 01 03 - 05 (per floor) 16 no. TYPE 01

1 no. TYPE 04 06 - 07 (per floor) 8 no. TYPE 03 Meeting Room/Club Lounge

Fitness/Spa

BLOCK C

01 - 02 (per floor) Welcome/BoH 03 - 05 (per floor) 6 no. TYPE 01 06 (only) Sun-Set Terrace

## BLOCK D

01 - 02 (per floor) Restaurant/Kitchen/BoH 6 no. TYPE 01 03 - 05 (per floor) 14 no. TYPE 01 06 - 07 (per floor) 14 no. TYPE 01 BLOCK E

2 no. TYPE 04 01 - 05

TOTAL

178 no. TYPE 01 10 no. TYPE 02 16 no. TYPE 03 3no. TYPE 04

207 no. Overall Guest Beds

### NOTES

Feasibility based on drawings by others. Scheme subject to survey, planning, boundary confirmation, vehicle tracking & brand approval. All dimensions and areas are approximate

Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Levels 03 - 05 issue stage // Outline Planning date // drawn // scale @ ARCH D //

MAY19 NVR 1:300 project // dwg number // revision // 1250 AL(00)012 A







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---- Site Boundary ---- Site Boundary 30ft./15ft. Offset ---- Vegetation Line & Offset



# BLOCK PLAN Scale 1:1500

SCHEDULE OF ACCOMMODATION

BLOCK A

01 - 05 (per floor) BoH/Plant

# BLOCK B

01 - 02 (per floor) 12 no. TYPE 01 03 - 05 (per floor) 16 no. TYPE 01 06 - 07 (per floor) 8 no. TYPE 03

1 no. TYPE 04 Meeting Room/Club Lounge

# BLOCK C

01 - 02 (per floor) Welcome/BoH 03 - 05 (per floor) 6 no. TYPE 01 06 (only) Sun-Set Terrace

Fitness/Spa

# BLOCK D

01 - 02 (per floor) Restaurant/Kitchen/BoH 6 no. TYPE 01 03 - 05 (per floor) 14 no. TYPE 01 06 - 07 (per floor) 14 no. TYPE 01 BLOCK E

2 no. TYPE 04

TOTAL

01 - 05

178 no. TYPE 01 10 no. TYPE 02 16 no. TYPE 03 3no. TYPE 04

207 no. Overall Guest Beds

# NOTES

Feasibility based on drawings by others. Scheme subject to survey, planning, boundary confirmation, vehicle tracking & brand approval. All dimensions and areas are approximate

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Level 06 issue stage // Outline Planning

date // drawn // scale @ ARCH D // MAY19 NVR 1:300 project // dwg number // revision // 1250 AL(00)013 A







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---- Site Boundary ---- Site Boundary 30ft./15ft. Offset ---- Vegetation Line & Offset



# BLOCK PLAN

Scale 1:1500

SCHEDULE OF ACCOMMODATION

BLOCK A

01 - 05 (per floor) BoH/Plant

### BLOCK B

01 - 02 (per floor) 12 no. TYPE 01 03 - 05 (per floor) 16 no. TYPE 01

1 no. TYPE 04 06 - 07 (per floor) 8 no. TYPE 03 Meeting Room/Club Lounge

Fitness/Spa

BLOCK C

01 - 02 (per floor) Welcome/BoH 03 - 05 (per floor) 6 no. TYPE 01 06 (only) Sun-Set Terrace

## BLOCK D

01 - 02 (per floor) Restaurant/Kitchen/BoH 6 no. TYPE 01 03 - 05 (per floor) 14 no. TYPE 01 06 - 07 (per floor) 14 no. TYPE 01 BLOCK E

2 no. TYPE 04 01 - 05

TOTAL

178 no. TYPE 01 10 no. TYPE 02 16 no. TYPE 03 3no. TYPE 04

207 no. Overall Guest Beds

### NOTES

Feasibility based on drawings by others. Scheme subject to survey, planning, boundary confirmation, vehicle tracking & brand approval. All dimensions and areas are approximate

Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Level 07 issue stage // Outline Planning date // drawn // scale @ ARCH D //

MAY19 NVR 1:300 project // dwg number // revision // 1250 AL(00)014 A









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---- Site Boundary ---- Site Boundary 30ft. Offset



---- Vegetation Line & Offset

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Sections Section AA & BB

issue stage // Outline Planning

date // drawn // scale @ ARCH D // MAY19 NVR 1:200 project // dwg number // revision // 1250 AL(00)030 A









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ffset	
D foot o	

---- Site Boundary 30ft. Offset

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Sections Section CC & DD

issue stage // Outline Planning

 date //
 drawn //
 scale @ ARCH D //

 MAY19
 NVR
 1 : 200

 project //
 dwg number //
 revision //

 1250
 AL(00)031
 A









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---- Site Boundary ---- Site Boundary 30ft. Offset

----- Vegetation Line & Offset

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Elevations East (Beach Access) and South

issue stage // Outline Planning

date // drawn // scale @ ARCH D // JULY19 NVR 1 : 200 project // dwg number // revision // 1250 AL(00)040 A



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---- Vegetation Line & Offset

---- Site Boundary 30ft. Offset

Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Elevations North and West (Beach Access)

date // drawn // scale @ ARCH D // JULY19 NVR 1 : 200 project // dwg number // revision // 1250 AL(00)041 A







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— — — — Site Boundary ---- Vegetation Line & Offset

---- Site Boundary 30ft. Offset

Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Proposed Elevations East and West

 date //
 drawn //
 scale @ ARCH D //

 JULY19
 NVR
 1 : 200

 project //
 dwg number //
 revision //

 1250
 AL(00)042
 A








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#### SCHEDULE OF ROOM TYPES

TYPE 01	178 no. Total
TYPE 02	10 no. Total
TYPE 03	16 no. Total
TYPE 04	3 no. Total

## OVERALL TOTAL - 207 GUESTROOMS

NOTES Feasibility based on drawings by others. All dimensions and areas are approximate.

For reference plan showing where the room types occur refer to AL(00)050.



# BLOCK PLAN

Scale 1:1500

## SCHEDULE OF ACCOMMODATION BLOCK A

01 - 05 (per floor) BoH/Plant

#### BLOCK B

01 - 02 (per floor)	12 no. TYPE 01
	Fitness/Spa
03 - 05 (per floor)	16 no. TYPE 01
	1 no. TYPE 04
06 - 07 (per floor)	8 no. TYPE 03
	Meeting Room/Club Lounge
BLOCK C	

01 - 02 (per floor)Welcome/BoH03 - 05 (per floor)6 no. TYPE 0106 (only)Sun-Set Terrace

#### BLOCK D

01 - 02 (per floor) Restaurant/Kitchen/BoH 6 no. TYPE 01 03 - 05 (per floor) 14 no. TYPE 01 06 - 07 (per floor) 14 no. TYPE 01

BLOCK E 01 - 05

TOTAL

178 no. TYPE 01 10 no. TYPE 02 16 no. TYPE 03 3no. TYPE 04

2 no. TYPE 04

207 no. Overall Guest Beds

#### NOTES

Feasibility based on drawings by others. Scheme subject to survey, planning, boundary confirmation, vehicle tracking & brand approval. All dimensions and areas are approximate

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Reference Plans for Room Types issue stage // Outline Planning date // drawn //

scale @ ARCH D / JUNE19 NVR 1 : 1000 project // dwg number // revision // 1250 AL(00)050 A



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ROOM TYPE 01 Scale 1 : 50 40 sqm 430 sqft 178 no. TOTAL

ROOM TYPE 02 Scale 1 : 50

75 sqm 807 sqft 10 no. TOTAL

- ·



ROOM TYPE 03 Scale 1 : 50 60 sqm 645 sqft 16 no. TOTAL



ROOM TYPE 04 Scale 1 : 50 60 sqm 645 sqft 3 no. TOTAL

SCHEDULE OF ROOM TYPES TYPE 01 178 no. Total TYPE 02 10 no. Total TYPE 03 16 no. Total TYPE 04 3 no. Total OVERALL TOTAL - 207 GUESTROOMS NOTES Feasibility based on drawings by others. All dimensions and areas are approximate. For reference plan showing where the room types occur refer to AL(00)050.

project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Room Type Plans (1 of 2) 

issue stage // Outline Planning date // drawn // scale @ ARCH D //

JULY19 AC 1 : 50 project // dwg number // revision // 1250 AL(00)051 A



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PROTOTYPICAL MODULE RISER PLAN Scale 1 : 20



project title // Proposed Hotel Grace Bay Turks and Caicos Island

drawing title // Modular Construction inc. Prototypical Details

issue stage // Outline Planning date // drawn // scale @ ARCH D // JULY19 AC VARIOUS project // dwg number // revision // 1250 AL(00)060



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## Appendix E

Water Analysis



Provo Water Company, Ltd Bristol House Unit 3, Leeward Highway, Providenciales, TKCA1ZZ



To: Applied Tech and Management John Waszak Doc#: 000577

Approved by:

Chemical Analysis: 3-22-23 Bacteria Analysis: 3-20-23

Sherr Bed Ponker

Water Quality Manager Sherry Bell-Parker

This report shall not be reproduced except in full without approval of the laboratory can provide assurance that parts of a report are not taken out of context.

Provo Water Company shall have no liability to the client or the client's customer with respect to decisions or recommendation made, actions taken, or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor. This report shall not be reproduced except in full.





Provo Water Company, Ltd Bristol House Unit 3, Leeward Highway, Providenciales, TKCA1ZZ



Doc#: 000577

Client Name: Applied Tech and Management (ATM) Client Address: Grace Bay, Providenciales Contact number email: jwaszak@appliedtm.com DATE of Sample Received: 3-10-23 DATE of Sampling: 3-10-23 DATE of Test: 3-22-23 DATE of Report: 3-31-23 TEMP@ analysis: 22.8°C

<sup>1</sup>Samples collected by: John Waszak Test results for the following sample location: Molo Hotel Sample Description: Sea Water Refer to <u>Sampling Management</u> procedure SM-119WQ- results relate only to the items tested below

<sup>2</sup> Parameters	Method	Molo Hotel	*DW Standard
Copper	HACH 8021	1.22 mg/L	1-2 mg/L (E.P.A.)
Iron	HACH 8008	<0.02 mg/L	0.3 mg/L (E.P.A.)
Nitrate	HACH 10020	<0.2 mg/l	11.5mg/L(W.H.O.)
Nitrite	HACH 8507	<0.002 mg/l	0.9mg/L(W.H.O.)
Sulphate	HACH 8051	2800 mg/l	250mg/L (E.P.A)
Sulphide (C)	HACH 8131	6µg/I	50µg/L(W.H.O.)
T.D.S.	T.D.S. Meter	27,570 mg/l	1000mg/L (E.P.A)
рН	pH Meter	8.21	6.5-8.5 (E.P.A)
Phosphate (C)	HACH 8048	1.07mg/l	5mg/L(W.H.O.)
Salinity	Salinity Meter	36,820 mg/l	500mg/L(W.H.O.)

\*DW Drinking Water \*\* W.H.O. World Health Organization \*\*\* E.P.A. Environmental Protection Agency <sup>2</sup>Testing conducted outside of the lab will be labeled as such in the "Parameter" column beside the parameter being testing Location of test (F)ield (C)ustomer location

Parameters	Method	Molo Hotel	W.H.O. DW Standards
Fecal Coliform	HACH 8074	Absent	0 cfu/100ml per sample
Total Coliform	HACH 10029	<b>38 cfu/100ml</b>	0 cfu/100ml per sample
E. Coli	HACH 10029	Absent	0 cfu/100ml per sample

Control Blanks	Molo Hotel
Total Coliform	Absent
<b>C</b> 11	

Test performed by: Stefon Tyndall

**Note:** 20ml of seawater sample was used adding reagent grade water to meet the required sample of 100ml for testing. Results shown was multiplied by 5.

<sup>1</sup>Disclaimer: where the laboratory has not been responsible for the sampling stage, the laboratory cannot guarantee validity of results. The results of the report apply to the sample(s) as received by client.

Enviromental Conditions: No enviromental conditions were observed during the sampling process that could affect the interpretation of the results

## Appendix F

The Schedules



Department of Environment and Coastal Resources (DECR) Ministry of Tourism, Environment, Heritage and Culture (MTEHC) Turks and Caicos Islands Government (TCIG) Providenciales, Turks and Caicos Islands



# The following flora and fauna are protected species because they are endemic, rare and endangered.

### THE SCHEDULES

- I. Protected Flora & Fungi
  - A. Turks & Caicos Endemic Plants
    - 1. Turks & Caicos heather Limonium bahamense
    - 2. Lucayan pear Opuntia x lucayana
    - 3. Britton's buttonbush Spermacoce brittonii
    - 4. Capillary buttonbush Spermacoce capillaries
    - 5. Stipitate dog-strangle Metastelma stipitatum
    - 6. Slender-stemmed peppergrass Lepidium filicaule
    - 7. Caicos Encyclia orchid Encyclia caicensis
    - 8. Caroline's pink Stenandrium carolinae
    - 9. Silvery silverbush Argythamnia argentea
    - 10. Broom bush Evolvulus bahamensis
    - 11. Hatpin sedge Eleocharis bahamensis
  - B. Endemic and vital species of fungi
    - 1. Ectomychrrhizal species in the genera Neoboletus, Octaviana, Diplocystis, Melanogaster, Sebacinaceae, Tomentella, Thelophora, Thelophoraceae, Entoloba, and Inocybe

Envi

ronment

- 2. Pine truffle Rhizopogon floscorubens
- 3. Russula littoralis
- 4. Scleroderma bermudense and other ectomycorrhizal Scleroderma
- 5. Sullus cothurnatus
  - 6. Amanita arenicola
- C. Lucayan Archipelago Endemic Plants
  - 1. Haulbark Thouinia discolor
  - 2. Inagua Encyclia orchid Encyclia inaguensis
  - 3. Correll's rock orchid Encyclia correllii (ex Encyclia gracilis)
  - 4. Rufous Encyclia Encyclia rufa
  - 5. Inagua gum-elemi Bursera inaguensis
  - 6. Frenning's gum-elemi Bursera frenningae
  - 7. Sea sage Lantana involucrata
  - 8. Inagua silver-top palm Coccothrinax inaguensis
  - 9. Nakedback Euphorbia gymnonota



Department of Environment and Coastal Resources (DECR) Ministry of Tourism, Environment, Heritage and Culture (MTEHC) Turks and Caicos Islands Government (TCIG) Providenciales, Turks and Caicos Islands



10. Wild thyme Euphorbia inaguensis 11. Inagua century plant Agave inaguensis 12. Lucayan century plant Agave millspaughii 13. Bahama love grass Eragrostis bahamensis 14. Nash's pepperwort Marsilea nashii 15. Inagua fimbry sedge Fimbristylis inaguensis 16. Caicos pine Pinus caribaea var. bahamensis 17. Brasiletto Caesalpinia reticulata 18. Pineyard golden creeper Ernodea serratifolia 19. Low ashy heliptrope Heliotropium nanum 20. Thyme-leaved buttonbush Spermacoce thymifolia 21. Lucayan lobelia Lobelia lucayana 22. Lucayan cocobey Varronia lucayana 23. Bahama cocobey Varronia bahamensis 24. Lucayan silverbush Argythamnia lucayana 25. Yellow silverbush Argythamnia sericea 26. Bumbo-bush Lepidaploa arbuscula 27. False holly Anastraphia paucifloscula 28. Lucayan boneset Chromalaena lucayana 29. Rong-bush Wedelia bahamensis 30. Heliotrope Heliotropium diffusum 31. Nash's heliotrope Heliotropium nashii 32. Wilson's pinweed spurge Euphorbia lecheoides 33. Bahama milkpea Galactia bahamensis 34. Swamp-bush Pavonia bahamensis 35. Correll's spider-grass Aristida correlliae 36. Catesby's lily-thorn Catesbaea foliosa 37. Winder Clematis plukenetii 38. Golden creeper Ernodea millspaughii 39. Savanna buttonbush Spermacoce savannarum 40. Big sage Lantana balsamifera 41. Horse pear Consolea nashii D. Native Plants of Special Conservation Concern 1. Tall Encyclia orchid Encyclia altissima 2. Britton's shadow-witch orchid Ponthieva brittonae 3. Adder's mouth orchid Malaxis spicata

- 4. Spring ladies tresses Spiranthes vernalis
- 5. Green ladies tresses Spiranthes polyantha
- 6. Cuban dune mat Guilleminea brittonii
- 7. Woolly nipple cactus Mammillaria nivosa
- 8. Smooth pear Opuntia bahamana
- 9. Dildo cactus Pilosocereus royenii





- 10. West Indian mahogany Swietenia mahagoni
- 11. Holy lignum vitae *Guaiacum sanctum*
- 12. True lignum vitae Guiaiacum officinale
- 13. Mauby Colubrina elliptica
- 14. Brook's cereus Harrisia brookii
- 15. Monkey-fiddle Euphorbia tithymaloides var. bahamensis
- 16. Pork-and-doughboy Acacia acuifera
- 17. Leatherleaf casha Acacia coriophylla
- 18. Bahama savia Savia bahamensis
- 19. Brasiletto Caesalpinia bahamensis
- 20. Bloody powderpuff Calliandra haematomma
- 21. Popcorn Chamaecrista caribaea
- 22. Mistletoe Dendropemon purpureus
- 23. Wild hibiscus Hibiscus clypeatus
- 24. Taylor's jujube Ziziphus taylori
- 25. Bahama buttonbush Spermacoce bahamensis
- 26. Mahogany mistletoe Phoradendron northropiae
- 27. Pineyard rat-tail bush Stachytarpheta fruticosa
- II. Protected Fauna
  - A. Turks & Caicos Endemic Fauna
    - 1. Turks & Caicos rock iguana Cyclura carinata
    - 2. Caicos pygmy trope boa *Tropidophis greenwayi* (*T. g. greenwayi* & *T. g. lathanus*)
    - 3. Caicos barking gecko Aristelliger hechti
    - 4. Turks snake-doctor Spondylurus turksae
    - 5. Caicos snake-doctor Spondylurus caicosae
    - 6. Turks dwarf gecko Sphaerodactylus underwoodi
    - 7. Caicos dwarf gecko Sphaerodactylus caicosensis
    - 8. Dwarf Greater Antillean bullfinch Loxigilla violacea ofella
    - 9. Turks & Caicos thick-billed vireo Vireo crassirostris stalagmium
    - 10. Cave crustacean Deevaya spiralis
    - 11. Cave crustacean Speonebilia cannoni
    - 12. Cave crustacean Bahadzia stocki
    - 13. Cave crustacean Lasionectes entrichoma
    - 14. Cave crustacean Erebonectoides macrochaetus
    - 15. Cave crustacean Fosshagenia ferrarii
    - 16. Cave crustacean Pelagomacellicephala iliffei
    - 17. Cave crustacean Kaloketos pilosus
    - 18. Cave crustacean Godzillius robustus
    - 19. Cave crustacean Bahalana caicosana
    - 20. Cave crustacean Spelaeonicippe provo



Department of Environment and Coastal Resources (DECR) Ministry of Tourism, Environment, Heritage and Culture (MTEHC) Turks and Caicos Islands Government (TCIG) Providenciales, Turks and Caicos Islands



B. Protected Birds. List of Turks & Caicos Islands Native, Migratory, and Regionally Vagrant Bird Species.

Flamingos (Phoenicopteriformes)

- 1. Caribbean Flamingo *Phoenicopterus ruber* Tropicbirds (Phaethontiformes)
- 2. White Tailed Tropicbird *Phaethon lepturus* Petrels (Procellariiformes)
- 3. Herald petrel Pterodroma arminjoniana
- 4. Black-capped petrel Pterodroma hasitata
- 5. Audubon's shearwater Puffinus Iherminieri
- 6. Cory's shearwater Calonectris borealis
- 7. Pelicans, Cormorants, Herons Pelecaniformes
- 8. Brown pelican Pelecanus occidentalus
- 9. Brown Booby Sula leucogaster
- 10. Masked booby Sula dactylatra
- 11. Northern gannet Morus bassanus
- 12. Red-footed booby Sula sula
- 13. Double Crested Cormorant Phalacrocorax auritus
- 14. Olivaceous Cormorant Phalacrocorax olivaceus
- 15. Magnificent Frigatebird Fregata magnificens
- 16. Great Blue Heron Ardea herodias
- 17. Great Egret Casmerodius albus
- 18. Snowy Egret Egretta thula
- 19. Little Blue Heron Egretta caerulea
- 20. Tricolored Heron Egretta tricolor
  - 21. Reddish Egret Egretta rufescens
  - 22. Cattle Egret Bubulcus ibis
- 23. Green Heron Butorides virescens
- 24. Black Crowned Night Heron Nycticorax nycticorax
- 25. Yellow Crowned Night Heron Nyctanassa violacea
- 26. American Bittern Botaurus lentiginosus
- 27. Glossy Ibis Plegadis falcinellus
- 28. White ibis *Eudocimus* albus
- 29. Roseate Spoonbill Ajaia ajaja
  - Rails and Cranes (Gruiformes)
- 30. Clapper Rail Rallus longirostris
- 31. King rail Rallus elegans
- 32. Sora Rail Porzana carolina
- 33. Purple gallinule Porphyrio martinicus
- 34. Common gallinule Gallinula galeata
- 35. American coot Fulica americana
- 36. Caribbean coot *Fulica caribaea*
- 37. Sandhill crane Grus canadensis





- 38. Limpkin *Aramus guarauna* 
  - Geese, Swans and Ducks (Anseriformes)
- 39. West Indian Whistling Duck Dendrocygna arborea
- 40. Fulvous whistling duck Dendrocygna bicolor
- 41. Green Winged Teal Anas crecca
- 42. White-cheeked Pintail Anas bahamensis
- 43. Blue-winged Teal Anas discors
- 44. Ruddy Duck Oxyura jamaicensis
- 45. Least Grebe Tachybaptus dominicus
- 46. Pied-billed Grebe Podilymbus podiceps
- 47. Greater Scaup Aythya marila
- 48. Lesser scaup Aythya affinis
- 49. Ring-necked duck Aythya collaris
- 50. Hooded merganser Lophodytes cucullatus
- 51. Common merganser Mergus merganser
- 52. Red-breasted merganser Mergus serrator
- 53. Canada goose Branta canadensis
- 54. Masked Duck Nomonyx dominicus
- 55. Redhead Aythya americana
- 56. Northern shoveler Spatula clypeata
- 57. Gadwall Mareca strepera
- 58. American wigeon Mareca americana
- 59. Mallard Anas platyrhynchos (excludes domestic breeds)
- 60. American black duck Anas rubripes
- 61. Northern pintail Anas acuta
- 62. Shorebirds Charadriiformes
- 63. American Oystercatcher Haemotopus palliatus
- 64. Black-necked Stilt Himantopus mexicanus
- 65. American Avocet Recurvirostra americana
- 66. Lesser Golden Plover Pluvialis dominica
- 67. Grey plover Pluvialus squatarola
- Dep
- 68. Semipalmated Plover *Charadrius semipalmatus* 69. Wilson's Plover *Charadrius wilsonia*
- 70. Killdeer Charadrius vociferus
- 71. Snowy Plover Charadrius alexandrinus
- 72. Piping Plover Charadrius melodus
- 73. Black-bellied Plover Pluvialis squatarola
- 74. Upland Sandpiper Bartyramia longicauda
- 75. Whimbrel Numenius phaeopus
- 76. Hudsonian Godwit *Limosa haemastica*
- 77. Ruddy Turnstone Arenaria interpres
- 78. Red Knot Calidris canutus
- 79. Stilt Sandpiper Calidris himantopus
- 80. Sanderling Calidris alba





81. Dunlin Calidris alpina 82. Least Sandpiper Calidris minutilla 83. White-rumped Sandpiper Calidris fuscicollis 84. Pectoral Sandpiper Calidris melanotos 85. Semipalmated Sandpiper Calidris pusilla 86. Western Sandpiper Calidris mauri 87. Short-billed Dowitcher Limnodromus griseus 88. Wilson's snipe Gallinago delicata 89. Common Snipe Gallinago gallinago 90. Spotted Sandpiper Actitus macularia 91. Solitary Sandpiper Tringa solitaria 92. Willet Catoptrophorus semipalmatus 93. Greater Yellowlegs Tringa melanoleuca 94. Lesser Yellowlegs Tringa flavipes 95. Wilson's phalarope Steganopus tricolor 96. Little aukAlle alle 97. Pomarine skua Stercoriarus pomarinus 98. Brown Noddy Anous stolidus 99. Black Skimmer Rhynchops niger 100. Bonaparte's gull Chroicocephalus philadelphia 101. Black-headed gull Chroicocephalus ridibundus 102. Laughing gull Leucophaeus atricilla 103. Ring-billed gull Larus delawarensis 104. Great black-backed gull Larus marinus 105. American herring gull Larus smithsonianus 106. Sooty Tern Sterna fuscata 107. Bridled Tern Sterna anaethetus 108. Least Tern Sterna antillarum 109. Gull-billed tern Gelochelidon nilotica 110. Caspian tern Hydroprogne caspia 111. Black tern Chlidonius niger 112. Roseate Tern Sterna dougallii 113. Common Tern Sterna hirundo 114. Forster's Tern Sterna forsteri 115. Sandwich Tern Sterna sandvicencis 116. Royal Tern Sterna maximus Pigeons and doves (Columbiformes) 117. White Crowned Pigeon Columba leucocephala 118. White-winged Dove Zenaida asiatica 119. Zenaida Dove Zenaida aurita 120. Mourning Dove Zenaida macroura 121. Common Ground Dove Columbina passerina 122. Key West Quail Dove Geotrygon chrysia

Cuckoos (Cuculiformes)

TCI protected species/page6 of 10 pages



Turks and Caicos Islands Government (TCIG)





- 123. Yellow-billed Cuckoo Coccyzus americanus
- 124. Mangrove Cuckoo Coccyzus minor
- 125. Smooth-billed Ani *Crotophaga ani* Hawks (Accipitriformes)
- 126. Osprey Pandion heliaetus
- 127. Red-tailed hawk Buteo jamaicensis
- 128. Sharp-shinned hawk Accipter striatus
- 129. Northern harrier Circus cyaneus
- 130. Swallow-tailed kite *Elanoides forficatus* Owls (Strigiformes)
- 131. Barn Owl Tyto alba
- 132. Short-eared Owl Asio flammeus
  - Nighthawks, swifts, hummingbirds (Caprimulgiformes)
- 133. Common Nighthawk Chordeiles minor
- 134. Antillean Nighthawk Chordeiles gundlachii
- 135. Chuck-will's- widow Caprimulgus carolinensis
- 136. Black Swift Cypseloides niger
- 137. Chimney Swift Chaetura pelagica
- 138. Antillean palm swift Tachornis phoenicobia
- 139. Lesser Antillean swift Chaetura martinica
- 140. Bahama Woodstar Hummingbird Calliphlox evelynae
- 141. Bee Hummingbird Mellisuga helenae
- 142. Cuban emerald hummingbird *Chlorostilbon ricordii* Kingfishers (Coriaciiformes)
- 143. Belted Kingfisher Ceryle alcyon Falcons (Falconiformes)
- 144. American kestrel Falco sparverius
- 145. Merlin Falco columbarius
- 146. Peregrine falcon *Falco peregrinus* Woodpeckers (Piciformes)
- 147. Yellow Bellied Sapsucker Sphyrapicus varius
- 148. Hairy Woodpecker *Picoides villosus* Perching birds (Passeriformes)
- 149. Purple Martin *Progne subis*
- 150. Sand martin Riparia riparia
- 151. Caribbean Martin Progne dominicensis
- 152. Bahama swallow Tachycineta cyaneoviridis
- 153. Tree Swallow Tachycineta bicolor
- 154. Cave swallow Petrochelidon fulva
- 155. Northern Rough- winged Swallow Stelgidopteryx serripennis
- 156. Bank Swallow Riparia riparia
- 157. Cliff Swalow Hirundo pyrrhonota
- 158. Barn Swallow Hirundo rustica
- 159. Eastern Wood Pewee Contopus virens



Ministry of Tourism, Environment, Heritage and Culture (MTEHC)

Turks and Caicos Islands Government (TCIG) Providenciales, Turks and Caicos Islands



- 160. Greater Antillean Pewee Contopus caribaeus
- 161. Eastern Kingbird Tyrannus tyrannus
- 162. Gray Kingbird Tyrannus dominicensis
- 163. Giant kingbird (historical range) Tyrannus cubensis
- 164. La Sagra's flycatcher Myriacrus sagrae
- 165. Hispaniolan wood peewee Contopus hispaniolensis
- 166. Cedar waxwing Bombycilla cedrorum
- 167. Cuban Crow Corvus nasicus
- 168. Blue-gray Gnatcatcher Polioptila caerulea
- 169. Gray-cheeked Thrush Catharus minimus
- 170. American robin Turdus migratorius
- 171. Gray Catbird Dumetella carolinensis
- 172. Northern Mockingbird Mimus polyglottus
- 173. Bahama Mockingbird Mimus gundlachii
- 174. Pearly-eyed Thrasher Margarops fuscatus
- 175. Chipping sparrow Spizella passerina
- 176. White-crowned sparrow Zonotrichia leucophrys
- 177. Savannah sparrow Passerculus sandwichensis
- 178. White-eyed Vireo Vireo griseus
- 179. Thick-billed Vireo Vireo crassirostris
- 180. Yellow-throated Vireo Vireo flavifrons
- 181. Philadelphia Vireo Vireo philadelphicus
- 182. Red-eyed Vireo Vireo olivaceus
- 183. Black-whiskered Vireo Vireo altiloquus
- 184. Blue Winged Warbler Vermivora pinus
- 185. Tennessee Warbler Vermivora peregrina
- 186. Nashville Warbler Vermivora ruficapilla
- 187. Northern Parula Warbler Parula americana
- 188. Yellow Warbler Dendroica petechia
- 189. Chestnut-sided Warbler Dendroica pensylvanica
- 190. Magnolia Warbler Dendroica magnolia
- 191. Cape May Warbler Dendroica tigrina
- 192. Black-throated Blue Warbler Dendroica caerulescens
- 193. Yellow-rumped Warbler Dendroica coronata
- 194. Black-throated Green Warbler Dendroica virens
- 195. Blackburnian Warbler Dendroica fusca
- 196. Yellow-throated Warbler Dendroica dominica
- 197. Kirtland's Warbler Dendroica kirtlandii
- 198. Prairie Warbler Dendroica discolor
- 199. Palm Warbler Dendroica palmarum
- 200. Bay-breasted Warbler Dendroica castanea
- 201. Blackpoll Warbler Dendroica striata
- 202. Cerulean Warbler Dendroica cerulea
- 203. Black-and-white Warbler Mniotilta varia



Ministry of Tourism, Environment, Heritage and Culture (MTEHC)

Turks and Caicos Islands Government (TCIG) Providenciales, Turks and Caicos Islands



- 204. American Redstart Setophaga ruticilla
- 205. Prothonotary Warbler Protonotaria citrea
- 206. Worm-eating Warbler Helmitheros vermivorus
- 207. Ovenbird Seiurus aurocapillus
- 208. Townsend's warbler Stetophaga townsendi
- 209. Northern Waterthrush Seiurus noveboracensis
- 210. Louisiana Waterthrush Seiurus motacilla
- 211. Kentucky Warbler Oporomis formosus
- 212. Connecticut Warbler Oporomis agilis
- 213. Mourning Warbler Oporomis philadelphia
- 214. Common Yellowthroat Geothlypis trichas
- 215. Hooded Warbler Wilsonia citrina
- 216. Green-tailed warbler Microligea palustris
- 217. Swainson's warbler Limnothlypis swainsonii
- 218. Bananaquit Coereba flaveola
- 219. Western spindalis Spindalis zena
- 220. Summer Tanager Piranga rubra
- 221. Scarlet Tanager Piranga olivacea
- 222. Rose Breasted Grosbeak Pheucticus Iudovicianis
- 223. Blue Grosbeak Guaraca caerulea
- 224. Indigo Bunting Passerina cyanea
- 225. Painted Bunting Passerina ciris
- 226. Dickcissel Spiza americana
- 227. Black-faced Grassquit Tiaris bicolor
- 228. Greater Antillean Bullfinch Loxigilla violacea ofella
- 229. White-crowned Sparrow Zonotrichia leucophrys
- 230. Bobolink Dolichonyx oryzivorus
- 231. Brown-headed Cowbird Molothrus ater
- 232. Shiny cowbird *Molothrus bonariensis*
- 233. Northern Oriole Icterus galbula
- 234. Buff-bellied pipit Anthus rubescens
- C. Protected Reptiles and Amphibians
  - 1. Southern Bahamas rainbow boa Chilabothrus chrysogaster
  - 2. Mayaguana dwarf gecko Sphaerodactylus mariguanae
  - 3. Jamaican slider Trachemys terrapent
  - 4. Inagua slider Trachemys stejnegerit



Department of Environment and Coastal Resources (DECR)

Ministry of Tourism, Environment, Heritage and Culture (MTEHC) Turks and Caicos Islands Government (TCIG)

Providenciales, Turks and Caicos Islands



- 5. Thread snake Typhlops platycephalus?
- 6. American crocodile Crocodylus acutus‡
- 7. Green turtle Chelonia mydas
- 8. Hawksbuill turtle Eretmochelys imbricata
- 9. Loggerhead turtle Caretta caretta
- D. Protected Mammals
  - 1. All bats; all species in order Chiroptera
  - 2. All hutias; Geocapromys species
  - 3. All whales, dolphins, and porpoises, all members of order *Cetacea*
  - 4. West Indian manatee Trichechus manatus
  - 5. All other marine mammals, including vagrant species
- E. Protected Terrestrial Invertebrates
  - 1. Turks Island leafwing
  - 2. Drury's hairstreak
  - 3. Cave shrimp Typhlatya garciai
  - 4. Cave shrimp Barbouria cubensis

# Department of Environment & Coastal Resources

# Turks & Caicos Islands

## Appendix G

International Union for the Conservation of Nature Red List

Scientific Name	Red list Category	Direct Potential Impact	Indirect or Secondary Potential Impact
Marine and Freshwater Species			
Ablennes hians	Least Concern		
Abudefduf saxatilis	Least Concern		$\checkmark$
Abudefduf taurus	Least Concern		
Abyssobrotula galatheae	Least Concern		
Acanthemblemaria aspera	Least Concern		
Acanthemblemaria chaplini	Least Concern		
Acanthemblemaria maria	Least Concern		
Acanthemblemaria spinosa	Least Concern		
Acanthocybium solandri	Least Concern		
Acanthonus armatus	Least Concern		
Acanthostracion polygonius	Least Concern		
Acanthostracion quadricornis	Least Concern		
Acanthurus chirurgus	Least Concern		
Acanthurus coeruleus	Least Concern		
Acanthurus tractus	Least Concern		
Acentronura dendritica	Least Concern		
Acromycter atlanticus	Least Concern		
Acropora cervicornis	Critically Endangered		
Acropora palmata	Critically Endangered		
Actinopyga agassizi	Least Concern		
Acyrtops beryllinus	Least Concern		
Acyrtus artius	Least Concern		
Acyrtus lanthanum	Least Concern		
Acyrtus rubiginosus	Least Concern		
Aetobatus narinari	Endangered		
Agaricia agaricites	Vulnerable		
Agaricia fragilis	Least Concern		
Agaricia grahamae	Near Threatened		
Agaricia humilis	Critically Endangered		
Agaricia lamarcki	Critically Endangered		
Agaricia tenuifolia	Critically Endangered		
Agaricia undata	Least Concern		
Ahlia egmontis	Least Concern		
Ahliesaurus berryi	Least Concern		
Albula vulpes	Near Threatened		$\checkmark$
Aldrovandia affinis	Least Concern		
Aldrovandia gracilis	Least Concern		
Alepisaurus ferox	Least Concern		
Alepocephalus productus	Least Concern		
Alopias superciliosus	Vulnerable		
Alopias vulpinus	Vulnerable		

