

## Herps of Guantanamo Bay, Cuba

### **A look at the snakes, lizards and amphibians of Cuba.**

*By Jeff Lemm and Allison Alberts, Ph.D*

Because travel to Cuba from the United States has been restricted since the missile crisis in the early 1960s, few herpetologists have had the opportunity to work with Cuba's fascinating variety of reptiles and amphibians. For the past five years, we have been fortunate to travel to the U.S. Navy Base at Guantanamo Bay to conduct ecological field studies on the island's largest terrestrial reptile, the Cuban rock iguana, *Cyclura nubila nubila* (see Reptiles 5(8); August 1997). Over time, we have learned a great deal about the iguana and a number of the other unique reptiles and amphibians of the Guantanamo Bay region.

Although anoles are fairly easily detected by the trained eye, few people on the base have actually seen many of them. Photo by Jeff Lemm

The navy base at Guantanamo Bay lies in Oriente Province in the southeast corner of Cuba. It is the oldest overseas U.S. military base, originally acquired as a coaling station in 1903, but reaffirmed by treaty with Cuba in 1934 after the American fleet aided Cuba in the Spanish-American War. Guantanamo Bay is the only U.S. military installation located in a communist country. Termination of the land lease requires consent from both the United States and Cuba.

Because only 11 percent of the 20-square-mile base is actively used by the military, large areas of grassland, mudflats, thorn scrub and mangrove tidal forest remain in an almost pristine state (Silva Lee, 1997). Within these varied habitats numerous species of native birds, mammals, fish, reptiles and amphibians benefit from the protection the base provides.

While northern regions of Cuba are characterized by wet climatic conditions, southern Cuba, including Guantanamo, lies in the rain shadow of the Sierra Maestra Mountains and is primarily xeric. Dry, tropical forests dominate this starkly beautiful region. With air temperatures averaging from 82.4 to 86.0 degrees Fahrenheit (28 to 30 degrees Celsius) year round and an annual rainfall of 16 to 33 inches, it is no wonder that as many as 30 terrestrial herp species, 21 of which are endemic to Cuba, make Guantanamo their home (Silva Lee, 1997).

### Frogs and Toads

The most commonly seen nocturnal herps on the base are frogs and toads. They are usually observed foraging alongside giant land crabs on or adjacent to roads. The largest and most abundant anuran is an attractive and appealing brownish-red and yellow bufonid known as *Peltophyryne peltoccephalus*. Reaching lengths of roughly 5 to 7 inches snout to vent length (SVL), these charismatic creatures can be found in virtually every habitat on the base. During the heavy summer rains they reproduce in temporary ponds, with their tadpoles able to tolerate extreme fluctuations in water temperature (Silva Lee, 1997). Because dogs and cats frequently try to eat them and become ill, these toads are considered to be somewhat of a problem species.

The other toad inhabiting the base, *P. empusus*, is seen much less frequently than its larger cousin, preferring to remain in burrows outside the rainy season.

A single species of hylid frog is found at Guantanamo. The Cuban tree frog, *Hyla septentrionalis*, is actually quite common and occurs throughout the base, but seems to favor housing areas and buildings. On two occasions, these large tree frogs thoroughly surprised us by hiding inside rolls of toilet paper. When captured, they usually emit a shriek (also a common response by those awakening unexpectedly to find this frog burrowing in their hair, as loudly demonstrated by the junior author on her first night in Cuba).

Two other frogs found on the base, *Eleuthrodactylus atkinsi atkinsi* and *E. etheridgei*, belong to one of the largest genera of vertebrates, with over 300 species represented. Both species are relatively abundant at Guantanamo, where they can be found singing in the grasslands or trees or sitting on roads at night after light rains. *Eleuthrodactylus etheridgei* was first described from five specimens on the base (Schwartz, 1958) and measures roughly 1 inch SVL, whereas the larger *E. a. atkinsi* can reach 2 inches SVL. Like many other frogs in this group, *E. a. atkinsi* has direct development and does not depend on standing water for reproduction (Silva Lee, 1997).

### Lizards

With 19 taxa belonging to six families represented, lizards are the most commonly encountered herps at Guantanamo. The largest of these, the Cuban iguana, *Cyclura nubila nubila*, is very prevalent, probably because it is protected and the

penalty for molesting iguanas on the navy base is strict. Elsewhere in Cuba, iguanas are scarce outside of designated protected areas and certain offshore islands (Alberts, 1998).

Iguanas are most commonly found along windswept rocky cliffs on the coast where they compete with large capromyid rodents called hutias, *Capromys pilorides*, for food and shelter. Growing to lengths of over 4 feet and weighing as much as 20 pounds (9 kilograms), the Cuban iguana has become an unofficial military mascot and base residents routinely sunbathe and picnic on the beaches in close proximity to iguanas.

The second most prominent group of lizards on the base are the curly-tailed lizards, genus *Leiocephalus*. The largest of these, *L. carinata aquarius*, occurs in many of the same habitats as iguanas and has even been seen basking on their backs. Reaching total lengths of 7 inches, these lizards look somewhat like fence lizards (*Sceloporous* sp.), but with an upward-curved tail. Usually flat on the ground while the animal is resting, the tail curls up whenever the lizard moves, flashing its white underside. This behavior may serve to ward off predators, as the tightly curled tail bears an uncanny resemblance to a large eye. During the breeding season from April to May, male curly-tailed lizards can be observed performing "push-up" displays toward other males in defense of their territories. Occasionally, these displays become so intense that the animals propel their entire bodies up to 2 inches off the ground, a humorous sight to say the least. The two smaller curly tail species, *L. m. macropus* and *L. raviceps uzzelli*, are common in grasslands and thorn forests. Although similar in behavior, these two smaller species differ from the larger curly tail in appearance, with smoother scales and lighter brown colors that probably serve as important adaptations to life in the grassy scrub.

