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Appendix C:
*Description of Natural Reserves and
Special Planning Areas designated by
virtue of the PRCZMP*

DESCRIPTION OF THE NATURAL RESERVES AND SPECIAL PLANNING AREAS

The Puerto Rico Coastal Zone Management Program (PRCZMP) of 1978 recommended the designation of portions of the coast as Natural Reserves and Special Planning Areas. The PRCZMP recommended 26 areas as Natural Reserve (NR), from which 21 have been designated by the PRPB through administrative mechanism. Subsequently, other coastal areas have been designated as NR, which have become an integral part of the PRCZMP through routine program changes (RPC). Moreover, the PRCZMP recommended eight coastal areas to be designated as Special Planning Areas. With its approval in 1978, these areas were automatically designated.

NATURAL RESERVES AS RECOMMENDED BY THE PRCZMP IN 1978 AND DESIGNATED BY THE PRPB

Caño Martín Peña Natural Reserve

Designation Date: June /18 /2003

PRPB Resolution: PU-002-2003-18-01

Location: San Juan

Area: 0.90 km²

Owner: PRPA, DTPW and Municipality of San Juan

Management: PRPA/ Municipality of San Juan.

Description:

The Caño Martín Peña Natural Reserve contains swamplands and the Caño Martín Peña, a large channel bordered by mangroves – some natural and some as part of mitigation plans – and other floodable areas. This is an important body of water because it connects the San José Lagoon with the San Juan Bay, and as such the Natural Reserve is part of the San Juan Bay Estuary System.

Due to existing urban developments, this Natural Reserve area is divided into segments. The Caño Martín Peña and its contiguous lands have been affected by pressure due to development, dredging, excessive discharge and disposal of solid waste, among other factors. For this reason, the quality of the water and the productivity of its ecosystem have been compromised.

Despite the changes this area has undergone, it was and still is – although to a lesser extent – an important source of nourishment and nesting for a great number of migratory birds. Furthermore, its capacity to hold runoff waters allows it to serve as a buffer zone for flooding and reduces the sediments which discharge into the San Juan Bay.

Piñones Commonwealth Forest Natural Reserve

Designation Date: September/20/1979

PRPB Resolution: Second Extension Resolution PU-002

Location: Loíza

Area: 7.72 km²

Owner: DNER

Management: DNER

Description:

The Piñones Commonwealth Forest Natural Reserve is located at the municipality of Loíza along the Northern coastal plain. It is included as part of the Subtropical Rainforest Life Zone. This forest has valuable physical, geological and geographic qualities. It represents a natural habitat to a diverse array of marine and land life residing in the area. Among the great variety of natural resources housed by this Natural Reserve, the mangrove area stands out being part of the largest natural mangrove systems in Puerto Rico. In this mangrove forest four species are represented: the red mangrove, the black mangrove, the white mangrove and the button mangrove. Furthermore, beaches, bays, reefs, seagrass prairies, salt deposits, islet, a bioluminescent bay and sand dunes are also part of the Reserve. The sand dunes represent the remainders of this important coastal feature of Puerto Rico's Northwestern zone. Local endangered species found in the Bosque Estatal Piñones include the brown pelican and the leatherback marine turtle.

Río Espíritu Santo Natural Reserve

Designation Date: February/11/1985

PRPB Resolution: Extension to Resolution PU-002; Twenty-sixth Extension on Resolution PU-002 of September 14 of 1995 (To exclude Punta Miquillo from the Natural Reserve); Resolution PU-002-98-22-01 of May 14 of 1998 (Maritime limit amendment 9nm)

Location: Río Grande

Area: 19.80 km²

Owned by: Government of Puerto Rico and private

Management: DNER

Description:

The Reserve is located at Río Grande's coastal plain, in Puerto Rico's Northeastern region, inside the Río Espíritu Santo watershed. It is bordered on the North by the Atlantic Ocean while the Southern side is flanked by the Bravo Hill. The area is made up of a floodable coastal valley where a diverse number of ecologic systems converge. These ecologic systems include waterlogged land among which are both freshwater and saltwater swamps, marine aquatic systems, saltwater or brackish marshes, a mangrove forest, a *Pterocarpus* forest and freshwater marshes. It also includes extensive prairies of a marine tall grass known as *thalassia*, coral reefs and the Río Espíritu Santo estuary. This Natural Reserve is classified within the climate zone as a Subtropical Rainforest.

The area's fauna is rich in birds and crustaceans. It has great value as a habitat for 65 species of birds among which is the brown pelican. A total of 14 species of crabs, of which three are of great commercial value have also been identified. As far as flora is concerned, most of the plants in the area are hydrophytes¹ as well as the four species of mangroves: red mangrove, black mangrove, white mangrove and button mangrove.

Las Cabezas de San Juan Natural Reserve

Designation Date: January/29/1986

PRPB Resolution Number: Eighth Extension Resolution PU-002 and Resolution PU-002-98-24-01 of May 14 of 1998 (Amendment to the maritime limit 9nm)

Location: Fajardo

Area: 1.76 km²

Owned by: DNER, PRCT, USCG and public land

Management: PRCT

Description:

The Las Cabezas de San Juan is an area of natural and cultural value. The area is host to practically all natural coastal communities existing in Puerto Rico within a relatively small space. Among the existing ecosystems are coral reefs, dry forest, rocky coast, bioluminescent lagoon, mangroves, beaches and marine tall grass prairies. The marine tall grass species known as *thalassia* dominates the prairies. This marine tall grass is of particular importance because it is an essential diet for the green turtle and the manatee – both of which are endangered species. Meanwhile, the Laguna Grande is one of the tree bodies of water in Puerto Rico which exhibit the bioluminescence phenomenon.

Meanwhile, the Fajardo Lighthouse is located in this NR. This lighthouse is Puerto Rico's second oldest and has been continuously operating since its opening in 1882. Aside for the historical value of the lighthouse, the Las Cabezas de San Juan Natural Reserve has been the setting for significant archeological findings which document the history of Puerto Rico and the Caribbean.

Arrecifes La Cordillera Natural Reserve

Designation Date: January/2/1980

PRPB Resolution Number: Third Extension Resolution PU-002

Location: 1.5 nautical miles northeast of Fajardo

Area: 0.88 km²

Owner: Government of Puerto Rico, PRIDCO, DTPW and public domain

Management: DNER

Description:

¹ Hydrophytes are plants which can tolerate flooded conditions.

The Arrecifes La Cordillera Natural Reserve consists of a chain system formed by cays, islets and reefs to the northeast of Fajardo. The following formations are part of the NR: Los Farallones, Cayo Icacos, Cayo Ratones, Cayo Diablo and la Blanquilla, Cayo Cucaracha, Arrecife Hermanos and Arrecife Barriles. There are three more cays that, even though are located physically within the area comprising the Reserve, they are not part of it because are privately owned. These are: Cayo Lobos and the islands Palomino and Palominito.