Alphestes aferLeast ConcernAluterus monocerosLeast ConcernAluterus schoepfiiLeast ConcernAluterus scriptusLeast ConcernAmblycirrhitus pinosLeast ConcernAmarchias similisLeast ConcernAnarchoa textusLeast ConcernAnarchog terus tectusLeast ConcernAnchoa cayorumLeast ConcernAnchoa filiferaLeast ConcernAnchoa filiferaLeast ConcernAnchoa lamprotaeniaLeast ConcernAncylopsetta antillarumLeast ConcernAnguilla rostrataEndangeredAnisotremus surinamensisData DeficientAnologaster brachyceraData DeficientAnoplogaster cornutaLeast ConcernAntennarius multiocellatusLeast ConcernAntennarius striatusLeast ConcernAntennarius combatiaLeast ConcernAntigonia caprosLeast ConcernAntigonia combatiaLeast ConcernAntigonia combatiaLeast ConcernAntigonia combatiaLeast ConcernAntigonia combatiaLeast ConcernAntigonia combatiaLeast ConcernAntimora rostrataLeast Concern	
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Arctozenus risso Least Concern	
Argentina georgei Least Concern	
Argonauta argo Least Concern	
Argonauta hians Least Concern	
Argyripnus atlanticus Least Concern	
Argyropelecus olfersii Least Concern	
Argyropelecus sladeni Least Concern	

Ariosoma balearicum	Least Concern	
Aristostomias grimaldii	Least Concern	
Aristostomias lunifer	Least Concern	
Aristostomias polydactylus	Least Concern	
Aristostomias tittmanni	Least Concern	
Aristostomias xenostoma	Least Concern	
Asquamiceps caeruleus	Least Concern	
Astichopus multifidus	Least Concern	
Astrapogon alutus	Least Concern	
Astrapogon puncticulatus	Least Concern	
Astrapogon stellatus	Data Deficient	
Astronesthes atlanticus	Least Concern	
Astronesthes gemmifer	Data Deficient	
Astronesthes gudrunae	Least Concern	
Astronesthes indicus	Least Concern	
Astronesthes leucopogon	Least Concern	
Astronesthes macropogon	Least Concern	
Astronesthes micropogon	Least Concern	
Astronesthes niger	Least Concern	
Astronesthes similus	Least Concern	
Astronesthes zharovi	Least Concern	
Ataxolepis apus	Least Concern	
Aulopus filamentosus	Least Concern	
Aulostomus maculatus	Least Concern	
Auxis rochei	Least Concern	
Auxis thazard	Least Concern	
Avocettina infans	Least Concern	
Bajacalifornia megalops	Least Concern	
Balaenoptera acutorostrata	Least Concern	
Balaenoptera borealis	Endangered	
Balaenoptera edeni	Least Concern	
Balistes capriscus	Vulnerable	
Balistes vetula	Near Threatened	
Barathrites parri	Least Concern	
Barathrodemus manatinus	Least Concern	
Barathronus bicolor	Least Concern	
Barbourisia rufa	Least Concern	
Barbulifer ceuthoecus	Least Concern	
Bassogigas gillii	Least Concern	
Bassozetus compressus	Least Concern	
Bassozetus levistomatus	Least Concern	
Bassozetus nielseni	Least Concern	
Bassozetus normalis	Least Concern	
Bassozetus taenia	Least Concern	
Bathophilus longipes	Least Concern	

Bathophilus metallicus	Least Concern	
, Bathophilus nigerrimus	Least Concern	
Bathophilus schizochirus	Least Concern	
Bathophilus vaillanti	Least Concern	
Bathyanthias cubensis	Least Concern	
Bathyarctus faxoni	Least Concern	
Bathyclupea schroederi	Least Concern	
Bathycongrus dubius	Least Concern	
Bathycongrus thysanochilus	Least Concern	
Bathycongrus vicinalis	Least Concern	
Bathygadus melanobranchus	Least Concern	
Bathygobius antilliensis	Least Concern	
Bathygobius curacao	Least Concern	
Bathygobius lacertus	Least Concern	
Bathygobius mystacium	Least Concern	
Bathygobius soporator	Least Concern	
Bathylaco nigricans	Least Concern	
Bathyonus laticeps	Data Deficient	
Bathyplotes pourtalesii	Least Concern	
Bathyprion danae	Least Concern	
Bathypterois bigelowi	Least Concern	
Bathypterois grallator	Least Concern	
Bathypterois phenax	Least Concern	
Bathypterois viridensis	Least Concern	
Bathyteuthis abyssicola	Least Concern	
Bathytroctes macrolepis	Least Concern	
Bathytroctes michaelsarsi	Least Concern	
Bathytroctes microlepis	Least Concern	
Bathytroctes squamosus	Least Concern	
Bathytyphlops marionae	Least Concern	
Bathyuroconger vicinus	Least Concern	
Bellator brachychir	Least Concern	
Bellator egretta	Least Concern	
Bembrops gobioides	Least Concern	
Bembrops macromma	Least Concern	
Benthalbella infans	Least Concern	
Benthocometes robustus	Least Concern	
Benthosema suborbitale	Least Concern	
Beryx splendens	Least Concern	
Bodianus pulchellus	Least Concern	
Bodianus rufus	Least Concern	
Bolinichthys indicus	Least Concern	
Bolinichthys photothorax	Least Concern	
Bolinichthys supralateralis	Least Concern	
Bolitaena pygmaea	Least Concern	

Bonanartia pedaliota	Least Concern	
Borostomias elucens	Least Concern	
Borostomias mononema	Least Concern	
Bothus lunatus	Least Concern	
Bothus maculiferus	Least Concern	
Bothus ocellatus	Least Concern	
Bothus robinsi	Least Concern	
Brama brama	Least Concern	
Brama caribbea	Least Concern	
Brama dussumieri	Least Concern	
Brinkmannella elonaata	Data Deficient	
Brockius albiaenvs	Least Concern	
Brockius niaricinctus	Least Concern	
Brotula barbata	Least Concern	
Brotulotaenia brevicauda	Least Concern	
Brotulotaenia crassa	Least Concern	
Brotulotaenia niara	Least Concern	
Bryx dunckeri	Least Concern	
Bryx randalli	Least Concern	
Bufoceratias wedli	Least Concern	
Bullisichthys caribbaeus	Least Concern	
Bythites gerdae	Least Concern	
Calamopteryx goslinei	Least Concern	
Calamus bajonado	Least Concern	
Calamus calamus	Least Concern	
Calamus penna	Least Concern	
Calamus pennatula	Least Concern	
Callechelys bilinearis	Least Concern	
Callionymus bairdi	Least Concern	
Cantherhines macrocerus	Least Concern	
Cantherhines pullus	Least Concern	
Canthidermis maculata	Least Concern	
Canthidermis sufflamen	Least Concern	
Canthigaster rostrata	Least Concern	
Caranx bartholomaei	Least Concern	
Caranx crysos	Least Concern	$\checkmark$
Caranx hippos	Least Concern	
Caranx latus	Least Concern	
Caranx lugubris	Least Concern	
Caranx ruber	Least Concern	
Carapus bermudensis	Least Concern	
Carcharhinus acronotus	Endangered	
Carcharhinus falciformis	Vulnerable	
Carcharhinus leucas	Vulnerable	
Carcharhinus limbatus	Vulnerable	

		<b>1</b>
Carcharhinus longimanus	Critically Endangered	
Carcharhinus perezi	Endangered	
Carcharhinus plumbeus	Endangered	
Carcharhinus signatus	Endangered	
Carcharodon carcharias	Vulnerable	
Cardiospermum halicacabum	Least Concern	
Caulophryne jordani	Least Concern	
Centrobranchus nigroocellatus	Least Concern	
Centrodraco acanthopoma	Least Concern	
Centropomus undecimalis	Least Concern	
Centropyge argi	Least Concern	
Cephalopholis cruentata	Least Concern	
Cephalopholis fulva	Least Concern	
Cephalopholis furcifer	Least Concern	
Ceratias holboelli	Least Concern	
Ceratias uranoscopus	Least Concern	
Ceratoscopelus townsendi	Least Concern	
Ceratoscopelus warmingii	Least Concern	
Cerdale floridana	Least Concern	
Cetomimus gillii	Data Deficient	
Cetorhinus maximus	Endangered	
Cetostoma regani	Data Deficient	
Chaenophryne longiceps	Least Concern	
Chaenopsis limbaughi	Least Concern	
Chaenopsis ocellata	Least Concern	
Chaetodipterus faber	Least Concern	
Chaetodon capistratus	Least Concern	
Chaetodon ocellatus	Least Concern	
Chaetodon sedentarius	Least Concern	
Chaetodon striatus	Least Concern	
Charadrius melodus	Near Threatened	
Chascanopsetta lugubris	Least Concern	
Chauliodus danae	Least Concern	
Chauliodus sloani	Least Concern	
Chaunacops roseus	Least Concern	
Chaunax pictus	Least Concern	
Chaunax suttkusi	Least Concern	
Cheilopogon cyanopterus	Least Concern	
Cheilopogon exsiliens	Least Concern	
Cheilopogon furcatus	Least Concern	
Cheilopogon melanurus	Least Concern	
Cheilopogon nigricans	Least Concern	
Chelonia mydas	Endangered	$\checkmark$
Chiasmodon niger	Least Concern	
Chiasmodon pluriradiatus	Least Concern	
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Chilomycterus antennatus	Least Concern	
Chilomycterus antillarum	Least Concern	
Chirocentrodon bleekerianus	Least Concern	
Chirostomias pliopterus	Least Concern	
Chlorophthalmus agassizi	Least Concern	
Chloroscombrus chrysurus	Least Concern	
Choranthias tenuis	Least Concern	
Chrionema squamentum	Least Concern	
Chromis cyanea	Least Concern	
Chromis enchrysura	Least Concern	
Chromis multilineata	Least Concern	
Citharichthys cornutus	Least Concern	
Cladocora arbuscula	Least Concern	
Clepticus parrae	Least Concern	
Coccorella atlantica	Least Concern	
Coelorinchus ventrilux	Least Concern	
Colpophyllia breviserialis	Critically Endangered	
Colpophyllia natans	Vulnerable	
Conger triporiceps	Least Concern	
Conocara macropterum	Least Concern	
Conodon nobilis	Least Concern	
Conus acutimarginatus	Least Concern	
Conus arangoi	Least Concern	
Conus attenuatus	Least Concern	
Conus centurio	Least Concern	
Conus daucus	Least Concern	
Conus ermineus	Least Concern	
Conus flavescens	Least Concern	
Conus granulatus	Least Concern	
Conus lenhilli	Data Deficient	
Conus mindanus	Least Concern	
Conus patae	Least Concern	
Conus regius	Least Concern	
Conus speciosissimus	Least Concern	
Conus sphacelatus	Least Concern	
Cookeolus japonicus	Least Concern	
Coralliozetus cardonae	Least Concern	
Corvula batabana	Least Concern	
Coryphaena hippurus	Least Concern	
Coryphaenoides rudis	Least Concern	
Coryphopterus alloides	Vulnerable	
Coryphopterus dicrus	Least Concern	
Coryphopterus eidolon	Vulnerable	
Coryphopterus glaucofraenum	Least Concern	
Coryphopterus hyalinus	Vulnerable	

Corvphopterus lipernes	Vulnerable	
Coryphopterus personatus	Vulnerable	
Coryphopterus thrix	Vulnerable	
Coryphopterus tortugae	Vulnerable	
Coryphopterus venezuelae	Vulnerable	
Cosmocampus albirostris	Least Concern	
Cosmocampus brachycephalus	Least Concern	
Cryptopsaras couesii	Least Concern	
Cryptotomus roseus	Least Concern	
Ctenogobius boleosoma	Least Concern	
Ctenogobius saepepallens	Least Concern	
Cubiceps caeruleus	Least Concern	
Cubiceps capensis	Least Concern	
Cubiceps pauciradiatus	Least Concern	
Cyclothone acclinidens	Least Concern	
Cyclothone alba	Least Concern	
Cyclothone braueri	Least Concern	
Cyclothone microdon	Least Concern	
Cyclothone obscura	Least Concern	
Cyclothone pallida	Least Concern	
Cyclothone parapallida	Least Concern	
Cyclothone pseudopallida	Least Concern	
Cyema atrum	Least Concern	
Cynoscion jamaicensis	Least Concern	
Cyperus squarrosus	Least Concern	
Cypselurus comatus	Least Concern	
Cyttopsis rosea	Least Concern	
Dactylopterus volitans	Least Concern	
Dactyloscopus comptus	Least Concern	
Dactyloscopus crossotus	Least Concern	
Dactyloscopus poeyi	Least Concern	
Dactyloscopus tridigitatus	Least Concern	
Dajaus monticola	Least Concern	
Danaphryne nigrifilis	Least Concern	
Decapterus macarellus	Least Concern	
Decapterus punctatus	Least Concern	
Decapterus tabl	Least Concern	
Decodon puellaris	Least Concern	
Dendrogyra cylindrus	Critically Endangered	
Derilissus nanus	Data Deficient	
Dermatolepis inermis	Data Deficient	
Desmodema polystictum	Least Concern	
Diaphus adenomus	Least Concern	
Diaphus brachycephalus	Least Concern	
Diaphus dumerilii	Data Deficient	

Diaphus effulgens	Least Concern	
Diaphus fragilis	Least Concern	
Diaphus garmani	Least Concern	
Diaphus lucidus	Least Concern	
Diaphus luetkeni	Least Concern	
Diaphus metopoclampus	Least Concern	
Diaphus minax	Least Concern	
Diaphus mollis	Least Concern	
Diaphus perspicillatus	Least Concern	
Diaphus problematicus	Least Concern	
Diaphus rafinesquii	Least Concern	
Diaphus roei	Least Concern	
Diaphus splendidus	Least Concern	
Diaphus subtilis	Data Deficient	
Diaphus termophilus	Least Concern	
Diceratias pileatus	Least Concern	
Dichocoenia stokesii	Vulnerable	
Dicrolene introniger	Least Concern	
Dicrolene kanazawai	Least Concern	
Digitaria horizontalis	Least Concern	
Diodon holocanthus	Least Concern	
Diodon hystrix	Least Concern	
Diogenichthys atlanticus	Least Concern	
Diplectrum formosum	Least Concern	
Diplodus argenteus	Least Concern	
Diplogrammus pauciradiatus	Least Concern	
Diplophos taenia	Least Concern	
Diploria labyrinthiformis	Critically Endangered	
Diplospinus multistriatus	Least Concern	
Diretmichthys parini	Least Concern	
Diretmoides pauciradiatus	Least Concern	
Diretmus argenteus	Least Concern	
Ditropichthys storeri	Data Deficient	
Dolicholagus longirostris	Least Concern	
Dolichopteroides binocularis	Least Concern	
Dolichopteryx longipes	Least Concern	
Dolopichthys longicornis	Least Concern	
Dolopichthys pullatus	Data Deficient	
Doratonotus megalepis	Least Concern	
Dormitator maculatus	Least Concern	
Doryteuthis plei	Least Concern	
Drepanotrema cimex	Least Concern	
Dysalotus alcocki	Least Concern	
Dysalotus oligoscolus	Least Concern	
Echeneis naucrates	Least Concern	
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Echeneis neucratoides	Data Deficient	
Echidna catenata	Least Concern	
Elacatinus chancei	Least Concern	
Elacatinus evelynae	Least Concern	
Elacatinus genie	Least Concern	
Elacatinus louisae	Least Concern	
Elagatis bipinnulata	Least Concern	
Elops smithi	Data Deficient	
Emblemaria pandionis	Least Concern	
Emblemariopsis bahamensis	Least Concern	
Emblemariopsis leptocirris	Least Concern	
Emblemariopsis occidentalis	Least Concern	
Emblemariopsis signifer	Least Concern	
Emmelichthyops atlanticus	Least Concern	
Enchelycore carychroa	Least Concern	
Enchelycore nigricans	Least Concern	
Enneanectes atrorus	Least Concern	
Enoplometopus antillensis	Least Concern	
Epigonus denticulatus	Least Concern	
Epigonus macrops	Least Concern	
Epigonus occidentalis	Least Concern	
Epigonus pandionis	Least Concern	
Epinephelus adscensionis	Least Concern	
Epinephelus guttatus	Least Concern	
Epinephelus itajara	Vulnerable	
Epinephelus morio	Vulnerable	
Epinephelus striatus	Critically Endangered	
Epinnula magistralis	Least Concern	
Equetus lanceolatus	Least Concern	
Equetus punctatus	Least Concern	
Erotelis smaragdus	Least Concern	
Etelis oculatus	Data Deficient	
Etmopterus gracilispinis	Least Concern	
Euaxoctopus pillsburyae	Data Deficient	
Eucinostomus argenteus	Least Concern	
Eucinostomus gula	Least Concern	
Eucinostomus harengulus	Least Concern	
Eucinostomus havana	Least Concern	
Eucinostomus jonesii	Least Concern	
Eucinostomus lefroyi	Least Concern	
Eucinostomus melanopterus	Least Concern	
Euleptorhamphus velox	Least Concern	
Eumecichthys fiski	Least Concern	
Eumegistus brevorti	Least Concern	
Eupera cubensis	Least Concern	

Eurypharynx pelecanoides	Least Concern	
Eusmilia fastigiata	Critically Endangered	
Eustomias achirus	Least Concern	
Eustomias acinosus	Data Deficient	
Eustomias arborifer	Least Concern	
Eustomias bibulbosus	Least Concern	
Eustomias bigelowi	Least Concern	
Eustomias bimargaritatus	Least Concern	
Eustomias binghami	Least Concern	
Eustomias bituberatus	Least Concern	
Eustomias braueri	Data Deficient	
Eustomias brevibarbatus	Least Concern	
Eustomias contiguus	Data Deficient	
Eustomias dendriticus	Least Concern	
Eustomias dubius	Least Concern	
Eustomias filifer	Least Concern	
Eustomias furcifer	Least Concern	
Eustomias hulleyi	Least Concern	
Eustomias lipochirus	Least Concern	
Eustomias longibarba	Least Concern	
Eustomias macronema	Least Concern	
Eustomias macrophthalmus	Least Concern	
Eustomias macrurus	Least Concern	
Eustomias micraster	Least Concern	
Eustomias monoclonus	Least Concern	
Eustomias paucifilis	Least Concern	
Eustomias polyaster	Data Deficient	
Eustomias satterleei	Least Concern	
Eustomias schmidti	Least Concern	
Eustomias simplex	Least Concern	
Eustomias tenisoni	Data Deficient	
Eustomias variabilis	Least Concern	
Eutaeniophorus festivus	Least Concern	
Euthynnus alletteratus	Least Concern	
Evermannella indica	Least Concern	
Evermannichthys metzelaari	Least Concern	
Exocoetus obtusirostris	Least Concern	
Exocoetus volitans	Least Concern	
Favia fragum	Least Concern	$\checkmark$
Fistularia petimba	Least Concern	
Fistularia tabacaria	Least Concern	
Flagellostomias boureei	Least Concern	
Foetorepus agassizii	Least Concern	
Gadella imberbis	Least Concern	
Gadomus arcuatus	Least Concern	

Gadomus longifilis	Least Concern	
Galba cubensis	Least Concern	
Galeus antillensis	Least Concern	
Gempylus serpens	Least Concern	
Gephyroberyx darwinii	Least Concern	
Gerres cinereus	Least Concern	
Gibberichthys pumilus	Least Concern	
Gigantactis vanhoeffeni	Data Deficient	
Gigantura chuni	Least Concern	
Gigantura indica	Least Concern	
Gillellus greyae	Least Concern	
Gillellus uranidea	Least Concern	
Ginglymostoma cirratum	Vulnerable	
Globicephala macrorhynchus	Least Concern	
Gnatholepis thompsoni	Least Concern	
Gobiesox lucayanus	Least Concern	
Gobiesox punctulatus	Least Concern	
Gobioclinus bucciferus	Least Concern	
Gobioclinus filamentosus	Least Concern	
Gobioclinus gobio	Least Concern	
Gobioclinus guppyi	Least Concern	
Gobioclinus haitiensis	Least Concern	
Gobioclinus kalisherae	Least Concern	
Gonichthys cocco	Least Concern	
Gonioplectrus hispanus	Least Concern	
Gonostoma atlanticum	Least Concern	
Gonostoma denudatum	Least Concern	
Gonostoma elongatum	Least Concern	
Gramma loreto	Least Concern	
Gramma melacara	Least Concern	
Grammatostomias circularis	Least Concern	
Grammatostomias flagellibarba	Least Concern	
Grammicolepis brachiusculus	Least Concern	
Grammonus claudei	Least Concern	
Grampus griseus	Least Concern	
Gymnachirus nudus	Least Concern	
Gymnothorax conspersus	Least Concern	
Gymnothorax miliaris	Least Concern	
Gymnothorax moringa	Least Concern	
Gymnothorax vicinus	Least Concern	
Gyrinomimus myersi	Data Deficient	
Haemulon album	Data Deficient	 
Haemulon aurolineatum	Least Concern	
Haemulon bonariense	Least Concern	
Haemulon carbonarium	Least Concern	

Haemulon chrysargyreum	Least Concern	
Haemulon flavolineatum	Least Concern	$\checkmark$
Haemulon macrostomum	Least Concern	
Haemulon melanurum	Least Concern	
Haemulon parra	Least Concern	
Haemulon plumierii	Least Concern	
Haemulon sciurus	Least Concern	$\checkmark$
Haemulon striatum	Least Concern	
Haemulon vittatum	Least Concern	
Haemulopsis corvinaeformis	Least Concern	
Halichoeres bathyphilus	Least Concern	
Halichoeres bivittatus	Least Concern	
Halichoeres caudalis	Least Concern	
Halichoeres cyanocephalus	Least Concern	
Halichoeres garnoti	Least Concern	
Halichoeres maculipinna	Least Concern	
Halichoeres pictus	Least Concern	
Halichoeres poeyi	Least Concern	
Halichoeres radiatus	Least Concern	
Haliphron atlanticus	Least Concern	
Halodule wrightii	Least Concern	$\checkmark$
Halosaurus guentheri	Least Concern	
Halosaurus ovenii	Least Concern	
Haplophryne mollis	Least Concern	
Harengula clupeola	Least Concern	
Harengula humeralis	Least Concern	
Harengula jaguana	Least Concern	
Helicolenus dactylopterus	Least Concern	
Helioseris cucullata	Critically Endangered	
Hemiramphus balao	Least Concern	
Hemiramphus brasiliensis	Least Concern	
Heteroconger longissimus	Least Concern	
Heterophotus ophistoma	Least Concern	
Heteropriacanthus cruentatus	Least Concern	
Himantolophus brevirostris	Data Deficient	
Himantolophus groenlandicus	Least Concern	
Himantolophus rostratus	Data Deficient	
Hippocampus reidi	Near Threatened	
Hirundichthys affinis	Least Concern	
Hirundichthys speculiger	Least Concern	
Hirundichthys volador	Least Concern	
Histrio histrio	Least Concern	
Holacanthus bermudensis	Least Concern	
Holacanthus ciliaris	Least Concern	
Holacanthus tricolor	Least Concern	

Hollardia hollardi	Least Concern	
Hollardia meadi	Least Concern	
Holocentrus adscensionis	Least Concern	
Holocentrus rufus	Least Concern	
Holothuria arenicola	Data Deficient	
Holothuria cubana	Least Concern	
Holothuria floridana	Least Concern	
Holothuria glaberrima	Least Concern	
Holothuria grisea	Least Concern	
Holothuria impatiens	Data Deficient	
Holothuria lentiginosa	Least Concern	
Holothuria mexicana	Least Concern	
Holothuria occidentalis	Least Concern	
Holothuria parvula	Least Concern	
Holothuria pseudofossor	Least Concern	
Holothuria surinamensis	Least Concern	
Holothuria thomasi	Least Concern	
Hoplostethus mediterraneus	Least Concern	
Hoplostethus occidentalis	Least Concern	
Howella atlantica	Least Concern	
Howella simplex	Least Concern	
Hygophum hygomii	Least Concern	
Hygophum macrochir	Least Concern	
Hygophum reinhardtii	Least Concern	
Hygophum taaningi	Least Concern	
Hymenocephalus aterrimus	Least Concern	
Hymenocephalus italicus	Least Concern	
Hypanus americanus	Near Threatened	
Hypanus guttatus	Near Threatened	
Hypleurochilus pseudoaequipinnis	Least Concern	
Hypleurochilus springeri	Least Concern	
Hypoatherina harringtonensis	Least Concern	
Hypoplectrus aberrans	Least Concern	
Hypoplectrus chlorurus	Least Concern	
Hypoplectrus gummigutta	Least Concern	
Hypoplectrus guttavarius	Least Concern	
Hypoplectrus indigo	Least Concern	
Hypoplectrus nigricans	Least Concern	
Hypoplectrus providencianus	Least Concern	
Hypoplectrus puella	Least Concern	
Hypoplectrus randallorum	Least Concern	
Hypoplectrus unicolor	Least Concern	
Hyporhamphus unifasciatus	Least Concern	
Hyporthodus flavolimbatus	Vulnerable	
Hyporthodus mystacinus	Least Concern	

Ichthyanus onhioneus	Least Concern	
Ichthyopoccus ovatus	Least Concern	
Idiacanthus fasciola	Least Concern	
Ilvophis brunneus	Least Concern	
Ipnops murravi	Least Concern	
Isophyllia riaida	Least Concern	
Isophyllia sinuosa	Least Concern	J
Isostichopus badionotus	Least Concern	
Istiophorus platypterus	Vulnerable	
Isurus oxvrinchus	Endangered	
Isurus paucus	Endangered	
Japetella diaphana	Least Concern	
Jenkinsia lamprotaenia	Least Concern	
Jenkinsia majua	Least Concern	
Justitia lonaimanus	Data Deficient	
Kajikia albida	Least Concern	
Kali colubrina	Least Concern	
Kali indica	Least Concern	
Kali kerberti	Least Concern	
Kali macrura	Least Concern	
Kali parri	Least Concern	
Kathetostoma cubana	Least Concern	
Katsuwonus pelamis	Least Concern	
Kaupichthys hyoproroides	Least Concern	
Kaupichthys nuchalis	Least Concern	
Kogia breviceps	Least Concern	
Kogia sima	Least Concern	
Kryptolebias marmoratus	Least Concern	
Kyphosus sectatrix	Least Concern	
Labrisomus nuchipinnis	Least Concern	
Lachnolaimus maximus	Vulnerable	
Lactophrys bicaudalis	Least Concern	
Lactophrys trigonus	Least Concern	
Lactophrys triqueter	Least Concern	
Lagenodelphis hosei	Least Concern	
Lagocephalus laevigatus	Least Concern	
Lagocephalus lagocephalus	Least Concern	
Lampadena anomala	Data Deficient	
Lampadena atlantica	Least Concern	
Lampadena chavesi	Least Concern	
Lampadena luminosa	Least Concern	
Lampanyctus alatus	Least Concern	
Lampanyctus festivus	Least Concern	
Lampanyctus nobilis	Least Concern	
Lampanyctus photonotus	Least Concern	

Lampanyctus pusillus	Least Concern	
Lampanyctus tenuiformis	Least Concern	
Lampanyctus vadulus	Least Concern	
Lampris guttatus	Least Concern	
Lamprogrammus niger	Least Concern	
Larimus breviceps	Least Concern	
Lasiognathus saccostoma	Least Concern	
Lepidocybium flavobrunneum	Least Concern	
Lepidophanes gaussi	Least Concern	
Lepidophanes guentheri	Least Concern	
Lepidopus altifrons	Least Concern	
Lepophidium kallion	Least Concern	
Lepophidium wileyi	Least Concern	
Leptoderma macrops	Least Concern	
Leptoseris cailleti	Least Concern	
Leptostomias bilobatus	Least Concern	
Leptostomias gladiator	Least Concern	
Leptostomias haplocaulus	Least Concern	
Leptostomias leptobolus	Least Concern	
Lestidiops affinis	Least Concern	
Lestidiops jayakari	Least Concern	
Lestidiops mirabilis	Least Concern	
Lestidium atlanticum	Least Concern	
Lestrolepis intermedia	Least Concern	
Leurochilus acon	Least Concern	
Linophryne coronata	Least Concern	
Linophryne densiramus	Least Concern	
Liopropoma carmabi	Least Concern	
Liopropoma mowbrayi	Least Concern	
Liopropoma rubre	Least Concern	
Lipogramma anabantoides	Least Concern	
Lipogramma rosea	Least Concern	
Lipogramma trilineata	Least Concern	
Littoraria angulifera	Least Concern	
Lobianchia gemellarii	Least Concern	
Lobotes surinamensis	Least Concern	
Lophiodes beroe	Least Concern	
Lophiodes monodi	Least Concern	
Lophius gastrophysus	Least Concern	
Lophodolos acanthognathus	Least Concern	
Lophodolos indicus	Least Concern	
Lophotus lacepede	Least Concern	
Loweina rara	Least Concern	
Luciobrotula corethromycter	Least Concern	
Lupinoblennius vinctus	Near Threatened	

Lutjanus analis	Near Threatened	
Lutjanus apodus	Least Concern	
Lutjanus buccanella	Data Deficient	
Lutjanus cyanopterus	Vulnerable	
Lutjanus griseus	Least Concern	
Lutjanus jocu	Data Deficient	
Lutjanus mahogoni	Least Concern	
Lutjanus synagris	Near Threatened	
Lutjanus vivanus	Least Concern	
Lythrypnus crocodilus	Least Concern	
Lythrypnus elasson	Least Concern	
Lythrypnus heterochroma	Least Concern	
Lythrypnus nesiotes	Least Concern	
Lythrypnus okapia	Least Concern	
Lythrypnus spilus	Least Concern	
Macroparalepis affinis	Least Concern	
Macroparalepis brevis	Least Concern	
Madracis auretenra	Least Concern	
Madracis carmabi	Least Concern	
Madracis decactis	Critically Endangered	
Madracis formosa	Near Threatened	
Madracis pharensis	Least Concern	
Madracis senaria	Least Concern	
Magnisudis atlantica	Least Concern	
Makaira nigricans	Vulnerable	
Malacanthus plumieri	Least Concern	$\checkmark$
Malacoctenus aurolineatus	Least Concern	
Malacoctenus erdmani	Least Concern	
Malacoctenus gilli	Least Concern	
Malacoctenus macropus	Least Concern	
Malacoctenus triangulatus	Least Concern	
Malacoctenus versicolor	Least Concern	
Malthopsis gnoma	Least Concern	
Manducus maderensis	Data Deficient	
Manicina areolata	Least Concern	
Margrethia obtusirostra	Data Deficient	
Masturus lanceolatus	Least Concern	
Meandrina danae	Least Concern	
Meandrina meandrites	Critically Endangered	
Megalops atlanticus	Vulnerable	
Megaptera novaeangliae	Least Concern	
Melamphaes ebelingi	Data Deficient	
Melamphaes inconspicuus	Data Deficient	
Melamphaes longivelis	Data Deficient	
Melamphaes microps	Least Concern	

Melamphaes polylepis	Data Deficient	
Melamphaes pumilus	Data Deficient	
Melamphaes typhlops	Data Deficient	
Melampus coffeus	Least Concern	
Melanolagus bericoides	Least Concern	
Melanorhinus microps	Least Concern	
Melanostomias macrophotus	Least Concern	
Melanostomias margaritifer	Least Concern	
Melanostomias melanopogon	Least Concern	
Melanostomias melanops	Least Concern	
Melanostomias spilorhynchus	Least Concern	
Melanostomias valdiviae	Least Concern	
Melichthys niger	Least Concern	
Mentodus longirostris	Least Concern	
Mesoplodon densirostris	Least Concern	
Mesoplodon europaeus	Least Concern	
Mesothuria lactea	Least Concern	
Mesothuria verrilli	Data Deficient	
Micrognathus crinitus	Least Concern	
Microphis brachyurus	Least Concern	
Microspathodon chrysurus	Least Concern	
Microstoma microstoma	Least Concern	
Millepora alcicornis	Vulnerable	$\checkmark$
Millepora complanata	Critically Endangered	
Mobula birostris	Endangered	
Mobula hypostoma	Endangered	
Mobula mobular	Endangered	
Mobula tarapacana	Endangered	
Mobula thurstoni	Endangered	
Mola mola	Vulnerable	
Molpadiodemas porphyrus	Least Concern	
Monacanthus ciliatus	Least Concern	
Monacanthus tuckeri	Least Concern	
Monomitopus agassizii	Least Concern	
Monopenchelys acuta	Least Concern	
Montastraea cavernosa	Least Concern	
Moringua edwardsi	Least Concern	
Mugil curema	Least Concern	
Mugil liza	Data Deficient	
Mugil trichodon	Least Concern	
Mulloidichthys martinicus	Least Concern	
Mussa angulosa	Near Threatened	
Mustelus canis	Near Threatened	
Muusoctopus januarii	Least Concern	
Mycetophyllia aliciae	Least Concern	
Mycetophyllia danaana	Critically Endangered	
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Mycetophyllia ferox	, Critically Endangered	
Mycetophyllia lamarckiana	Least Concern	
Mycetophyllia reesi	Least Concern	
Mycteroperca bonaci	Near Threatened	
Mycteroperca interstitialis	Vulnerable	
Mycteroperca tigris	Data Deficient	
Mycteroperca venenosa	Near Threatened	
Myctophum asperum	Least Concern	
Myctophum nitidulum	Least Concern	
Myctophum selenops	Least Concern	
Myctophum spinosum	Least Concern	
Myrichthys breviceps	Least Concern	
Myrichthys ocellatus	Least Concern	
Myripristis jacobus	Least Concern	
Myrophis platyrhynchus	Least Concern	
Myrophis punctatus	Least Concern	
Najas marina	Least Concern	
Nannobrachium cuprarium	Least Concern	
Nannobrachium lineatum	Least Concern	
Nansenia longicauda	Data Deficient	
Nansenia megalopa	Data Deficient	
Nansenia pelagica	Data Deficient	
Narcetes stomias	Least Concern	
Naucrates ductor	Least Concern	
Nealotus tripes	Least Concern	
Negaprion brevirostris	Vulnerable	
Nemichthys curvirostris	Least Concern	
Nemichthys scolopaceus	Least Concern	
Neobathyclupea argentea	Least Concern	
Neobythites elongatus	Least Concern	
Neobythites marginatus	Least Concern	
Neobythites unicolor	Least Concern	
Neoceratias spinifer	Least Concern	
Neoepinnula americana	Least Concern	
Neonesthes capensis	Least Concern	
Neoniphon marianus	Least Concern	
Neoscopelus macrolepidotus	Least Concern	
Neoscopelus microchir	Least Concern	
Nephropsis aculeata	Least Concern	
Nephropsis agassizii	Least Concern	
Nephropsis neglecta	Least Concern	
Nephropsis rosea	Least Concern	
Nes longus	Least Concern	
Nesiarchus nasutus	Least Concern	

Nettenchelys pygmaea	Least Concern	
Nezumia aequalis	Least Concern	
Nezumia cyrano	Least Concern	
Nezumia suilla	Least Concern	
Nomeus gronovii	Least Concern	
Notolychnus valdiviae	Least Concern	
Notoscopelus caudispinosus	Least Concern	
Notoscopelus resplendens	Least Concern	
Oculina diffusa	Least Concern	
Oculina varicosa	Least Concern	
Ocyurus chrysurus	Data Deficient	$\checkmark$
Odontoscion dentex	Least Concern	
Odontostomops normalops	Least Concern	
Ogcocephalus corniger	Least Concern	
Ogcocephalus nasutus	Least Concern	
Ogcocephalus parvus	Least Concern	
Ogcocephalus pumilus	Least Concern	
Ogilbichthys longimanus	Least Concern	
Omosudis lowii	Least Concern	
Ophidion nocomis	Least Concern	
Ophioblennius macclurei	Least Concern	
Opisthonema oglinum	Least Concern	
Opisthoproctus grimaldii	Least Concern	
Opisthoproctus soleatus	Least Concern	
Opistognathus aurifrons	Least Concern	
Opistognathus gilberti	Least Concern	
Opistognathus macrognathus	Least Concern	
Opistognathus maxillosus	Least Concern	
Opistognathus whitehursti	Least Concern	
Orbicella annularis	Endangered	
Orbicella faveolata	Endangered	
Orbicella franksi	Near Threatened	
Orcinus orca	Data Deficient	
Ostichthys trachypoma	Least Concern	
Otophidium dormitator	Least Concern	
Oxyporhamphus similis	Least Concern	
Pachystomias microdon	Least Concern	
Palinurellus gundlachi	Least Concern	
Panulirus argus	Data Deficient	
Panulirus laevicauda	Data Deficient	
Parabathymyrus oregoni	Least Concern	
Parablennius marmoreus	Least Concern	
Paraclinus cingulatus	Least Concern	
Paraclinus fasciatus	Least Concern	
Paraclinus nigripinnis	Least Concern	

