

Joining Forces for an Island of Biodiversity

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Nestled in the rain shadow of the Sierra Cristal, the U.S. Naval Base at Guantanamo Bay, Cuba, has baked in sleepy isolation from the other biodiversity hot spots of the Western



A hutia feeds in a *Phyllostylon* tree.

Photos by Peter J. Tolson



A *Coccothrinax fragans* palm forest near Windmill Beach.

Caribbean for more than 100 years. Now that “GTMO” has been thrust into the forefront of our nation’s defense against terrorism, our awareness of the strategic importance of the base’s 17 miles (27 kilometers) of perimeter fence has increased substantially. Fewer of us realize the value of this barrier in conserving a substantial component of Cuban biodiversity.

With an annual rainfall of less than 19.5 inches (500 millimeters) per year, the arid landscape of the Guantanamo Naval Base is dominated by tropical xeric (dry) habitats, precisely the habitats that are most imperiled throughout the West Indies. During an ecological assessment of the base completed in

1998, The Nature Conservancy identified no fewer than five forest alliances, three woodland alliances, and five shrubland alliances that comprise the plant communities of the base.

Fifty-one of the 193 plant species identified during the floristic surveys are endemic to Cuba, and four are endemic

to GTMO and the adjacent dry forests outside the fence line. Ten species are endemic to southeastern Cuba, eight to eastern Cuba, and nine to central and southeastern Cuba.

Endemic reptiles abound on the base, from the diminutive *Sphaerodactylus* geckos to the Cuban ground iguana (*Cyclura nubila*) and the Cuban boa (*Epicrates angulifer*), the largest terrestrial reptiles of Cuba. The size of these animals and the population densities are unusual. Cuban boas greater than 9.8 feet (3 meters) in total length are rare outside of the base, but are commonly encountered in a variety of GTMO habitats. Ground iguanas exist in greater densities on the base than anywhere else on the island. Conservatively, the base’s population of 2,000 iguanas represents more than 5 percent of the total number living in Cuba. At least 26 reptile species are found on the base. As on other Caribbean islands, native mammal biodiversity is low, with eight species of bats and one species of rodent, the hutia (*Capromys pilorides*).

Also contributing to this biodiversity are 167 species of birds identified by the Institute for Bird Populations, a nonprofit organization that fosters a global approach to the study of changes in bird populations, while it conducted avian field research at GTMO. Noteworthy among these are eight endemic species, including the bee hummingbird (*Mellisuga helenae*), the world’s smallest bird, and the Cuban tody (*Todus multicolor*), a small, colorful bird that digs tunnels in embankments for nesting. Thirty-one additional species are considered uncommon and 19 species are considered rare. The endangered

Antillean brown pelican (*Pelicanus occidentalis occidentalis*) is common on the base, and there are reliable sightings, as yet unconfirmed, of the endangered Cuban parrot (*Amazona leucocephala*) in a remote area of GTMO.

In a facility with more than 12 miles (19.3 km) of coastline, we might expect GTMO to have substantial marine resources. The quality of reef habitats and mangrove forests, habitats that have been substantially degraded elsewhere on the island, is excellent on the base. Coral reefs fringing the coastline and southern portions of Guantanamo Bay are relatively pristine. In addition to the many common coral species building the reefs, large stands of undisturbed staghorn (*Acropora cervicornus*) and elkhorn (*A. palmate*) corals are found here. Seagrass beds support an abundance of queen conch (*Strombus gigas*), and endangered West Indian manatees (*Trichechus manatus*) are frequently seen feeding in these areas. Mangrove forests and fringes provide habitat for a variety of birds, including nesting resident shore birds and neotropical migratory landbirds. Mangroves are also essential for many marine fish, and mangrove-dependent species such as snook (*Centropomus undecimalis*) and mangrove snapper (*Lutjanus griseus*) are quite common. GTMO beaches provide nesting habitat for four species of threatened or endangered sea turtles, and juvenile sea turtles are found frequently in and around the coral reef and seagrass habitats.

The Navy puts considerable effort into managing and conserving the natural resources of GTMO. New personnel indoctrinations include an environmental session where they learn about such subjects as hazardous material minimization, hazardous waste management, recycling, recreational fishing and diving, species at risk, and applicable regulations. Mission-essential operations are reviewed for environmental impacts and are planned to avoid adverse effects. These operations include live-fire

training in Caribbean ranges where environmental requirements include aerial surveys for endangered or threatened species, marine life, and other nontarget hazards before training exercises begin. Aerial surveys are also followed by spotter and safety craft to curtail operations should marine life or nontarget hazards enter the ranges during the exercises.

The GTMO staff of environmental professionals manages several research programs for endangered and threatened species. In addition to the bird surveys described above, ongoing cooperative research programs with the San Diego and Toledo Zoos study the ecology and demography of GTMO boa and iguana populations. The environmental office also places a strong emphasis on outreach and educational programs to inform base personnel of the importance of environmental and natural resource management. These elements combine to ensure awareness among the base residents and military mission planners about environmental and natural resources considerations during the daily living and working routine.

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A male Cuban ground iguana.



Phyllostylon brasiliensis/cactus forest.