The Reserve has the best developed reefs in the Northeastern coast of Puerto Rico. It has large expanses of turtle grass (*Thalassia* prairies) that provide nourish to marine species, and a place for mating, spawning and nursery for commercial species as lobster, shrimps and mollusks. Among the birds which can be observed are the brown noody, bridled tern, sooty tern, brown booby and the roseate tern. In the winter, species such as the white-cheeked pintail duck and the blue-winged teal can be found.

This Natural Reserve is intensely used for touristic and recreational purposes and is accessible only by private boats that usually depart from Fajardo.

Ceiba Commonwealth Forest Natural Reserve

Designation Date: September/20/1979

PRPB Resolution: Second Extension Resolution PU-002

Location: Ceiba, Naguabo and Fajardo

Area: 3.34 km²

Owned by: DNER

Management: DNER

Description:

The Ceiba Commonwealth Forest Natural Reserve contains natural flora and fauna elements which gives the forest great potential for environmental investigations and recreational fishing activities. Most of the forest is covered by extensive mangrove areas and sandy beaches. The vegetation is primarily red mangrove and black mangrove, but other types of mangroves known in Puerto Rico can also be found.

The establishment of mangroves favors a diversity of fish and coastal bird species as well as crustaceans among which are the white-cheeked pintail duck, the willet, the white-crowned pigeon and the yellow-shouldered blackbird. Marine organisms such as oysters and crabs have also been identified.

El Pantano, Bosque de *Pterocarpus*, Lagunas Mandri y Santa Teresa Natural Reserve

Designation Date: June/4/1986;

PRPB Resolution: Tenth Extension to Resolution PU-002 and Resolution PU-002-98-51-01 of May 14 of 1998 (Amendment to exclude land from the Natural Reserve and integrate them into the buffer zone)

Location: Humacao and Naguabo

Area: 10.15 km²

Owned by: DNER, PRCT, PRLA, LA and private ownership

Management: DNER

Description:

This Natural Reserve is comprised by wetlands and lagoons which host a great diversity of flora and fauna both native and exotic, resident and migratory. Some of these species are protected by local and federal laws among which are marine turtles such as the leatherback turtle, the hawksbill turtle and bird species such as the brown pelican, West Indian Whistling-Duck, white-cheek pintail duck, among others.

Among the natural systems which stand out is Puerto Rico's largest extension of the dragon blood tree or *Pterocarpus officinalis*. The Reserve is also composed of the lagoons Santa Teresa, Mandri and Palmas, a coastal forest and a strip of beach. Currently, this NR has a collaborative agreement between the DNER, PRTC and the community based organization *Programa de Educación Comunal de Entrega y Servicio* (P.E.C.E.S.,Inc.) to develop the area as the first ecotouristic reserve of Puerto Rico.

Arrecifes de Guayama Natural Reserve

Designation Date: January/2/1980

PRPB Resolution: Third Extension Resolution PU-002

Location: Approximately 1 nm south of Punta Figuras in Arroyo

Area Size: Approximately 5.16 km²

Owned by: Government of Puerto Rico

Management: DNER

Description:

The Arrecifes de Guayama Natural Reserves is 50% to 85% composed of live coral reefs. Between the coast near Punta Figuras and the reef there is an abundance of the marine tall grass known as *thalassia*. The water is normally clear and of good quality for aquatic sports, especially scuba diving. While it is believed that these reefs are good condition, they have not been completely explored.

Punta Petrona Natural Reserve

Designation Date: September/20/1979

PRPB Resolution: Second Extension Resolution PU-002

Location: Santa Isabel

Area: 2.25 km²

Owned by: DNER

Management: DNER

Description:

The Punta Petrona Natural Reserve is one of the segments part of the Bosque Estatal de Aguirre. This reserve is comprised by Cabezazos cay, Caracoles cay, Alfeñique cay, parts of Isla Puerca, Punta Águila, Bahía de Rincón and Punta Petrona (JP, 2006). The Reserve

contains mangroves, coral reefs and pristine cays which are of great importance for the conservation of flora and fauna typical to the Puerto Rico's Southern coastal zones. It is a productive area for commercial and recreational fishing.

Isla de Caja de Muertos Natural Reserve

Designation Date: January/2/1980

PRPB Resolution: Third Extension Resolution PU-002

Location: 8.6 nm south of Ponce

Area: 1.62 km²

Owned by: Government of Puerto Rico

Management: DNER

Description:

The natural system is comprised of Caja de Muertos island, Morrillito cay, Berbería cay and the adjacent waters of the Caribbean Sea. This Reserve counts with a coral reef system of extraordinary color and beauty. Its largest development is found in the extreme Northeast of forming a reef lagoon.

The Reserve serves as a nesting, nourishing and protection area for native fauna of great diversity among which are resident and migratory marine birds, some endangered such as: the brown pelican and the red-billed tropicbird. The Reserve is also home to several species of reptiles such as the blue-tailed lizard and the Puerto Rican racer as well as endangered marine turtles such as hawksbill turtle and the green turtle, which nest on the island's beaches.

Among its flora, several rare species, such as *Waltheira calciola*, *Bulbostylis curasavica*, *Chamaesyce cowelli*, *Myrtus bellonis* and *Portulaciz czulerpoides* (the latter two are endemic) and the Puerto Rican applecactus (*Harrisia portoricensis*), which is an endangered species introduced to the island by the DNER. The island counts with a mangrove basin forest where the dominant species are white and button mangroves.

Guánica Commonwealth Forest Natural Reserve

Designation Date: October/16/1985

PRPB Resolution: Sixth Extension Resolution PU-002; First Amendment to the Sixth Extension Resolution PU-002 of January 22 of 1997 [Increase limits to include Ballena Bay (Law No. 150 of 1988)]

Locations: Guánica, Yauco and Guayanilla

Area: 36.21 km²

Owner: DNER and public domain

Management: DNER, PRCT

Description:

Its complexity, natural richness and scientific importance distinguish the Bosque Seco de Guánica. The forest contains flora adapted to extreme conditions. The wind, saltpeter and scarcity of water limit the vegetation's growth. However, the forest's flora is rich with a variety of species greater than in humid forests on the Island. This ecosystem is also home to marine and land wildlife of great importance such as the peregrine falcon, the yellow-shouldered blackbird, the Puerto Rican nightjar, the ruddy duck, the dry lizard and the manatee, among others. Very valuable herpetofauna has also been registered which includes 21 species of reptiles and six species of amphibians. These characteristics have earned the forest the distinction, granted by UNESCO, of being the second International Biosphere Reserve.

La Parguera Natural Reserve

Designation Date: September/20/1979;

PRPB Resolution: Second Extension Resolution PU-002; First Amendment to the Second Extension to Resolution PU-002 of January 15 of 1986; Resolution PU-002-98-57-01 of May14 of 1998 (Amendment to maritime limit 9nm); Resolution PU-002-2000-57-01 of October 4 of 2000 (Amendment to terrestrial limit).