Paraconger caudilimbatus	Least Concern	
Paralepis brevirostris	Least Concern	
Paralepis coregonoides	Least Concern	
Parasudis truculenta	Least Concern	
Parazen pacificus	Least Concern	
Pareques acuminatus	Least Concern	
Parexocoetus hillianus	Least Concern	
Paroncheilus affinis	Least Concern	
Parophidion schmidti	Least Concern	
Parribacus antarcticus	Least Concern	
Paspalidium geminatum	Least Concern	
Pempheris poeyi	Least Concern	
Pempheris schomburgkii	Least Concern	
Penetopteryx nanus	Least Concern	
Penopus microphthalmus	Least Concern	
Pentacheles validus	Least Concern	
Pentherichthys atratus	Least Concern	
Peponocephala electra	Least Concern	
Peristedion brevirostre	Least Concern	
Peristedion ecuadorense	Least Concern	
Peristedion greyae	Least Concern	
Peristedion longispatha	Least Concern	
Peristedion truncatum	Least Concern	
Petrotyx sanguineus	Least Concern	
Phaeoptyx conklini	Least Concern	
Phaeoptyx pigmentaria	Least Concern	
Phaeoptyx xenus	Least Concern	
Photocorynus spiniceps	Least Concern	
Photonectes achirus	Least Concern	
Photonectes caerulescens	Least Concern	
Photonectes dinema	Least Concern	
Photonectes leucospilus	Least Concern	
Photonectes parvimanus	Least Concern	
Photonectes phyllopogon	Least Concern	
Photostomias goodyeari	Least Concern	
Photostylus pycnopterus	Least Concern	
Phtheirichthys lineatus	Least Concern	
Physeter macrocephalus	Vulnerable	
Physiculus fulvus	Least Concern	
Platybelone argalus	Least Concern	
Platygillellus rubrocinctus	Least Concern	
Plectranthias garrupellus	Least Concern	
Plectrypops retrospinis	Least Concern	
Poecilopsetta beanii	Least Concern	
Poecilopsetta inermis	Least Concern	

Pollichthys mauli	Least Concern	
Polyacanthonotus merretti	Least Concern	
Polycheles perarmatus	Least Concern	
Polyipnus asteroides	Least Concern	
Polyipnus laternatus	Least Concern	
Polymetme thaeocoryla	Least Concern	
Polymixia lowei	Least Concern	
Polymixia nobilis	Least Concern	
Pomacanthus arcuatus	Least Concern	
Pomacanthus paru	Least Concern	
Pontinus castor	Least Concern	
Porites astreoides	Least Concern	$\checkmark$
Porites divaricata	Least Concern	
Porites furcata	Least Concern	
Porites porites	Least Concern	$\checkmark$
Poromitra capito	Data Deficient	
Poromitra crassiceps	Least Concern	
Poromitra megalops	Data Deficient	
Priacanthus arenatus	Least Concern	
Priolepis hipoliti	Least Concern	
Prionace glauca	Near Threatened	
Pristipomoides aquilonaris	Least Concern	
Pristipomoides macrophthalmus	Least Concern	
Prognathodes aculeatus	Least Concern	
Prognathodes guyanensis	Least Concern	
Prognichthys glaphyrae	Least Concern	
Prognichthys occidentalis	Least Concern	
Promethichthys prometheus	Least Concern	
Pronotogrammus martinicensis	Least Concern	
Psenes cyanophrys	Least Concern	
Psenes maculatus	Least Concern	
Psenes pellucidus	Least Concern	
Pseudodiploria clivosa	Near Threatened	$\checkmark$
Pseudodiploria strigosa	Critically Endangered	$\checkmark$
Pseudogramma gregoryi	Least Concern	
Pseudorca crassidens	Near Threatened	
Pseudoscopelus altipinnis	Least Concern	
Pseudoscopelus obtusifrons	Least Concern	
Pseudoscopelus scriptus	Least Concern	
Pseudoscopelus scutatus	Least Concern	
Pseudupeneus maculatus	Least Concern	$\checkmark$
Psilotris alepis	Least Concern	
Psilotris batrachodes	Least Concern	
Pteroplatytrygon violacea	Least Concern	
Pterycombus brama	Least Concern	

Rachycentron canadum	Least Concern	
Ranzania laevis	Least Concern	
Regalecus glesne	Least Concern	
Remora australis	Least Concern	
Remora osteochir	Least Concern	
Remora remora	Least Concern	
Rhamphocetichthys savagei	Least Concern	
Rhincodon typus	Endangered	
Rhizoprionodon porosus	Vulnerable	
Rhomboplites aurorubens	Vulnerable	
Rhonciscus crocro	Data Deficient	
Rhynchactis macrothrix	Data Deficient	
Rhynchohyalus natalensis	Least Concern	
Risor ruber	Least Concern	
Rondeletia bicolor	Least Concern	
Rouleina attrita	Least Concern	
Rouleina maderensis	Least Concern	
Ruvettus pretiosus	Least Concern	
Rypticus bistrispinus	Least Concern	
Rypticus carpenteri	Least Concern	
Rypticus saponaceus	Least Concern	
Rypticus subbifrenatus	Least Concern	
Sardinella aurita	Least Concern	
Sargocentron bullisi	Least Concern	
Sargocentron coruscum	Least Concern	
Sargocentron poco	Least Concern	
Sargocentron vexillarium	Least Concern	
Saurenchelys stylura	Least Concern	
Saurida normani	Least Concern	
Saurida suspicio	Least Concern	
Scaergus unicirrhus	Data Deficient	
Scartella cristata	Least Concern	
Scarus coelestinus	Data Deficient	
Scarus coeruleus	Least Concern	
Scarus guacamaia	Near Threatened	
Scarus iseri	Least Concern	
Scarus taeniopterus	Least Concern	$\checkmark$
Scarus vetula	Least Concern	
Schultzea beta	Least Concern	
Scolymia cubensis	Critically Endangered	
Scolymia lacera	Critically Endangered	
Scomberomorus regalis	Least Concern	 
Scombrolabrax heterolepis	Least Concern	
Scopelarchoides danae	Least Concern	
Scopelarchus analis	Least Concern	

Scopelarchus guentheri	Least Concern	
Scopelarchus michaelsarsi	Least Concern	
Scopeloberyx opisthopterus	Least Concern	
Scopeloberyx robustus	Data Deficient	
Scopelogadus mizolepis	Least Concern	
Scopelosaurus argenteus	Least Concern	
Scopelosaurus mauli	Least Concern	
Scopelosaurus smithii	Least Concern	
Scorpaena albifimbria	Least Concern	
Scorpaena bergii	Least Concern	
Scorpaena brasiliensis	Least Concern	
Scorpaena calcarata	Least Concern	
Scorpaena inermis	Least Concern	
Scorpaena plumieri	Least Concern	
Scorpaenodes caribbaeus	Least Concern	
Scorpaenodes tredecimspinosus	Least Concern	
Scyllarides aequinoctialis	Least Concern	
Scyllarus chacei	Least Concern	
Searsia koefoedi	Least Concern	
Selar crumenophthalmus	Least Concern	
Sepioteuthis sepioidea	Least Concern	
Seriola dumerili	Least Concern	
Seriola fasciata	Least Concern	
Seriola rivoliana	Least Concern	
Seriola zonata	Least Concern	
Serranus annularis	Least Concern	
Serranus baldwini	Least Concern	
Serranus luciopercanus	Least Concern	
Serranus phoebe	Least Concern	
Serranus tabacarius	Least Concern	
Serranus tigrinus	Least Concern	
Serranus tortugarum	Least Concern	
Serrivomer beanii	Least Concern	
Siderastrea radians	Least Concern	$\checkmark$
Siderastrea sidera	Critically Endangered	$\checkmark$
Snyderidia canina	Least Concern	
Solenastrea bournoni	Least Concern	
Solenastrea hyades	Least Concern	
Sparisoma atomarium	Least Concern	
Sparisoma aurofrenatum	Least Concern	
Sparisoma chrysopterum	Least Concern	
Sparisoma radians	Least Concern	
Sparisoma rubripinne	Least Concern	
Sparisoma viride	Least Concern	$\checkmark$
Spectrunculus grandis	Least Concern	

Sphagemacrurus grenadae	Least Concern	
Sphoeroides greeleyi	Least Concern	
Sphoeroides spengleri	Least Concern	$\checkmark$
Sphoeroides testudineus	Least Concern	
Sphyraena barracuda	Least Concern	$\checkmark$
Sphyraenops bairdianus	Least Concern	
Sphyrna mokarran	Critically Endangered	
Sphyrna zygaena	Vulnerable	
Squalus clarkae	Least Concern	
Squalus cubensis	Least Concern	
Starksia atlantica	Least Concern	
Starksia culebrae	Least Concern	
Starksia elongata	Least Concern	
Starksia fasciata	Least Concern	
Starksia hassi	Least Concern	
Starksia lepicoelia	Least Concern	
Starksia nanodes	Least Concern	
Starksia smithvanizi	Least Concern	
Stathmonotus gymnodermis	Least Concern	
Stathmonotus hemphillii	Least Concern	
Stathmonotus stahli	Least Concern	
Stegastes adustus	Least Concern	
Stegastes diencaeus	Least Concern	$\checkmark$
Stegastes leucostictus	Least Concern	$\checkmark$
Stegastes partitus	Least Concern	$\checkmark$
Stegastes planifrons	Least Concern	
Stegastes xanthurus	Least Concern	
Steindachneria argentea	Least Concern	
Stemonosudis intermedia	Least Concern	
Stemonosudis rothschildi	Least Concern	
Stemonosudis siliquiventer	Least Concern	
Stenella attenuata	Least Concern	
Stenella clymene	Least Concern	
Stenella coeruleoalba	Least Concern	
Stenella frontalis	Least Concern	
Stenella longirostris	Least Concern	
Steno bredanensis	Least Concern	
Stephanoberyx monae	Least Concern	
Stephanocoenia intersepta	Near Threatened	
Stephanolepis hispidus	Least Concern	
Stephanolepis setifer	Least Concern	
Stereomastis sculpta	Least Concern	
Stomias affinis	Least Concern	
Stomias brevibarbatus	Least Concern	
Stomias longibarbatus	Least Concern	

Strongylura notata	Least Concern	
Strongylura timucu	Least Concern	
Stygnobrotula latebricola	Least Concern	
Stylephorus chordatus	Least Concern	
Styracura schmardae	Endangered	
Sudis atrox	Least Concern	
Sudis hyalina	Data Deficient	
Sula dactylatra	Least Concern	
Syacium micrurum	Least Concern	
Symbolophorus rufinus	Least Concern	
Symbolophorus veranyi	Least Concern	
Symphurus arawak	Least Concern	
Symphurus marginatus	Least Concern	
Symphurus tessellatus	Least Concern	
Symphysanodon berryi	Least Concern	
Symphysanodon octoactinus	Least Concern	
Synagrops bellus	Least Concern	
Synagrops spinosus	Least Concern	
Syngnathus caribbaeus	Least Concern	
Syngnathus pelagicus	Least Concern	
Synodus foetens	Least Concern	
Synodus intermedius	Least Concern	
Synodus poeyi	Least Concern	
Synodus synodus	Least Concern	
Syringodium filiforme	Least Concern	$\checkmark$
Taaningichthys bathyphilus	Least Concern	
Taaningichthys minimus	Least Concern	
Talismania antillarum	Least Concern	
Talismania homoptera	Least Concern	
Talismania mekistonema	Least Concern	
Taractichthys longipinnis	Least Concern	
Tetragonurus atlanticus	Least Concern	
Tetrapturus georgii	Data Deficient	
Thalassia testudinum	Least Concern	$\checkmark$
Thalassoma bifasciatum	Least Concern	$\checkmark$
Thaumatichthys binghami	Least Concern	
Thunnus alalunga	Least Concern	
Thunnus albacares	Least Concern	
Thunnus atlanticus	Least Concern	
Thunnus obesus	Vulnerable	
Thunnus thynnus	Least Concern	
Tigrigobius dilepis	Least Concern	
Tigrigobius gemmatus	Least Concern	
Tigrigobius macrodon	Least Concern	
Tigrigobius multifasciatus	Least Concern	

Tiariaobius pallens	Least Concern	
Trachinocephalus myops	Least Concern	
Trachinotus falcatus	Least Concern	
Trachinotus goodei	Least Concern	
Trachonurus sulcatus	Least Concern	
Tremoctopus violaceus	Least Concern	
Trichechus manatus	Vulnerable	
Trinectes inscriptus	Least Concern	
Tursiops truncatus	Least Concern	
Tylosurus acus	Least Concern	
Tylosurus crocodilus	Least Concern	
Typhlatya garciai	Vulnerable	
Umbrina coroides	Least Concern	
Uncisudis advena	Least Concern	
Uraspis secunda	Least Concern	
Urobatis jamaicensis	Least Concern	
Uropterygius macularius	Least Concern	
Varicus bucca	Least Concern	
Venefica procera	Least Concern	
Ventrifossa macropogon	Least Concern	
Ventrifossa mucocephalus	Least Concern	
Verilus sordidus	Least Concern	
Vinciguerria nimbaria	Least Concern	
Vinciguerria poweriae	Least Concern	
Vitreledonella richardi	Least Concern	
Willemoesia forceps	Least Concern	
Xanthichthys ringens	Least Concern	
Xenodermichthys copei	Least Concern	
Xenomystax austrinus	Least Concern	
Xenomystax bidentatus	Least Concern	
Xenomystax congroides	Least Concern	
Xenophthalmichthys danae	Least Concern	
Xiphias gladius	Near Threatened	
Xyelacyba myersi	Least Concern	
Xyrichtys novacula	Least Concern	
Xyrichtys splendens	Least Concern	
Zalieutes mcgintyi	Least Concern	
Zapogon evermanni	Least Concern	
Zenion hololepis	Least Concern	
Ziphius cavirostris	Least Concern	
Zu cristatus	Least Concern	
Landside Species		
Accipiter striatus	Least Concern	
Acrostichum danaeifolium	Least Concern	
Actitis macularius	Least Concern	

P			
Agelaius phoeniceus	Least Concern		
Aix sponsa	Least Concern		
Alle alle	Least Concern		
Ammannia baccifera	Least Concern		
Amyris elemifera	Least Concern		
Anas acuta	Least Concern		
Anas bahamensis	Least Concern		
Anas platyrhynchos	Least Concern		
Anas rubripes	Least Concern		
Anhinga anhinga	Least Concern		
Annona glabra	Least Concern		
Annona montana	Least Concern		
Annona mucosa	Least Concern		
Anolis equestris	Least Concern		
Anolis sagrei	Least Concern	$\checkmark$	
Anolis scriptus	Least Concern		
Anous minutus	Least Concern		
Anous stolidus	Least Concern		
Anser caerulescens	Least Concern		
Anthephora hermaphrodita	Least Concern		
Anthus rubescens	Least Concern		
Antillotyphlops platycephalus	Least Concern		
Antrostomus carolinensis	Near Threatened		
Aramus guarauna	Least Concern		
Ardea alba	Least Concern		
Ardea herodias	Least Concern		
Ardenna gravis	Least Concern		
Ardenna grisea	Near Threatened		
Arenaria interpres	Least Concern		
Argythamnia argentea	Endangered		
Aristelliger hechti	Vulnerable		
Avicennia germinans	Least Concern		
Ayenia tenuicaulis	Endangered		
Aythya affinis	Least Concern		
Aythya americana	Least Concern		
Aythya collaris	Least Concern		
Aythya marila	Least Concern		
Bartramia longicauda	Least Concern		
Beckmannia syzigachne	Least Concern		
Bernardia dichotoma	Least Concern		
Boehmeria cylindrica	Least Concern		
Bombycilla cedrorum	Least Concern		
Bontia daphnoides	Data Deficient		
Botaurus lentiginosus	Least Concern		
Bourreria succulenta	Least Concern	$\checkmark$	

Branta anadonaia	Loost Concern		
Branta canadensis	Least Concern		
Bubulcus Ibis	Least Concern		
Buteo jamaicensis	Least Concern		
Butoriaes striata	Least Concern		
Buxus bahamensis	Least Concern		
	Least Concern		
Calidris alba	Least Concern		
Calidris alpina	Least Concern		
Calidris canutus	Near Threatened		
Calidris fuscicollis	Least Concern		
Calidris himantopus	Least Concern		
Calidris mauri	Least Concern		
Calidris melanotos	Least Concern		
Calidris minutilla	Least Concern		
Calidris pusilla	Near Threatened		
Calonectris borealis	Least Concern		
Canavalia rosea	Least Concern		
Cardellina canadensis	Least Concern		
Caretta caretta	Vulnerable		
Casasia clusiifolia	Least Concern	$\checkmark$	
Catesbaea foliosa	Near Threatened		
Catesbaea parviflora	Least Concern		
Cathartes aura	Least Concern		
Catharus fuscescens	Least Concern		
Catharus guttatus	Least Concern		
Catharus minimus	Least Concern		
Cenchrus echinatus	Least Concern	$\checkmark$	
Cenchrus tribuloides	Least Concern		
Chaetura pelagica	Vulnerable		
Chamaecrista caribaea	Vulnerable		
Chamaecrista lineata	Least Concern	$\checkmark$	
Charadrius nivosus	Near Threatened		
Charadrius semipalmatus	Least Concern		
Charadrius vociferus	Least Concern		
Charadrius wilsonia	Least Concern		
Chilabothrus chrysogaster	Near Threatened		
Chiococca alba	Least Concern		
Chlidonias leucopterus	Least Concern		
Chlidonias niger	Least Concern		
Chondestes grammacus	Least Concern		
Chordeiles gundlachii	Least Concern		
Chordeiles minor	Least Concern		
Chrysobalanus icaco	Least Concern		
Chrysophyllum oliviforme	Least Concern		
Circus hudsonius	Least Concern		

Citharexylum spinosum	Least Concern		
Clusia rosea	Least Concern		
Coccoloba diversifolia	Least Concern		
Coccoloba uvifera	Least Concern	$\checkmark$	
Coccothrinax inaguensis	Near Threatened	$\checkmark$	
Coccyzus americanus	Least Concern		
Coccyzus minor	Least Concern		
Coereba flaveola	Least Concern		
Colinus virginianus	Near Threatened		
Colubrina arborescens	Least Concern		
Colubrina elliptica	Least Concern		
Columba livia	Least Concern		
Columbina passerina	Least Concern		
Conocarpus erectus	Least Concern	$\checkmark$	
Consolea nashii	Least Concern		
Contopus caribaeus	Least Concern		
Contopus virens	Least Concern		
Cordia sebestena	Least Concern	$\checkmark$	
Corthylio calendula	Least Concern		
Corvus nasicus	Least Concern		
Croton discolor	Least Concern		
Croton eluteria	Least Concern		
Croton glabellus	Least Concern		
Crotophaga ani	Least Concern	$\checkmark$	
Cyclura carinata	Endangered		
Cyperus planifolius	Least Concern		
Cystophora cristata	Vulnerable		
Damburneya coriacea	Least Concern		
Dendrocygna arborea	Near Threatened		
Dendrocygna bicolor	Least Concern		
Dermochelys coriacea	Vulnerable		
Desmanthus virgatus	Least Concern		
Distichlis spicata	Least Concern		
Dolichonyx oryzivorus	Least Concern		
Drypetes diversifolia	Least Concern		
Dumetella carolinensis	Least Concern		
Echinochloa colona	Least Concern		
Egretta caerulea	Least Concern		
Egretta rufescens	Near Threatened		
Egretta thula	Least Concern		
Egretta tricolor	Least Concern		
Elanoides forficatus	Least Concern		
Eleocharis cellulosa	Least Concern		
Eleocharis geniculata	Least Concern		
Eleutherodactylus planirostris	Least Concern		

Empidonax virescens	Least Concern		
Encyclia caicensis	Endangered		
Erithalis fruticosa	Least Concern	$\checkmark$	
Ernodea littoralis	Least Concern	$\checkmark$	
Ernodea millspaughii	Near Threatened		
Erythroxylum havanense	Least Concern		
Eudocimus albus	Least Concern		
Eugenia axillaris	Least Concern		
Eugenia foetida	Least Concern		
Eugenia rhombea	Least Concern		
Euphagus cyanocephalus	Least Concern		
Euphorbia articulata	Least Concern		
Euphorbia blodgettii	Least Concern		
Euphorbia gymnonota	Near Threatened		
Euphorbia heterophylla	Least Concern	$\checkmark$	
Euphorbia mesembryanthemifolia	Least Concern		
Euphorbia petiolaris	Least Concern		
Euphorbia tithymaloides	Least Concern		
Euploca procumbens	Least Concern		
Evolvulus bracei	Least Concern		
Exostema caribaeum	Least Concern		
Falco columbarius	Least Concern		
Falco peregrinus	Least Concern		
Falco sparverius	Least Concern	$\checkmark$	
Ficus aurea	Least Concern		
Ficus citrifolia	Least Concern		
Fimbristylis cymosa	Least Concern		
Fimbristylis inaguensis	Least Concern		
Forestiera segregata	Least Concern		
Fregata magnificens	Least Concern		
Fulica americana	Least Concern		
Furcraea hexapetala	Least Concern		
Gallinago delicata	Least Concern		
Gallinula galeata	Least Concern		
Gelochelidon nilotica	Least Concern		
Geocapromys ingrahami	Vulnerable		
Geothlypis formosa	Least Concern		
Geothlypis philadelphia	Least Concern		
Geothlypis trichas	Least Concern		
Geotrygon chrysia	Least Concern		
Guaiacum officinale	Endangered	$\checkmark$	
Guapira discolor	Least Concern	$\checkmark$	
Guapira obtusata	Least Concern		
Guettarda elliptica	Least Concern		
Guettarda krugii	Least Concern		

Guettada scabra   Least Concern     Guilandina bonduc   Least Concern     Gyminda lafiolia   Least Concern     Haematopus palliatus   Least Concern     Helicteres semitriloba   Least Concern     Helicteres semitriloba   Least Concern     Helicteres semitriloba   Least Concern     Helicteres semitriloba   Least Concern     Hernitheros vermivorum   Least Concern     Hernitheros vermivorum   Least Concern     Hernitheros vermivorum   Least Concern     Himantopus himantopus   Least Concern     Himantopus himantopus   Least Concern     Hippomane mancinella   Least Concern     Hydroprogne caspia   Least Concern     Hydroprogne caspia   Least Concern     Hylocereus undatus   Data Deficient     Hylocereus undatus   Least Concern     Hylocereus undatus   Least Concern     Hylophylops braminus   Least Concern     Leterus galula   Least Concern     Leterus galula   Least Concern     Lacquinia keyensis   Least Concern     Lacquinia keyensis   Least Concern     Lacquinia keyensis<			-	-
Guilandina banduc Least Concern	Guettarda scabra	Least Concern		
Gymnanthes lucida   Least Concern     Meamotopus polliatus   Least Concern     Helicteres semitriloba   Least Concern     Helicteres semitriloba   Least Concern     Henitdactylus mabouia   Least Concern     Henitdactylus mabouia   Least Concern     Heterosavia bahamensis   Least Concern     Himantopus himantopus   Least Concern     Hirundo rustica   Least Concern     Hydrobates leucorhous   Vulnerable     Hydrobates leucorhous   Vulnerable     Hylochates leucorhous   Data Deficient     Hylochates and the set concern   Hylochates leucorhous     Hylochatian mustelina   Least Concern     Hylochatian mustelina   Least Concern     Hylochatian mustelina   Least Concern     Hylochatian mustelina   Least Concern     Idetrus spurius   Least Concern     Idetrus purius   Least Concern     Idetruba duestrio<	Guilandina bonduc	Least Concern		
Gymnanthes lucida   Least Concern     Haematopus polilatus   Least Concern     Helicteres semiritoba   Least Concern     Hemidatylus maboula   Least Concern     Hernidatylus maboula   Least Concern     Hernosavio bahamensis   Least Concern     Himpantopus   Least Concern     Himpantopus   Least Concern     Hippomane mancinella   Least Concern     Hydrobates leucorhous   Vulnerable     Hydrobates leucorhous   Data Deficient     Hylocicha mustelina   Least Concern     Hylocicha mustelina   Least Concern     Leterus galbula   Least Concern     Leterus galbula   Least Concern     Icterus galbula   Least Concern     Icterus galbula   Least Concern     Indotyphlops braminus   Least Concern     Ipomoet triloba   Least Concern     Mobrychus exilis   Least Concern     Jacquinia berteroi   Least Concern     Jatroph gosspilofla   Least Concern     Jatroph gosspilofla   Least Concern     Lanus ludovicianus   Near Threatened     Lanus nivalucarta   Least Concern	Gyminda latifolia	Least Concern		
Haematopus palliatus Least Concern Intervention   Helicteres semitriloba Least Concern Intervention   Hemithacos vermivorum Least Concern Intervention   Hemidactylus mabouia Least Concern Intervention   Heterosovio bahamensis Least Concern Intervention   Hiundo rustica Least Concern Intervention   Hiundo rustica Least Concern Intervention   Hydrobates levorhous Vulnerable Intervention   Hydrobates levorhous Vulnerable Intervention   Hydrobates levorhous Data Deficient Intervention   Hylocicha mustelina Least Concern Intervention   Hylocicha mustelina Least Concern Intervention   Hylocicha mustelina Least Concern Intervention   Icterus galbula Least Concern Intervention   Indexphilogs braminus Lea	Gymnanthes lucida	Least Concern		
Helinitheros vernivorum   Least Concern     Helinitheros vernivorum   Least Concern     Henidact/jus mabouia   Least Concern     Himantopus himantopus   Least Concern     Hippomane mancinella   Least Concern     Hippomane mancinella   Least Concern     Hydrobates leucorhous   Vulnerable     Hydrobates leucorhous   Vulnerable     Hydroprogne caspia   Least Concern     Hylocichla mustelina   Least Concern     Hylocichla mustelina   Least Concern     Hylocichla mustelina   Least Concern     Hylocichla mustelina   Least Concern     Leterus galbula   Least Concern     Iterus galbula   Least Concern     Idest spurius   Least Concern     Indotyphlops braminus   Least Concern     Ipomoen triloba   Least Concern     Jacquinia keyensis   Least Concern     Jacquinia keyensis   Least Concern     Jurach hyemdis   Least Concern     Laguncularia rocemosa   Least Concern     Jatrapha gosspilfolia   Least Concern     Junco hyemdis   Least Concern     Laguncularia rocemosa   <	Haematopus palliatus	Least Concern		
Helmitheras vermivorum   Least Concern     Hemidactylus mabouia   Least Concern     Himantopus himantapus   Least Concern     Hippomane mancinella   Least Concern     Hydrobates leucorhous   Vulnerable     Hydroptes leucorhous   Vulnerable     Hylochcha mustelina   Least Concern     Hylockcha mustelina   Least Concern     Icterus galbula   Least Concern     Icterus galbula   Least Concern     Icterus galbula   Least Concern     Indotyphlogs braminus   Least Concern     Ipomoea triloba   Least Concern     Izaquinia berteroi   Least Concern     Jacquinia berteroi   Least Concern     Junco hyemalis   Least Concern     Laguncularia racemosa   Least Concern     Lanus ludovicianus   Near Threatened     Lanus ludovicianus   Least Concern     Lanus ludovicianus   Least Concern     Larus delawarensis   Leas	Helicteres semitriloba	Least Concern		
Hemidactylus mabouia   Least Concern   ✓     Heterosavia bahamensis   Least Concern   ✓     Himantopus himantopus   Least Concern   ✓     Hippomane mancinella   Least Concern   ✓     Hydrobates leucorhous   Vulnerable   ✓     Hydropagne caspia   Least Concern   ✓     Hylocchla mustelina   Least Concern   ✓     Hylockhla mustelina   Least Concern   ✓     Hypelate tri/foliata   Least Concern   ✓     Icterus galbula   Least Concern   ✓     Icterus spurius   Least Concern   ✓     Indotyphlops braminus   Least Concern   ✓     Igomeat rilaba   Least Concern   ✓     Dacquinia berteroi   Least Concern   ✓     Jatropha gossypilfolia   Least Concern   ✓     Junco hyemalis   Least Concern   ✓     Lanius ludovicianus   Near Threatened   ✓     Lanius ludovicianus   Near Threatened   ✓     Lanius ludovicianus   Least Concern   ✓     Larus delawarensis   Least Concern   ✓     Lanius ludovicianus<	Helmitheros vermivorum	Least Concern		
Heterosavia bahamensis   Least Concern     Himantopus himantopus   Least Concern     Hippomane mancinella   Least Concern     Hiprodone mancinella   Least Concern     Hydrobotes leucorhous   Vulnerable     Hydroprogne caspia   Least Concern     Hydroprogne caspia   Least Concern     Hylocreus undatus   Data Deficient     Hylocichla mustelina   Least Concern     Hypelte trifoliata   Least Concern     Leterus galbula   Least Concern     Icterus galbula   Least Concern     Icterus galbula   Least Concern     Indotyphlops braminus   Least Concern     Ipomee triloba   Least Concern     Izcquinia beteroi   Least Concern     Jacquinia betreoi   Least Concern     Jacquinia betreoi   Least Concern     Janco hyeemalis   Least Concern     Jacquinia betreoi   Least Concern     Lanucharia racemosa   Least Concern     Lanus hudovicianus   Near Threatened     Lanus hudovicianus   Least Concern     Lanus trilla   Least Concern     Larus delawarensis   Least Concern	Hemidactylus mabouia	Least Concern		
HimontopusLeast ConcernHippomane mancinellaLeast ConcernHirundo rusticaLeast ConcernHydrobres leucorhousVulnerableHydroprogne caspiaLeast ConcernHylocichla mustelinaLeast ConcernHylocichla mustelinaLeast ConcernHylocichla mustelinaLeast ConcernIcterus galbulaLeast ConcernIcterus spuriusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIderus spuriusLeast ConcernIndotyphlops braminusLeast ConcernJacquinia berteroiLeast ConcernJacquinia keyensisLeast ConcernJacquinia keyensisLeast ConcernJurco hyemalisLeast ConcernJunco hyemalisLeast ConcernJunco hyemalisLeast ConcernLantan cinvolucrataLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus philadelphiaLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus d	Heterosavia bahamensis	Least Concern	$\checkmark$	
Hippomane mancinellaLeast ConcernHirundo rusticaLeast ConcernHydrobates leucorhousVulnerableHydropane caspiaLeast ConcernHylocereus undatusData DeficientHylocichia mustelinaLeast ConcernHylocichia mustelinaLeast ConcernIcterus galbulaLeast ConcernIcterus galbulaLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernJacquinia berteroiLeast ConcernJacquinia berteroiLeast ConcernJacquinia keyensisLeast ConcernJunco hyemalisLeast ConcernJunco hyemalisLeast ConcernJunco hyemalisLeast ConcernJunco hyemalisLeast ConcernJunius ludovicianusNear ThreatenedLantuna involucrataLeast ConcernLarus atricillaLeast ConcernLarus delawarensisLeast ConcernLarus delawarensisLeast ConcernLarus spilladelphiaLeast ConcernLarus spilladelphiaLeast ConcernLarus filbundusLeast ConcernLarus spilladelphiaLeast ConcernLarus spilladelphiaLeast ConcernLarus spilladelphiaLeast ConcernLeiothlypis celataLeast ConcernLeiothlypis celataLeast ConcernLeiothlypis celataLeast ConcernL	Himantopus himantopus	Least Concern		
Hirundo rustica   Least Concern   Image: Concern of the set of	Hippomane mancinella	Least Concern		
Hydrobates leucorhousVulnerableHydrobates leucorhousLeast ConcernHylocrelus undatusData DeficientHylocichla mustelinaLeast ConcernHypelate trifoliataLeast ConcernIcterus galbulaLeast ConcernIcterus spuriusLeast ConcernIndotyphlops braminusLeast ConcernIderunia keyensisLeast ConcernIacquinia berteroiLeast ConcernIatropha gossypilfoliaLeast ConcernIatropha gossypilfoliaLeast ConcernIanco hyemalisLeast ConcernIanun luration racemosaLeast ConcernLanus tricillaLeast ConcernIarus atricillaLeast ConcernIarus atricillaLeast ConcernIarus sphiladelphiaLeast ConcernLarus ridibundusLeast ConcernLarus ridibundusLeast ConcernLarus sphiladelphiaLeast ConcernLarus sphiladelphiaLeast ConcernLeiocephalus psammodromusVulnerableLeiothypis regrinaLeast ConcernLeiothypis regrinaLeast ConcernLeiothypis regrinaLeast ConcernLeiothypis ruficapillaLeast ConcernLeiothypis ruficapillaLeast ConcernLeiothypis ruficapilla	Hirundo rustica	Least Concern		
Hydroprogne caspia   Least Concern     Hylocichla mustelina   Least Concern     Hyplatte trifoliata   Least Concern     Icterus galbula   Least Concern     Icterus galbula   Least Concern     Icterus guitus   Least Concern     Indotyphlops braminus   Least Concern     Ipomoea triloba   Least Concern     Iborychus exilis   Least Concern     Jacquinia berteroi   Least Concern     Jacquinia keyensis   Least Concern     Janco hyemalis   Least Concern     Laguncularia racemosa   Least Concern     Lanus ludovicianus   Near Threatened     Larus delawarensis   Least Concern	Hydrobates leucorhous	Vulnerable		
Hylocereus undatusData DeficientHyloctichla mustelinaLeast ConcernHypelate trifoliataLeast ConcernIcterus galbulaLeast ConcernIcterus garbulaLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIacquinia berteroiLeast ConcernJacquinia keyensisLeast ConcernJunco hyemalisLeast ConcernJunco hyemalisLeast ConcernLantuna involucrataLeast ConcernLantus ludovicianusNear ThreatenedLantus ludovicianusLeast ConcernJurus atricillaLeast ConcernLarus philadelphiaLeast ConcernLarus philadelphiaLeast ConcernLarus philadelphiaLeast ConcernLarus ridibundusLeast ConcernLarus sithsonianusLeast ConcernLarus sithsonianusLeast ConcernLeast SconcernLeast ConcernLarus sithsonianusLeast ConcernLeast ConcernLeast ConcernLarus sithsonianusLeast ConcernLeast ConcernLeast ConcernLarus sithsonianusLeast ConcernLeast philadelphiaLeast ConcernLeast philadelphiaLeast ConcernLeast philadelphiaLeast ConcernLeiothlypis celataLeast ConcernLeiot	Hydroprogne caspia	Least Concern		
Hylocichla mustelina   Least Concern     Hypelate trifoliata   Least Concern     Icterus galbula   Least Concern     Icterus spurius   Least Concern     Indotyphlops braminus   Least Concern     Ipomoea triloba   Least Concern     Izaquinia berteroi   Least Concern     Jacquinia berteroi   Least Concern     Jacquinia keyensis   Least Concern     Jatropha gossypilfolia   Least Concern     Junco hyemalis   Least Concern     Laguncularia racemosa   Least Concern     Lanus atricilla   Least Concern     Lanus dricilla   Least Concern     Larus philadelphia   Least Concern     Larus philadelphia   Least Concern     Larus philadelphia   Least Concern     Larus philadelphia   Least Concern	Hylocereus undatus	Data Deficient		
Hypelate trifoliataLeast ConcernIcterus galbulaLeast ConcernIcterus spuriusLeast ConcernIndotyphlops braminusLeast ConcernIndotyphlops braminusLeast ConcernIzcouria e trilobaLeast ConcernIacquinia berteroiLeast ConcernJacquinia berteroiLeast ConcernJacquinia berteroiLeast ConcernJacquinia keyensisLeast ConcernJacquinia keyensisLeast ConcernJacquinia keyensisLeast ConcernJaunco hyemalisLeast ConcernLagancularia racemosaLeast ConcernLanius ludovicianusNear ThreatenedLarus atricillaLeast ConcernLarus atricillaLeast ConcernLarus atricillaLeast ConcernLarus atricillaLeast ConcernLarus spilladelphiaLeast ConcernLarus smithsonianusLeast ConcernLarus smithsonianusLeast ConcernLarus smithsonianusLeast ConcernLeiothlypis pergrinaLeast ConcernLeiothlypis refacinalLeast ConcernLeiothlypis refacinalLeast ConcernLeiothlypis ruficapillaLeast ConcernLimoad musa gr	Hylocichla mustelina	Least Concern		
Icterus galbula   Least Concern     Indotyphlops braminus   Least Concern     Ipomoea triloba   Least Concern     Ixobrychus exilis   Least Concern     Jacquinia berteroi   Least Concern     Jacquinia berteroi   Least Concern     Jacquinia keyensis   Least Concern     Jacquinia keyensis   Least Concern     Junco hyemalis   Least Concern     Laguncularia racemosa   Least Concern     Lanius ludovicianus   Near Threatened     Larus atricilla   Least Concern     Larus stricilla   Least Concern     Larus stricibundus   Least Concern     Larus smithsonianus   Least Concern     Larus smithsonianus   Least Concern     Leiotchypis celata   Least Concern     Leiothypis celata   Least Concern     Leiothypis ruficapilla   Least Concern     Leiothypis ruficapilla   Least Concern <td>Hypelate trifoliata</td> <td>Least Concern</td> <td></td> <td></td>	Hypelate trifoliata	Least Concern		
Icterus spurius   Least Concern     Indotyphlops braminus   Least Concern     Ipomoea triloba   Least Concern     Ixobrychus exilis   Least Concern     Jacquinia berteroi   Least Concern     Jacquinia keyensis   Least Concern     Jatropha gossypiifolia   Least Concern     Junco hyemalis   Least Concern     Laguncularia racemosa   Least Concern     Lantana involucrata   Least Concern     Larus delawarensis   Least Concern     Larus philadelphia   Least Concern     Larus philadelphia   Least Concern     Larus smithsonianus   Least Concern     Larus smithsonianus   Least Concern     Larus smithsonianus   Least Concern     Leiothlypis celata   Least Concern     Leiothlypis ruficapilla   Least Concern     Leiothly	Icterus galbula	Least Concern		
Indotyphlops braminus   Least Concern     Ipomoea triloba   Least Concern     Ixobrychus exilis   Least Concern     Jacquinia berteroi   Least Concern     Jacquinia keyensis   Least Concern     Jaropha gossypiifolia   Least Concern     Junco hyemalis   Least Concern     Laguncularia racemosa   Least Concern     Lanius ludovicianus   Near Threatened     Larus atricilla   Least Concern     Larus delawarensis   Least Concern     Larus delawarensis   Least Concern     Larus delawarensis   Least Concern     Larus philadelphia   Least Concern     Larus philadelphia   Least Concern     Larus smithsonianus   Least Concern     Least concern	Icterus spurius	Least Concern		
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Jacquinia berteroi   Least Concern   ✓     Jatropha gossypiifolia   Least Concern   ✓     Junco hyemalis   Least Concern   ✓     Laguncularia racemosa   Least Concern   ✓     Lanius ludovicianus   Near Threatened   ✓     Larus arricilla   Least Concern   ✓     Larus delawarensis   Least Concern   ✓     Larus delawarensis   Least Concern   ✓     Larus philadelphia   Least Concern   ✓     Larus smithsonianus   Least Concern   ✓     Larus smithsonianus   Least Concern   ✓     Leiotephalus psammodromus   Vulnerable   ✓     Leiothlypis celata   Least Concern   ✓     Leiothlypis ruficapilla   Least Concern   ✓	Ixobrychus exilis	Least Concern		
Jacquinia keyensisLeast Concern✓Jatropha gossypiifoliaLeast ConcernJunco hyemalisLeast ConcernLaguncularia racemosaLeast ConcernLanius ludovicianusNear ThreatenedLantana involucrataLeast Concern✓Larus atricillaLeast Concern✓Larus delawarensisLeast ConcernLarus philadelphiaLeast ConcernLarus ridibundusLeast ConcernLarus smithsonianusLeast ConcernLawsonia inermisLeast ConcernLeiotephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis ruficapillaLeast ConcernLeiothlypis ruficapillaLeast ConcernLeiothlypis ruficapillaLeast ConcernLeiothlypis ruficapillaLeast ConcernLeiotontopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimnoium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Jacquinia berteroi	Least Concern		
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Lanius ludovicianusNear ThreatenedLantana involucrataLeast ConcernLarus atricillaLeast ConcernLarus delawarensisLeast ConcernLarus philadelphiaLeast ConcernLarus ridibundusLeast ConcernLarus smithsonianusLeast ConcernLawsonia inermisLeast ConcernLeiocephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis ruficapillaLeast ConcernLeiototopicus villosusLeast ConcernLeiototopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimnoium bahamenseEndangeredLimosa haemasticaLeast ConcernLimosa haemasticaLeast Concern	Laguncularia racemosa	Least Concern		
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Larus atricillaLeast ConcernLarus delawarensisLeast ConcernLarus philadelphiaLeast ConcernLarus ridibundusLeast ConcernLarus smithsonianusLeast ConcernLawsonia inermisLeast ConcernLeiocephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis peregrinaLeast ConcernLeiothlypis ruficapillaLeast ConcernLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Lantana involucrata	Least Concern	$\checkmark$	
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Larus ridibundusLeast ConcernLarus smithsonianusLeast ConcernLawsonia inermisLeast ConcernLeiocephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis peregrinaLeast ConcernLeiothlypis ruficapillaLeast ConcernLepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Larus philadelphia	Least Concern		
Larus smithsonianusLeast ConcernLawsonia inermisLeast ConcernLeiocephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis peregrinaLeast ConcernLeiothlypis ruficapillaLeast ConcernLepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Larus ridibundus	Least Concern		
Lawsonia inermisLeast ConcernLeiocephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis peregrinaLeast ConcernLeiothlypis ruficapillaLeast ConcernLepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Larus smithsonianus	Least Concern		
Leiocephalus psammodromusVulnerableLeiothlypis celataLeast ConcernLeiothlypis peregrinaLeast ConcernLeiothlypis ruficapillaLeast ConcernLepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Lawsonia inermis	Least Concern		
Leiothlypis celataLeast ConcernImage: ConcernLeiothlypis peregrinaLeast ConcernImage: ConcernLeiothlypis ruficapillaLeast ConcernImage: ConcernLepidium filicauleEndangeredImage: ConcernLeuconotopicus villosusLeast ConcernImage: ConcernLimnodromus griseusLeast ConcernImage: ConcernLimonium bahamenseEndangeredImage: ConcernLimosa fedoaLeast ConcernImage: ConcernLimosa haemasticaLeast ConcernImage: Concern	Leiocephalus psammodromus	Vulnerable		
Leiothlypis peregrinaLeast ConcernLeiothlypis ruficapillaLeast ConcernLepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Leiothlypis celata	Least Concern		
Leiothlypis ruficapillaLeast ConcernLepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Leiothlypis peregrina	Least Concern		
Lepidium filicauleEndangeredLeuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Leiothlypis ruficapilla	Least Concern		
Leuconotopicus villosusLeast ConcernLimnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Lepidium filicaule	Endangered		
Limnodromus griseusLeast ConcernLimonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Leuconotopicus villosus	Least Concern		
Limonium bahamenseEndangeredLimosa fedoaLeast ConcernLimosa haemasticaLeast Concern	Limnodromus griseus	Least Concern		
Limosa fedoa Least Concern   Limosa haemastica Least Concern	Limonium bahamense	Endangered		
Limosa haemastica Least Concern	Limosa fedoa	Least Concern		
	Limosa haemastica	Least Concern		