Location: Lajas, Cabo Rojo and Guánica

Area: 52.24 km²

Owned by: DNER, DTPW and Government of Puerto Rico

Management: DNER

Description:

The La Parguera Natural Reserve has marine resources of great value which include coral reefs, marine prairies, mangrove forests and bioluminescent bays. Among the diversity of habitats found here are muddy and sandy swamps, rocky beaches and extensive salt marshes. The Reserve is also a marine ecosystem with high biodiversity and a high potential for fishing, making it unique in Puerto Rico. The La Parguera Natural Reserve is host to various species including endangered species such as the brown pelican and the yellow-shoulder blackbird. Marine turtles, such as the hawksbill turtle, the leatherback turtle and the green turtle use the reefs and marine prairies for feeding as do the manatee and some dolphins.

Boquerón Commonwealth Forest Natural Reserve

Designation Date: January/2/1980

PRPB Resolution: Third Extension Resolution PU-002; Resolution PU-002-98-55-02 of ; May 14 of 1998 (Amendment to maritime limit); Resolution PU-002-2005-55-01of February 22 of 2005 [Amendments to terrestrial limits to incorporate land Northeast and Northwest of the Boquerón Wildlife Refuge and lots 2.3 & 4 of the Candelaria Salt Flats (transferred by the USFWS)].

Location: Cabo Rojo

Area: Approximately 4.99 km²

Owned by: DNER and public domain

Management: DNER

Description:

The Boquerón Commonwealth Forest Natural Reserve has various types of habitats important for wildlife including wetlands, plains, salt deposits, marine prairies and reefs. The forest also counts with 25 km of sandy beaches such as El Combate (Puerto Angelino sector) and La Playuela.

For the most part, the forest's vegetation is made up of mangroves of the four species. Several other protected plant species such as the cobana negra (*Stahlia monosperma*) and the bariaco (*Trichilia triacantha*). Meanwhile, its beaches serve as nesting areas for endangered marine turtles such as the leatherback turtle, the hawksbill turtle and the green turtle. Endangered fauna such as the brown pelican, the willet, the peregrine falcon and the dry land lizard can also be found here. This reserve is also the site of Puerto Rico's largest population of the yellow-shouldered blackbird.

Laguna Joyuda Natural Reserve

Designation Date: January/2/1980

PRPB Resolution: Third Extension Resolution PU-002

Location: Cabo Rojo

Area: Approximately 1.21 km²

Owner: Government of Puerto Rico

Management: DNER

Description:

The Laguna Joyuda is the only lagoon in Puerto Rico's West coast. Due to its natural and ecologic condition, it represents a unique habitat which, along with its adjacent areas, forms a natural ecosystem essential for this coast. The area is commonly recognized as a dual system for recreation and fishing. However, it is an area of incalculable value for its flora, its endemic and exotic marine fauna, its varied reef systems and exchange of fauna at the mouth of the Río Guanajibo to the north. The Isla de Ratones and the Punta Ostiones atoll are a refuge for migratory birds and fish. It also serves as a habitat for abundant mollusks and crustaceans in the coast.

Arrecifes de Tourmaline Natural Reserve

Designation Date: May/14/1998

PRPB Resolution Number: PU-002-98-55-01

Location: 7.5 nm west of Mayagüez

Area: 19.43 nm

Owned by: Public domain

Management: DNER

Description:

The Arrecifes de Tourmaline Natural Reserve counts with great marine life biodiversity, which includes equinodermata, mollusks, crustaceans, cnidaries, sponges, fish and marine prairies.

Coral colonies present at the Reserve are representative of 95% of the existing corals in Puerto Rico. Some 41 species of fish representative of 16 families have been identified. Among the equinodermata found are starfish, urchins and sand dollars mollusks such as *Strombus gallus* and *S. gigas*, and *Pinna carnea* clam. Some species of commercial value found here are the octopus and the squid. Other species of economic importance found here are lobsters, shrimp and crabs.

Caño Tiburones Natural Reserve

Designation Date: October/16/1998

PRPB Resolution: PU-002-98-06-02

Location: Arecibo

Area: 13.47 km²

Owner: PRLA

Management: DNER

Description:

The Caño Tiburones Natural Reserve is considered to be the largest herbaceous swamp in Puerto Rico and the second largest in the Caribbean. Originally, it was a coastal saltwater lagoon which was unsuccessfully drained for agricultural purposes and was later transferred to the PRLA.

Its ecological value makes it a unique place because of its size and its hydrological, geological and biotic characteristics. A variety of species associated with these systems use the Caño Tiburones as their main habitat.

The Caño Tiburones Natural Reserve is considered a very important area for wild life. The extension and variability of this system makes it important for feeding and reproduction of birds. Besides, the area is a vital nursery area for fish.

This protected natural area constitute the habitat for some 206 species of birds, 26 families of insects, 6 of reptiles, 9 of crustaceans, 21 species of fish, including native animals, endemic, migratory, rare or in danger of extinction and other of commercial and recreational importance. Between the species in danger of extinction is the: brown pelican (*Pelecanus occidentalis*) and the Puerto Rican boa (*Epicrates inornatus*).

Cueva del Indio Natural Reserve

Designation Date: March/11/1992

PRPB Resolution: Nineteenth Extension Resolution PU-002; PU-002-98-06-01 of June 11 of 1998 (Amendment to maritime limit 9 nm)

Location: Arecibo

Area: 0.44 km²

Owner: Public domain

Management: DNER

Description:

The Cueva del Indio, aside from its high archeological value, is one of the most beautiful landscapes in Puerto Rico's North coast. It is known as Cueva del Indio due to the large quantities of writings, paintings and artifacts of "*taino indian*" origin found in the area. These writings were identified at the end of the 19th Century by the prestigious pre-hispanic scholar Alphonse Pinart in one of his trips to the Antilles. Furthermore, the natural elements constituting this landscape create an impressive setting and representative stage of the Northern coast with its formative characteristics from the Pleistocene Era.

Hacienda La Esperanza Natural Reserve

Designation Date: March/3/1987

PRPB Resolution: Eleventh Extension Resolution PU-002; Resolution PU-002-98-08-01 of June 11 of 1998 (Amendment to maritime limit 9 nm)

Location: Manatí

Area: 9.94 km²

Owned by: DNER, PRCT and PRLA

Management: PRCT

Description:

The Hacienda La Esperanza Natural Reserve contains an exceptional landscape with coves, dunes and an alluvial plain rich in fertile lands for agriculture. More than 10 different ecosystems of great ecological value can be found on this site including four types of forest, herbaceous wetlands, two important estuaries and an ample alluvial plain. Among them are also the estuary of the Río Manatí, a reef area and the haystack hills typical of the zone.

This Natural Reserve is also distinguished for its historical value since it was here where the oldest and most important sugar cane mills was established. Archeological sites dating back 510 AD, among which are an indigenous ceremonial site, petroglyphs and an indigenous cemetery. The area has been included in the National Registry of Historical Places by the NPS.

Laguna Tortuguero Natural Reserve

Designation Date: 20/September/1979

PRPB Resolution: Fifth Extension Resolution PU-002

Location: Vega Baja and Manatí

Area: 74.99 km²

Owned by: DNER, PREPA, LA and private

Management: DNER

Description:

The Laguna Tortuguero is considered to be Puerto Rico's largest and most important body of fresh water with a diversity of soils and silicates which provide the ideal conditions for the cohabitation of a great variety of plant and animals. The flora at Laguna Tortuguero stands out for its 717 species of plants while there are 19 species of fish inhabiting the lagoon, among which are the horse-eye jack, the little-head porgy, bass and carps, among others. There are 39 bird species of which 14 are migratory and the rest are residents. Four of these are endemic: the bananaquit, the Greater Antillean oriole, the Greater Antillean grackle and the Puerto Rican spindalis. Other birds are also observed such as the least grebe, the ruddy duck, the purple gallinule and the yellow-breasted creake – four very rare species in Puerto Rico.

Mona and Monito Islands Natural Reserve

Designation Date: June/4/1986

PRPB Resolution: Ninth Extension to Resolution PU-002; First Amendment to the Ninth Extension of Resolution PU-002 of October 15 of 1997 (Amendment to maritime limit 9 nm).

Location: 50 nm west of Mayagüez

Area: 55.19 km²

Owner: DNER and public domain

Management: DNER

Description:

The Mona and Monito Islands Natural Reserve's pristine natural condition and exceptional beauty earned it the designation of Insular Forest. Among the characteristics which distinguish these two oceanic plateaus are enormous palisades which vertically penetrate depths upwards of 100 feet. In Mona, there is an underwater palisade which vertically drops some 300 feet and is known as the Roca del Carabinero. The base of this palisade drastically falls to about 1,800 feet, but at the 132-foot mark it has a terrace which is believed to have once represented the level of the sea.

Among the fauna which inhabits Mona is the Mona iguana (*Cyclura stejnegeri*), which is endemic to the island and is protected by local and federal law. A variety of marine turtles are also observed, being the hawksbill turtle the more common of these. Among the birds identified in the Natural Reserve are the broad-winged hawk, brown pelican and the gray

kingbird as well as introduced species such as goats, pigs and domestic cats, among other species.

The island is conserved in an almost perfect natural state, reason why there is abundant marine life development. Some 270 species of fish have been identified between Mona and Monito as well as 10 species of marine crabs, 40 species of marine conch and 50 species of microalgae.

Furthermore, a great variety of insects of which 67 (15%) are not known in Puerto Rico and 24 (5%) can only be found in Mona. Only one amphibian can be observed, the Mona coquí, which is not found in any other part of the World and its sound is different from the coquí found in Puerto Rico. Two species of bats are the only mammals endemic to Mona.

Bahía Bioluminiscente de Vieques Natural Reserve

Designation Date: July/ 1/ 1989

PRPB Resolution Number: Fifteenth Extension to Resolution PU-002; Resolution PU-002-98-76-01 of May 14 of 1998 (Amendment to maritime limit - 9 nm)

Location: Vieques

Area: 4.40 km²

Owner: DNER, *Compañía Fomento Recreativo*², PRIDCO and public domain

Management: DNER

Description:

The Bahía Bioluminiscente de Vieques Natural Reserve has characteristics which differentiate it from other areas and make it one of utmost importance for wildlife. The area is composed of various marine communities, among which are Puerto Mosquito, Puerto Ferro and Bahía Tapón, which stand out for the presence of the bioluminescent phenomenon, among other valuable elements. Other communities of interest are the strip of mangrove which is developing among the banks of the three bays mentioned, the salty swamp near Bahía Tapón, the salt deposit to the north of Puerto Mosquito and the presence of coral reefs. Various endangered species have been spotted in the area including the white-cheeked pintail, the Key West quail-dove, the brown pelican, the manatee, the leatherback turtle and the hawksbill turtle.

² Currently Department of Sports and Recreation

NATURAL RESERVES DESIGNATED BY THE PRPB AND INCORPORATED INTO THE PRCZMP VIA RPC

Caño La Boquilla Natural Reserve

Designation Date: August/21/2002

PRPB Resolution: Resolution PU-002-02-29-01

Location: Mayagüez

Area: 0.47 km² and the maritime zone

Owner: Private and public domain

Management: DNER

Description:

The Caño La Boquilla Natural Reserve is a natural area important for the growth and development of many species of organisms. This is a system of wetlands of high ecological value consisting of a central canal with arteries which run perpendicular to coast and flows into the Mona Passage. Parallel to the coast other interior fresh water canals connect to the main canal.

River banks are covered by red and white mangroves along with swamp forest tree species that are disappearing in Puerto Rico such as the dragon blood tree. It is a valuable habitat for resident and migratory bird species, reptiles and fish with commercial and recreational value, mollusks and marine mammals. It also serves as a nesting area for the leatherback and hawksbill turtles, also classified as endangered species. Archeological sites dating back to the 18th and 19th Centuries have also been reported in the area.

Pantano Cibuco Natural Reserve

Designation Date: December/2/1992

PRPB Resolution: Twenty-first Extension to Resolution PU-002; PU-002-98-09-01 of November 5 of 1998 (Amendment to maritime limit - 9 nm)

Location: Vega Baja

Area: 3.93 km²

Owner: PRLA and public domain

Management: DNER

Description:

It is considered the second most important mangrove system in Puerto Rico, after the Piñones Natural Reserve. Also known as the Cibuco Swamp, it contains important wetlands, spring waters, sinkholes and estuaries. The Reserve is a bird sanctuary which includes many endangered species. It is through this Reserve that the legendary Río Cibuco flows into the Cibuco estuary, which is habitat for manatees as well as other marine life. In this estuary system there are wetlands, islets and coral reefs.

Laguna Cartagena Natural Reserve

Designation Date: January/1990

PRPB Resolution Number: Eighteenth Extension Resolution PU-002

Location: Lajas

Area: 3.13 km²

Owned by: PRLA

Management: USFWS

Description:

The Laguna Cartagena Natural Reserve contains a fresh water swamp important for the preservation of rare bird species which are endangered. More than half of the bird species indentified in Puerto Rico have been spotted in this lagoon or in adjacent hills. The lagoon seen today is what is left of what once was a very large body of water and one of Puerto Rico's most important fresh water habitats. Due to agricultural practices, about 90% of the lagoon was filled. Aside from the lagoon, there several high land sectors which include grass lands, abandoned sugar cane plantations and 1.07 km² of the Sierra Bermeja hill, which is geologically the oldest in the Caribbean and serves as protection for the native forest and many endemic plant species.

Canal Luis Peña Natural Reserve (RNCLP for its Spanish acronymn)

Designation Date: June/1/1999

PRPB Resolution: Resolution PU-002-99-77-01

Location: Culebra

Area: 4.75 km²

Owned by: Public domain

Management: DNER

Description:

The RNCLP extends from the Flamenco Peninsula to Punta Melones to the Luis Peña islet. The Reserve includes an ample diversity of habitats among which are marine prairies, prairies of macrophytic algae and communities associated with rocky environments. Some 83 different species of coral have been identified (Puerto Rico Coral Reef Initiative, 1999-2004).