Lophodytes cucullatus	Least Concern		
Mammillaria nivosa	Least Concern		
Manilkara jaimiqui	Least Concern		
Mareca americana	Least Concern		
Mareca strepera	Least Concern		
Margarops fuscatus	Least Concern		
Maytenus buxifolia	Least Concern		
Megaceryle alcyon	Least Concern		
Melanospiza bicolor	Least Concern		
Melocactus intortus	Least Concern		
Melopyrrha violacea	Least Concern		
Melospiza georgiana	Least Concern		
Melospiza lincolnii	Least Concern		
Melospiza melodia	Least Concern		
Mergus serrator	Least Concern		
Metopium toxiferum	Least Concern	$\checkmark$	
Microligea palustris	Least Concern		
Mimus gundlachii	Least Concern		
Mimus polyglottos	Least Concern	$\checkmark$	
Mniotilta varia	Least Concern		
Molothrus ater	Least Concern		
Morus bassanus	Least Concern		
Mosiera longipes	Near Threatened		
Mycteria americana	Least Concern		
Myiarchus sagrae	Least Concern		
Myrcianthes fragrans	Least Concern		
Myrsine cubana	Least Concern		
Nama jamaicensis	Least Concern		
Nannopterum auritus	Least Concern		
Nannopterum brasilianus	Least Concern		
Nephila clavipes	Least Concern		
Nephrolepis exaltata	Least Concern		
Nesophlox evelynae	Least Concern		
Nomonyx dominicus	Least Concern		
Numenius phaeopus	Least Concern		
Nyctanassa violacea	Least Concern	$\checkmark$	
Nycticorax nycticorax	Least Concern		
Oceanites oceanicus	Least Concern		
Onychoprion anaethetus	Least Concern		
Onychoprion fuscatus	Least Concern		
Oporornis agilis	Least Concern		
Osteopilus septentrionalis	Least Concern		
Oxyura jamaicensis	Least Concern		
Pandion haliaetus	Least Concern	$\checkmark$	
Panicum trichoides	Least Concern		

Parkesia motacilla	Least Concern		
Parkesia noveboracensis	Least Concern		
Parkinsonia aculeata	Least Concern		
Paspalum distichum	Least Concern		
Paspalum fimbriatum	Least Concern		
Paspalum paniculatum	Least Concern		
Paspalum setaceum	Least Concern		
Passer domesticus	Least Concern		
Passerina caerulea	Least Concern		
Passerina cyanea	Least Concern		
Passiflora pallida	Least Concern		
Passiflora pectinata	Least Concern	$\checkmark$	
Pavonia bahamensis	Near Threatened		
Pelecanus erythrorhynchos	Least Concern		
Pelecanus occidentalis	Least Concern		
Petrochelidon pyrrhonota	Least Concern		
Phaethon aethereus	Least Concern		
Phaethon lepturus	Least Concern		
Phalaropus fulicarius	Least Concern		
Phalaropus lobatus	Least Concern		
Pheucticus ludovicianus	Least Concern		
Phoenicopterus ruber	Least Concern		
Phonipara canora	Least Concern		
Phragmites australis	Least Concern		
Phyla nodiflora	Least Concern		
Physalis cordata	Least Concern		
Picramnia pentandra	Least Concern		
Pinus caribaea	Least Concern		
Piranga ludoviciana	Least Concern		
Piranga olivacea	Least Concern		
Piranga rubra	Least Concern		
Pisonia rotundata	Data Deficient		
Pithecellobium unguis-cati	Least Concern		
Platalea ajaja	Least Concern		
Plectrophenax nivalis	Least Concern		
Plegadis falcinellus	Least Concern		
Plumeria obtusa	Least Concern		
Pluvialis dominica	Least Concern		
Pluvialis squatarola	Least Concern		
Podilymbus podiceps	Least Concern		
Polioptila caerulea	Least Concern		
Pooecetes gramineus	Least Concern		
Porphyrio martinicus	Least Concern		
Porzana carolina	Least Concern		
Progne dominicensis	Least Concern		

Protonotaria citrea Least Concern   Pseudophoenix sargentii Vulnerable   Psychotria ligustrifolia Least Concern   Pteridium caudatum Least Concern
Protonotana chied Least concern   Pseudophoenix sargentii Vulnerable   Psychotria ligustrifolia Least Concern   Pteridium caudatum Least Concern
Psychotria ligustrifolia Least Concern   Pteridium caudatum Least Concern
Province Deast Concern   Pteridium caudatum Least Concern
I Dtorodroma hasitata
Prerodroma nasitata Endangerea
Pujjillus merminien Quadralla augenhallanhaur
Quadrella cynophaliophora Least Concern
Rachicallis americana Least Concern
Railus crepitans
Ranala aculeata Least Concern V
Recurvirostra americana Least Concern
Rhizophora mangle Least Concern
Rhynchospora colorata Least Concern $\checkmark$
Riccordia ricordii Least Concern
Riparia riparia Least Concern
Rissa tridactyla Vulnerable
Roystonea regia Least Concern
Rynchops niger Least Concern
Scaevola plumieri Least Concern √
Schoenus nigricans Least Concern
Scleria lithosperma Least Concern
Seiurus aurocapilla Least Concern
Selasphorus rufus Near Threatened
Senna pallida Least Concern
Sesuvium portulacastrum Least Concern √
Setaria parviflora Least Concern
Setophaga americana Least Concern
Setophaga caerulescens Least Concern
Setophaga castanea Least Concern
Setophaga citrina Least Concern
Setophaga coronata Least Concern
Setophaga discolor Least Concern
Setophaga dominica Least Concern
Setophaga fusca Least Concern
Setophaga kirtlandii Near Threatened
Setophaga magnolia Least Concern
Setophaga palmarum Least Concern
Setophaga pensylvanica Least Concern
Setophaga petechia Least Concern
Setophaga pityophila Least Concern
Setophaga ruticilla Least Concern
Setophaga striata Near Threatened
Setophaga tigrina Least Concern
Setophaga townsendi Least Concern

Setophaga virens	Least Concern		
Sideroxylon americanum	Least Concern		
Sideroxylon salicifolium	Least Concern		
Sitta pusilla	Least Concern		
Smilax aracilior	Least Concern		
Sophora tomentosa	Least Concern		
Spatula clypeata	Least Concern		
Spatula cvanoptera	Least Concern		
Spatula discors	Least Concern		
Spermacoce capillaris	Endangered		
Spermacoce tetraquetra	Least Concern		
Sphaerodactvlus caicosensis	Least Concern		
Sphaerodactvlus mariauanae	Endangered		
Sphaerodactvlus underwoodi	Least Concern		
Sphyrapicus varius	Least Concern		
Spindalis zena	Least Concern		
Spinus tristis	Least Concern		
Spiza americana	Least Concern		
Spizella pallida	Least Concern		
Spizella passerina	Least Concern		
Spondylurus caicosae	Near Threatened		
Spondylurus turksae	Critically Endangered		
Sporobolus indicus	Least Concern		
, Sporobolus virginicus	Least Concern	$\checkmark$	
Stachytarpheta fruticosa	Least Concern		
Stachytarpheta jamaicensis	Least Concern	$\checkmark$	
Starnoenas cyanocephala	Endangered		
Steganopus tricolor	Least Concern		
Stelgidopteryx serripennis	Least Concern		
Stenandrium carolinae	Critically Endangered		
Stenostomum lucidum	Least Concern		
Stenostomum myrtifolium	Least Concern		
Stercorarius parasiticus	Least Concern		
Stercorarius pomarinus	Least Concern		
Sterna dougallii	Least Concern		
Sterna forsteri	Least Concern		
Sterna hirundo	Least Concern		
Sternula antillarum	Least Concern		
Streptopelia decaocto	Least Concern		
Strumpfia maritima	Least Concern		
Sturnus vulgaris	Least Concern		
Sula leucogaster	Least Concern		
Sula sula	Least Concern		
Suriana maritima	Least Concern		
Swietenia mahagoni	Near Threatened		

Tabebuja bahamensis	Least Concern		
Tabebuja lepidota	Least Concern		
Tachybaptus dominicus	Least Concern		
Tachycineta bicolor	Least Concern		
Tecoma stans	Least Concern	$\checkmark$	
Terrestrail Species			
Thalasseus maximus	Least Concern		
Thalasseus sandvicensis	Least Concern		
Tournefortia anaphalodes	Least Concern		
Toxostoma rufum	Least Concern	, v	
Tringa flavines	Least Concern		
Tringa melanoleuca	Least Concern		
Tringa seminalmata	Least Concern		
Tringa solitaria	Least Concern		
Tronidonhis areenwavi	Vulnerable		
Turdus migratorius	Least Concern		
Turnera ulmifolia	Least Concern		
Turannus caudifasciatus	Least Concern		
	Endangorod		
	Liudilgereu		
	Least Concern		
Tyrannus jorjicatus	Least Concern		
Tyrannus tyrannus	Least Concern		
Tyto alba	Least Concern	1	
Vachellia acuifera	Least Concern	J (	
Vachellia choriophylla	Data Deficient	$\checkmark$	
Vachellia farnesiana	Least Concern	1	
Vachellia macracantha	Least Concern	$\checkmark$	
Vachellia tortuosa	Least Concern		
Vanellus vanellus	Near Threatened	,	
Varronia bahamensis	Least Concern	$\checkmark$	
Varronia brittonii	Least Concern		
Varronia bullata	Least Concern		
Varronia lucayana	Near Threatened		
Vermivora cyanoptera	Least Concern		
Vireo altiloquus	Least Concern		
Vireo crassirostris	Least Concern		
Vireo flavifrons	Least Concern		
Vireo griseus	Least Concern		
Vireo olivaceus	Least Concern		
Vireo philadelphicus	Least Concern		
Volkameria aculeata	Least Concern		
Waltheria indica	Least Concern	$\checkmark$	
Ximenia americana	Least Concern		
Zapoteca formosa	Least Concern		
Zenaida asiatica	Least Concern		

Zenaida aurita	Least Concern	
Zenaida macroura	Least Concern	
Zonotrichia leucophrys	Least Concern	

## Appendix H

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







# Index of CITES species







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CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. At the time of writing the present introduction (March 2021), 183 States or regional economic integration organizations are party to CITES.

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) is a global Centre of excellence on biodiversity. The Centre operates as a collaboration between the UN Environment Programme and the UK-registered charity WCMC. Together we are confronting the global crisis facing nature.

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CITES Checklist website:	http://checklist.cites.org/

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## FOREWORD AND ACKNOWLEDGEMENTS

The *Checklist of CITES Species* acts as the official digest of CITES-listed species. It contains the scientific names of listed taxa according to the standard references as recognized in Resolution Conf. 12.11 (Rev. CoP18) on *Standard nomenclature*, and is regularly updated to reflect the latest information. In order to be able to implement the Convention effectively, CITES Parties need to have access to authoritative information on which species are listed, where they occur and what level of protection they are afforded. The online *Checklist* is designed to allow Parties as well as the wider public to do this, offering the opportunity to access, download and filter data on species listings, nomenclature and distributions tailored to their needs. Users can download information contained in the Checklist in the three languages of the Convention (English, French and Spanish), as well as in different formats compatible with databases and other datasets, making it easy to ensure consistency between national checklists and the nomenclature adopted by the Conference of the Parties to CITES.

The *Checklist* also offers a mechanism to allow Parties to update their own national systems with amendments to the CITES Appendices as they are made, thus avoiding duplication of effort and reducing the risk of introducing errors in copying species names. This is done via Application Programming Interface (API), which also allows Parties to "pull" the names of species and the Appendices they are included in directly into a CITES electronic permit or certificate. Information on using these web services is available from the online Checklist (and at: http://api.speciesplus.net/).

The production and publication of the *Checklist* have been made possible through the generous funding of the European Union. I would therefore like to express my sincere thanks to the European Union, not only for this project but also for their continued general support for CITES activities.

The *Checklist* is widely used and appreciated by CITES Management Authorities, Scientific Authorities, Customs officers and others around the world involved in the implementation and enforcement of CITES, as well as by intergovernmental entities, international and national non-governmental organizations, academics, the media and many others. We trust that this resource will be of value to you, and we very much welcome any feedback and suggestions on ways to improve this resource in the future.

Ivonne Higuero CITES Secretary-General

## INTRODUCTION

The Conference of the Parties recognizes the *Checklist of CITES species* as an official digest of scientific names contained in the official standard references. The *Checklist of CITES species* is now dynamically linked to Species+, a database of information on MEA-listed species that is managed by UNEP-WCMC, allowing, for the first time, taxonomic and listing changes to be reflected within this document as they are updated. This will include amendments to CITES Appendix III made between meetings of the Conference of the Parties. For this reason, it will be important for users of the *Checklist* to take note of the date of download, as outputs will change over time on the basis of changes adopted by Parties.

The Checklist website also provides the flexibility to create tailored outputs by higher taxonomic group, Appendix and country or region, with additional "Advanced options" for including or excluding elements such as Authors' names, scientific synonyms and common names. If filters have been applied, some of the descriptions below may not be applicable. For instance, if scientific synonyms have been excluded, the synonym records will not appear in the output.

### Structure

The *Checklist of CITES species* comprises two parts: the *Index of CITES species* (the present output) and the *History of CITES listings*. While users can choose to download tailored outputs of the *Index of CITES species*, the complete publication is an alphabetical list of all animal and plant taxa included in the CITES Appendices. The only exceptions to this are Appendix-II orchids. These are only included if they are listed in the *CITES Orchid Checklist*, volumes 1-4, published by the Royal Botanic Gardens, Kew, or in the *Checklist for* Bulbophyllum *and allied taxa* (Sieder, Rainer & Kiehn, 2007). For the orchid species not found in these references, the *CITES Species Index* contains a record of the genera to which they belong, e.g. *Aa* spp, but not of the individual species in each genus.

Three types of record are included in the *Index of CITES species*:

- 1) scientific names, which are the main records and contain all information;
- 2) common names, which refer to the main record; and
- 3) scientific synonyms, which refer to the main record.

#### 1 The scientific name record

This record is the main record that contains all the information available for each taxon.

Taxonomic names that have been officially adopted by the Conference of the Parties [see the list of standard nomenclatural references in <u>Resolution Conf. 12.11 (Rev. CoP18)</u> appear in boldface in the *Checklist*, e.g. *Acinonyx jubatus* (the cheetah). This is the case for most taxa. In some cases, nevertheless, a standard nomenclatural reference for the constituent species of a higher taxon has not yet been adopted. In such instances, a reference identified by UNEP-WCMC has been used. The names of these taxa are not in boldface, e.g. *Tridacna maxima* (or any Tridacnidae species).

Higher taxa are only included when there is an Appendix listing at that level or if the higher taxon has inherited a listing from another higher taxon. For instance, a genus within Scleractinia spp. would be included so that it would be clear to readers that all species within the genus are listed (e.g. *Acropora* spp.). If, alternatively, the inclusion in the Appendices goes no further up than the species level, as in

the case of *Dugong dugon*, the genus, family or order would not appear in this case (e.g. *Dugong*, Dugongidae and Sirenia would not appear).

#### Examples of scientific name records and explanation



#### Key to abbreviations and annotations

1	listed in Appendix I
Ш	listed in Appendix II
111	listed in Appendix III
NC	non CITES
spp.	all species of a higher taxon
var.	variety
Superscript annotations 1 to 74.	see the key for <i>Annotations <u>not</u> preceded by "#"</i> at the end of this PDF
#1-#14 (flora only)	see Key to # annotations at the end of the PDF

#### 2 The common name record

Where available, English (E), Spanish (S) and French (F) common names are provided. The common name is followed by the corresponding scientific name under which all information is recorded. There is only one entry for each common name, e.g. there is an entry for 'Eagle, Golden' but not for 'Golden Eagle'.

#### Examples of common name records and explanation

1) <u>Hummingbird, Emerald-chinned (E)</u>: Abeillia abeillei

= go to "Abeillia abeillei" to see the full record of the "emerald-chinned hummingbird".

2) parrots (E): PSITTACIFORMES (Aves)

= go to "PSITTACIFORMES" to see the full record of "parrots".

3) <u>orchids, slipper (E)</u>: *Paphiopedilum* spp. / *Phragmipedium* spp.

= go to "*Paphiopedilum* spp." and "*Phragmipedium* spp." to see the full record of "slipper orchids", because the same common name is used for both genera.

#### 3 The synonym record

A synonym is followed by '=' and the scientific name under which all information is recorded.

#### Example and explanation

#### Loxodonta cyclotis = Loxodonta africana

Explanation: Loxodonta cyclotis is a synonym of Loxodonta africana. Go to "Loxodonta africana" to see the full record.

Note: A same species name may be displayed as both a synonym and an accepted name when it has been given by different authors to different species. Thus, the *Index of CITES species* contains the following consecutive entries:

#### Porites solida = Porites astreoides

Porites solida II PORITIDAE (Anthozoa)

Selecting "Author's name" in the *Advanced options* will display the authors' names both on screen and in the downloads, thereby clarifying these records as:

Porites solida Verrill, 1868 = Porites astreoides Lamarck, 1816

Porites solida (Forskål, 1775) II PORITIDAE (Anthozoa)

In other words, the Conference of the Parties to CITES has adopted *Porites astreoides*, as named by Lamarck in 1816, and *Porites solida*, as named by Forskål in 1775, as the scientific names of two

CITES-listed species. In addition, it is recognized that the species that Verrill named *Porites solida* in 1868 is the same as the one known to CITES as *Porites astreoides*.

# **FAUNA**

Accipiter chionogaster (Kaup, 1852) = Accipiter striatus Vieillot, 1807

Accipiter erythronemius (Kaup. 1850) = Accipiter striatus Vieillot, 1807

Accipiter striatus Vieillot, 1807 II 31 ACCIPITRIDAE (Aves) (E) Sharp-shinned Hawk (S) Azor chico, Esparvero chico, Gavilán americano, Gavilán arrastrador, Gavilán pajarero (F) Épervier brun

- Accipiter ventralis Sclater, 1866 = Accipiter striatus Vieillot, 1807
- Acropora cervicornis (Lamarck, 1816) II ACROPORIDAE (Anthozoa) (E) Staghorn Coral (S) Coral cuerno de ciervo (F) Corail cornes de cerf
- Acropora palmata (Lamarck, 1816) II ACROPORIDAE (Anthozoa) (E) Elkhorn Coral (S) Coral cuerno de alce Axohelia mirabilis (Duchassaing & Michelotti, 1860) = (F) Corail cornes d'élan
- Agarice fragile (F): Agaricia fragilis
- Agarice laitue (F): Agaricia agaricites
- Agarice plate (F): Agaricia humilis
- Agaricia agaricites (Linnaeus, 1758) II AGARICIIDAE (Anthozoa) (E) Leaf Coral, Lettuce Coral (S) Coral de lechuga (F) Agarice laitue
- Agaricia cailleti (Duchassaing & Michelotti, 1864) = Leptoseris cailleti (Duchassaing & Michelotti, 1864)
- Agaricia crassa Verrill, 1901 = Agaricia agaricites (Linnaeus, 1758)
- Agaricia fragilis (Dana, 1846) II AGARICIIDAE (Anthozoa) (E) Fragile Saucer Coral (S) Coral frágil (F) Boa, Bahamas Islands (E): Chilabothrus chrysogaster Agarice fragile
- Agaricia humilis Verrill, 1901 II AGARICIIDAE (Anthozoa) (E) Lowrelief Lettuce Coral (S) Coral bajorrelieve (F) Agarice plate
- Agaricia purpurea LeSueur, 1820 = Agaricia agaricites (Linnaeus, 1758)
- Águila pescadora (S): Pandion haliaetus
- Águila sangual (S): Pandion haliaetus
- Aguililla colirroja (S): Buteo jamaicensis
- Aguilucho pálido (S): Circus cyaneus
- Aigle pêcheur (F): Pandion haliaetus
- Alcachofa de mar (S): Scolymia cubensis
- Anas arborea Linnaeus, 1758 = Dendrocygna arborea (Linnaeus, 1758)
- Anas bicolor Vieillot, 1816 = Dendrocygna bicolor (Vieillot, Caballito de mar (S): Hippocampus erectus 1816)
- Asio flammeus (Pontoppidan, 1763) II 35 STRIGIDAE (Aves) (E) Short-eared Owl (S) Búho campestre, Búho Caballito hocico largo (S): Hippocampus reidi orejicorto, Lechuza campestre, Lechuza orejicorta, Lechuzón campestre (F) Hibou brachyote, Hibou des marais
- Astrea annularis (Ellis & Solander, 1786) = Montastrea annularis (Ellis & Solander, 1786)
- Astrea argus Lamarck, 1816 = Montastrea cavernosa (Linnaeus, 1767)
- Astrea conferta Milne Edwards & Haime, 1850 = Montastrea cavernosa (Linnaeus, 1767)
- Astrea decactis Lyman, 1859 = Madracis decactis (Lyman, Cardon (S): Dermochelys coriacea 1859)

Astrea intersepta (Esper, 1795) = Stephanocoenia intersepta (Esper, 1795)

Astrea radiata (Ellis & Solander, 1786) = Montastrea cavernosa (Linnaeus, 1767)

- Astrea rigida Dana, 1846 = Isophyllastrea rigida (Dana, 1846)
- Astropsammia pedersenii Verrill, 1869 = Tubastraea coccinea Lesson, 1829

Axhelia mirabilis (Duchassaing & Michelotti, 1860) = Madracis myriaster (Milne Edwards & Haime, 1849)

Axhelia myriaster Milne Edwards & Haime, 1849 = Madracis myriaster (Milne Edwards & Haime, 1849)

Axohelia dumetosa (Duchassaing, 1870) = Madracis myriaster (Milne Edwards & Haime, 1849)

Madracis myriaster (Milne Edwards & Haime, 1849)

- Axohelia myriaster (Milne Edwards & Haime, 1849) = Madracis myriaster (Milne Edwards & Haime, 1849)
- Axohelia schrammii Pourtalès, 1874 = Madracis myriaster (Milne Edwards & Haime, 1849)
- Azor chico (S): Accipiter striatus
- Balbugard fluviatile (F): Pandion haliaetus
- Balbuzard fluviatile (F): Pandion haliaetus
- Balbuzard pêcheur (F): Pandion haliaetus
- Barn-Owl, Common (E): Tyto alba
- Baula (S): Dermochelys coriacea
- Boa, Ambergris Cay Dwarf (E): Tropidophis greenwayi
- Boa de l'île Turques (F): Chilabothrus chrysogaster
- Boa forestier d'Ambergris Cay (F): Tropidophis greenwayi
- Boa nain d'Ambergris Cay (F): Tropidophis greenwayi
- Boa, Turks Islands (E): Chilabothrus chrysogaster
- Búho campestre (S): Asio flammeus
- Búho orejicorto (S): Asio flammeus
- Busardo colirrojo (S): Buteo jamaicensis
- Busard Saint-Martin (F): Circus cyaneus
- Buse à queue rousse (F): Buteo jamaicensis
- Buteo jamaicensis (Gmelin, 1788) II <sup>31</sup> ACCIPITRIDAE (Aves) (E) Red-tailed Hawk (S) Aguililla colirroja, Busardo colirrojo, Guaraguao (F) Buse à queue rousse Cabailito (S): Hippocampus reidi
- Caballito de mar (S): Hippocampus reidi
- Caballito erecto (S): Hippocampus erectus
- Caballito estriado (S): Hippocampus erectus
- Caballito punteado (S): Hippocampus erectus
- Cachona (S): Sphyrna lewini
- Caguama (S): Caretta caretta
- Canal (S): Dermochelys coriacea
- Caouana elongata Gray, 1844 = Caretta caretta (Linnaeus, 1758)
- Caouanne (F): Caretta caretta
- Carcharias tigris Atwood, 1865 = Isurus oxyrinchus Rafinesque, 1810

Caret (F): Eretmochelys imbricata

Caretta atra Merrem, 1820 = Caretta caretta (Linnaeus, 1758)

Caretta bissa Rüppell, 1835 = Eretmochelys imbricata (Linnaeus, 1766)

- Caretta caretta (Linnaeus, 1758) I CHELONIIDAE (Reptilia) (E) Loggerhead, Loggerhead turtle (S) Caguama, Cayuma, Tortuga boba, Tortuga cabezona, Tortuga careta, Tortuga comun (F) Caouanne, Cayunne, Coffre, Tortue à bahut, Tortue caouanne, Tortue caret
- Caretta cepedii Merrem, 1820 = Chelonia mydas (Linnaeus, 1758)
- Caretta esculenta Merrem, 1820 = Chelonia mydas (Linnaeus, 1758)
- Caretta gigas Deraniyagala, 1933 = Caretta caretta (Linnaeus, 1758)
- Caretta nasuta Rafinesque, 1814 = Caretta caretta (Linnaeus, 1758)
- Caretta rostrata Girard, 1858 = Eretmochelys imbricata (Linnaeus, 1766)
- Caretta squamosa Girard, 1858 = Eretmochelys imbricata Chelonia virgata Schweigger, 1812 = Chelonia mydas (Linnaeus, 1766)
- Caretta thunbergii Merrem, 1820 = Chelonia mydas (Linnaeus, 1758)
- Caryophyllia aurantiaca Milne Edwards, 1836 = Tubastraea coccinea Lesson, 1829
- Caryophyllia berteriana Duchassaing, 1850 II CARYOPHYLLIIDAE (Anthozoa) (E) Beautiful Horn Coral (S) Coral cuernito hermoso
- Caryophyllia carduus (Ellis & Solander, 1786) = Mussa angulosa (Pallas, 1766)
- Caryophyllia cubensis Milne Edwards & Haime, 1849 = Scolymia cubensis (Milne Edwards & Haime, 1849)
- Caryophyllia fastigiata (Pallas, 1766) = Eusmilia fastigiata coarl, Ridged cactus (E): Mycetophyllia lamarckiana (Pallas, 1766)
- Caryophyllia formosa Pourtalès, 1867 = Caryophyllia berteriana Duchassaing, 1850
- Cayuma (S): Caretta caretta
- Cayunne (F): Caretta caretta
- Cernícalo americano (S): Falco sparverius
- Cernícalo primito (S): Falco sparverius
- Cestracion leeuwenii (Day 1865) = Sphyrna lewini (Griffith & Smith, 1834)
- Cestracion oceanica (Garman 1913) = Sphyrna lewini (Griffith & Smith, 1834)
- Chagrin (F): Rhincodon typus
- Chelone imbricata (Linnaeus, 1766) = Eretmochelys imbricata (Linnaeus, 1766)
- Chelonia agassizii Bocourt, 1868 = Chelonia mydas (Linnaeus, 1758)
- Chelonia bicarinata Lesson, 1834 = Chelonia mydas (Linnaeus, 1758)
- Chelonia formosa Girard, 1858 = Chelonia mydas (Linnaeus, 1758)
- Chelonia grisea Eschscholtz, 1829 = Eretmochelys imbricata (Linnaeus, 1766)
- Chelonia lachrymata Cuvier, 1829 = Chelonia mydas (Linnaeus, 1758)
- Chelonia lata Philippi, 1887 = Chelonia mydas (Linnaeus, 1758)

- Chelonia maculosa Cuvier, 1829 = Chelonia mydas (Linnaeus, 1758)
- Chelonia marmorata Duméril & Bibron, 1835 = Chelonia mydas (Linnaeus, 1758)
- Chelonia mydas (Linnaeus, 1758) I CHELONIIDAE (Reptilia) (E) Green Turtle (S) Tortuga blanca, Tortuga verde (F) Tortue comestible, Tortue franche, Tortue verte
- Chelonia pelasgorum Bory, 1833 = Caretta caretta (Linnaeus, 1758)
- Chelonia pseudocaretta Lesson, 1834 = Eretmochelys imbricata (Linnaeus, 1766)
- Chelonia pseudomydas Lesson, 1834 = Eretmochelys imbricata (Linnaeus, 1766)
- Chelonia radiata Cuvier, 1829 = Eretmochelys imbricata (Linnaeus, 1766)
- Chelonias lutaria Rafinesque, 1814 = Dermochelys coriacea (Vandelli, 1761)
- Chelonia tenuis Girard, 1858 = Chelonia mydas (Linnaeus, 1758)
- (Linnaeus, 1758)
- Chilabothrus chrysogaster (Cope, 1871) II BOIDAE (Reptilia) (E) Bahamas Islands Boa, Turks Islands Boa (F) Boa de l'île Turques
- Chiriría caribeña (S): Dendrocygna arborea Chouette effraie (F): Tyto alba
- *Circus cvaneus* (Linnaeus, 1766) II <sup>31</sup> ACCIPITRIDAE (Aves) (E) Hen Harrier, Marsh Hawk, Northern Harrier (S) Aguilucho pálido, Gavilán rastrero (F) Busard Saint-Martin
- Cirrhipathes setacea occidentalis (Gray, 1860) = Stichopathes occidentalis (Gray, 1860)
- Coenopsammia affinis Duncan, 1889 = Tubastraea coccinea Lesson, 1829
- Coenopsammia aurea (Quoy & Gaimard, 1833) = Tubastraea coccinea Lesson, 1829
- Coenopsammia coccinea (Lesson, 1834) = Tubastraea coccinea Lesson, 1829
- Coenopsammia ehrenbergiana Milne Edwards & Haime, 1848 = Tubastraea coccinea Lesson, 1829
- Coenopsammia manni Verrill, 1866 = Tubastraea coccinea Lesson, 1829
- Coenopsammia radiata Verrill, 1864 = Tubastraea coccinea Lesson, 1829
- Coenopsammia tenuilamellosa Milne Edwards & Haime. 1848 = Tubastraea coccinea Lesson, 1829
- Coenopsammia urvillii Milne Edwards & Haime, 1848 = Tubastraea coccinea Lesson, 1829
- Coenopsammia willeyi Gardiner, 1899 = Tubastraea coccinea Lesson, 1829
- Coenosmilia arbuscula Pourtalès, 1874 II CARYOPHYLLIIDAE (Anthozoa) (E) Dwarf Tree Coral (S) Coral arbolito
- Coffin-back (E): Dermochelys coriacea
- Coffre (F): Caretta caretta
- Colpophyllia natans (Houttuyn, 1772) II FAVIIDAE (Anthozoa) (E) Boulder Brain Coral (S) Coral cerebro macizo (F) Corail cerveau natan