Other documented species were fish (260 species); mollusks (192 species) y cnidaries (124 species); arthropods (54 species); sponges (48 species); and equinoderms (27 species) (Hernández et al., (2003c). Within the Reserve, more than one third of the sea bed is covered by a marine prairie (Hernández, 2004).

This Natural Reserve has a designation of “no-fishing zone”, whose purpose is to protect coral systems and the restoration of local fisheries.

Aguas Costeras de la Isla de Desecheo Natural Reserve

Designation Date: March/10/2000

PRPB Resolution: Law No. 57 March 10th, 2000

Location: Isla de Desecheo, located west of Mayagüez's coastline

Area:

Owner: Public domain

Management:

Description:

The marine communities of the Aguas Costeras de la Isla de Desecheo Natural Reserve are influenced by clear waters, strong currents and seasons of strong wave action caused by cold fronts moving across the Atlantic Ocean. The coral reefs found are possibly the best quality reefs found in all of Puerto Rico. In the coastal waters of Desecheo, massive and impressive corals - separated by banks of coral sands can be observed. In this environment, massive patch reef formations – the only one of their kind in Puerto Rico – have been observed and in which the Boulder star coral (*Montastraea annularis*) is highly abundant.

The reefs of the coastal waters of Desecheo are considered to have the most abundance of fish in Puerto Rico (Garcia et al., 2008). The diversity of fish includes species such as the blue reef chromis (*Chromis cyanea*), the creole wrasse (*Clepticus parrae*) and the royal gramma (*Gramma loreto*), among others.

Punta Guaniquilla Natural Reserve

Designation Date: October/30/2002

PRPB Resolution: Resolution PU-002-2002-55-03

Location: Cabo Rojo

Area: 1.70 km²

Owned by: DNER and PRCT

Management: PRCT

Description:

The Punta Guaniquilla Natural Reserve is composed of a coastal area that includes lagoons and limestone promontories. This area is considered critical for wildlife because it is used by migrating birds and numerous endemic species, native and residents, some classified as endangered. Furthermore, the area's geomorphology contains a cave system which includes the Cofresí Caves. This lends a unique landscape value to the area.

Here, both mangroves as well as herbaceous halophytes form a floristic combination which is common around the borders of coastal lagoons. In this area a population of plant species identified to be critically endangered exist, such as the zapotillo (*Manilkara pleeana*), the llume palm (*Gaussia attenuata*), the baill (*Oxandra lanceolata*) and the cobana negra (*Stahlia monosperma*).

This area is dominated by bird species common to shorelines that are also in greater abundance compared to others bird species characteristic of these lagoons, throughout most of the year. Species such as the ruddy turnstone and species in critical endangerment like the ruddy duck, the white tail tropic bird, the Caribbean coot and the brown pelican can be identified in this Reserve.

This Natural Reserve also houses the remains of an old sugar plantation known as La Romana. Also, eight archaeological sites have been identified which are believed to belong to the *taíno period* in Puerto Rico.

Punta Yeguas Natural Reserve

Designation Date: December/22/2000

PRPB Resolution: Resolution PU-002-2000-75-01

Location: Yabucoa

Area: 1.14 km²

Owned by: DNER and PRCT

Management: PRCT

Description:

The Punta Yeguas Natural Reserve is composed of a coastal landscape which includes palisades and deep coves covered by a dense humid forest between promontories raised over thin beaches of diorite sands. This Natural Reserve serves as a habitat for diverse and important native plant species among which is the ortegón tree – a species endemic to Puerto Rico whose populations are restricted to the island’s Southeast. The population of ortegón trees in this natural reserve is the most important among all protected lands destined by conservation in Puerto Rico.³

Belvedere Natural Reserve

Designation Date: February/21/ 2003

PRPB Resolution: Resolution PU-002-2003-55-4

Location: Cabo Rojo

Area: 1.00 km²

Owner: DNER and PRLA

Management: DNER

Description:



The Belvedere Farm is composed of a variety of natural systems which constitute a habitat for wildlife species, some of which are protected. The lands comprising this sector have a high natural value due to its high diversity in wildlife and in physical contiguousness to the

³ See <http://www.fideicomiso.org/>

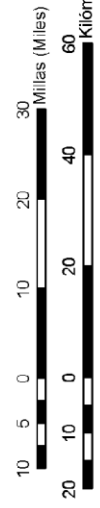
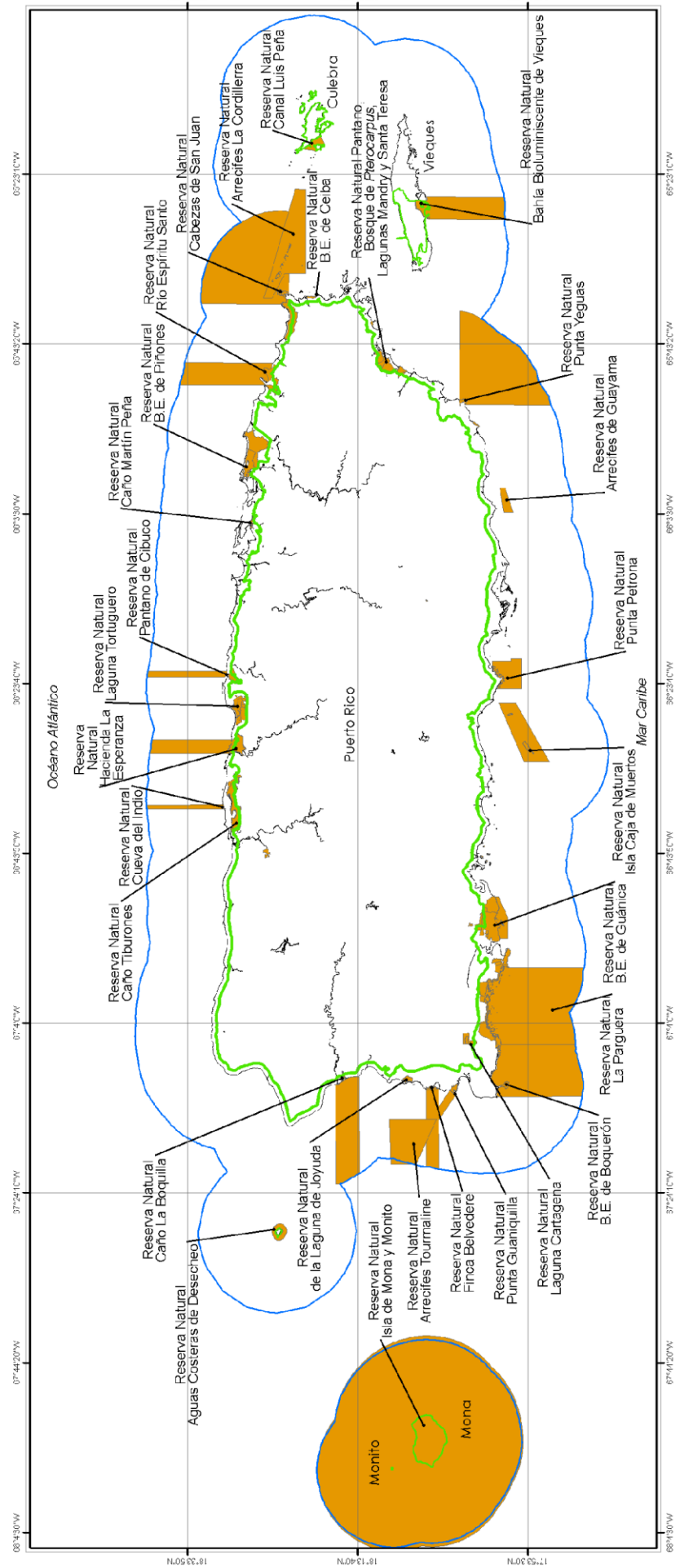
Boquerón Commonwealth Forest. The area includes coral reefs, mangroves, *thalassia* prairies and cays which have rarely been touched. Among the protected animal species inhabiting this ecosystem are the brown pelican, the yellow-shouldered blackbird, the Puerto Rican nightjar, the dry land lizard, the manatee and the hawksbill turtle. This last species nests on the beaches which exist in this zone.

Furthermore, the area offers a variety of topographic configurations and micro-environments which are favorable for the discovery of archeological sites. Specifically in the area of Punta Ostiones, located on the north part of the Belvedere Natural Reserve where one of the most important archeological findings in Puerto Rico is located. A large amount artifacts, remnants of food and instruments are still within the site at Punta Ostiones made this an excellent location for scientific investigations.

Leyenda - Map Key:

-  Límite de la zona costanera tierra adentro - Coastal Zone Inland Boundary
-  Límite de la zona costanera marina (9 millas náuticas) - Coastal Zone Maritime Boundary
-  Reservas Naturales / Natural Reserves

Escala - Scale 1:860,000



Reservas Naturales que forman parte del PMZCPR

Natural Reserves that Make Up the PRCZMP

Fuente de Información - Source:
 Departamento de Recursos Naturales y Ambientales



Programa de Manejo de la Zona Costanera
 Coastal Zone Management Program

SPECIAL PLANNING AREAS (SPA)

Piñones SPA

PRPB Management Plan Resolution: Resolution P. U. 002, July 14, 1992 and approved by the Governor of Puerto Rico on March 28, 1994 through Executive Order OE-1994-17.

Location: Loíza, Carolina and Canóvanas

Area: 39.53km²

Ownership: Private and public (DNER, PRDS, PRIDCO, DRS⁴)

Description:

The Piñones SPA contains one of the most important natural and cultural systems in Puerto Rico, as it offers a series of ecological and recreational benefits and serves as a barrier of protection against weather events for all of the San Juan Metropolitan Area. Its limit extends from the lagoons at Boca de Cangrejo to the mouth of the Río Grande de Loíza and includes an extension of haystack hills, beaches, sand dunes, lagoons, mangrove forests and fresh water swamplands, among other systems. It is also a low-density residential zone with an urban structure based on small communities including Vacía Talega-Piñones, which is used as a recreational area. Contiguous to its border is the Luis Muñoz Marín International Airport and an urban and tourism development project.

The Piñones Natural Area contains the largest mangrove area in Puerto Rico with representation from all mangrove species on the Island. Parts of this forest are protected by the limits of the Piñones State Forest. The Piñones Lagoon is one of the few places on the island with environmental conditions to sustain a population of bioluminescent organisms – a characteristic which increases the area’s scientific and recreational value. Furthermore, the area contains various kilometers of beaches in which marine sports such as swimming, scuba diving and sports fishing are practiced.

This SPA is also important in terms of its historical and cultural value. Its residents are mostly descendants of the original inhabitants of this area and conserve many of their ancestral customs. The community of Loíza Aldea, contiguous to the Area is an important community as is Punta Vacía Talega in which remains of an Indian village can be found and is considered an area of archeological importance.

The SPA Piñones Land Use Plan (1995) identified several social, economic and environmental problem areas among which are: the deterioration of its residents’ quality of life, inadequate land use patterns, proliferation of illegal housing and businesses, loss and contamination of areas of high ecological value, destruction of archeological sites, lack of infrastructure and services, construction on the maritime zone and an increase in traffic volume on road PR-187.

⁴ Currently known as the National Parks Company.

SPA Pandura-Guardarrayas

PRPB Management Plan Resolution: Has not been developed.

Location: Yabucoa and Maunabo

Area: 50.94 km² (34.73 km² in land area 16.21 km² in water)

Ownership: Public and private

Description:

Located on the Island's Southeast coast, the SPA Pandura-Guardarraya extends from the Yabucoa Valley in the north to the Sierra de Guardarraya to the south. Among the characteristics which distinguish this area is its scenic value framed by mountain ranges which extend all the way to the Caribbean Sea. Urban development in this area is primarily rural, but an increase in the proliferation of residential projects has been observed.

Its coastline is irregular due to rocky promontories such as Punta Guayanes to the north, Punta Yeguas and Punta Toro. The mouth of Río Guayanes and Río Maunabo also stand out in this area, which includes the Punta Yeguas Natural Reserve and the Humedal Punta Tuna Natural Reserve, this latter contains some of the best pond apple (*Annona glabra*) wetland in Puerto Rico.

Among the species identified in the area are the white-crowned pigeon and the Puerto Rican plain pigeon, the latter of which is an endangered species protected by federal and local laws. Also, the Puerto Rican demon coqui (*Eleutherodactylus cooki*), an endemic specie, can be found along the rock ridges at the Sierra de Pandura.

This area also includes the Yabucoa oil refinery facilities, agricultural lands and elements of historical value such as the Punta Tuna Lighthouse.

The scenic landscape and its attractive beaches make this area a rather unique part of the island. However, any development in these lands should take into consideration problems with water supply and the quality of this resource.

SPA Bahía de Jobos

PRPB Management Plan Resolution: Draft prepared by the DNER

Location: Guayama and Salinas

Area: 67.46 km² (25.86 km² of land and 41.60 km² of water)

Ownership: Public and private

Description:

The SPA Bahía de Jobos is located on Puerto Rico's Southern coast extending from the municipality of Guayama to Salinas Beach, close to Punta Salinas in the Municipality of Salinas. This SPA contains important resources such as forests, mangroves, cays and bodies of water. Two of the four segments which comprise the Aguirre Commonwealth Forest are located in this area and consist of mangroves and coastal plains.