Concha Reina (S): Strombus gigas Concha reina del Caribe (S): Strombus gigas Conch, Pink (E): Strombus gigas Conch, Queen (E): Strombus gigas Corail balle de golf (F): Favia fragum Corail cactus à crêtes basses (F): Mycetophyllia daniana Corail cactus ridé (F): Mycetophyllia lamarckiana Corail cactus sinueux (F): Isophyllia sinuosa Corail cerveau bosselé (F): Diploria clivosa Corail cerveau natan (F): Colpophyllia natans Corail cerveau symétrique (F): Diploria strigosa Corail coeur d'artichaut (F): Scolymia cubensis Corail cornes de cerf (F): Acropora cervicornis Corail cornes d'élan (F): Acropora palmata Corail étoile elliptique (F): Dichocoenia stokesii Corail étoilé massif (F): Montastrea annularis Corail étoile rougissant (F): Stephanocoenia intersepta Corail étoile rugueux (F): Isophyllastrea rigida Corail fleur doux (F): Eusmilia fastigiata Corail fleur épineux (F): Mussa angulosa Corail laitue (F): Helioseris cucullata Corail méandreux (F): Meandrina maeandrites Corail starlette massif (F): Siderastrea siderea Coral alambre verde (S): Stichopathes occidentalis Coral arbolito (S): Coenosmilia arbuscula Coral, Artichoke (E): Scolymia cubensis Coral bajorrelieve (S): Agaricia humilis Coral, Beautiful Horn (E): Caryophyllia berteriana Coral, Blue Crust (E): Porites branneri Coral, Blushing Star (E): Stephanocoenia intersepta Coral, Boulder Brain (E): Colpophyllia natans Coral, Boulder Star (E): Montastrea annularis Coral, Boulder Star (E): Montastrea franksi Coral cavernoso macizo (S): Montastrea cavernosa Coral, Cavernous Star (E): Montastrea cavernosa Coral cerebro macizo (S): Colpophyllia natans Coral cerebro parejo (S): Diploria strigosa Coral cerebro verrugoso (S): Diploria clivosa Coral, Club Finger (E): Porites porites Coral, Clubtip Finger (E): Porites porites Coral crustoso azul (S): Porites branneri Coral cuernito hermoso (S): Caryophyllia berteriana Coral cuerno de alce (S): Acropora palmata Coral cuerno de ciervo (S): Acropora cervicornis Coral de dedos chatos (S): Porites porites Coral de diez rayos (S): Madracis decactis Coral de encaje (S): Leptoseris cailleti Coral de lechuga (S): Agaricia agaricites Coral de ocho rayos (S): Madracis formosa Coral, Dwarf Tree (E): Coenosmilia arbuscula Coral, Eight-ray Finger (E): Madracis formosa Coral, Elkhorn (E): Acropora palmata Coral, Elliptical Star (E): Dichocoenia stokesii Coral empelotado (S): Favia fragum Coral estrella macizo (S): Montastrea annularis Coral estrella sonrojado (S): Stephanocoenia intersepta Coral estrellita chico (S): Siderastrea radians Coral estrellita macizo (S): Siderastrea siderea Coral estriado de dedos (S): Madracis myriaster Coral floral liso (S): Eusmilia fastigiata

Coral frágil (S): Agaricia fragilis Coral, Fragile Saucer (E): Agaricia fragilis Coral, Franks's Boulder Star (E): Montastrea franksi Coral, Golfball (E): Favia fragum Coral, Great Star (E): Montastrea cavernosa Coral, Green Cactus (E): Madracis decactis Coral, Green Wire (E): Stichopathes occidentalis Coral, Knobby Brain (E): Diploria clivosa Coral laberíntico (S): Meandrina maeandrites Coral, Lacy Lettuce (E): Leptoseris cailleti Coral, Large Flower (E): Mussa angulosa Coral, Leaf (E): Agaricia agaricites Coral, Lesser Starlet (E): Siderastrea radians Coral, Lettuce (E): Agaricia agaricites Coral, Lobed Star (E): Montastrea annularis Coral, Lowrelief Lettuce (E): Agaricia humilis Coral, Lowridge Cactus (E): Mycetophyllia daniana coral macizo de Franks (S): Montastrea franksi Coral, Massive Starlet (E): Siderastrea siderea Coral, Maze (E): Meandrina maeandrites Coral montañoso (S): Montastrea faveolata Coral mostaza (S): Porites astreoides Coral, Mountainous Star (E): Montastrea faveolata Coral, Mustard Hill (E): Porites astreoides Coral naranja de tubo (S): Tubastraea coccinea Coral, Orange Cup (E): Tubastraea coccinea Coral, Orange Tube (E): Tubastraea coccinea Coral piña (S): Dichocoenia stokesii Coral, Pineapple (E): Dichocoenia stokesii Coral rayo de sol (S): Helioseris cucullata Coral, Ridged Cactus (E): Mycetophyllia lamarckiana Coral rosado (S): Manicina areolata Coral, Rose (E): Manicina areolata Coral, Rough Star (E): Isophyllastrea rigida Coral, Rough Starlet (E): Siderastrea radians Coral, Sinuous Cactus (E): Isophyllia sinuosa Coral, Small Star (E): Favia fragum Coral, Smooth Flower (E): Eusmilia fastigiata Coral, Smooth Starlet (E): Siderastrea siderea Coral, Solitary Disk (E): Scolymia cubensis Coral, Spiny Flower (E): Mussa angulosa Coral, Staghorn (E): Acropora cervicornis Coral, Striated Cup (E): Desmophyllum striatum Coral, Striate Finger (E): Madracis myriaster Coral, Sunray Lettuce (E): Helioseris cucullata Coral, Symmetrical Brain (E): Diploria strigosa Coral tazón estriado (S): Desmophyllum striatum Coral, Ten-ray Finger (E): Madracis decactis Coral, Ten-ray Star (E): Madracis decactis Coral, Yellow Pencil (E): Madracis myriaster Coraux à pores (F): Porites branneri Cornúa (S): Sphyrna lewini Cornuda (S): Sphyrna lewini Cornuda comun (S): Sphyrna lewini Cornuda común (S): Sphyrna lewini Cornuda martillo (S): Sphyrna lewini Cornuda negra (S): Sphyrna lewini Cosmoporites laevigata Duchassaing & Michelotti, 1864 = Porites astreoides Lamarck, 1816 Crécerelle américaine (F): Falco sparverius

Crécerelle d'Amérique (F): Falco sparverius cuero, Galapagos, Siete lomos, Siete guillas, Tinglada, Ctenophyllia maeandrites (Linnaeus, 1758) = Meandrina Tinglar, Tora, Tortuga laud, Tortugas Laúd (F) Tortue Luth maeandrites (Linnaeus, 1758) Ctenophyllia pectinata (Lamarck, 1801) = Meandrina Desmophyllum striatum Cairns, 1979 II maeandrites (Linnaeus, 1758) CARYOPHYLLIIDAE (Anthozoa) (E) Striated Cup Coral (S) Coral tazón estriado Ctenophyllia profunda Dana, 1846 = Meandrina maeandrites (Linnaeus, 1758) Dichocoenia stokesii Milne Edwards & Haime, 1848 II Ctenophyllia quadrata Dana, 1846 = Meandrina MEANDRINIIDAE (Anthozoa) (E) Elliptical Star Coral, Pineapple Coral (S) Coral piña (F) Corail étoile maeandrites (Linnaeus, 1758) Cvclura carinata Harlan, 1824 I IGUANIDAE (Reptilia) elliptique (E) Bahamas Rock Iguana, Bartsch's Iguana, Turks Diploria clivosa (Ellis & Solander, 1786) II FAVIIDAE and Caicos Ground Iguana, Turks and Caicos Iguana, (Anthozoa) (E) Knobby Brain Coral (S) Coral cerebro Turks and caicos rock iguana, Turks Island iguana (F) verrugoso (F) Corail cerveau bosselé Cyclure des îles Turques-et-Caïques, Iguane terrestre Diploria mammosa (Dana, 1846) = Diploria clivosa (Ellis & des îles Turks et Caïques Solander, 1786) Cyclure des îles Turques-et-Caïques (F): Cyclura carinata Diploria strigosa (Dana, 1846) II FAVIIDAE (Anthozoa) Dámero (S): Rhincodon typus (E) Symmetrical Brain Coral (S) Coral cerebro parejo Dauphin de Clymène (F): Stenella clymene (F) Corail cerveau symétrique Dolphin, Atlantic Spinner (E): Stenella clymene Delfín clymene (S): Stenella clymene Dendrocygna arborea (Linnaeus, 1758) II ANATIDAE Dolphin, Clymene (E): Stenella clymene (Aves) (E) Black-billed Wood-Duck, Cuban Tree-Duck, Dolphin, Helmet (E): Stenella clymene West Indian Tree-Duck, West indian whistling duck, Dorso de cuero (S): Dermochelys coriacea West Indian Whistling-Duck (S) Chiriría caribeña, Pato duck, Fulvous (E): Dendrocygna bicolor silbón de Cuba, Suirirí yaguaza, yaguasa de pico negro duck, Fulvous whistling (E): Dendrocygna bicolor (F) Dendrocygne à bec noir, Dendrocygne des Antilles duck, West indian whistling (E): Dendrocygna arborea Dendrocygna bicolor (Vieillot, 1816) III ANATIDAE Effraie africaine (F): Tyto alba (Aves) (E) Fulvous duck, Fulvous Tree-Duck, Fulvous Effraie des clochers (F): Tyto alba whistling duck, Fulvous Whistling-Duck (S) Pato silbón Épervier brun (F): Accipiter striatus común, Pijiji canelo, Suirirí bicolor, Suirirí leonado, Epicrates chrysogaster (Cope, 1871) = Chilabothrus Yaguaso colorado (F) Dendrocygne fauve chrysogaster (Cope, 1871) Dendrocygna fulva Hartlaub, 1844 = Dendrocygna bicolor Epicrates relicquus Barbour & Shreve, 1935 = (Vieillot, 1816) Chilabothrus chrysogaster (Cope, 1871) Dendrocygne à bec noir (F): Dendrocygna arborea Epicrates striatus chrysogaster (Fischer, 1856) = Dendrocygne des Antilles (F): Dendrocygna arborea Chilabothrus chrysogaster (Cope, 1871) Dendrocygne fauve (F): Dendrocygna bicolor Dendrophyllia affinis Duncan, 1889 = Tubastraea coccinea Epicrates striatus relicquus (Fischer, 1856) = Chilabothrus chrysogaster (Cope, 1871) Lesson, 1829 Eretmochelys imbricata (Linnaeus, 1766) I Dendrophyllia aurantiaca (Milne Edwards, 1836) = CHELONIIDAE (Reptilia) (E) Hawksbill Turtle (S) Tubastraea coccinea Lesson, 1829 Tortuga carey, Tortuga de carey (F) Caret, Tortue à bec Dendrophyllia danae Verrill, 1872 = Tubastraea coccinea de faucon, Tortue à écailles, Tortue imbriguée Lesson, 1829 Eretmochelys squamata Agassiz, 1857 = Eretmochelys Dendrophyllia ehrenbergiana (Milne Edwards & Haime, imbricata (Linnaeus, 1766) 1848) = Tubastraea coccinea Lesson, 1829 Esmerejón (S): Falco columbarius Dendrophyllia manni (Verrill, 1866) = Tubastraea coccinea Esparvero chico (S): Accipiter striatus Lesson, 1829 Euphyllia aspera Dana, 1846 = Eusmilia fastigiata (Pallas, Dendrophyllia surcularis Verrill, 1869 = Tubastraea 1766) coccinea Lesson, 1829 Eusmilia aspera (Dana, 1848) = Eusmilia fastigiata Dendrophyllia turbinata Nemenzo, 1960 = Tubastraea (Pallas, 1766) coccinea Lesson, 1829 Eusmilia fastigiata (Pallas, 1766) II CARYOPHYLLIIDAE Dendrophyllia willeyi (Gardiner, 1899) = Tubastraea (Anthozoa) (E) Smooth Flower Coral (S) Coral floral coccinea Lesson, 1829 liso (F) Corail fleur doux Dermatochelys atlantica Duméril and Bibron, 1835 = Eusmilia knorrii Milne Edwards & Haime, 1848 = Eusmilia Dermochelys coriacea (Vandelli, 1761) Dermatochelys porcata Wagler, 1830 = Dermochelys fastigiata (Pallas, 1766) Explanaria annularis (Ellis & Solander, 1786) = coriacea (Vandelli, 1761) Montastrea annularis (Ellis & Solander, 1786) Dermochelys coriacea (Vandelli, 1761) I DERMOCHELYIDAE (Reptilia) (E) Coffin-back, Explanaria argus (Lamarck, 1816) = Montastrea cavernosa (Linnaeus, 1767) Leatherback, Leatherback sea turtle, Leatherback Turtle, Leathery Turtle, Luth, Luth Turtle, Trunkback Explanaria radiata (Ellis & Solander, 1786) = Montastrea Turtle, Trunk turtle (S) Baula, Canal, Cardon, Dorso de cavernosa (Linnaeus, 1767)

Falco columbarius Linnaeus, 1758 II 31 FALCONIDAE (Aves) (E) Merlin, Pigeon Hawk (S) Esmerejón, Halcón Halcón primito (S): Falco sparverius migratorio, Halcón palomero (F) Faucon émerillon Falco cyaneus Linnaeus, 1766 = Circus cyaneus (Linnaeus, 1766) Falco haliaetus Linnaeus, 1758 = Pandion haliaetus (Linnaeus, 1758) Falco jamaicensis Gmelin, 1788 = Buteo jamaicensis (Gmelin, 1788) Falco kreyenborgi Kleinschmidt, 1929 = Falco peregrinus Tunstall, 1771 Falco madens Ripley & Watson, 1963 = Falco peregrinus Tunstall, 1771 Falcon, Peregrine (E): Falco peregrinus Falco peregrinus Tunstall, 1771 I FALCONIDAE (Aves) (E) Duck Hawk, Peregrine, Peregrine Falcon (S) Halcón blancuzco, Halcón común, Halcón peregrino, Halcón real, Halcón viajero (F) Faucon pèlerin Falco sparverius Linnaeus, 1758 II 31 FALCONIDAE (Aves) (E) American Kestrel (S) Cernícalo americano, Cernícalo primito, Halconcito, Halconcito común, Halcón primito (F) Crécerelle américaine, Crécerelle d'Amérique Faucon émerillon (F): Falco columbarius Faucon pèlerin (F): Falco peregrinus Favia coarctata Duchassaing & Michelotti, 1860 = Favia fragum (Esper, 1793) Favia fragum (Esper, 1793) II FAVIIDAE (Anthozoa) (E) Golfball Coral, Small Star Coral (S) Coral empelotado (F) Corail balle de golf Favia incerta Duchassaing & Michelotti, 1860 = Favia fragum (Esper, 1793) Favia whitfieldi Verrill, 1901 = Favia fragum (Esper, 1793) Flamant de Cuba (F): Phoenicopterus roseus Flamant rose (F): Phoenicopterus roseus Flamant rouge (F): Phoenicopterus roseus Flamenco (S): Phoenicopterus roseus Flamenco común (S): Phoenicopterus roseus Flamenco de Cuba (S): Phoenicopterus roseus Flamenco rojo (S): Phoenicopterus roseus Flamingo, American (E): Phoenicopterus roseus Flamingo, Caribbean (E): Phoenicopterus roseus flamingo, Greater (E): Phoenicopterus roseus Galapagos (S): Dermochelys coriacea Gavilán americano (S): Accipiter striatus Gavilán arrastrador (S): Accipiter striatus Gavilán pajarero (S): Accipiter striatus Gavilán pescador (S): Pandion haliaetus Gavilán rastrero (S): Circus cyaneus Goreaugyra memorialis Wells, 1974 = Meandrina maeandrites (Linnaeus, 1758) Grand corail étoilé (F): Montastrea cavernosa Guaraguao (S): Buteo jamaicensis Guincho (S): Pandion haliaetus Halcón blancuzco (S): Falco peregrinus Halconcito (S): Falco sparverius Halconcito común (S): Falco sparverius Halcón común (S): Falco peregrinus Halcón migratorio (S): Falco columbarius Halcón palomero (S): Falco columbarius

Halcón peregrino (S): Falco peregrinus Halcón real (S): Falco peregrinus Halcón viajero (S): Falco peregrinus Hammerhai, gebuchteter (E): Sphyrna lewini Hammerhead (E): Sphyrna lewini hammerhead, Scalloped (E): Sphyrna lewini Harrier, Hen (E): Circus cyaneus Harrier, Northern (E): Circus cyaneus Hawk, Duck (E): Falco peregrinus Hawk, Marsh (E): Circus cyaneus Hawk, Pigeon (E): Falco columbarius Hawk, Red-tailed (E): Buteo jamaicensis Hawk, Sharp-shinned (E): Accipiter striatus Helioseris cucullata (Ellis & Solander, 1786) II AGARICIIDAE (Anthozoa) (E) Sunray Lettuce Coral (S) Coral rayo de sol (F) Corail laitue Hibou brachyote (F): Asio flammeus Hibou des marais (F): Asio flammeus Hippocampe long-nez (F): Hippocampus reidi Hippocampe moucheté (F): Hippocampus erectus Hippocampe rayé (F): Hippocampus erectus Hippocampus brunneus Bean, 1906 = Hippocampus erectus Perry, 1810 Hippocampus erectus Perry, 1810 II SYNGNATHIDAE (Actinopteri) (E) Black Seahorse, Brown Seahorse, Horsefish, Lined Seahorse, Northern Seahorse, Spotted Seahorse, Yellow Seahorse (S) Caballito de mar, Caballito erecto, Caballito estriado, Caballito punteado (F) Hippocampe moucheté, Hippocampe rayé Hippocampus fascicularis Kaup, 1856 = Hippocampus erectus Perry, 1810 *Hippocampus hudsonius DeKay, 1842 = Hippocampus* erectus Perry, 1810 Hippocampus kincaidi Townsend & Barbour, 1906 = Hippocampus erectus Perry, 1810 Hippocampus laevicaudatus Kaup, 1856 = Hippocampus erectus Perry, 1810 Hippocampus marginalis Kaup, 1856 = Hippocampus erectus Perry, 1810 Hippocampus obtusus Ginsburg, 1933 = Hippocampus reidi Ginsburg, 1933 Hippocampus poeyi Howell Rivero, 1934 = Hippocampus reidi Ginsburg, 1933 Hippocampus punctulatus Guichenot. 1853 = Hippocampus erectus Perry, 1810 Hippocampus reidi Ginsburg, 1933 II SYNGNATHIDAE (Actinopteri) (E) Brazilian Seahorse, Long-snout Seahorse, Longsnout Seahorse, Slender Seahorse (S) Cabailito, Caballito de mar, Caballito hocico largo (F) Hippocampe long-nez Hippocampus stylifer Jordan & Gilbert, 1882 = Hippocampus erectus Perry, 1810 Hippocampus tetragonus Mitchill, 1814 = Hippocampus erectus Perry, 1810 Hippocampus villosus Günther, 1880 = Hippocampus erectus Perry, 1810

Homalochilus chrysogaster Cope, 1871 = Chilabothrus chrysogaster (Cope, 1871)

Iguana, Bahamas Rock (E): Cyclura carinata Iguana, Bartsch's (E): Cyclura carinata Iguana, Turks and Caicos (E): Cyclura carinata Iguana, Turks and Caicos Ground (E): Cyclura carinata iguana, Turks and caicos rock (E): Cyclura carinata iguana, Turks Island (E): Cyclura carinata Iquane terrestre des îles Turks et Caïques (F): Cyclura carinata Isophyllastrea rigida (Dana, 1846) II MUSSIDAE (Anthozoa) (E) Rough Star Coral (S) Micetocoral áspero (F) Corail étoile rugueux Isophyllia multiflora Verrill, 1901 = Isophyllia sinuosa (Ellis & Solander, 1786) Isophyllia rigida (Dana, 1846) = Isophyllastrea rigida (Dana, 1846) Isophyllia sinuosa (Ellis & Solander, 1786) II MUSSIDAE (Anthozoa) (E) Sinuous Cactus Coral (S) Micetocoral sinuoso (F) Corail cactus sinueux Isuropsis dekayi Gill, 1862 = Isurus oxyrinchus Rafinesque, 1810 Isurus bideni Phillipps, 1932 = Isurus oxyrinchus Rafinesque, 1810 Isurus glaucus Müller and Henle, 1839 = Isurus oxyrinchus Rafinesque, 1810 Isurus mako Whitley. 1929 = Isurus oxvrinchus Rafinesque, 1810 Isurus oxyrinchus Rafinesque, 1810 II LAMNIDAE (Elasmobranchii) (E) Mako, Shortfin mako (S) Mako, Marrajo común, Marrajo dientuso, Tiburón mako aletas cortas, tiburón mako de aleta corta (F) Mako, Reguin mako, Requin-taupe bleu, Taupe bleu Isurus spallanzanii Rafinesque, 1810 = Isurus oxyrinchus Rafinesque, 1810 Isurus tigris africanus Smith, 1957 = Isurus oxyrinchus Rafinesque, 1810 Kestrel, American (E): Falco sparverius Lambis (F): Strombus gigas Lamna guentheri Murray, 1884 = Isurus oxyrinchus Rafinesque, 1810 Lamna huidobrii Philippi, 1887 = Isurus oxyrinchus Rafinesque, 1810 Lamna oxyrhina Cuvier and Valenciennes, in Agassiz, 1838 = Isurus oxyrinchus Rafinesque, 1810 Lamna punctata Storer, 1839 = Isurus oxyrinchus Rafinesque, 1810 Leatherback (E): Dermochelys coriacea Lechuza campestre (S): Asio flammeus Lechuza común (S): Tyto alba Lechuza de campanario (S): Tyto alba Lechuza orejicorta (S): Asio flammeus Lechuzón campestre (S): Asio flammeus Leptoseris cailleti (Duchassaing & Michelotti, 1864) II AGARICIIDAE (Anthozoa) (E) Lacy Lettuce Coral (S) Coral de encaje Leptoseris cucullata (Ellis & Solander, 1786) = Helioseris cucullata (Ellis & Solander, 1786) Leptoseris nobilis Ma, 1959 = Helioseris cucullata (Ellis & Madrepora gyrosa Ellis & Solander, 1786 = Colpophyllia

Solander, 1786)

Horsefish (E): Hippocampus erectus

Lithophyllia argemone Duchassaing & Michelotti, 1860 = Mussa angulosa (Pallas, 1766) Lobophyllia angulosa (Pallas, 1766) = Mussa angulosa (Pallas, 1766) Lobophyllia aurea Quoy & Gaimard, 1833 = Tubastraea coccinea Lesson, 1829 Loggerhead (E): Caretta caretta Luth (E): Dermochelys coriacea Madrace à dix rayons (F): Madracis decactis Madrace profond (F): Madracis formosa Madracis decactis (Lyman, 1859) II POCILLOPORIDAE (Anthozoa) (E) Green Cactus Coral, Ten-ray Finger Coral, Ten-ray Star Coral (S) Coral de diez rayos (F) Madrace à dix rayons Madracis formosa Wells, 1973 II POCILLOPORIDAE (Anthozoa) (E) Eight-ray Finger Coral (S) Coral de ocho rayos (F) Madrace profond Madracis mirabilis (Duchassaing & Michelotti, 1860) = Madracis myriaster (Milne Edwards & Haime, 1849) Madracis myriaster (Milne Edwards & Haime, 1849) II POCILLOPORIDAE (Anthozoa) (E) Striate Finger Coral, Yellow Pencil Coral (S) Coral estriado de dedos Madrepora agaricites Linnaeus, 1758 = Agaricia agaricites (Linnaeus, 1758) Madrepora angulosa Pallas, 1766 = Mussa angulosa (Pallas, 1766) Madrepora annularis Ellis & Solander, 1786 = Montastrea annularis (Ellis & Solander, 1786) Madrepora areolata Linnaeus, 1758 = Manicina areolata (Linnaeus, 1758) Madrepora astroites Pallas, 1766 = Montastrea annularis (Ellis & Solander, 1786) Madrepora attenuata Brook, 1893 = Acropora cervicornis (Lamarck, 1816) Madrepora capitata Esper, 1797 = Eusmilia fastigiata (Pallas, 1766) Madrepora carduus Ellis & Solander, 1786 = Mussa angulosa (Pallas, 1766) Madrepora cavernosa Linnaeus, 1766 = Montastrea cavernosa (Linnaeus, 1767) Madrepora cervicornis Lamarck, 1816 = Acropora cervicornis (Lamarck, 1816) Madrepora clivosa Ellis & Solander, 1786 = Diploria clivosa (Ellis & Solander, 1786) Madrepora cornuta Duchassaing & Michelotti, 1860 = Acropora palmata (Lamarck, 1816) Madrepora cucullata Ellis & Solander, 1786 = Helioseris cucullata (Ellis & Solander, 1786) Madrepora fastigiata Pallas, 1766 = Eusmilia fastigiata (Pallas, 1766) Madrepora faveolata Ellis & Solander, 1786 = Montastrea annularis (Ellis & Solander, 1786) Madrepora filograna Esper, 1791 = Diploria clivosa (Ellis & Solander, 1786)

Madrepora flabellum Lamarck, 1816 = Acropora palmata (Lamarck, 1816)

Madrepora fragrum Esper, 1797 = Favia fragum (Esper, 1793)

natans (Houttuyn, 1772)

- Madrepora intersepta Esper, 1795 = Stephanocoenia intersepta (Esper, 1795)
- Madrepora labyrinthica Pallas, 1766 = Meandrina maeandrites (Linnaeus, 1758)
- Madrepora maeandrites Linnaeus, 1758 = Meandrina maeandrites (Linnaeus, 1758)
- Madrepora palmata Lamarck, 1816 = Acropora palmata (Lamarck, 1816)
- Madrepora perampla Horn, 1861 = Acropora palmata (Lamarck, 1816)
- Madrepora porites Pallas, 1766 = Porites porites (Pallas, 1766)
- Madrepora radians Pallas, 1766 = Siderastrea radians (Pallas, 1766)
- Madrepora radiata Ellis & Solander, 1786 = Montastrea cavernosa (Linnaeus, 1767)
- Madrepora siderea Ellis & Solander, 1786 = Siderastrea siderea (Ellis & Solander, 1786)
- Madrepora sinuosa Ellis & Solander, 1786 = Isophyllia sinuosa (Ellis & Solander, 1786)
- Madrepora thomasiana Duchassaing & Michelotti, 1860 = Acropora palmata (Lamarck, 1816)
- Mako (S): Isurus oxyrinchus
- Mako (F): Isurus oxyrinchus
- Mako (E): Isurus oxyrinchus
- mako, Shortfin (E): Isurus oxyrinchus
- Manicina areolata (Linnaeus, 1758) II FAVIIDAE (Anthozoa) (E) Rose Coral (S) Coral rosado (F) Rose de corail
- Manicina hispida Ehrenberg, 1834 = Manicina areolata (Linnaeus, 1758)
- Manicina mayori Wells, 1936 = Manicina areolata (Linnaeus, 1758)
- Manicina praerupta Ehrenberg, 1834 = Manicina areolata (Linnaeus, 1758)
- Manicina strigilis Milne Edwards & Haime, 1849 = Manicina areolata (Linnaeus, 1758)
- Marrajo común (S): Isurus oxyrinchus
- Marrajo dientuso (S): Isurus oxyrinchus
- Meandrina filograna (Esper, 1791) = Diploria clivosa (Ellis & Solander, 1786)
- Meandrina grandilobata Milne Edwards & Haime, 1849 = Diploria clivosa (Ellis & Solander, 1786)
- Meandrina interrupta Dana, 1846 = Diploria clivosa (Ellis & Solander, 1786)
- Meandrina maeandrites (Linnaeus, 1758) II MEANDRINIIDAE (Anthozoa) (E) Maze Coral (S) Coral Mycetophyllia lamarckiana Milne Edwards & Haime. laberíntico (F) Corail méandreux
- Meandrina mammosa Dana, 1846 = Diploria clivosa (Ellis & Solander, 1786)
- Meandrina memorialis (Wells, 1974) = Meandrina maeandrites (Linnaeus, 1758)
- Meandrina pectinata Lamarck, 1801 = Meandrina maeandrites (Linnaeus, 1758)
- 1846)

Meandrina superficialis Milne Edwards & Haime, 1849 = Diploria clivosa (Ellis & Solander, 1786) Merlin (E): Falco columbarius

Micetocoral angular (S): Mussa angulosa

Micetocoral áspero (S): Isophyllastrea rigida Micetocoral crestado (S): Mycetophyllia lamarckiana Micetocoral de poca cresta (S): Mycetophyllia daniana Micetocoral sinuoso (S): Isophyllia sinuosa *Micristodus punctatus Gill, 1865 = Rhincodon typus* 

- Smith, 1828
- Montastrea annularis (Ellis & Solander, 1786) II FAVIIDAE (Anthozoa) (E) Boulder Star Coral, Lobed Star Coral (S) Coral estrella macizo (F) Corail étoilé massif

Montastrea cavernosa (Linnaeus, 1767) II FAVIIDAE (Anthozoa) (E) Cavernous Star Coral, Great Star Coral (S) Coral cavernoso macizo (F) Grand corail étoilé

- Montastrea cavernosa hirta (Linnaeus, 1767) = Montastrea cavernosa (Linnaeus, 1767)
- Montastrea faveolata (Ellis & Solander, 1786) II FAVIIDAE (Anthozoa) (E) Mountainous Star Coral (S) Coral montañoso
- Montastrea franksi (Gregory, 1895) II FAVIIDAE (Anthozoa) (E) Boulder Star Coral, Franks's Boulder Star Coral (S) coral macizo de Franks
- Montastrea hispidula (Verrill, 1901) = Montastrea annularis (Ellis & Solander, 1786)
- Morfillo (S): Sphyrna lewini
- Mussa angulosa (Pallas, 1766) II MUSSIDAE (Anthozoa) (E) Large Flower Coral, Spiny Flower Coral (S) Micetocoral angular (F) Corail fleur épineux
- Mycedia fragilis Dana, 1846 = Agaricia fragilis (Dana, 1846)
- Mycedia gibbosa Dana, 1846 = Agaricia agaricites (Linnaeus, 1758)
- Mycedium cailleti Duchassaing & Michelotti, 1864 = Leptoseris cailleti (Duchassaing & Michelotti, 1864)
- Mycedium danai Duchassaing & Michelotti, 1860 = Agaricia agaricites (Linnaeus, 1758)
- Mycedium lessoni Duchassaing & Michelotti, 1860 = Agaricia agaricites (Linnaeus, 1758)
- Mycedium sanctijohannis Duchassaing & Michelotti, 1864 = Agaricia agaricites (Linnaeus, 1758)
- Mycedium vesparium Duchassaing & Michelotti, 1860 = Agaricia agaricites (Linnaeus, 1758)
- Mycetophyllia daniana Milne Edwards & Haime, 1849 II MUSSIDAE (Anthozoa) (E) Lowridge Cactus Coral (S) Micetocoral de poca cresta (F) Corail cactus à crêtes basses
- 1848 II MUSSIDAE (Anthozoa) (E) Ridged cactus coarl, Ridged Cactus Coral (S) Micetocoral crestado (F) Corail cactus ridé
- Neoporites subtilis Duchassaing & Michelotti, 1864 = Porites astreoides Lamarck, 1816
- Onychochelys kraussi Gray, 1873 = Eretmochelys *imbricata* (Linnaeus, 1766)
- Meandrina strigosa Dana, 1846 = Diploria strigosa (Dana, Orbicella annularis (Ellis & Solander, 1786) = Montastrea annularis (Ellis & Solander, 1786)
  - Orbicella braziliana Verrill, 1901 = Montastrea cavernosa (Linnaeus, 1767)

Orbicella cavernosa (Linnaeus, 1766) = Montastrea cavernosa (Linnaeus, 1767)

Orbicella faveolata = Montastrea faveolata (Ellis & Solander, 1786) Orbicella franksi = Montastrea franksi (Gregory, 1895) Orbicella hispidula Verrill, 1901 = Montastrea annularis (Ellis & Solander, 1786) Osprey (E): Pandion haliaetus Oulophyllia spinosa Milne Edwards & Haime, 1849 = Isophyllia sinuosa (Ellis & Solander, 1786) Owl, Barn (E): Tyto alba Owl, Common Barn (E): Tyto alba Owl, Short-eared (E): Asio flammeus Oxyrhina gomphodon Müller and Henle, 1839 = Isurus oxyrinchus Rafinesque, 1810 Pandion haliaetus (Linnaeus, 1758) II 31 PANDIONIDAE Pristis pristis (Linnaeus, 1758) I PRISTIDAE (Aves) (E) Osprey (S) Águila pescadora, Águila sangual, Gavilán pescador, Guincho (F) Aigle pêcheur, Balbugard fluviatile, Balbuzard fluviatile, Balbuzard pêcheur Parastrea fragum (Esper, 1797) = Favia fragum (Esper, 1793) Pato silbón común (S): Dendrocygna bicolor Pato silbón de Cuba (S): Dendrocygna arborea Pejepeine (S): Pristis pristis Peregrine (E): Falco peregrinus Petit corail starlette (F): Siderastrea radians Pez dama (S): Rhincodon typus Pez martillo (S): Sphyrna lewini Pez sierra común (S): Pristis pristis Phoenicopterus roseus Pallas, 1811 II PHOENICOPTERIDAE (Aves) (E) American Flamingo, Rhincodon typus Smith, 1828 II RHINCODONTIDAE Caribbean Flamingo, Greater flamingo (S) Flamenco, Flamenco común, Flamenco de Cuba, Flamenco rojo, Tococo (F) Flamant de Cuba, Flamant rose, Flamant rouge Pijiji canelo (S): Dendrocygna bicolor Placopsammia darwini Duncan, 1876 = Tubastraea coccinea Lesson, 1829 Plesiastrea goodei Verrill, 1900 = Stephanocoenia intersepta (Esper, 1795) Poisson-scie commun (F): Pristis pristis Porite digitée (F): Porites porites Porite étoile (F): Porites astreoides Porites agaricus Duchassaing & Michelotti, 1860 = Porites Scie (F): Pristis pristis astreoides Lamarck, 1816 Porites astreoides Lamarck, 1816 II PORITIDAE (Anthozoa) (E) Mustard Hill Coral (S) Coral mostaza (F) Porite étoile Porites branneri Rathbun, 1887 II PORITIDAE (Anthozoa) (E) Blue Crust Coral (S) Coral crustoso azul (F) Coraux à pores Porites clavaria Lamarck, 1816 = Porites porites (Pallas, 1766)Porites guadalupensis Duchassaing & Michelotti, 1860 = Porites astreoides Lamarck, 1816 Porites hentscheli Thiel, 1928 = Porites astreoides Lamarck, 1816 Porites incerta Duchassaing & Michelotti, 1860 = Porites astreoides Lamarck, 1816 Porites polymorphus Link, 1807 = Porites porites (Pallas, 1766)

**Porites porites** (Pallas, 1766) **II** PORITIDAE (Anthozoa) (E) Club Finger Coral, Clubtip Finger Coral (S) Coral de dedos chatos (F) Porite digitée Porites solida Verrill, 1868 = Porites astreoides Lamarck, 1816 Porites superficialis Duchassaing & Michelotti, 1860 = Porites astreoides Lamarck, 1816 Porites verrilli Rehberg, 1892 = Porites astreoides Lamarck, 1816 Pristis antiquorum Latham, 1794 = Pristis pristis (Linnaeus, 1758) Pristis canaliculata Bloch & Schneider, 1801 = Pristis pristis (Linnaeus, 1758) (Elasmobranchii) (E) Common Sawfish (S) Pejepeine, Pez sierra común, Sägefisch (F) Poisson-scie commun, Scie, Scie commune Pristis typica Poey, 1861 = Pristis pristis (Linnaeus, 1758) Pristis zephyreus Jordan & Starks, 1895 = Pristis pristis (Linnaeus, 1758) Requin baleine (F): Rhincodon typus Requin-baleine (F): Rhincodon typus Requin mako (F): Isurus oxyrinchus Requin marteau (F): Sphyrna lewini Requin marteau halicorne (F): Sphyrna lewini Requin-marteau halicorne (F): Sphyrna lewini Requin-taupe bleu (F): Isurus oxyrinchus Reussia lamellosa Duchassaing & Michelotti, 1860 = Madracis decactis (Lyman, 1859) (Elasmobranchii) (E) Whale Shark (S) Dámero, Pez dama, Tiburón Ballena (F) Chagrin, Requin baleine, **Requin-baleine** Rhinodon pentalineatus Kishinouye, 1901 = Rhincodon typus Smith, 1828 Rhinodon typicus Müller & Henle, 1839 = Rhincodon typus Smith, 1828 Rhinodon typicus Smith, 1845 = Rhincodon typus Smith, 1828 Rose de corail (F): Manicina areolata Sägefisch (S): Pristis pristis Sawfish, Common (E): Pristis pristis Scie commune (F): Pristis pristis Scolymia cubensis (Milne Edwards & Haime, 1849) II MUSSIDAE (Anthozoa) (E) Artichoke Coral, Solitary Disk Coral (S) Alcachofa de mar (F) Corail coeur d'artichaut Seahorse, Black (E): Hippocampus erectus Seahorse, Brazilian (E): Hippocampus reidi Seahorse, Brown (E): Hippocampus erectus Seahorse, Lined (E): *Hippocampus erectus* Seahorse, Longsnout (E): Hippocampus reidi Seahorse, Long-snout (E): Hippocampus reidi Seahorse, Northern (E): Hippocampus erectus Seahorse, Slender (E): Hippocampus reidi Seahorse, Spotted (E): Hippocampus erectus Seahorse, Yellow (E): Hippocampus erectus

shark, Bronze hammerhead (E): Sphyrna lewini

shark, Hammerhead (E): Sphyrna lewini
shark, Kidney-headed (E): Sphyrna lewini shark, Scalloped hammerhead (E): Sphyrna lewini shark, Southern hammerhead (E): Sphyrna lewini Shark, Whale (E): Rhincodon typus Siderastrea radians (Pallas, 1766) II SIDERASTREIDAE Stylophora mirabilis Duchassaing & Michelotti, 1860 = (Anthozoa) (E) Lesser Starlet Coral, Rough Starlet Coral (S) Coral estrellita chico (F) Petit corail starlette Siderastrea senegalensis Milne Edwards & Haime, 1850 = Suirirí leonado (S): Dendrocygna bicolor Siderastrea radians (Pallas, 1766) Siderastrea siderea (Ellis & Solander, 1786) II SIDERASTREIDAE (Anthozoa) (E) Massive Starlet Coral, Smooth Starlet Coral (S) Coral estrellita macizo Taupe bleu (F): Isurus oxyrinchus (F) Corail starlette massif Siderastrea siderea dominicensis (Ellis & Solander, 1786) = Siderastrea siderea (Ellis & Solander, 1786) Siete lomos (S): Dermochelys coriacea Siete quillas (S): Dermochelys coriacea Sphargis angusta Philippi, 1899 = Dermochelys coriacea (Vandelli, 1761) Sphargis coriacea (Linnaeus, 1766) = Dermochelys coriacea (Vandelli, 1761) Sphargis mercurialis Merrem, 1820 = Dermochelys coriacea (Vandelli, 1761) Sphyrna couardi Cadenat, 1951 = Sphyrna lewini (Griffith & Smith, 1834) Sphyrna diplana (Springer 1941) = Sphyrna lewini (Griffith & Smith, 1834) Sphyrna lewini (Griffith & Smith, 1834) II SPHYRNIDAE (Elasmobranchii) (E) Bronze hammerhead shark, gebuchteter Hammerhai, Hammerhead, Hammerhead shark, Kidney-headed shark, Scalloped hammerhead, Scalloped hammerhead shark, Southern hammerhead shark (S) Cachona, Cornúa, Cornuda, Cornuda comun, Cornuda común, Cornuda martillo, Cornuda negra, Morfillo, Pez martillo, Tiburón martillo, Tiburón martillo festoneado (F) Reguin marteau, Reguin marteau halicorne, Requin-marteau halicorne Squalus cepedii Lesson, 1830 = Isurus oxyrinchus Rafinesque, 1810 Stenella clymene (Gray, 1846) II <sup>23</sup> DELPHINIDAE (Mammalia) (E) Atlantic Spinner Dolphin, Clymene Dolphin, Helmet Dolphin (S) Delfín clymene (F) Dauphin de Clymène Stephanocoenia goodei (Verrill, 1900) = Stephanocoenia intersepta (Esper, 1795) Stephanocoenia intersepta (Esper, 1795) II ASTROCOENIIDAE (Anthozoa) (E) Blushing Star Coral (S) Coral estrella sonrojado (F) Corail étoile rougissant Stephanocoenia michelinii Milne Edwards & Haime, 1848 = Stephanocoenia intersepta (Esper, 1795) Stichopathes occidentalis (Gray, 1860) II ANTIPATHIDAE (Anthozoa) (E) Green Wire Coral (S) Coral alambre verde Strix alba Scopoli, 1769 = Tyto alba (Scopoli, 1769) Strix flammea Pontopiddan, 1763 = Asio flammeus (Pontoppidan, 1763) Strombe Géant (F): Strombus gigas Strombus gigas Linnaeus, 1758 II STROMBIDAE (Gastropoda) (E) Pink Conch, Queen Conch (S)

Concha Reina, Concha reina del Caribe (F) Lambis, Strombe Géant Stylophora dumetosa Duchassaing, 1870 = Madracis myriaster (Milne Edwards & Haime, 1849) Madracis myriaster (Milne Edwards & Haime, 1849) Suirirí bicolor (S): Dendrocygna bicolor Suirirí yaguaza (S): Dendrocygna arborea Syngnathus caballus Larranaga, 1923 = Hippocampus erectus Perrv. 1810 Testudo arcuata Catesby, 1771 = Dermochelys coriacea (Vandelli, 1761) Testudo caouana Lacépède, 1788 = Caretta caretta (Linnaeus, 1758) Testudo caretta Linnaeus, 1758 = Caretta caretta (Linnaeus, 1758) Testudo cepediana Daudin, 1802 = Chelonia mydas (Linnaeus, 1758) Testudo cephalo Schneider, 1783 = Caretta caretta (Linnaeus, 1758) Testudo coriacea Linnaeus, 1766 = Dermochelys coriacea (Vandelli, 1761) Testudo imbricata Linnaeus, 1766 = Eretmochelys imbricata (Linnaeus, 1766) Testudo japonica Thunberg, 1787 = Chelonia mydas (Linnaeus, 1758) Testudo lyra Lacépède, 1788 = Dermochelys coriacea (Vandelli, 1761) Testudo mydas Linnaeus, 1758 = Chelonia mydas (Linnaeus, 1758) Testudo nasicornis Bonnaterre, 1789 = Eretmochelys imbricata (Linnaeus, 1766) Testudo nasicornis Lacépède, 1788 = Caretta caretta (Linnaeus, 1758) Testudo rugosa Daudin, 1802 = Chelonia mydas (Linnaeus, 1758) Testudo tuberculata Pennant, 1801 = Dermochelys coriacea (Vandelli, 1761) Testudo viridis Schneider, 1783 = Chelonia mydas (Linnaeus, 1758) Thalassochelys caretta (Linnaeus, 1758) = Caretta caretta (Linnaeus, 1758) Thalassochelys corticata Girard, 1858 = Caretta caretta (Linnaeus, 1758) Tiburón Ballena (S): Rhincodon typus Tiburón mako aletas cortas (S): Isurus oxyrinchus tiburón mako de aleta corta (S): Isurus oxyrinchus Tiburón martillo (S): Sphyrna lewini Tiburón martillo festoneado (S): Sphyrna lewini Tinglada (S): Dermochelys coriacea Tinglar (S): Dermochelys coriacea Tococo (S): Phoenicopterus roseus Tora (S): Dermochelys coriacea Tortue à bahut (F): Caretta caretta Tortue à bec de faucon (F): Eretmochelys imbricata Tortue à écailles (F): Eretmochelys imbricata

Tortue caouanne (F): Caretta caretta Tortue caret (F): Caretta caretta

Tortue comestible (F): Chelonia mydas Tortue franche (F): Chelonia mydas Tortue imbriquée (F): Eretmochelys imbricata Tortue Luth (F): Dermochelys coriacea Tortue verte (F): Chelonia mydas Tortuga blanca (S): Chelonia mydas Tortuga boba (S): Caretta caretta Tortuga cabezona (S): Caretta caretta Tortuga careta (S): Caretta caretta Tortuga carey (S): Eretmochelys imbricata Tortuga comun (S): Caretta caretta Tortuga de carey (S): Eretmochelys imbricata Tortuga laud (S): Dermochelys coriacea Tortugas Laúd (S): Dermochelys coriacea Tortuga verde (S): Chelonia mydas Tree-Duck, Cuban (E): Dendrocygna arborea Tree-Duck, Fulvous (E): Dendrocygna bicolor Tree-Duck, West Indian (E): Dendrocygna arborea Tropidophis greenwayi Barbour & Shreve, 1936 II TROPIDOPHIIDAE (Reptilia) (E) Ambergris Cay Dwarf Boa (F) Boa forestier d'Ambergris Cay, Boa nain d'Ambergris Cay 1769) Tropidophis pardalis greenwavi (Gundlach, 1840) = Tropidophis greenwayi Barbour & Shreve, 1936 Tubastraea aurea (Quoy & Gaimard, 1833) = Tubastraea coccinea Lesson, 1829 Tubastraea coccinea Lesson, 1829 II DENDROPHYLLIIDAE (Anthozoa) (E) Orange Cup Coral, Orange Tube Coral (S) Coral naranja de tubo (F) Zygaena erythraea (Klunzinger 1871) = Sphyrna lewini Tubastrée orange

Tubastraea pedersenii (Verrill, 1869) = Tubastraea coccinea Lesson, 1829 Tubastraea tenuilamellosa (Milne Edwards & Haime, 1848) = Tubastraea coccinea Lesson, 1829 Tubastraea willeyi (Gardiner, 1899) = Tubastraea coccinea Lesson, 1829 Tubastrée orange (F): Tubastraea coccinea Turtle, Green (E): Chelonia mydas Turtle, Hawksbill (E): Eretmochelys imbricata Turtle, Leatherback (E): Dermochelys coriacea turtle, Leatherback sea (E): Dermochelys coriacea Turtle, Leathery (E): Dermochelys coriacea turtle, Loggerhead (E): Caretta caretta Turtle, Luth (E): Dermochelys coriacea turtle, Trunk (E): Dermochelys coriacea Turtle, Trunkback (E): Dermochelys coriacea Tyto alba (Scopoli, 1769) II <sup>35</sup> TYTONIDAE (Aves) (E) Barn Owl, Common Barn Owl, Common Barn-Owl (S) Lechuza común, Lechuza de campanario (F) Chouette effraie, Effraie africaine, Effraie des clochers Tyto delicatula (Gould, 1837) = Tyto alba (Scopoli, 1769) Tyto deroepstorffi (Hume, 1875) = Tyto alba (Scopoli, *Tyto detorta Hartert, 1913 = Tyto alba* (Scopoli, 1769) Whistling-Duck, Fulvous (E): Dendrocygna bicolor Whistling-Duck, West Indian (E): Dendrocygna arborea Wood-Duck, Black-billed (E): Dendrocygna arborea yaguasa de pico negro (S): Dendrocygna arborea Yaguaso colorado (S): Dendrocygna bicolor

(Griffith & Smith, 1834)

# **FLORA**

Acajou de Cuba (S): Swietenia mahagoni Acajou de Cuba (F): Swietenia mahagoni acajou des Antilles (F): Swietenia mahagoni Acajou de Santo Domingo (S): Swietenia mahagoni Alpargata (S): Consolea macracantha Arequipa mirabilis (Buining) Backeberg = Cactaceae Juss. Bois de Gaïac (F): Guaiacum officinale Bois de saint (F): Guaiacum officinale Bois de vie (F): Guaiacum officinale Borzicactus mirabilis Buining = Cactaceae Juss. CACTACEAE spp. Juss. #4 I/II/NC <sup>66</sup> (E) Cacti, Turk's Island Prickly-pear Cactus (S) Cactus (F) Cactus Cacti (E): Cactaceae Cactus (F): Cactaceae Cactus (S): Cactaceae cactus, Barrel (E): Melocactus intortus Cactus, Nash's Prickly-pear (E): Consolea macracantha Cactus, Organ (E): Pilosocereus royenii Cactus, Pope's Head (E): Melocactus intortus Cactus, Red-topped Barrel (E): Melocactus intortus cactus, Royen's tree (E): Pilosocereus royenii Cactus, Turk's Cap (E): Melocactus intortus Cactus, Turk's Head (E): Melocactus intortus Cactus, Turk's Island Prickly-pear (E): Cactaceae cactus, Woolly nipple (E): Mammillaria nivosa Caoba de las Indias occidentales (S): Swietenia mahagoni Caoba Española (S): Swietenia mahagoni cap, Turk's (E): Melocactus intortus Cephalocereus barbadensis Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus brooksianus (Britton & Rose) = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus gaumeri (Britton & Rose) = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus millspaughii Britton = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus monoclonos (De Candolle) Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus nobilis (Haw.) Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus royenii Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley Cephalocereus swartzii (Griseb.) Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley Cereus (K. Brandegee) Britton & Rose = Cactaceae Juss. Haageocereus albisetatus (Akers) Backeberg = Cereus orcuttii (K.Brandegee) Rowley = Cactaceae Juss. Cleistocana mirabilis K. Brandegee = Cactaceae Juss. Coabilla (S): Swietenia mahagoni Consolea falcata (Ekman & Werdermann) F.Knuth = Consolea macracantha (Grisebach) Berger Consolea macracantha (Grisebach) Berger #4 II 66 CACTACEAE (E) Nash's Prickly-pear Cactus (S) Alpargata, Tuna de cruz Consolea millspaughii (Britton) Berg = Consolea macracantha (Grisebach) Berger Consolea nashii (Britton) Berger = Consolea macracantha Ibidium lucayanum Britton = Mesadenus lucayanus (Grisebach) Berger

Consolea nashii gibarensis A.E.Areces-Kallea = Consolea macracantha (Grisebach) Berger Deamia (Ritter) A.E.Hoffmann = Cactaceae Juss. Encyclia altissima Schltr. #4 II 80 ORCHIDACEAE Encyclia bahamensis (Grisebach.) Britton & Millsp. = Encyclia rufa (Lindl.) Britt. & Millsp. Encyclia caicensis Sauleda & R.M.Adams #4 II 80 ORCHIDACEAE (E) Life plant, Wild shallot Encyclia gracilis (Lindl.) Schltr. #4 II 80 ORCHIDACEAE Encyclia hodgeana (Hawkes) Beckner #4 II 80 ORCHIDACEAE Encyclia inaguensis Nash ex Britton & Millsp. #4 II 80 ORCHIDACEAE Encyclia rufa (Lindl.) Britt. & Millsp. #4 II 80 ORCHIDACEAE Epidendrum bahamense Grisebach. = Encyclia rufa (Lindl.) Britt. & Millsp. Epidendrum primulinum Bateman ex Lindl. = Encyclia rufa (Lindl.) Britt. & Millsp. *Epidendrum rufum Lindl. = Encyclia rufa* (Lindl.) Britt. & Millsp. Eriosyce kunzei (Foerster) Kattermann = Cactaceae Juss. Espostoa baumannii = Cactaceae Juss. Espostocactus mirabilis = Cactaceae Juss. Gaïac (F): Guaiacum officinale Gayac (F): Guaiacum officinale Guaiacum (E): Guaiacum officinale Guaiacum bijugum Stokes = Guaiacum officinale L. Guaiacum, Gum (E): Guaiacum officinale *Guaiacum officinale* L. #2 II ZYGOPHYLLACEAE (E) Brazil Wood, Commoner Lignum Vitae, Guaiac Tree, Guaiacum, Guaiacum Resin, Guaiacum Wood, Gum Guaiacum, Lignum Vitae, Pockwood, Tree of Life, Vera, Wood of life (S) Guajacum, Guayacán negro, Guayaco, Leno de Guayaco, Palo de vida, Palosanto, Palo Santo, Pau Santo (F) Bois de Gaïac, Bois de saint, Bois de vie, Gaïac, Gayac, Resina de Gayaco, Resin de Gaïac Guajacum (S): Guaiacum officinale Guayacán negro (S): Guaiacum officinale Guayaco (S): Guaiacum officinale Gymnocalycium parvulum (Spegazzini) Spegazzini = Cactaceae Juss. Gymnocalycium platense (Spegazzini) Britton & Rose = Cactaceae Juss. Cactaceae Juss. Haageocereus climaxanthus = Cactaceae Juss. Haagespostoa albisetata (Akers) Rowley = Cactaceae Juss. Haagespostoa climaxantha (Werdermann) Rowley = Cactaceae Juss. Head, Cactus, Pope's (E): Mammillaria nivosa head, Turk's (E): Melocactus intortus Horridocactus geissei (Werdermann) Croizat = Cactaceae Juss. (Britton) Schltr., 1920

Kadenicarpus (Buining) Donald = Cactaceae Juss. Leno de Guayaco (S): Guaiacum officinale Life, Tree of (E): Guaiacum officinale life, Wood of (E): Guaiacum officinale Mahogani de Saint-Dominique (F): Swietenia mahagoni Mahogani petites feuilles (F): Swietenia mahagoni Mahogany (E): Swietenia mahagoni mahogany, American (E): Swietenia mahagoni mahogany, Caribbean (E): Swietenia mahagoni Mahogany, Cuban (E): Swietenia mahagoni mahogany, Small-leaved (E): Swietenia mahagoni Mahogany, West Indian (E): Swietenia mahagoni Mammillaria flavescens Haworth = Mammillaria nivosa Link ex Pfeiffer Mammillaria hamata Lehmann ex Pfeiffer = Cactaceae Juss. *Mammillaria nivosa* Link ex Pfeiffer #4 II <sup>66</sup> CACTACEAE Opuntia magnifica Small = Opuntia stricta (Haworth) (E) Cactus, Pope's Head, Woolly nipple cactus Matucana mirabilis (Buining) Hunt = Cactaceae Juss. Melocactus communis Link & Otto = Melocactus intortus (Miller) Urban Melocactus coronatus (Lamarck) Backeberg = Melocactus intortus (Miller) Urban Melocactus intortus (Miller) Urban #4 II 66 CACTACEAE (E) Barrel cactus, Mother-in-law's pincushion, Pope's Head Cactus, Red-topped Barrel Cactus, Turk's cap, Turk's Cap Cactus, Turk's head, Turk's Head Cactus (F) Opuntia nitens Small = Opuntia stricta (Haworth) Haworth Tête a l'anglais Melocactus perezassoi Areces = Melocactus intortus (Miller) Urban Mesadenus lucayanus (Britton) Schltr., 1920 #4 II 80 ORCHIDACEAE Mesadenus stahlii (Cogn.) Garay = Mesadenus lucayanus (Britton) Schltr., 1920 Mirabella (Rauh & Backeberg ex Backeberg) Rowley = Cactaceae Juss. Neobinghamia climaxantha (Werdermann) Backeberg = Cactaceae Juss. Neobinghamia mirabilis = Cactaceae Juss. Neobinghamia multiareolata Rauh & Backeberg = Cactaceae Juss. Neobinghamia villigera Rauh & Backeberg = Cactaceae Juss. Neochilenia eriosyzoides (Ritter) Backeberg = Cactaceae Juss. Neochilenia kunzei (Foerster) Backeberg = Cactaceae Juss. Neochilenia transitensis (Ritter) Backeberg = Cactaceae Juss. Neoporteria eriosyzoides = Cactaceae Juss. Neoporteria kunzei (Foerster) Backeberg = Cactaceae Juss. Neoporteria nidus (Soehrens ex Schumann) Britton & Rose = Cactaceae Juss. Neoporteria transitensis (Ritter) Ferryman ex Preston-Mafham = Cactaceae Juss. Neoporteria vallenarensis Knize = Cactaceae Juss. Nopal estricto (S): Opuntia stricta Opuntia anahuacensis Griffiths = Opuntia stricta (Haworth) Haworth Pilosocereus royenii (L.) Byles & Rowley

*Opuntia atrocapensis Small = Opuntia stricta* (Haworth) Haworth Opuntia bahamana Britton & Rose = Opuntia stricta (Haworth) Haworth *Opuntia congesta = Cactaceae* Juss. Opuntia dillenii (Ker-Gawler) Haworth = Opuntia stricta (Haworth) Haworth Opuntia falcata Ekman & Werdermann = Consolea macracantha (Grisebach) Berger Opuntia keyensis Britton & Small = Opuntia stricta (Haworth) Haworth Opuntia lucayana Britton = Cactaceae Juss. Opuntia macracantha (Grisebach) Berger = Consolea macracantha (Grisebach) Berger *Opuntia macrarthra Gibbes = Opuntia stricta* (Haworth) Haworth Haworth Opuntia melanosperma Svenson = Opuntia stricta (Haworth) Haworth Opuntia millspaughii Britton = Consolea macracantha (Grisebach) Berger Opuntia nashii Britton = Consolea macracantha (Grisebach) Berger Opuntia nejapensis Bravo = Opuntia stricta (Haworth) Haworth **Opuntia stricta** (Haworth) Haworth #4 II <sup>66</sup> CACTACEAE (E) Erect pricklypear (S) Nopal estricto Opuntia subsphaerocarpa Spegazzini = Opuntia stricta (Haworth) Haworth Opuntia tehuantepecana (Bravo) Bravo = Opuntia stricta (Haworth) Haworth *Opuntia tenuiflora Small = Opuntia stricta* (Haworth) Haworth Opuntia zebrina Small = Opuntia stricta (Haworth) Haworth Pacherocactus orcuttii (Ritter) Donald & Rowley = Cactaceae Juss. Pachycereus orcuttii (Poselger ex Schumann) Doelz = Cactaceae Juss. Palo de vida (S): *Guaiacum officinale* Palosanto (S): Guaiacum officinale Palo Santo (S): Guaiacum officinale Pau Santo (S): Guaiacum officinale Pear, Vine (E): Pilosocereus rovenii Pilocereus curtisii (Pfeiff.) Salm-Dyck = Pilosocereus royenii (L.) Byles & Rowley Pilocereus haworthii (DC.) Console = Pilosocereus royenii (L.) Byles & Rowley Pilocereus strictus (Link & Otto) C.F.Först. & Rümpler = Pilosocereus royenii (L.) Byles & Rowley Pilosocereus barbadensis (Britton & Rose) Byles & Rowley = Pilosocereus royenii (L.) Byles & Rowley Pilosocereus gaumeri (Britton & Rose) Backeberg = Pilosocereus royenii (L.) Byles & Rowley Pilosocereus monoclonos (De Candolle) Byles & Rowley = *Pilosocereus royenii* (L.) Byles & Rowley Pilosocereus nobilis (Haworth) Byles & Rowley =

*Pilosocereus royenii* (L.) Byles & Rowley #4 II <sup>66</sup> CACTACEAE (E) Organ Cactus, Royen's tree cactus, Vine Pear

Pilosocereus swartzii (Griseb.) Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley

Pilosocereus urbanianus (K. Schum.) Britton & Rose = Pilosocereus royenii (L.) Byles & Rowley

pincushion, Mother-in-law's (E): Melocactus intortus

plant, Life (E): Encyclia caicensis

Pockwood (E): Guaiacum officinale

pricklypear, Erect (E): Opuntia stricta

Pseudopilocereus nobilis (Haworth) Buxbaum = Pilosocereus royenii (L.) Byles & Rowley

*Pyrrhocactus eriosyzoides (Ritter) Ritter = Cactaceae* Juss.

Pyrrhocactus transitensis Ritter = Cactaceae Juss. Pyrrhocactus vallenarensis Ritter = Cactaceae Juss. Resina de Gayaco (F): Guaiacum officinale Resin de Gaïac (F): Guaiacum officinale Resin, Guaiacum (E): Guaiacum officinale

shallot, Wild (E): Encyclia caicensis

Spiranthes lucayana (Britton) Cogn. = Mesadenus lucayanus (Britton) Schltr., 1920

*Spiranthes stahlii Cogn. = Mesadenus lucayanus* (Britton) Schltr., 1920

Strombocactus roseiflorus Rauh & Backeberg ex Backeberg = Cactaceae Juss.

- Swietenia mahagoni (L.) Jacq. #5 II MELIACEAE (E) American mahogany, Caribbean mahogany, Cuban Mahogany, Mahogany, Small-leaved mahogany, West Indian Mahogany (S) Acajou de Cuba, Acajou de Santo Domingo, Caoba de las Indias occidentales, Caoba Española, Coabilla (F) Acajou de Cuba, acajou des Antilles, Mahogani de Saint-Dominique, Mahogani petites feuilles
- Tête a l'anglais (F): Melocactus intortus

Tree, Guaiac (E): Guaiacum officinale

Tuna de cruz (S): Consolea macracantha

Vera (E): Guaiacum officinale

Vitae, Commoner Lignum (E): Guaiacum officinale

Vitae, Lignum (E): Guaiacum officinale

Wood, Brazil (E): Guaiacum officinale

Wood, Guaiacum (E): Guaiacum officinale

# Annotations key

# Annotations not preceded by "#"

## <sup>1</sup> Antilocapra americana

Only the population of Mexico is included in Appendix I. No other population is included in the Appendices.

# <sup>2</sup> Bos gaurus

Excludes the domesticated form, which is referenced as *Bos frontalis*, and is not subject to the provisions of the Convention.

# <sup>3</sup> Bos mutus

Excludes the domesticated form, which is referenced as *Bos grunniens*, and is not subject to the provisions of the Convention.

# <sup>4</sup> Bubalus arnee

Excludes the domesticated form, which is referenced as *Bubalus bubalis* and is not subject to the provisions of the Convention.

# <sup>5</sup> Ovis canadensis

Only the population of Mexico; no other population is included in the Appendices.

#### <sup>6</sup> Ovis gmelini

Only the population of Cyprus; no other population is included in the Appendices

### <sup>7</sup> Saiga borealis

A zero export quota for wild specimens traded for commercial purposes

#### <sup>8</sup> Saiga tatarica

A zero export quota for wild specimens traded for commercial purposes

# <sup>9</sup> Vicugna vicugna

Only the populations of Argentina (the populations of the Provinces of Jujuy, Catamarca and Salta, and the semi-captive populations of the Provinces of Jujuy, Salta, Catamarca, La Rioja and San Juan), Chile (populations of the region of Tarapacá and of the region of Arica and Parinacota), Ecuador (the whole population), Peru (the whole population) and the Plurinational State of Bolivia (the whole population); all other populations are included in Appendix I.

For the exclusive purpose of allowing international trade in fibre from vicuñas (*Vicugna vicugna*) and their derivative products, only if the fibre comes from the shearing of live vicuñas. Trade in products derived from the fibre may only take place in accordance with the following provisions:

a) Any person or entity processing vicuña fibre to manufacture cloth and garments must request authorization from the relevant authorities of the country of origin (Countries of origin: The countries where the species occurs, that is, Argentina, Bolivia, Chile, Ecuador and Peru) to use the "vicuña country of origin" wording, mark or logo adopted by the range States of the species that are signatories to the Convention for the Conservation and Management of the Vicuña.

b) Marketed cloth or garments must be marked or identified in accordance with the following provisions: i) For international trade in cloth made from live-sheared vicuña fibre, whether the cloth was produced within or outside of the range States of the species, the wording, mark or logo must be used so that the country of origin can be identified. The VICUÑA [COUNTRY OF ORIGIN] wording, mark or logo has the format as detailed below:

This wording, mark or logo must appear on the reverse side of the cloth. In addition, the selvages of the cloth must bear the words VICUÑA [COUNTRY OF ORIGIN].

ii) For international trade in garments made from live-sheared vicuña fibre, whether the garments were produced within or outside of the range States of the species, the wording, mark or logo indicated in paragraph b) i) must be used. This wording, mark or logo must appear on a label on the garment itself. If the garments are produced outside of the country of origin, the name of the country where the garment was produced should also be indicated, in addition to the wording, mark or logo referred to in paragraph b) i).

c) For international trade in handicraft products made from live-sheared vicuña fibre produced within the range

States of the species, the VICUÑA [COUNTRY OF ORIGIN] - ARTESANÍA wording, mark or logo must be used as detailed below:

d) If live-sheared vicuña fibre from various countries of origin is used for the production of cloth and garments, the wording, mark or logo of each of the countries of origin of the fibre must be indicated, as detailed in paragraphs b) i) and ii).

e) All other specimens shall be deemed to be specimens of species listed in Appendix I and the trade in them shall be regulated accordingly.

# <sup>10</sup> *Moschus* spp.

Except the populations of Afghanistan, Bhutan, India, Myanmar, Nepal and Pakistan, which are included in Appendix I.

# <sup>10</sup> *Moschus* spp.

The populations of Afghanistan, Bhutan, India, Myanmar, Nepal and Pakistan are included in Appendix I. All other populations are included in Appendix II.

#### <sup>11</sup> TAYASSUIDAE spp.

Except the species included in Appendix I (*Catagonus wagneri*) and the populations of *Pecari tajacu* of Mexico and the United States of America, which are not included in the Appendices.

# <sup>12</sup> Canis lupus

Except the populations of Bhutan, India, Nepal and Pakistan, which are included in Appendix I. Excludes the domesticated form and the dingo which are referenced as *Canis lupus familiaris* and *Canis lupus dingo*.

# <sup>13</sup> FELIDAE spp.

Included in Appendix II, except for the species included in Appendix I. Specimens of the domesticated form are not subject to the provisions of the Convention.

# <sup>14</sup> Acinonyx jubatus

Included in Appendix I. Annual export quotas for live specimens and hunting trophies are granted as follows: Botswana: 5; Namibia: 150; Zimbabwe: 50. The trade in such specimens is subject to the provisions of Article III of the Convention.

#### <sup>15</sup> Caracal caracal

Except the Asian population, which is included in Appendix I.

#### <sup>16</sup> Herpailurus yagouaroundi

Only the populations of Central and North America; all other populations are included in Appendix II.

#### <sup>17</sup> Panthera leo

Only the populations of India; all other populations are included in Appendix II.

# <sup>17</sup> Panthera leo

[FAMILY listing Felidae spp.]

For *Panthera leo* (African populations): a zero annual export quota is established for specimens of bones, bone pieces, bone products, claws, skeletons, skulls and teeth removed from the wild and traded for commercial purposes. Annual export quotas for trade in bones, bone pieces, bone products, claws, skeletons, skulls and teeth for commercial purposes, derived from captive breeding operations in South Africa, will be established and communicated annually to the CITES Secretariat.

# <sup>18</sup> Prionailurus bengalensis bengalensis

Except the populations of Bangladesh, India and Thailand, which are included in Appendix I.

#### <sup>19</sup> Prionailurus rubiginosus

Except the population of India, which is included in Appendix I.

### <sup>19</sup> *Prionailurus rubiginosus*

Only the population of India; all other populations are included in Appendix II.

# <sup>20</sup> Puma concolor

Only the populations of Costa Rica and Panama; all other populations are included in Appendix II

# <sup>21</sup> Aonyx capensis microdon

Only the populations of Cameroon and Nigeria; all other populations are included in Appendix II.

# <sup>22</sup> Ursus arctos

Only the populations of Bhutan, China, Mexico and Mongolia; all other populations are included in Appendix II.

# <sup>22</sup> Ursus arctos

Except the populations of Bhutan, China, Mexico and Mongolia, which are included in Appendix I.

# <sup>23</sup> CETACEA spp.

Included in Appendix II, except for the species included in Appendix I. A zero annual export quota has been established for live specimens from the Black Sea population of Tursiops truncatus removed from the wild and traded for primarily commercial purposes.

# <sup>24</sup> Balaenoptera acutorostrata

Population of West Greenland.

# <sup>25</sup> *Pteropus* spp.

Except *Pteropus brunneus* and the species included in Appendix I.

#### <sup>26</sup> Chaetophractus nationi

Included in Appendix II. A zero annual export quota has been established. All specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly.

# <sup>27</sup> Equus africanus

Excludes the domesticated form, which is referenced as *Equus asinus* and is not subject to the provisions of the Convention.

# <sup>28</sup> Ceratotherium simum simum

Only the populations of Eswatini, Namibia and South Africa; all other populations are included in Appendix I. The populations of Eswatini and South Africa are included in Appendix II for the exclusive purpose of allowing international trade in live animals to appropriate and acceptable destinations and hunting trophies. The population of Namibia is included in Appendix II for the exclusive purpose of allowing international trade in live animals to appropriate and acceptable destinations and hunting trophies. The population of Namibia is included in Appendix II for the exclusive purpose of allowing international trade in live animals for *in-situ* conservation only, and only within the natural and historical range of *Ceratotherium simum* in Africa. All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly.

# <sup>29</sup> Loxodonta africana

The populations of Botswana, Namibia, South Africa and Zimbabwe are listed in Appendix II for the exclusive purpose of allowing:

a) trade in hunting trophies for non-commercial purposes;

b) trade in live animals to appropriate and acceptable destinations, as defined in Resolution Conf. 11.20 (Rev. CoP18), for Botswana and Zimbabwe and for *in situ* conservation programmes for Namibia and South Africa;

c) trade in hides;

d) trade in hair;

e) trade in leather goods for commercial or non-commercial purposes for Botswana, Namibia and South Africa and for non-commercial purposes for Zimbabwe;

f) trade in individually marked and certified ekipas incorporated in finished jewellery for non-commercial purposes for Namibia and ivory carvings for non-commercial purposes for Zimbabwe;

g) trade in registered raw ivory (for Botswana, Namibia, South Africa and Zimbabwe, whole tusks and pieces) subject to the following:

i) only registered government-owned stocks, originating in the State (excluding seized ivory and ivory of unknown origin);

ii) only to trading partners that have been verified by the Secretariat, in consultation with the Standing Committee, to have sufficient national legislation and domestic trade controls to ensure that the imported ivory will not be re-exported and will be managed in accordance with all requirements of Resolution Conf. 10.10 (Rev. CoP18) concerning domestic manufacturing and trade;

iii) not before the Secretariat has verified the prospective importing countries and the registered government-owned stocks;

iv) raw ivory pursuant to the conditional sale of registered government-owned ivory stocks agreed at CoP12, which are 20,000 kg (Botswana), 10,000 kg (Namibia) and 30,000 kg (South Africa);

v) in addition to the quantities agreed at CoP12, government-owned ivory from Botswana, Namibia, South Africa and Zimbabwe registered by 31 January 2007 and verified by the Secretariat may be traded and despatched, with

the ivory in paragraph g) iv) above, in a single sale per destination under strict supervision of the Secretariat; vi) the proceeds of the trade are used exclusively for elephant conservation and community conservation and development programmes within or adjacent to the elephant range; and

vii) the additional quantities specified in paragraph g) v) above shall be traded only after the Standing Committee has agreed that the above conditions have been met; and

h) no further proposals to allow trade in elephant ivory from populations already in Appendix II shall be submitted to the Conference of the Parties for the period from CoP14 and ending nine years from the date of the single sale of ivory that is to take place in accordance with provisions in paragraphs g) i), g) ii), g) iii), g) vi) and g) vii). In addition such further proposals shall be dealt with in accordance with Decisions 16.55 and 14.78 (Rev. CoP16).