The Aguirre thermo-electrical plant, one of Puerto Rico's key electricity generation centers, is also located in this SPA. Urban development in this area is primarily rural, but some urban

centers, some of them occupying land illegally (PRPB, DNER, NOAA 2000) can be observed. This SPA also includes places of historical and cultural value such as the old Aguirre Sugar Plant. Also, remnants of Taíno Indian villages have been found which indicates the presence of pre-colonial cultures in these lands.

A total of 87 bird species have been observed at Bahía de Jobos including the brown pelican, the peregrine falcon, the Puerto Rican plain pigeon and the yellow-shouldered blackbird, all of which are endangered (PRPB, DNER & NOAA, 2000). The Caribe and Barca cays, located to the southwest of Punta Pozuelo at the mouth of the bay, sustain an important colony of gulls.

Various fish species of recreational and commercial value can be found along to the roots of the mangroves. Despite the fact that the mangrove forest is not a pristine area, this coastal zone is considered to be one of the most productive for recreational and commercial fishing on the Island. Also, endangered species such as the hawksbill turtle and manatee can be found on the bay's shallow waters and find nourishment in the reefs and sea grass plains along the bay's floor.

The natural characteristics of this area, such as its protected natural structure, flat lands and the availability of underground water sources have been complemented with the development of port facilities and access routes which have served as an attraction for agricultural, industrial, recreational and residential development activity. This development has impacted natural systems in the estuary through non-point sources of pollution which affect the quality of the water. On the other hand, wetlands have been compromised and/or eliminated to make way for urban development. It is feared that unchecked use of the lands and waters from the Bahía de Jobos alluvial basin could threaten the stability of the estuary's ecosystem and increase the vulnerability of its residents (PRPB, DNER & NOAA, 2000).

SPA Southwest

PRPB Resolution for the Management Plan of SPA Southwest, La Parguera sector: Twenty-seventh Extension of Resolution P. U. 002, October 25, 1995 and approved by the Governor of Puerto Rico through Executive Order OE-1995-75 of December 5, 1995.

Location: Cabo Rojo and Guayanilla

Area: 264.82 km² (110.03 km² in land and 154.79 km² in water)

Titularidad: Public and Private

Descripción:

The SPA Southwest extends from Punta Ventana and the Bosque Seco de Guánica in the Municipality of Guayanilla to Punta Guaniquilla in Cabo Rojo. This area distinguishes itself for its industrial developments and its natural characteristics. The area is divided in three sub-areas: Boquerón, La Parguera and Guánica.

a. Guánica

This sub-area extends from Punta Ventana to Punta Montalva, including Guánica Bay, the Bosque Seco de Guánica and an industrial development. Development activity in nearby areas has negatively affected the resources in Guánica Bay. The Bosque Seco de Guánica is a unique natural resource within this sub-area.

The Guánica sub-area also has cultural and historical value since it is the location where United States troops initially landed in Puerto Rico and also includes the Guánica Lighthouse. The area is also host to various recreational activities in the public beaches of Caña Gorda, Bahía Ballena and Cerro Caprón.

b. La Parguera

The La Parguera sub-area is the only sub-area in this SPA with a Management Plan approved by the PRPB. This area extends from Punta Montalva to Punta Molina and includes the bays of La Parguera and Montalva. These lands also include the La Parguera Natural Reserve which includes two bioluminescent bays, salt deposits, mangroves, cays and islets and reefs, as well as archeological sites. This SPA also includes the La Parguera Natural Reserve's buffer zone and is divided into three zones which include the bioluminescent bays, Quebrada Fortuna and mangroves and salt deposits of La Parguera.

This region distinguishes itself for the presence of mangroves shore along with sea grass and algae which sustain a great diversity of species. In marine ecosystems, fish species of commercial value can be found along with mollusks such as conch and crustaceans such as lobsters. Protected species such as the hawksbill turtle, the green turtle and the leatherback turtle use the beaches for nesting and a great diversity of birds, including the Puerto Rican tody and the Venezuelan troupial, among others, nest in this zone.

The natural characteristics of this sector have made it attractive for the development of diverse economic activities which include residential, touristic, commercial and industrial development as well as education and research activities. The increase in these types of activities through the years has contributed to the deterioration of existing resources in the sector. Among the conflicts identified by the Management Plan for this sector are changes in demographic patterns and use of the soils, the excess illumination in the area, which affects the bioluminescent lagoons, the proliferation of structures on land and water which discharge directly into the lagoon and affect water quality and the population of *Rhesus* and *Pata* monkeys in the area, among other problems.

c. Boquerón

The Boquerón sub-area extends from Punta Molino to Punta Guaniquilla. However, the final draft of the Management Plan for the SPA Southwest-Boquerón sector, which is under consideration by the PRPB, recommends extending this area to Punta Guanajibo. This territorial extension will include the habitat of a great number of plants and animals since it will contain the mangroves part of the Boquerón Commonwealth Forest, the Boquerón Wildlife Refuge, Laguna Rincón, Punta Guaniquilla as well as the salt deposits, cays, islets, coral reefs, palisades, sea grass plains and bays in this sector.

The salt deposits and mangroves in the sector are home to 28 species of beach birds and 10 gulls, which are representatives of the majority of species in Puerto Rico. Land communities in the area include a diversity of migratory birds in relationship to the rest of the island and include species such as the Puerto Rican nightjar, swallows and warblers.

Boquerón's beaches and their sea grass plains provide important resources for endangered species such as the hawksbill turtle and the manatee. Other species identified as critical elements which have been observed in Boquerón include: the dry forest lizard (*Anolis cooki*),

the free-tailed bat (*Tadarida brasiliensis antillarum*) as well as a great variety of plants such as the cobana negra (*Stahlia monosperma*), a rare species in its distribution in Puerto Rico.

The sector also has historical and cultural value as it hosts the Los Morillo Lighthouse, designated as a historic site by the PRPB.

The natural characteristics of this sector have made it particularly attractive for recreational activities. A series of activities and land uses which, due to the location, nature and intensity, conform very little to current legal statutes and natural and historical resources of the area. The draft of the Management Plan for this sector identified the following conflicts: proliferation of structures in the maritime zone; the declaration of tourism zones and classification of lands incompatible with conservation of land of natural value in the SPA; intense recreational activities; excess of illumination in coastal areas where turtles nest; deforestation and erosion; location of communities adjacent to ecologically important areas; proliferation of the Rhesus and Patas monkeys and problems with ownership and deeds on lands contiguous to the natural area.

SPA Isabela-Aguadilla

PRPB Management Plan Resolution: Final draft under the consideration of the PRPB

Location: Aguadilla and Isabela

Area: 19.79 km² (13.24 km² in land and 6.55 km² in water)

Ownership: Public and private

Description:

The SPA Isabela- Aguadilla (SPAIA) extends from Bajura, between Isabela en the Jobos Sector, to Punta Agujerada to the north of the Borinquen Airport.

The area consists of sandy beaches and sand dunes – remnants of what once were great sand structures. The dunes protect from flooding caused by storms and wave action to low level areas, mangroves and adjacent communities while preventing the erosion of the coast. The island’s most important sand dune formations – the Jacinto Dunes – are included in this SPA. Some of the dunes have been severely weathered and have formed plateaus which constitute a very singular ecosystem.