On a proposal from the Secretariat, the Standing Committee can decide to cause this trade to cease partially or completely in the event of non-compliance by exporting or importing countries, or in the case of proven detrimental impacts of the trade on other elephant populations.

All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly.

#### <sup>30</sup> Chinchilla spp.

Specimens of the domesticated form are not subject to the provisions of the Convention

#### <sup>31</sup> FALCONIFORMES spp.

Except *Caracara lutosa* and the species of the family Cathartidae, which are not included in the Appendices; and the species included in Appendices I and III.

#### <sup>32</sup> Falco newtoni

Except the population of the Seychelles, which is included in Appendix I.

#### <sup>32</sup> Falco newtoni

Only the population of Seychelles.

#### <sup>33</sup> Pycnonotus zeylanicus

Entry into effect delayed by 12 months, i.e. until 25 November 2023.

# <sup>34</sup> PSITTACIFORMES spp.

Included in Appendix II, except for the species included in Appendix I and Agapornis roseicollis, Melopsittacus undulatus, Nymphicus hollandicus and Psittacula krameri, which are not included in the Appendices.

# <sup>35</sup> STRIGIFORMES spp.

Except Sceloglaux albifacies and the species included in Appendix I.

#### <sup>36</sup> Struthio camelus

Only the populations of Algeria, Burkina Faso, Cameroon, the Central African Republic, Chad, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal and Sudan are included in Appendix I. No other population is included in the Appendices.

# <sup>37</sup> Caiman latirostris

Except the population of Argentina, which is included in Appendix II, and the population of Brazil, which is included in Appendix II subject to a zero annual export quota for wild specimens traded for commercial purposes.

# <sup>37</sup> Caiman latirostris

Population of Argentina, included in CROCODYLIA spp., and population of Brazil, included in CROCODYLIA spp. and subject to a zero annual export quota for wild specimens traded for commercial purposes.

# <sup>38</sup> Crocodylus acutus

Population of the Integrated Management District of Mangroves of the Bay of Cispata, Tinajones, La Balsa and Surrounding Areas, Department of Córdoba, Colombia, and the population of Cuba; and the population of Mexico, which is subject to a zero export quota for wild specimens for commercial purposes

# <sup>39</sup> Crocodylus moreletii

Only the population of Belize, which is included in Appendix II with a zero quota for wild specimens traded for commercial purposes, and the population of Mexico.

#### <sup>40</sup> Crocodylus niloticus

Populations of Botswana, Egypt (subject to a zero quota for wild specimens traded for commercial purposes), Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Namibia, South Africa, Uganda, the United Republic of Tanzania (subject to an annual export quota of no more than 1,600 wild specimens including hunting trophies, in addition to ranched specimens), Zambia and Zimbabwe.

# <sup>40</sup> Crocodylus niloticus

Included in Appendix I, except the populations of Botswana, Egypt (subject to a zero quota for wild specimens traded for commercial purposes), Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Namibia, South Africa, Uganda, the United Republic of Tanzania (subject to an annual export quota of no more than 1,600 wild specimens including hunting trophies, in addition to ranched specimens), Zambia and Zimbabwe, which are included in Appendix II

# <sup>41</sup> Crocodylus porosus

Except the populations of Australia, Indonesia, Malaysia [wild harvest restricted to the State of Sarawak and a zero quota for wild specimens for the other States of Malaysia (Sabah and Peninsular Malaysia), with no change in the zero quota unless approved by the Parties], Papua New Guinea and the Philippines [population of the Palawan Islands only, subject to a zero annual export quota for wild specimens traded for commercial purposes], which are included in Appendix II.

#### <sup>42</sup> Ceratophora aspera

Zero export quota for wild specimens for commercial purposes

# <sup>43</sup> Ceratophora stoddartii

Zero export quota for wild specimens for commercial purposes

### <sup>44</sup> Lyriocephalus scutatus

Zero export quota for wild specimens for commercial purposes

#### <sup>45</sup> *Abronia* spp.

Except the species included in Appendix I. Zero export quota for wild specimens for Abronia aurita, A. gaiophantasma, A. montecristoi, A. salvadorensis and A. vasconcelosii.

# <sup>46</sup> LANTHANOTIDAE spp.

Zero export quota for wild specimens for commercial purposes.

#### <sup>47</sup> Vipera ursinii

Only the population of Europe, except the area which formerly constituted the Union of Soviet Socialist Republics; these latter populations are not included in the Appendices.

#### <sup>48</sup> Chelodina mccordi

Zero export quota for specimens from the wild.

#### <sup>49</sup> Chelus fimbriatus

#### <sup>50</sup> Batagur borneoensis

Zero quota for wild specimens for commercial purposes.

#### <sup>51</sup> Batagur trivittata

Zero quota for wild specimens for commercial purposes.

#### <sup>52</sup> Heosemys annandalii

Zero quota for wild specimens for commercial purposes.

#### <sup>53</sup> *Heosemys depressa*

Zero quota for wild specimens for commercial purposes.

#### <sup>54</sup> Orlitia borneensis

Zero quota for wild specimens for commercial purposes.

#### <sup>55</sup> TESTUDINIDAE spp.

Included in Appendix II, except for the species included in Appendix I. A zero annual export quota has been established for *Centrochelys sulcata* for specimens removed from the wild and traded for primarily commercial purposes.

# <sup>56</sup> Agalychnis spp.

Includes Agalychnis annae, A. callidryas, A. lemur [subject to a zero annual export quota for wild-taken specimens traded for commercial purposes], A. moreletti, A. saltator, A. spurrelli and A. terranova.

# <sup>57</sup> Rheobatrachus spp.

Except Rheobatrachus silus and Rheobatrachus vitellinus.

# <sup>58</sup> Laotriton laoensis

Included in Appendix II subject to a zero annual export quota for wild-taken specimens traded for commercial purposes.

# <sup>59</sup> Hypancistrus zebra

Included in Appendix II subject to a zero export quota for wild specimens for commercial purposes.

# <sup>60</sup> Holothuria fuscogilva

Entry into effect delayed by 12 months, i.e. until 28 August 2020

#### <sup>61</sup> Holothuria nobilis

Entry into effect delayed by 12 months, i.e. until 28 August 2020

#### <sup>62</sup> Holothuria whitmaei

Entry into effect delayed by 12 months, i.e. until 28 August 2020

#### <sup>63</sup> Caribena versicolor

Listed by the European Union

# <sup>64</sup> Papilio phorbanta

Listed by the European Union

#### <sup>65</sup> Panax ginseng

Only the population of the Russian Federation; no other population is included in the Appendices.

# <sup>66</sup> CACTACEAE spp.

Except the species included in Appendix I and except *Pereskia* spp., *Pereskiopsis* spp. and *Quiabentia* spp. Artificially propagated specimens of the following hybrids and/or cultivars are not subject to the provisions of the Convention: *Hatiora* x graeseri; *Schlumbergera* x *buckleyi*; *Schlumbergera* russelliana x *Schlumbergera* truncata; *Schlumbergera* orssichiana x *Schlumbergera* truncata; *Schlumbergera* truncata (cultivars); Cactaceae spp. colour mutants grafted on the following grafting stocks *Harrisia* 'Jusbertii', *Hylocereus* trigonus or *Hylocereus* undatus; *Opuntia* microdasys (cultivars).

# <sup>67</sup> *Dicksonia* spp.

Only the populations of the Americas; no other population is included in the Appendices

#### <sup>68</sup> *Diospyros* spp.

Populations of Madagascar.

# <sup>69</sup> *Euphorbia* spp.

Succulent species only except *Euphorbia misera* and the species included in Appendix I.

Artificially propagated specimens of cultivars of *Euphorbia trigona*, artificially propagated specimens of crested, fanshaped or colour mutants of *Euphorbia lactea*, when grafted on artificially propagated root stock of *Euphorbia neriifolia*, and artificially propagated specimens of cultivars of *Euphorbia* 'Milii' when they are traded in shipments of 100 or more plants and readily recognizable as artificially propagated specimens, are not subject to the provisions of the Convention.

# <sup>70</sup> Euphorbia cremersii

Included in Appendix I. Includes the forma *viridifolia* and the variety *rakotozafyi*.

# <sup>71</sup> Euphorbia cylindrifolia

Included in Appendix I. Includes the subspecies tuberifera.

#### <sup>72</sup> Euphorbia decaryi

Included in Appendix I. Includes the varieties ampanihyensis, robinsonii and spirosticha.

#### <sup>73</sup> Euphorbia moratii

Included in Appendix I. Includes the varieties antsingiensis, bemarahensis and multiflora.

#### $^{74}$ Aloe spp.

Except the species included in Appendix I. Also excludes *Aloe vera*, also referenced as *Aloe barbadensis* which is not included in the Appendices.

#### <sup>75</sup> Aloe compressa

Included in Appendix I. Includes the varieties paucituberculata, rugosquamosa and schistophila.

#### <sup>76</sup> Aloe haworthioides

Included in Appendix I. Includes the variety aurantiaca.

# 77 Aloe laeta

Included in Appendix I. Includes the variety maniaensis.

# <sup>78</sup> *Cedrela* spp.

Populations of the Neotropics. Entry into effect delayed by 12 months, i.e. until 28 August 2020.

# <sup>79</sup> Swietenia macrophylla

Populations of the Neotropics

# <sup>80</sup> ORCHIDACEAE spp.

#### Included in Appendix II, except for the species included in Appendix I.

Additionally, artificially propagated hybrids of the following genera are not subject to the provisions of the Convention, if conditions, as indicated under a) and b), are met: *Cymbidium, Dendrobium, Phalaenopsis* and *Vanda*:

a) Specimens are readily recognizable as artificially propagated and do not show any signs of having been collected in the wild such as mechanical damage or strong dehydration resulting from collection, irregular growth and heterogeneous size and shape within a taxon and shipment, algae or other epiphyllous organisms adhering to leaves, or damage by insects or other pests; and

b) i) when shipped in non-flowering state, the specimens must be traded in shipments consisting of individual containers (such as cartons, boxes, crates or individual shelves of CC-containers) each containing 20 or more plants of the same hybrid; the plants within each container must exhibit a high degree of uniformity and healthiness; and the shipment must be accompanied by documentation, such as an invoice, which clearly states the number of plants of each hybrid; or

ii) when shipped in flowering state, with at least one fully open flower per specimen, no minimum number of specimens per shipment is required but specimens must be professionally processed for commercial retail sale, e.g. labelled with printed labels or packaged with printed packages indicating the name of the hybrid and the country of final processing. This should be clearly visible and allow easy verification.

Plants not clearly qualifying for the exemption must be accompanied by appropriate CITES documents.

# <sup>81</sup> Aerangis ellisii

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>82</sup> Cattleya jongheana

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>83</sup> Cattleya lobata

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>84</sup> Dendrobium cruentum

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>85</sup> *Mexipedium xerophyticum*

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated'

agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>86</sup> Paphiopedilum spp.

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

## 87 Peristeria elata

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>88</sup> *Phragmipedium* spp.

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>89</sup> Renanthera imschootiana

Included in Appendix I. Seedling or tissue cultures obtained *in vitro* and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties in Resolution Conf. 11.11 (Rev. CoP18), i.e. plant specimens: a) grown under controlled conditions; and b) grown from seeds, cuttings, divisions, callus tissues or other plant tissues, spores or other propagules that either are exempt from the provisions of the Convention or have been derived from cultivated parental stock.

# <sup>90</sup> Cyclamen spp.

Artificially propagated specimens of cultivars of *Cyclamen persicum* are not subject to the provisions of the Convention. However, the exemption does not apply to such specimens traded as dormant tubers.

### <sup>91</sup> Osyris lanceolata

Populations of Burundi, Ethiopia, Kenya, Rwanda, Uganda and the United Republic of Tanzania.

#### <sup>92</sup> Picrorhiza kurrooa

Excludes Picrorhiza scrophulariiflora.

# <sup>93</sup> Taxus chinensis

Includes infraspecific taxa of this species

#### <sup>94</sup> Taxus cuspidata

Includes infraspecific taxa of this species. Artificially propagated hybrids and cultivars of *Taxus cuspidata*, live, in pots or other small containers, each consignment being accompanied by a label or document stating the name of the taxon or taxa and the text "artificially propagated", are not subject to the provisions of the Convention.

# <sup>95</sup> Taxus fuana

Includes infraspecific taxa of this species.

#### <sup>96</sup> Taxus sumatrana

Includes infraspecific taxa of this species.

# <sup>97</sup> Siphonochilus aethiopicus

Populations of Mozambique, South Africa, Eswatini and Zimbabwe.

# Annotations preceded by "#"

Annotations are used in the CITES Appendices to indicate which population, parts or derivatives are concerned by the listing or to clarify its scope. The meaning of the # annotations (applicable to flora only) has changed over the years. The # annotations that are currently valid are those adopted at the 16th Conference of the Parties (CoP 16). These are provided below.

CoP19	Valid from 23/02/2023
#1	All parts and derivatives except:
	a) seeds, spores and pollen (including pollinia):
	b) seedling or tissue cultures obtained <i>in vitro</i> transported in sterile containers:
	c) cut flowers of artificially propagated plants; and
	d) fruits, and parts and derivatives thereof, of artificially propagated plants of the genus Vanilla
#2	All parts and derivatives except:
–	a) seeds and pollen; and
	b) finished products packaged and ready for retail trade.
#3	Whole and sliced roots and parts of roots, excluding manufactured parts or derivatives, such as
	powders, pills, extracts, tonics, teas and confectionery.
#4	All parts and derivatives, except:
	a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The
	exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from
	Beccariophoenix madagascariensis and Dypsis decaryi exported from Madagascar;
	b) seedling or tissue cultures obtained in vitro transported in sterile containers;
	c) cut flowers of artificially propagated plants;
	d) fruits, and parts and derivatives thereof, of naturalized or artificially propagated plants of the
	genus Vanilla (Orchidaceae) and of the family Cactaceae;
	e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants
	of the genera Opuntia subgenus Opuntia and Selenicereus (Cactaceae);
	f) finished products of Aloe ferox and Euphorbia antisyphilitica packaged and ready for retail trade;
	and
	g) finished products derived from artificial propagation, packaged and ready for retail trade of
	cosmetics containing parts and derivatives of Bletilla striata, Cycnoches cooperi, Gastrodia elata,
	Phalaenopsis amabilis or Phalaenopsis lobbii.
#5	Logs, sawn wood and veneer sheets.
#6	Logs, sawn wood, veneer sheets and plywood.
#7	Logs, woodchips, powder and extracts.
#8	Underground parts (i.e. roots, rhizomes): whole, parts and powdered.
#9	All parts and derivatives except those bearing a label:
	"Produced from <i>Hoodia</i> spp. material obtained through controlled harvesting and production under
	the terms of an agreement with the relevant CITES Management Authority of [Botswana under
	agreement No. Bw/xxxxxxj [Namibia under agreement No. NA/xxxxxxj [South Africa under
#10	Agreement No. ZA/XXXXXXJ.
#10	All parts, derivatives and finished products, except re-export or finished musical instruments,
#11	linished musical instrument accessories and initished musical instrument parts.
#11	Logs, sawn wood, veneer sneets, plywood, powder and extracts. Finished products containing
	annotation
#12	Logs sawn wood veneer sheets plywood and extracts. Finished products containing such
<i>"'''</i>	extracts as ingredients, including fragrances, are not considered to be covered by this annotation
#13	The kernel (also known as 'endosperm' 'nulp' or 'copra') and any derivatives thereof except
"10	finished products packaged and ready for retail trade
#14	All narts and derivatives excent:
	a) seeds and pollen.
	b) seedling or tissue cultures obtained <i>in vitro</i> transported in sterile containers:
	c) fruits:
	d) leaves;
	e) exhausted agarwood powder, including compressed powder in all shapes; and
	f) finished products packaged and ready for retail trade, this exemption does not apply to wood
	chips, beads, prayer beads and carvings.

- #15 All parts and derivatives, except:
  - a) Leaves, flowers, pollen, fruits, and seeds;

b) Finished products to a maximum weight of wood of the listed species of up to 10 kg per shipment;

c) Finished musical instruments, finished musical instrument parts and finished musical instrument accessories;

d) Parts and derivatives of *Dalbergia cochinchinensis*, which are covered by Annotation # 4; and e) Parts and derivatives of *Dalbergia* spp. originating and exported from Mexico, which are covered by Annotation # 6.

- #16 Seeds, fruits and oils.
- #17 Logs, sawn wood, veneer sheets, plywood and transformed wood.
- #18 Excluding parts and derivatives, other than eggs

# Appendix I

Landside Flora and Fauna Observed within the Assessment Area

The following species were observed and identified during ecological assessments conducted on the site of the Proposed MOLO Hotel site on Providenciales, Turks and Caicos Islands during the week of March 6, 2023. The list should be considered as a work-in-progress, and that additional species would be identified if additional surveys were to be conducted, particularly during different times of the year, when other plants would be in bloom. Nomenclature follows "Flora of the Bahama Archipelago' by D.S. Correll and H.B. Correll and/or 'Flowers of the Bahamas and the Turks and Caicos Islands' by K. McNary Wood. with updates as applicable.

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments
MONOCOTS					
AGAVACEAE					
Agave sp.	Century Plant	Herb	Beach coppices, rocky plains	Occasional	
ARECACEAE (PALMAE)					
Coccothrinax inaguensis	Thatch Palm	Tree	Coastal Coppices, Coppices, Whitelands	Common	Lucayan Endemic
Cocos nucifera	Coconut Palm	Tree	Coastal sands, Cultivated areas	Uncommon	
BROMELIACEAE					
Tillandsia circinnata	Silvery Wild Pine Air Plant	Epiphyte	On shrubs in coppices and scrublands	Occasional	
Tillandsia flexuosa	Flexuous Wild Pine	Epiphyte	On trees, rocks & shrubs in coppices	Occasional	CITES
Tillandsia utriculata	Swollen Wild Pine	Epiphyte	Coppice, Blacklands, Whitelands	Occasional	CITES
CYPERACEAE					
Cyperaceae		Herb	Disturbed Areas	Uncommon	
Rhynchospora floridensis	Starrush Whitetop	Herb	Moist flats	Uncommon	formerly Dichromena
MUSACEAE					
Musa acuminata	Banana	Shrub	Cultivated	Uncommon	
ORCHIDACEAE					
Encyclia altissima	Tall Orchid	Epiphyte	Coppices, Rocky Scrublands	Uncommon	NPSCC
Encyclia rufa	Spring Orchid	Epiphyte	Coppices, Rocky Scrublands	Uncommon	Lucayan Endemic
POACEAE (GRAMMINEAE)					
Cenchrus echinatus	Southern Burgrass	Herb	Sandy waste areas, coppice borders	Uncommon	
Cenchrus incertus	Sand Bur	Herb	Sandy waste areas, coppice borders	Occasional	
Dactyloctenium aegyptium	Crowfoot Grass	Herb	Road shoulders, disturbed areas	Common	
Distichlis (fka Monanthochloe) littoralis	Shoregrass	Herb	Muddy shorelines, saline flats	Occasional	

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments
Eustachys petraea	Finger Grass	Herb	Beach mid-dune, Coppice edges	Occasional	
Poaceae	Un-identified grass #1	Herb	Coastal strand	Occasional	
Poaceae	Un-identified grass #2	Herb	Disturbed Areas	Occasional	
Sporobolus virginicus	Seashore Rush-grass	Herb	Beach foredune	Occasional	
Uniola paniculata	Sea Oats	Herb	Beach foredune, sand dunes	Occasional	
SMILACEAE					
Smilax havanensis	Prickly Saw-brier	Vine	Coppices, Brushlands, open areas	Abundant	
DICOTS			•	•	-
ACANTHACEAE					
Ruellia tuberosa	vvila Petunia, Fever Root, iviinnie	Shrub	Cultivated, & escapee from cultivation	Occasional	
AIZOACEAE					
Sesuvium portulacastrum	Pondweed, Sea purslane	Ground cover	Sandy beaches, saline flats, rocky areas	Occasional	
ANACARDIACEAE					
Metopium toxiferum	Poisonwood	Tree	Coppices, Scrublands	Common	
APOCYNACEAE					
Catharanthus roseus	Old Maid, Periwinkle	Herb	Disturbed Areas	Occasional	
Pentalinon luteum	Wild Unction, Lice Bush	Vine	Climbing on shrubs in coppices & rocky soils	Occasional	
ASTERACEAE					
Ambrosia hispida	Sweet Bay, Bay tansy, Soap-bush	Grouna	Beach foredune, sandy shores	Occasional	
Launaea (Lactuca) intybacea	Wild Lettuce	Herb	Disturbed Areas,	Occasional	
Sphagneticola trilobata	Trailing Wedelia	Herb	Escapee from cultivation, disturbed areas	Uncommon	Now Sphagneticola
Tridax procumbens	Rabbit Thistle	Herb	Disturbed areas, vacant lots, roadsides	Occasional	
BIGNONIACEAE					
Tecoma stans	Trumpet Flower, Yellow Elder	Shrub	Edges of coppices,cultivated, disturbed areas	Occasional	
BORAGINACEAE					
Argusia (Mallotonia) gnaphalodes	Wild Bay, Sea Lavender	Shrub	Sandy beaches, Foredunes	Uncommon	
Bourreria succulenta	Chink Bush, Pigeon Berry	Shrub/ Tree	Coppices,	Common	

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments
Cordia sebestena	Geiger Tree, Anaconda	Tree	Coastal thickets	Occasional	
Heliotropium angiospermum	Horse-bush, Scorpion-tail	Shrub	Open coppices, disturbed areas	Uncommon	
Myriopus volubilis	Soldier-bush	Vine	Coppices, coppice edges	Occasional	
Varronia bahamensis	Cocobey	Shrub	Scrublands, coppices, savannas	Occasional	Lucayan Endemic
CACTACEAE					
Pilocereus polygonus	Old Man's Cactus	Shrub	Maritime and coastal rocks, dunes	Occasional	NPSCC
CARICACEAE					
Carica papaya	Рарауа	Shrub	Thickets, waste areas, disturbed soils	Uncommon	
CASUARINACEAE					
Casuarina equisetifolia	Beefwood, Australian Pine	Tree	Sandy Shores, Disturbed coastal areas	Common	Invasive
CRASSULACEAE					
Kalanchoe daigremontiana	Devil's Backbone	Herb	Cultivated, edges of coppices	Uncommon	
COMBRETACEAE					
Bucida buceras	Black Olive	Tree	Thickets, Scrublands and Ornamental	Uncommon	
Conocarpus erectus	Buttonwood	Shrub/ Tree	Coastal wetlands, savannas, salina edges	Uncommon	
Terminalia catappa	West Indian Almond	Tree	Cultivated	Occasional	
CONVOLVULACEAE					
Ipomoea pes-caprae	Bay Hops, Bay Winders	Vine	Beaches & coastal rocks	Occasional	
Jacquemontia cayensis	Black Wiss - Sandyplain Clustervine	Vine	Saline Coastal habitata	Uncommon	
Jacquemontia havanensis	Havana Clustervine	Vine	Coppices, pinelands	Uncommon	
CUCURBITACEAE					
Momordica charantia	Wild Balsam-apple	Vine	Waste ground, thickets, disturbed areas	Occasional	
ERYTHROXYLACEAE					
Erythroxylum rotundifolium	Rat-wood	Shrub	Coppices, thickets, scrublands	Uncommon	
EUPHORBIACEAE					
Argythamnia candicans		Shrub	Rocky soils in coppice edges	Occasional	
Chamaecrista lineata	Narrowpod Sensitive Pea	Shrub	Almost ubiquitous, esp dry sandy soils	Occasional	

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments
Chamaesyce hirta	Pillpod Sandmat	Herb	Disturbed areas	Uncommon	
Euphorbia heterophylla	Jacob's Ladder	Herb	Disturbed Areas	Uncommon	
Euphorbia inaguaensis	Wild Thyme (per TCIG)	Shrub	Salina edges, thinly-coppices slopes	Occasional	Lucayan Endemic
Euphorbia (Chamaesyce) sp.	Spurge	Herb	Ubiquitous, wastelands, coppices	Uncommon	
Heterosavia bahamensis	Maiden Bush	Shrub	Coppices, thickets	Occasional	NPSCC
FABACEAE					
Chamaecrista lineata	Narrowpod Sensitive Pea	Shrub	Sandy or rocky soils	Occasional	
Centrosema virginianum	Butterfly Pea	Vine	Disturbed Areas	Occasional	
Leucaena luecocephala	Jumbie Bean, Jumbay (Cow Bush in TCI)	Tree	Coppices, fields, thickets, disturbed areas	Common	Invasive
Pithecellobium keyense	Blackbead, Ram's horn	Tree	Coppices	Occasional	
Rhynchosia sp.	Snoutbean	Vine	Disturbed areas	Uncommon	
Stylosanthes hamata	Sweet Weed, Pencil Flower	Ground cover	Variable, mostly dryish soils	Uncommon	
Vachellia (fka Acacia) acuifera	Pork and DougbBoy, Rosewood	Tree	Coppices	Uncommon	NPSCC
Vachellia (fka Acacia) choriophylla	Cinnecord	Tree	Coppices	Common	NPSCC
Vachellia (fka Acacia) macracantha	Porknut	Shrub	Coppices	Occasional	
GOODENACEAE					
Scaevola plumieri	Inkberry, Black-soap	Shrub	Coastal dunes	Occasional	
Scaevola taccada	Ornamental Candlewood	Shrub	Beaches & coastal areas; non-native	Abundant	Invasive
LAURACEAE					
Cassytha filiformis	Woe-vine, Love Vine	Vine	Beach backdune, coppices, disturbed areas	Occasional	
MALPIGHIACEAE					
Byrsonima lucida	Locust-berry	Shrub	Depressions in Coppices & rock flats	Uncommon	
MALVACEAE					
Gossypium hirsutum	Wild cotton	Shrub	Open coppices, roadsides, cultivated	Occasional	
Herissantia crispa	Bladderpod	Shrub	Vacant lots, waste places	Uncommon	
Sida ciliaris	Fringed Sida	Shrub	Dryish open soils, disturbed areas	Occasional	
Sida rhombifolia			Disturbed areas, rock flats, open fields	Uncommon	

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments
Thespesia populnea	Seaside Mahoe, cork-tree	Tree	Open disturbed areas	Occasional	
MELIACEAE					
Azadirachta indica	Neem	Tree	Cultivated	Occasional	
MORACEAE					
Artocarpus altilis	Breadfruit	Tree	Cultivated	Uncommon	
NYCTAGINACEAE					
Boerhavia diffusa	Hog-weed	Ground cover	Open coppices, fields, disturbed areas	Uncommon	
Bougainvillea spectabilis	Bougainvillea	Shrub	Cultivated	Occasional	
Commicarpus scandens	Goma-bush, "heartleaf"	Herb	Disturbed areas	Occasional	
Guapira discolor	Blolly	Tree	Coppices, Scrublands, rock flats	Occasional	
PASSIFLORACEAE					
Passiflora cupraea	Devil's Pumpkin	Vine	Coastal coppices, thickets, disturbed areas	Uncommon	
Passiflora pectinata	Wild Apricot	Vine	Littoral sands, coastal coppice, savannas	Occasional	
Passiflora sp.	Passion-flower	Vine	Disturbed areas	Occasional	
Passiflora suberosa	Juniper-berry, Small Passion- flower	Vine	Variable habitats	Common	
POLYGONACEAE					
Coccoloba uvifera	Seagrape	Tree	Coastal thickets, coastal coppices	Abundant	
Coccoloba swartzii	Tie Tongue	Tree	Coastal thickets, coastal coppices	Uncommon	
RHAMNACEAE					
Reynosia septentrionalis	Darling Plum	Shrub	Coppices, scrublands, and rocky flats	Occasional	
RUBIACEAE					
Erithalis fruticosa	Black Torch, Candlewood	Shrub	Beach dunes, coastal coppices, pinelands,	Occasional	
Ernodea littoralis	Golden Creeper, Cough Bush	Shrub	Dunes, coastal coppices, disturbed areas	Common	
Genipa (fka Casasia) clusiifolia	Seven-year Apple	Shrub	Coastal Rocks, Coppices	Common	
Randia aculeata	Box briar	Shrub	Ubiquitous	Uncommon	
Stenostomum (fka Antirhea) myrtifolia	False Myrtle	Shrub	Pinelands, coppices, scrublands	Uncommon	
RUSCACEAE					

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments
Dracaena (fka Sanseviera) hyacinthoides	Bowstring Hemp	Shrub	Coppices, Disturbed sites	Uncommon	
SAPINDACEAE					
Dodonaea viscosa	Dogwood, Swamp Bush	Shrub	Coastal coppices, edges of marshlands	Occasional	
Hypelate trifoliata	White Ironwood	Tree	Coppices, Scrublands	Occasional	
Melicoccus bijugatus	Genip	Tree	Cultivated, waste places	Uncommon	
SAPOTACEAE					
Manilkara bahamensis	Wild Dilly	Tree	Coppices, Scrublands, Coastal areas	Occasional	
SOLANACEAE					
Solanum bahamense	Canker Berry, Bahamas Nightshade	Shrub	Disturbed areas	Occasional	
STERCULIACEAE					
Waltheria indica	Sleepy Morning	Shrub	Open, sandy areas, disturbed areas	Occasional	
THEOPHRASTACEAE					
Jacquinia keyensis	Joe-wood, Ironwood	Shrub	Coastal rocks, Coppices, Scrublands	uncommon	
TILIACEAE					
Corchorus hirsutus	Wooly Corchorus, Jack Switch	Shrub	Coppices, Scrublands, Fields	Abundant	
TURNERACEAE					
Turnera ulmifolia	Buttercups, Yellow Alder	Shrub	Beaches, Coastal dunes, Scrublands	Occasional	
VERBENACEAE					
Lantana involucrata	Sage Cop, Wild Sage	Shrub	Scrublands, Edges of thickets	Common	Lucayan Endemic
Stachytarpheta jamaicensis	Worry Vine, Bue rat-tail	Shrub	Coppices, Disturbed areas, Scrublands	Uncommon	
ZYGOPHYLLACEAE					
Guaiacum officinale	Lignum vitae	Tree	Coastal coppices, coppices	Occasional	NPSCC
Guaiacum sanctum	Lignum vitae	Tree	Coastal coppices, coppices	Occasional	NPSCC

Notes:

Habitats from Correll & Correll; Flora of the Bahama Archipelago

Occurrence Categories:

Abundant = Present in more than 10 of the 30 plots

Common = Present in 5-10 of the 30 plots

Family/Scientific Name Common Name		Life Form	Habitat	Abundance	Comments		
Occasional = present in 1-4 of the 30 plots							

Uncommon = Observed on the property, but was not present in any of the plots

Green shading = Species identified as protected by the Turks and Caicos Islands Government and/or international treaties

Pink shading = Species identified in Bahamas National Invasive Species Strategy

Plant status as Identified in "The Schedules" received from DECR is included in Comments column

The following species were observed during landside field assessments conducted on on the site of the proposed MOLO Hotel complex on Providenciales during field investigations from March 7-10, 2023. This list should be considered as a work-in-progress, and that additional species would be identified if additional surveys were conducted, particularly during different times of the year and migratory bird season.