This karst zone is the habitat for numerous species of plants and animals, such as the Puerto Rican boa (*Epicrates inornatus*), considered to be endangered, thus protected by local and federal statutes. The zone is also a habitat for the *Oplonia spinosa*, a bush which serves as a nesting area for the *Atlantea tulita* butterfly which is critically endangered.

The ocean waters in the SPA Isabela-Aguadilla are known for their underwater canyons and caves, among which are the Manatí Canyon and the Grieta de la Manta. These formations are found far from the coast and in them, a rich submarine life composed of corals, fish and giant rays exist. These caves and internationally known and are used by local and foreign tourists to practice scuba diving. Among the species identified in this system is the elkhorn coral

(*Acropora palmata*) which is listed by the Federal Government as endangered in the Caribbean region.

Off the coast of Aguadilla and Isabela, an underwater archeological site has been found which includes two English galleons sunken at a depth of 157 feet. These galleons contain relics such as vases, military equipment as well as gold and silver coins.

Starting in the 1980s and to the present, the final draft of the Management Plan for SPA Isabela-Aguadilla (DNER, 2008b) warns of an increase in residential development in the lands which make up the SPAIA, particularly in the area around the coastal zone of Isabela. The extraction of sand for construction threatens the stability and existence of the dunes system in the SPA. Furthermore, the Dunas de Jacinto site has been under extreme pressure due to the marked increase of urban and industrial development in the coastal zone.

SPA Laguna Tortuguero

PRPB Management Plan Resolution: Twenty-seventh Extension of Resolution P.U. 002 on September 1993 and approved by the Governor of Puerto Rico by Executive Order 1994-09 on March 4, 1994.

Location: Vega Baja and Manatí

Area: 75 km²

Ownership: PRLA, LA, PREPA, DNER and private

Description:

The SPA Laguna Tortuguero consists of the four zones which constitute the watershed of the Laguna Tortuguero between the Río Cibuco and Río Manatí and include the Laguna Tortuguero Natural Reserve, which is composed of a group of associated systems such as the Tortuguero and Rica lagoons. This SPA also includes karst zones, urban areas and land with high agricultural value.

The Laguna Tortuguero is one of island's most important bodies of fresh water. This area hosts an ecosystem of marshes and swamps which functions as a natural filter to trap sediments and contaminants while mitigating coastal erosion, run-off currents and water turbidity.

The diversity of flora existing in the wetlands and associated systems around the Laguna Tortuguero is particularly unique in Puerto Rico due to the presence of silica sand of various types over the limestone aquifer which is the source for this body of water. The Management Plan for this SPA identifies more than 700 species of plants, of which 57 are considered critical, two have been designated endangered while another four species are candidates for that designation. Furthermore, diverse types of forests are found on this land among which in the *Pterocarpus officinalis* species.

This SPA was classified as one of the habitats with the most diversity of species per square kilometer in Puerto Rico. Particularly, a great diversity of resident and migratory birds use this area among which are the West Indian whistling duck (*Dendrocygna arborea*) and the ruddy duck (*Oxyura jamaicensis*), both of which are endangered. There are also a great

number of reptiles and amphibians such as the Puerto Rican boa (*Epicrates inornatus*) and marine turtles such as the leatherback turtle and hawksbill turtle, classified as endangered, among other species.

Among the conflicts identified by the Management Plan for the SPA Laguna Tortuguero are: the decrease in the supply of underground water, water quality, the extraction of silica sands, increase in population and urbanization as well as a solid waste management problem, among others.

SPA Vieques

PRPB Management Plan Resolution: Has not been developed.

Location: Vieques

Area: 26.90 km² (130.0 km² total – 102.8 in excluded federal land)

Ownership: Public and private

Description:

Until 2003, Vieques was subjected to military practices by the U.S. Navy, which had retained ownership of close to 76% of the island or some 105.23 km². The purpose of this SPA was precisely to organize the use of the lands which were not subjected to military practices. Starting in 2001, the U.S. Navy began transferring these lands to the U.S. Department of the Interior (DOI), the Municipality of Vieques and the Puerto Rico Conservation Trust. However, the lands which were the property of the U.S. Navy are still considered to be federally-owned and have been excluded from the SPA Vieques. Part of the lands transferred to the DOI, to the east and west of the island, constitute the Vieques National Wildlife Refuge, which is administered by the USFWS. Portions of the excluded federal land are now part of the “Atlantic Fleet Weapons Training Area” Superfund.

According to the 2000 Census, Vieques’ population was 9,106 inhabitants who depend mostly on agriculture, fishing and tourism.

Precipitation on the island is minimal and there are no permanent bodies of water. Its vegetation is similar to the semi-arid areas of the Southwestern region of Puerto Rico and is resistant to high concentrations of salt and little water of water such as cacti, gramineae, xerophytes and semi-xerophytes bushes.

Vieques’ Southern coast is bordered by mangroves and bays such as Mosquito, Tapón, Puerto Ferro and Puerto del Manglar. Many corals found in Vieques and the ample insular platform provide for favorable conditions for the proliferation of marine life.

This SPA contains the Bahía Bioluminiscente de Vieques Natural Reserve, which is a great natural, touristic and scientific attraction due to the presence of the dinoflagellate *Pyrodinium bahamense* which creates the bioluminescent phenomenon in the waters of Bahía Puerto Mosquito, Bahía Tapón and Bahía Puerto Ferro.

Some of the conflicts identified in this area include: illegal constructions, problems with access to the beaches due to development along the coast, contamination of coastal waters due to erosion and sedimentation problems and the areas used for military practices.

SPA Puerto Rico Mangroves

PRPB Management Plan Resolution: Resolution P.U. 002-2003-Mangle PR of August 2003.

Location: Puerto Rico

Area: approximately 64.85 km²

Ownership: Public and private

Description:

All of the mangroves in Puerto Rico are included in this SPA. Mangroves have inherent functions which are of great value to human beings as well as associated ecosystems. These constitute the habitat for a great variety of species, some of which are endangered. Among the ecological and economic value of mangroves for Puerto Rico are: their characteristics as buffer zones; their capacity to produce oxygen in great quantity; basic link in the food chain for marine life in adjacent bodies of water, many of which are species of commercial or sporting importance; nesting area for species, both land and marine; exclusive habitat for great variety of birds; stabilizer for land to protect against erosion and sedimentation during weather events, among others. Mangroves are also intimately associated with bioluminescent bodies of water in Puerto Rico – a natural resource of unique scientific and touristic value.

The Management Plan for SPA Puerto Rico Mangroves recognizes that the type of economic development that is being carried out on the coasts is not compatible with the conservation of this valuable natural resource. With the purpose of protecting and managing Puerto Rico's mangrove areas, the SPA Puerto Rico Mangroves establishes management strategies for the conservation and use of these areas.

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