Scientific Name	Common Name	Habitat	Abundance
MAMMALS	·	•	
	Bat		
Canus lupus domesticus	Domestic Dog	Urban areas, beaches	Occasional
MOLLUSKS			
Cerion sp.	Peanut snail	Herbaceous & other low-growing vegetation	Occasional
Hemitrochus varians	Seagrape snail	Coastal uplands	Occasional
BIRDS	· ·	•	•
Nyctanassa violacea	Yellow-crowned Night-heron	Shorelines & shallow inland wetlands. Observed in vicinity, & crab parts suggest presence	Not observed, but shell fragments of eaten crabs suggest this species may intermittently be present
Pandion haliaetus	Osprey	Coastal areas, feeds on fish, nests nr water. Two seen repeatedly in vicinity. Nest present on platform near west property boundary.	Common
Falco sparverius sparverioides	Kestrel	Male & Female both observed repeatedly in semi- open areas. Likely year-round nesting resident in or near project area.	Uncommon
Columba passerina	Common Ground-dove	Sparsely-vegetated uplands. Frequently observed on site, including w/ young-of-the-year. Likely to nest within project area.	Common
Zenaida macroura	Mourning Dove	Typically in urban/residential areas, but heard frequently; likely to nest within project area.	Occasional
Crotophaga ani	Smooth-billed Ani	Open areas, bushes, golf courses. Heard in vicinity.	Occasional

Scientific Name	Common Name	Habitat	Abundance
Calliphlox evelynae	Bahama Woodstar	Coppice, typically nr nectar-producing flowers. Observed frequently, including feeding on Euphorbia gymnonota. Likely nests in project area.	Uncommon
Mimus polyglottos	Northern Mockingbird	Typically in urban/residential areas, but seen & heard frequently. Potentially nests within project area.	Occasional
Dendroica discolor	Prairie Warbler	Coppice, thicket & forest	Occasional
Dendroica palmarum	Palm Warbler	Coppice, thicket, urban areas, agricultural areas. Migrant, nests at northerly latitudes, but likely present on site fall through spring, &/or during migration	Occasional
Coerba flaveola	Bananaquit	Coppice, thicket & forest. Year-round, breeding resident. Heard & seen frequently. Likley nests in project area.	Common
REPTILES and AMPHIBIANS			
Anolis sagrei ordinatus	Bahamian Brown Anole	Semi-open uplands	Common
Anolis scriptus scriptus	Turks and Caicos Anole	Semi-open uplands	Common
Leiocephalus psammodromus	Turks & Caicos Curly-tailed Lizard	Coppices, urban areas (Neighbor Cay only)	Abundant
INSECTS			
Butterflies and Moths			
Agraulis (Dione) vanillae	Gulf Fritillary Butterfly	Semi-open areas, host plant is Passifloraceae	Common
Chlorostrymon sp.	Hairstreak Butterfly	In open coppice, & feeding on Heliotropium	Uncommon
Heraclides andreamon bonhotei	Bahama Swallowtail	Likely forage on Asclepiaceae	Occasional
Pieridae	Small Yellow Butterfly	Observed in weedy groundcovers	Uncommon
Pieridae	Sulfur Butterfly	Observed in weedy groundcovers	Uncommon
Pierinae	White Butterfly	Semi-open areas, host plants are Brassicaceae	Common

Scientific Name	Common Name	Habitat	Abundance	
Urbanus proteus	Long-tailed Skipper	Semi-open areas, host plants are Fabaceae	Common	
Spiders	·		•	
Argiope argentata	Silver argiope	in Strumpfia in coastal spray zone	Uncommon	
Gasteracantha elipsoides	Crablike Spiny Orb Weaver	Соррісе	Uncommon	
Other Insects		•		
Cicadidae	Cicada	Coppice & forests	Common	
Coccinella novemnotata	Ladybug Beetle	Observed in Leucaena thicket	Occasional	
Diplopoda	Millipede			
Cercopidae	Spittlebug	Encountered only on Casuarina trees	Occasional	
Formicidae	Ants	Agricultural shrublands	Abundant	
Hymenoptera	Wasp	Evergreem shrublands	Occasional	
Odonata	Dragonfly	Typically near freshwater & coastal wetlands	Uncommon	
Psychidae	Bagworm Moth	Open Coppices	Uncommon	

# Appendix J

Marine Flora and Fauna Observed within the Assessment Area

MOLO Hotel - Marine Organisms List

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments	CITES	IUCN
MARINE PLANTS							
SEAGRASSES							
Halodule wrightii	Shoal-grass	Seagrass	Typically shallow bays	Common	Varying cover		
Syringodium filiforme	Manatee-grass	Seagrass	Typically shallow bays	Occasional	Sparse to dense		
Thalassia testudinum	Turtle grass	Seagrass	Typically shallow bays	Abundant	Sparse to dense		
MACROALGAE							
Rhodophyta							
Acanthophora spicifera		Red Algae	Solid substrates	Occasional	On shell fragments		
Laurencia sp.	Laurencia	Red Algae	On hard substrates	Occasional	On hardbottom in Sound		
Phaeophyta							
Dictyota sp.		Brown Algae	On hard substrates	Common			
Padina sanctae-crucis	Scroll Algae	Brown Algae	On hard substrates	Abundant			
Sargassum sp.	Sargassum Weed	Seaweed	Drift	Common			
Turbinaria sp.	Saucer Leaf alga	Brown Algae	Drift	Occasional			
Chlorophyta							
Acetabularia sp.	Mermaid's Wine Gla	Green Algae	Sandy areas nr reefs	Occasional			
Batophora oerstedii	Batophora	Green Algae	Attached to solid substrat	Abundant	mostly nr MHW		
Caulerpa cupressiodes	Cactus tree algae	Green Algae	Sandy areas, betw reefs	Occasional			
Dasycladus vermicularis	Fuzzy finger Algae	Green Algae	Attached to solid substrate	Abundant			
Halimeda incrassata	Three-finger Leaf A	Green Algae	Grassbeds and reefs	Common	Interspersed w/ seagrass		
Halimeda monile	Algae	Green Algae	Sand flats, seagrasses	Common			
Halimeda opuntia	Watercress Algae	Green Algae	Attached to rocks	Common			
Penicillus dumetosus	Bristle Ball Brush	Green Algae	Grassbeds, sandy bottoms	Common	Interspersed w/ seagrass		
Penicillus pyriformis	Flat-top Bristle Brus	Green Algae	Sandy areas, betw reefs	Common	Interspersed w/ seagrass		

MOLO Hotel - Marine Organisms List

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments	CITES	IUCN
Rhipocephalus phoenix	Pine cone Algae	Green Algae	Sandy bottoms	Common	Interspersed w/ seagrass		
Udotea flabellum		Green Algae	Sandy bottoms	Common			
SPONGES							
Aplysina fistularis	Yellow Tube Sponge	Sponge	Coral reefs	Occasional			
Aplysina insularis	Branchlet Sponge	Sponge	Hardbottoms, reefs	Occasional			
Aplysina sp.	Rope Sponge	Sponge	Coral reefs	Occasional			
Ectyoplasia ferox	Brown Volcano	Sponge	Hardbottom, reefs	Occasional			
Ircinia strobilina	Black-ball Sponge	Sponge	Coral Reefs	Occasional			
CRUSTACEANS							
Stomatopoda	False mantis shrimp	Shrimp	Sandy substrates	Occasional			
MOLLUSKS							
Cephalopoda	Octopus	Octopus	Coral rubble	Occasional			
ECHINODERMS							
Echinometra sp.	Sea Urchin	Sea urchin	Reefs, hardbottom	Occasional			
CORALS							
Hydrocorals							
Millepora alcicornis	Fire Coral	Coral	Reefs	Common	CITES-Endangered		
Octocorals							
Briareum asbestinum	Corky Sea Fingers	Coral	Reefs	Common			
Gorgonia ventalina	Common Sea Fan	Coral	Reefs, esp seaward side	Common			
Plexaura sp.	Sea Rods	Coral	Reefs	Occasional			
Plexaurella homomalla	Black Sea Rods	Coral	Reefs	Occasional		-	
Pseudopterogorgia sp.	Sea Plumes	Coral	Reefs	Common	to + 1 meter height		
Stony Corals							

MOLO Hotel - Marine Organisms List

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments	CITES	IUCN
Favia fragum	Golfball Coral	Coral	Shallow reefs	Occasional		App II	
Isophylla sinuosa	Sinuous Cactus Coral	Coral	Reefs	Occasional	CITES	App II	
Porites astreoides	Mustard Hill Coral	Coral	Reefs	Occasional	Endangered - CITES		
Porites porites	Finger Coral	Coral	Reefs & grassbeds	Occasional			
Pseudodiploria clivosa	Knobby Brain	Coral	Reefs	Occasional	CITES		
Pseudodiploria strigosa	Brain Coral	Coral	Reefs	Occasional	CITES		
Siderastrea radians	Lesser Starlet Coral	Coral	Hardbottom, sand, reefs	Occasional			
Siderastrea sidera	Massive Starlet Coral	Coral	Hardbottom, reefs	Occasional	Endangered-CITES		
FISH							
Acanthus caeruleus	Blue Tang	Fish	Reefs	Common			
Caranx crysos	Blue Runner	Fish	Reefs & Sandy bottoms	Occasional			
Sphyraena barracuda	Great Barracuda	Fish	Reefs & Sandy bottoms	Occasional	Over grassbeds & reefs		
Albula vulpes	Bonefish	Gamefish	Shallow flats	Not Observed, but inhabits this habitat			
Haemulon sp.	Grunt	Fish	Reefs	Not Observed, but inhabits this habitat			
Lutjanus sp.	Snapper	Fish	Reefs	Not Observed, but inhabits this habitat			
Ocyurus chrysurus	Yellow-tail Snapper	Fish	Reefs	Not Observed, but inhabits this habitat			
Stegastes diencaeus	Longfin Damselfish	Fish	Reefs	Not Observed, but inhabits this habitat			
Stegastes fuscus	Dusky Damselfish	Fish	Reefs	Not Observed, but inhabits this habitat			
Stegastes partitus	Bicolor Damselfish	Fish	Reefs	Not Observed, but inhabits this habitat			
Stegastes leucostictus	Beaugregory	Fish	Reefs, hardbottom	Not Observed, but inhabits this habitat			
Pomacentridae	Damselfish	Fish	Reefs, hardbottom	Not Observed, but inhabits this habitat			
Abudefduf saxatilis	Sergeant Major	Fish	Rocks, shorelines	Not Observ	ed, but inhabits this habitat		
Sparisoma viridae	Stoplight Parrotfish	Fish	Reefs	Occasional			

MOLO Hotel - Marine Organisms List

Family/Scientific Name	Common Name	Life Form	Habitat	Abundance	Comments	CITES	IUCN
Scarus taeniopteris	Princess Parrotfish	Fish	Reefs	Not Observed, but inhabits this habitat			
Thalassoma bifasciatum	Bluehead Wrasse	Fish	Reefs	Occasional			
Sphoeroides spengleri	Bandtail Puffer	Fish	Grassbeds	Occasional			
Malacanthus plumieri	Sand Tilefish	Fish	SAV nr patch reefs	Uncommon			
Pseudupeneus maculatus	Spotted Goatfish	Fish	Sandy bottoms	Uncommon			
Dasyatis americana	Southern Stingray	Fish	Sandy Areas	Not Observed, but inhabits this habitat			
REPTILES							
Chelonia mydas	Green Turtle	Turtle		Not Observed, but inhabits this habitat			Endangered

# Appendix K

Representative Photos



This appendix provides additional photos with captions and dates of photos that were not included in the body of the report. These photos provide additional visual context to the text of the report.



Photo K-1. Plot of Dry Broadleaf Evergreen Shrubland. Date of Photo: March 7, 2023



Photo K-2. Plot of Dry Broadleaf Evergreen Forest. Date of Photo: March 7, 2023



Photo K-3. Plot of Dry Broadleaf Evergreen Forest. Date of Photo: March 7, 2023



Photo K-4. Typical plot of Dry Broadleaf Evergreen Forest. Date of Photo: March 7, 2023



Photo K-5. Orchids within the property. Date of Photo: March 7, 2023



Photo K-6. Disturbed area of the property. Date of Photo: March 7, 2023



Photo K-7. Looking east along the dune. Date of Photo: March 7, 2023


Photo K-8. Beach and dune looking west. Date of Photo: March 7, 2023



Photo K-9. Dune area looking east. Date of Photo: March 7, 2023



Photo K-10. Disturbed area of the property. Date of Photo: March 7, 2023



Photo K-11. Typical Dry Broadleaf Evergreen Scrubland. Date of Photo: March 7, 2023



Photo K-12. Osprey on nesting platform. Date of Photo: March 7, 2023



Photo K-13. Invasive species throughout the property. Date of Photo: March 7, 2023



Photo K-14. Invasive species throughout the property. Date of Photo: March 7, 2023



Photo K-15. Invasive species around property. Date of Photo: March 7, 2023



Photo K-16. Observation platform. Date of Photo: March 8, 2023



Photo K-17. Plot in Casuarina dominated area. Date of Photo: March 8, 2023



Photo K-18. Plot with Agave. Date of Photo: March 8, 2023



Photo K-19. Area of invasive species, landward of the dune, east side of the property. Date of Photo: March 8, 2023



Photo K-20. Cactus. Date of Photo: March 8, 2023



Photo K-21. Trashed area along east side of property. Date of Photo: March 8, 2023

# Appendix L

Scientific Name	Common Name	Transect 1 Plot a	Transect 1 Plot b	Transect 1 Plot c	Transect 1 Plot d	Transect 1 Plot e	Transect 1 Plot f	Transect 2 Plot a	Transect 2 Plot b	Transect 2 Plot c	Transect 2 Plot d	Transect 2 Plot e	Transect 2 Plot f	Transect 3 Plot a	Transect 3 Plot b	Transect 3 Plot c	Transect 3 Plot d	Transect 3 Plot e	Transect 3 Plot f	Transect 4 Plot a	Transect 4 Plot b
Agave sp.	Century Plant																				
Ambrosia hispida	Sweet Bay, Bay tansy, Soap-bush																				
Argusia (Mallotonia) gnaphalodes	Wild Bay, Sea Lavender																				
Argythamnia candicans																					
Artocarpus altilis	Breadfruit																				
Azadirachta indica	Neem																				
Boerhavia diffusa	Hog-weed																				
Bougainvillea spectabilis	Bougainvillea																				
Bourreria succulenta	Chink Bush, Pigeon Berry				0/5/0					0/1/0						0/1/0					0/2/0
Bucida buceras	Black Olive																				
Byrsonima lucida	Locust-berry																				
Carica papaya	Рарауа																				
Cassytha filiformis	Woe-vine, Love Vine								<1%												
Casuarina equisetifolia	Beefwood, Australian Pine					0/6/<5%						1/0/0					0/4/<1%	0/2/0			
Catharanthus roseus	Old Maid, Periwinkle																				
Cenchrus echinatus	Southern Burgrass																				
Cenchrus incertus	Sand Bur																				
Centrosema virginianum	Butterfly Pea																				
Chamaecrista lineata	Narrowpod Sensitive Pea							0/3/0													
Chamaesyce hirta	Pillpod Sandmat																				
Coccoloba swartzii	Tie Tongue																				
Coccoloba uvifera	Seagrape	1/0/0	0/4/0	0/1/0	0/3/0				0/1/0	0/4/0				0/3/0	0/6/0	1/0/0				0/5/0	0/1/0
Coccothrinax inaguensis	Thatch Palm		0/0/<1	2/0/0	0/3/<1%				0/1/0	0/14/0				0/0/<1%		0/6/0				1/1/<1%	1/9/0
Cocos nucifera	Coconut Palm																				
Commicarpus scandens	Goma-bush, "heartleaf"																				
Conocarpus erectus	Buttonwood																				
Corchorus hirsutus	Wooly Corchorus, Jack Switch					0/2/0		0/2/<1%			0/30/0				0/9/1%		0/11/<1%				0/1/0
Cordia sebestena	Geiger Tree, Anaconda																				
Cyperaceae																					
Dactyloctenium aegyptium	Crowfoot Grass				<1%						1%	<1%			<1%						
Distichlis (fka Monanthochloe) littoralis	Shoregrass					1%						<1%						25%			
Dodonaea viscosa	Dogwood, Swamp Bush													0/3/0							
Dracaena hyacinthoides	Bowstring Hemp																				
Encyclia altissima	Tall Orchid																				
Encyclia rufa	Spring Orchid																				
Erithalis fruticosa	Black Torch, Candlewood							0/4/0	0/1/0					0/1/0							
Ernodea littoralis	Golden Creeper, Cough Bush							0/8/<1%	0/3/0					0/2/<1%							
Erythroxylum rotundifolium	Rat-wood																				
Euphorbia (Chamaesyce) sp.	Spurge																				
Euphorbia heterophylla	Jacob's Ladder																				
Euphorbia inaguaensis	Wild Thyme (per TCIG)							0/1/0						0/1/0							
Eustachys petraea	Finger Grass					<1%															
Genipa (fka Casasia) clusiifolia	Seven-year Apple		1/1/0					0/1/0	0/5/0	0/1/0				3/0/0						1/1/0	0/3/0
Gossypium hirsutum	Wild cotton			0/1/0																	
Guaiacum officinale	Lignum vitae																				
Guaiacum sanctum	Lignum vitae															0/1/0				0/1/0	
Guapira discolor	Blolly								0/2/0												
Heliotropium angiospermum	Horse-bush, Scorpion-tail																				
Herissantia crispa	Bladderpod																				
Heterosavia bahamensis	Maiden Bush		0/5/1%							0/5/<1%											
Hypelate trifoliata	White Ironwood																				1/3/0
Ipomoea pes-caprae	Bay Hops, Bay Winders					<1%															

Scientific Name	Common Name	Transect 1 Plot a	Transect 1 Plot b	Transect 1 Plot c	Transect 1 Plot d	Transect 1 Plot e	Transect 1 Plot f	Transect 2 Plot a	Transect 2 Plot b	Transect 2 Plot c	Transect 2 Plot d	Transect 2 Plot e	Transect 2 Plot f	Transect 3 Plot a	Transect 3 Plot b	Transect 3 Plot c	Transect 3 Plot d	Transect 3 Plot e	Transect 3 Plot f	Transect 4 Plot a	Transect 4 Plot b
Jacquemontia cayensis	Black Wiss - Sandyplain Clustervine																				
Jacquemontia havanensis	Havana Clustervine																				
Jacquinia keyensis	Joe-wood, Ironwood																				
Kalanchoe daigremontiana	Devil's Backbone																				
Lantana involucrata	Sage Cop, Wild Sage							0/2/0													0/1/0
Launaea (Lactuca) intybacea	Wild Lettuce								0/2/0												
Leucaena luecocephala	Jumbie Bean, Jumbay (Cow Bush in TCI)			0/1/0							0/6/0										
Manilkara bahamensis	Wild Dilly																			1/0/0	
Melicoccus bijugatus	Genip						1														
Metopium toxiferum	Poisonwood	0/0/<1																		0/1/0	1/13/0
Momordica charantia	Wild Balsam-apple																				
Musa acuminata	Banana																			İ	
Myriopus volubilis	Soldier-bush																				
Passiflora cupraea	Devil's Pumpkin																				
Passiflora pectinata	Wild Apricot								1%	<1%											
Passiflora sp.	Passion-flower																				
Passiflora suberosa	Juniper-berry,Small Passion-flower															<1%					
Pentalinon luteum	Wild Unction, Lice Bush																				
Pilocereus polygonus	Old Man's Cactus																				
Pithecellobium keyense	Blackbead, Ram's horn									0/2/0											
Poaceae	Un-identified grass #1																				
Poaceae	Un-identified grass #2							1%													
Randia aculeata	Box briar																			+	
Reynosia septentrionalis	Darling Plum																			+	
Rhynchosia sp.	Snoutbean																			+	
Rhynchospora floridensis	Starrush Whitetop																				
Ruellia tuberosa	Wild Petunia, Fever Root, Minnie Root																				
Scaevola plumieri	Inkberry, Black-soap											0/2/0									
Scaevola taccada	Ornamental Candlewood	0/14/0	0/2/0	0/1/0		0/2/0					0/5/0	0/8/0						0/1/0			
Sesuvium portulacastrum	Pondweed, Sea purslane																	<1%			
Sida ciliaris	Fringed Sida										1%										
Sida rhombifolia																					[
Smilax havanensis	Prickly Saw-brier		<1	<1%					<1%	<1%				1%	<1%	5%				1%	<1%
Solanum bahamense	Canker Berry, Bahamas Nightshade																				[
Sphagneticola trilobata	Trailing Wedelia																			+	
Sporobolus virginicus	Seashore Rush-grass				0/0/10%													10%			
Stachytarpheta jamaicensis	Worry Vine, Bue rat-tail																				
Stenostomum myrtifolia	False Myrtle																				
Stylosanthes hamata	Sweet Weed, Pencil Flower																				
Tecoma stans	Trumpet Flower, Yellow Elder			1/0/0																	
Terminalia catappa	West Indian Almond																			İ	
Thespesia populnea	Seaside Mahoe, cork-tree																				
Tillandsia circinnata	Silvery Wild Pine Air Plant		1						17					1							
Tillandsia flexuosa	Flexuous Wild Pine		1						4												
Tillandsia utriculata	Swollen Wild Pine							1	1					2						3	[
Tridax procumbens	Rabbit Thistle																				
Turnera ulmifolia	Buttercups, Yellow Alder																				
Uniola paniculata	Sea Oats					5%															
Vachellia (fka Acacia) acuifera	Pork and DougbBoy, Rosewood																				
Vachellia (fka Acacia) choriophylla	Cinnecord	0/1/0	2/0/0							1/1/<1%				1/1/0						0/1/0	
Vachellia (fka Acacia) macracantha	Porknut					1															
Varronia bahamensis	Cocobey								0/2/0	0/2/0											

Scientific Name	Common Name	ransect 1 Tran Plot a Pl	ect 1 Transect b Plot c	Transect 1 Plot d	Transect 1 Plot e	Transect 1 Plot f	Transect 2 Plot a	Transect 2 Plot b	Transect 2 Plot c	Transect 2 Plot d	Transect 2 Plot e	Transect 2 Plot f	Transect 3 Plot a	Transect 3 Plot b	Transect 3 Plot c	Transect 3 Plot d	Transect 3 Plot e	Transect 3 Plot f	Transect 4 Plot a	Transect 4 Plot b
Waltheria indica	Sleepy Morning									0/11/0										
Location	21 072	.78553N 21.78 .202255W 072.20	736N 21.78599 249W 072.20241	V 21.786164N W 072.202452W	21.7876238N 072.202501W	21.786393N 072.202552W	21.785666N 072.201908W	21.785808N 072.201966W	21.786393N 072.202552W	21.786261N 072.202170W	21.786436N 072.202176W	21.786552N 072.202232W	21.785776N 072.201771W	21.785899N 072.201785W	21.786102N 072.201855W	21.786280N 072.201958W	21.786507N 072.202103W	21.786581N 072.202168W	21.786051N 072.201471W	21.786070N 072.201496W
Date Assessed: MM/DD/Year	3	3/7/2023 3/7/	023 3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/7/2023
Fauna	Wa	isps, Ants W	sp, Ladybird beetle, spid	dog feces er nearby	N/A	N/A	Woodstar nrby, Fritillary, Pieridae	Woodstars courtship	Wasp, eaten ghost crab parts	Hairstreak	Fritillary, Cercopidae, Anolis	N/A	Bananaquit nrby	Dead termite mound	Anolis	Woodstar nrby, Fritillary	N/A	N/A	Anolis	Woodstar nrby
Comments	Sca	aevola re- rooting	n ~30' Disturbed adjoining p	by for former residence	Litter, flotsam, Casuarina seedlings	On sandy beach nr MHW	Litter	Litter	Disturbance from former residence	Disturbance from former residence	Impacted by use of nrby path to beach	On sandy beach nr MHW	Litter	Appears to have been cleared repeatedly	~6" diam Coccoloba uvif sawed off		Some Casuarina recently cut	Barren, at MHW, ~3 scarp on eroded shoreline	' Litter, some cut Casuarina trunks	Hypelate 8.7" dbh
	Percent Cover:	95% 8	% 90%	35%	25%	0%	35%	80%	50%	65%	70%	0%	75%	20%	30%	30%	70%	0%	80%	75%
	Quality:	Poor G	od Fair	Fair	Fair	Good	Fair	Good	Fair	Poor	Poor	Good	Good	Poor	Fair	Poor	Poor	Fair	Good	Fair

Legend and Notes

plot size = 3 meter x 3 meter

Trees = > 7' tall

Shrubs = 1-7' tall

Groundcovers = < 1'; % groundcover shown

Numbers = #Trees / # shrub size / % cover for groundcovers & vines, & seedlings less than 1' in height

% Groundcover provided when individual was < 1' tall, regardless of height when mature

% Groundcover listed as 1% includes those present at <1%

For species which have had name changes since they were designated as protected or invasive, the following

apply

Vachellia acuifera (pork and doughboy) formerly known as Acacia acuifera

Vachellia choriophylla (cinnecord) formerly known as Acacia choriophylla

Encyclia orchid # based on avg of 15 peseudobulbs/cluster, unless otherwise counted

Species shown as having 0 occurrences were observed on the site during the assesssment, but did not occur in the vegetation monitoring plots

Landside Flora in Vegetation Analy		Turnet 4	Turnett	Turnet 4	Turnerald	Turnett	Turnet	Turnet	Turnett	T	Turnet	T	Transatta	T	Turnet	Turneral A	Turnet	
Scientific Name	Common Name	Plot c	Plot d	Plot e	Plot f	Plot a	Plot b	Plot c	Plot d	Plot e	Plot f	Plot a	Plot b	Plot c	Plot d	Plot e	Plot f	# Occurrences
Agave sp.	Century Plant								0/1/0				1/5/0	0/9/0				3
Ambrosia hispida	Sweet Bay, Bay tansy, Soap-bush						30%											1
Argusia (Mallotonia) gnaphalodes	Wild Bay, Sea Lavender																	0
Argythamnia candicans						0/3/0												1
Artocarpus altilis	Breadfruit																	0
Azadirachta indica	Neem											1/3/<1%						1
Boerhavia diffusa	Hog-weed																	0
Bougainvillea spectabilis	Bougainvillea		0/1/0															1
Bourreria succulenta	Chink Bush, Pigeon Berry		1			0/3/0												5
Bucida buceras	Black Olive																	0
Byrsonima lucida	Locust-berry																	0
Carica papaya	Рарауа																	0
Cassytha filiformis	Woe-vine, Love Vine						1%											2
Casuarina equisetifolia	Beefwood, Australian Pine							2/9/0	2/0/0	1/0/0					0/1/0			8
Catharanthus roseus	Old Maid, Periwinkle		0/1/0						0/2/1%									2
Cenchrus echinatus	Southern Burgrass																	0
Cenchrus incertus	Sand Bur															1%		1
Centrosema virginianum	Butterfly Pea												1%					1
Chamaecrista lineata	Narrowpod Sensitive Pea																	1
Chamaesyce hirta	Pillpod Sandmat																	0
Coccoloba swartzii	Tie Tongue																	0
Coccoloba uvifera	Seagrape	0/2/0												2/1/0				13
Coccothrinax inaquensis	Thatch Palm			0/1/0														10
Cocos nucifera	Coconut Palm																	0
Commicarpus scandens	Goma-bush, "heartleaf"											10%			20%			2
Conocarpus erectus	Buttonwood																	0
Corchorus hirsutus	Wooly Corchorus, Jack Switch		0/2/0				0/7/0	0/6/1%	0/1/0	0/1/0				0/2/0		0/1/1%		13
Cordia sebestena	Geiger Tree, Anaconda	1/0/0																1
Cyperaceae																		0
Dactyloctenium aegyptium	Crowfoot Grass	<1%	<1%			1%							<1%	1%	1%			10
Distichlis (fka Monanthochloe) littoralis	Shoregrass																	3
Dodonaea viscosa	Dogwood, Swamp Bush																	1
Dracaena hyacinthoides	Bowstring Hemp																	0
Encyclia altissima	Tall Orchid																	0
Encyclia rufa	Spring Orchid																	0
Erithalis fruticosa	Black Torch, Candlewood						0/1/0											4
Ernodea littoralis	Golden Creeper, Cough Bush					0/5/0	0/3/0									0/1/0		6
Erythroxylum rotundifolium	Rat-wood																	0
Euphorbia (Chamaesyce) sp.	Spurge		1									-		-				0
Euphorbia heterophylla	Jacob's Ladder																	0
Euphorbia inaguaensis	Wild Thyme (per TCIG)																	2
Eustachys petraea	Finger Grass						1%	<1%										3
Genipa (fka Casasia) clusiifolia	Seven-year Apple			0/5/0						0/1/0								9
Gossypium hirsutum	Wild cotton																	1
Guaiacum officinale	Lignum vitae											1/0/0						1
Guaiacum sanctum	Lignum vitae					0/4/<1%												3
Guapira discolor	Blolly																	1
Heliotropium angiospermum	Horse-bush, Scorpion-tail																	0
Herissantia crispa	Bladderood																	0
Heterosavia bahamensis	Maiden Bush																	2
Hypelate trifoliata	White Ironwood											0/1/0						2
loomoea pes-caprae	Bay Hops, Bay Winders											0,						2
iponiosa pos oupras																		-

Axaxaxy  Axaxy  Axa      Axa   Axa   Ax	Scientific Name	Common Name	Transect 4 Plot c	Transect 4 Plot d	Transect 4 Plot e	Transect 4 Plot f	Transect 5 Plot a	Transect 5 Plot b	Transect 5 Plot c	Transect 5 Plot d	Transect 5 Plot e	Transect 5 Plot f	Transect 6 Plot a	Transect 6 Plot b	Transect 6 Plot c	Transect 6 Plot d	Transect 6 Plot e	Transect 6 Plot f	# Occurrences
Abarbon  Solution  Soluti  Solution  Solution  Solutin	Jacquemontia cayensis	Black Wiss - Sandyplain Clustervine																	0
Andone  Andone </td <td>Jacquemontia havanensis</td> <td>Havana Clustervine</td> <td></td> <td>0</td>	Jacquemontia havanensis	Havana Clustervine																	0
Analyony  Symbol	Jacquinia keyensis	Joe-wood, Ironwood																	0
Image  Image Image <	Kalanchoe daigremontiana	Devil's Backbone																	0
Sharpord <th< td=""><td>Lantana involucrata</td><td>Sage Cop, Wild Sage</td><td></td><td></td><td></td><td></td><td>0/4/0</td><td>0/4/0</td><td></td><td></td><td></td><td></td><td></td><td></td><td>0/1/0</td><td></td><td></td><td></td><td>5</td></th<>	Lantana involucrata	Sage Cop, Wild Sage					0/4/0	0/4/0							0/1/0				5
base base base base base base base base	Launaea (Lactuca) intybacea	Wild Lettuce																	1
Name      Nam      N	Leucaena luecocephala	Jumbie Bean, Jumbay (Cow Bush in TCI)	2/17/0	0/14/<1%						2/5/1%			10/4/0	0/4/<1%		0/7/0			8
NameNam </td <td>Manilkara bahamensis</td> <td>Wild Dilly</td> <td></td> <td>1</td>	Manilkara bahamensis	Wild Dilly																	1
MamberMath<	Melicoccus bijugatus	Genip																	0
Name <td>Metopium toxiferum</td> <td>Poisonwood</td> <td>1/0/0</td> <td></td> <td></td> <td></td> <td>0/1/0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0/1/0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6</td>	Metopium toxiferum	Poisonwood	1/0/0				0/1/0						0/1/0						6
Head  Head	Momordica charantia	Wild Balsam-apple														1%			1
Bis	Musa acuminata	Banana																	0
bolom<	Myriopus volubilis	Soldier-bush					1%						1%		3%	1%			4
Abay  Symbol  td>Passiflora cupraea</td> <td>Devil's Pumpkin</td> <td></td> <td>0</td>	Passiflora cupraea	Devil's Pumpkin																	0
Abal Aba Aba Aba </td <td>Passiflora pectinata</td> <td>Wild Apricot</td> <td></td> <td>2</td>	Passiflora pectinata	Wild Apricot																	2
Abord  Abord	Passiflora sp.	Passion-flower														1%			1
Abord <td>Passiflora suberosa</td> <td>Juniper-berry,Small Passion-flower</td> <td>&lt;1%</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1%</td> <td></td> <td>1%</td> <td>1%</td> <td></td> <td></td> <td>5</td>	Passiflora suberosa	Juniper-berry,Small Passion-flower	<1%										1%		1%	1%			5
Name	Pentalinon luteum	Wild Unction, Lice Bush		1%															1
AbmothmeImport<	Pilocereus polygonus	Old Man's Cactus																	1
Name	Pithecellobium keyense	Blackbead, Ram's horn																	1
Name	Poaceae	Un-identified grass #1	1%				1%	1%		1%									4
band <thb< td=""><td>Poaceae</td><td>Un-identified grass #2</td><td></td><td>2%</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td></thb<>	Poaceae	Un-identified grass #2		2%															2
Byachemic  Byac	Randia aculeata	Box briar																	0
Mach      Matr      Matr <t< td=""><td>Reynosia septentrionalis</td><td>Darling Plum</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></t<>	Reynosia septentrionalis	Darling Plum																	1
May  May </td <td>Rhynchosia sp.</td> <td>Snoutbean</td> <td></td> <td>0</td>	Rhynchosia sp.	Snoutbean																	0
AnometryImage	Rhynchospora floridensis	Starrush Whitetop																	0
Sandard  Image	Ruellia tuberosa	Wild Petunia, Fever Root, Minnie Root								0/3/0									1
SendencionImage <td>Scaevola plumieri</td> <td>Inkberry, Black-soap</td> <td></td> <td>1</td>	Scaevola plumieri	Inkberry, Black-soap																	1
Semiconde matrix  Semicond matrix <t< td=""><td>Scaevola taccada</td><td>Ornamental Candlewood</td><td></td><td></td><td>0/5/45%</td><td></td><td></td><td></td><td></td><td>0/1/0</td><td></td><td></td><td></td><td></td><td></td><td>0/1/0</td><td>0/12/0</td><td></td><td>11</td></t<>	Scaevola taccada	Ornamental Candlewood			0/5/45%					0/1/0						0/1/0	0/12/0		11
Baden  Bigen	Sesuvium portulacastrum	Pondweed, Sea purslane																	1
Name And 	Sida ciliaris	Fringed Sida																	1
ShakandaShakand	Sida rhombifolia																		0
SymbolSymbo	Smilax havanensis	Prickly Saw-brier	<1%										5%	1%	1%				13
Sphered sp	Solanum bahamense	Canker Berry, Bahamas Nightshade					0/3/0												1
Sponder <t< td=""><td>Sphagneticola trilobata</td><td>Trailing Wedelia</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0</td></t<>	Sphagneticola trilobata	Trailing Wedelia																	0
ShelpedpainwardsMorporporporporporporporporporporporporpo	Sporobolus virginicus	Seashore Rush-grass																	2
Shohom problemShohom	Stachytarpheta jamaicensis	Worry Vine, Bue rat-tail																	0
Sybandha dendSybandha dendSyband	Stenostomum myrtifolia	False Myrtle																	0
Icons andIcons and	Stylosanthes hamata	Sweet Weed, Pencil Flower																	0
ImminiscriptionMednadeMednad	Tecoma stans	Trumpet Flower, Yellow Elder																	1
IndependentImage: Seade And And And And And And And And And And	Terminalia catappa	West Indian Almond								0/1/0									1
Induscional <br< td=""><td>Thespesia populnea</td><td>Seaside Mahoe, cork-tree</td><td></td><td></td><td>0/0/&lt;1%</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></br<>	Thespesia populnea	Seaside Mahoe, cork-tree			0/0/<1%														1
<i>I</i> I I I I I I I I I I I I I I I I I I	Tillandsia circinnata	Silvery Wild Pine Air Plant																	3
IndustationSemi-And MarkSemi-And <th< td=""><td>Tillandsia flexuosa</td><td>Flexuous Wild Pine</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td></th<>	Tillandsia flexuosa	Flexuous Wild Pine																	2
Index productionRebit NictionRebit NictionReb	Tillandsia utriculata	Swollen Wild Pine																	4
Image	Tridax procumbens	Rabbit Thistle												1%					1
IndependentSeadeSeadeImage </td <td>Turnera ulmifolia</td> <td>Buttercups, Yellow Alder</td> <td></td> <td></td> <td></td> <td></td> <td>0/1/0</td> <td>0/1/0</td> <td></td> <td>2</td>	Turnera ulmifolia	Buttercups, Yellow Alder					0/1/0	0/1/0											2
Nachelik flag karding flagNachelik flag </td <td>Uniola paniculata</td> <td>Sea Oats</td> <td></td> <td>1</td>	Uniola paniculata	Sea Oats																	1
Vachella (ka Acacia) chorophylla      Eineord      Image: Constraint of the system of the syste	Vachellia (fka Acacia) acuifera	Pork and DougbBoy, Rosewood																	0
Vachellia (Ra Acacia) macracantha      Porknut      Concept      <	Vachellia (fka Acacia) choriophylla	Cinnecord					0/1/0		0/0/1%										7
Varronia bahamensis Cocobey 2	Vachellia (fka Acacia) macracantha	Porknut								0/1/0									1
	Varronia bahamensis	Cocobey																	2

Scientific Name	Common Name	Transect 4 Plot c	Transect 4 Plot d	Transect 4 Plot e	Transect 4 Plot f	Transect 5 Plot a	Transect 5 Plot b	Transect 5 Plot c	Transect 5 Plot d	Transect 5 Plot e	Transect 5 Plot f	Transect 6 Plot a	Transect 6 Plot b	Transect 6 Plot c	Transect 6 Plot d	Transect 6 Plot e	Transect 6 Plot f	# Occurrences
Waltheria indica	Sleepy Morning					0/1/0									1%			3
Location		21.786339N 072.201619W	21.786481N 072.201677W	21.786559N 072.201715W	21.786906N 072.201497W	21.786559N 072.201715W	21.786559N 072.201715W	21.786403N 072.201302W	21.786610N 072.201460W	21.786877N 072.201492W	21.786877N 072.201492W	21.786108N 072.200820W	21.786287N 072.200868W	21.786444N 072.201102W	21.786706N 072.201088W	21.786873N 072.201278W	21.786960N 072.201323W	
Date Assessed: MM/DD/Year		3/7/2023	3/7/2023	3/7/2023	3/7/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	
Fauna		Fritillary	flies, spiny orb weaver, dog feces nrby	Wasp	N/A	Woodstar nrby, Fritillary, MoDo, prairie W	Bees, Fritillary, ants, palm W	Woodstar, MoDo, Bagworm	Woodstar, ants, centipede, gnd doves	N/A	N/A	N/A	N/A	Ants, reptile	Argiope	Spiders in Scaevola	N/A	
Comments		Adj to former driveway, litter	just east of former house pad, fill	Thick Casuarina duff	Barren sand, at MHW	Litter, near roadside & aerial utility line	Vegetative debris from cuttings	path nrby to west	Thick Casuarina duff	Casuarina blow- down, thick Casuarina duff	Barren sand at MHW, some erosion	G. officinale dbh = 10.8 cm, area disturbed	Disturbed due to proximity to E prop line	Lg Cocoloba toppled & cut - storm?	Litter	Litter, eroded on N side	Barren sand at MHW	
	Percent Cover:	70%	60%	65%	0%	35%	50%	30%	60%	75%	0%	95%	40%	75%	80%	80%	0%	
	Quality	Fair	Poor	Poor	Good	Poor	Fair	Poor	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Poor	Fair	

Legend and Notes

plot size = 3 meter x 3 meter

Trees = > 7' tall

Shrubs = 1-7' tall

Groundcovers = < 1'; % groundcover shown

Numbers = #Trees / # shrub size / % cover for groundcovers & vines, & seedlings less than 1' in height

% Groundcover provided when individual was < 1' tall, regardless of height when mature

% Groundcover listed as 1% includes those present at <1%

For species which have had name changes since they were designated as protected or invasive, the following

apply

Vachellia acuifera (pork and doughboy) formerly known as Acacia acuifera

Vachellia choriophylla (cinnecord) formerly known as Acacia choriophylla

Encyclia orchid # based on avg of 15 peseudobulbs/cluster, unless otherwise counted

Species shown as having 0 occurrences were observed on the site during the assesssment, but did not occur in the vegetation monitoring plots

# Appendix M

Project Certification



### **Study Certification**

Environmental Impact Assessment MOLO HOTEL, Parcel 60813/17,18 PR 15987

This Certification is provided as confirmation that the above referenced Environmental Impact Assessment (EIA) was developed based on original study and analysis. Secondary sources have been appropriately acknowledged and referenced.

Applied Technology & Management, a Geosyntec Company

Mi fi

Michael G. Jenkins, Ph.D., P.E. Sr. Principal

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