Although anoles are fairly easily detected by the trained eye, few people on the base have seen many of the seven species that occur there. Of the six small anoles at Guantanamo, *Anolis homolechis* is the most common. This species is found in a variety of habitats and is very abundant near housing developments. It resembles the Cuban brown anole, *A. sagrei*, yet males of *A. homolechis* are usually darker than females and the dewlap can range from yellow to white. *Anolis sagrei* is also found on the base, but amazingly is quite rare, contrasting sharply with its ability to invade non-native habitats in the United States, where it commonly outcompetes the normally ubiquitous *A. carolinensis* (G. Gerber, pers. comm.). Found on shrubbery throughout the base, *A. porcatius* is very similar to *A. carolinensis* in color and morphology, yet differs in its purple dewlap and whitish longitudinal stripe down the center of its back. It shows an affinity for housing developments, where its bright green color renders it cryptic among the tropical plants used by residents to landscape their yards. Another anole, *A. argenteolus*, is frequently encountered on the base and is quite striking in appearance. With their contrasting dark brown bodies and white reflective dewlaps, males can easily be seen displaying from a distance if their territory is invaded. Two smaller species, *A. ophiolepis* and *A. argillaceus*, are rare and only infrequently seen (Silva Lee, 1997). In our experience, Guantanamo's largest and most spectacular anole is surprisingly common, although previous investigators described them as rare (Silva Lee, 1997; Lando and Williams, 1969). With a SVL of nearly 8 inches and a total body length of more than 2 feet, *A. smallwoodi palardis* is one of seven giant anoles, or chipojos, found in Cuba (Silva Lee, 1996). Although rarely spotted during the dry season when they remain high in the canopy or deep within dense foliage, during the rainy season we found as many as six individuals in a single night. The majority were sighted as they slept on the outer branches of the tree *Capparis cyanophallophora*, between 6 and 15 feet off the ground. A few others were found in large fig trees (*Ficus* sp.) near housing settlements. These giant anoles are very shy but will deliver a powerful and painful bite if harassed, a less than endearing trait to which the senior author can personally attest. In 1995, seven of these animals were sent to the Fort Worth Zoo to establish a captive-breeding program. Within the first year, numerous clutches were laid and a number of offspring are now on exhibit at U.S. zoos, including San Diego.

In addition to the mainland of Mexico, Central and South America, ameivas are common on many islands of the Caribbean. At first glance, *Ameiva auberi*, the only ameiva at Guantanamo, closely resembles a whiptail lizard (genus *Cnemidophorus*). Although smaller than their American cousins, *A. auberi* live in sandy or dirt areas where they hunt insects with jerky movements highly reminiscent of whiptails. Olive brown dorsally, *A. auberi* has three light-colored longitudinal lines down the back, a bright blue tail and an orange snout.

Although less frequently seen, geckos are one of the most abundant groups of lizards at Guantanamo. Of the six species present on the base, the reef geckos (*Sphaerodactylus*) are the smallest, as well as the most numerous. Three species are common in gravel areas close to shore where they hide under wood or rocks during the day. Growing to no more than 2 inches in total length, the minute *S. notatus atactus*, *S. ruibali* and *S. torrei* are difficult to distinguish, although males and females are sexually dichromatic. All three species have been found in the same habitat and often under the same log (Lando and Williams, 1969). *Sphaerodactylus notatus atactus*, with its bright yellow keel-scaled tail, is the most conspicuous and distinctive reef gecko at Guantanamo.

*Tarentola americana* is the largest gecko found on the base, with adult males measuring up to 8 inches total length. Common only in natural areas, this vocal species has a very similar morphology and temperament to the Asian tokay gecko, *Gekko gecko*, yet is dull grayish-black in color, lacking the bright patterning characteristic of tokays. *Tarentola*

americana seems to prefer caves or foxholes, where it is often found in association with bats. The widespread tropical house gecko, *Hemidactylus mabouia*, also frequents caves, but it is much more common in and around residential areas.

Although we have not been fortunate enough to see them, three other lizard species have been noted on the base by other researchers. These include the rare yellow-headed gecko, *Gonatodes albogularis*, and two amphisbaenians, *A. cubana* and *A. innocens*. For each of these species, only a single specimen has ever been recorded from the base (Lando and Williams, 1969; Silva Lee, 1997). Amphisbaenids are probably not particularly rare on the base, but due to their subterranean nature are almost never seen.

#### Snakes

Six species of snakes representing four families inhabit Guantanamo, yet more than half of these are rarely encountered. At all times of year, the most abundant snake found on the base is the Cuban racer, *Alsophis cantherigerus adpersus*. This diurnal snake, which can grow up to 5 feet in length, is usually observed foraging in xeric habitats or cooling off under large shade trees. Although unique in many respects, this fast slender snake has the same snappy attitude as its North American relatives, but with the added adaptations of mild venom delivered via enlarged rear teeth and particularly pungent musk glands.

The second most common snake at Guantanamo is the Cuban boa, *Epicrates angulifer*. Prevalent in many areas, we often encountered this species at our iguana study site on the coast. Because this site possesses many deep underground crevices containing two favored food items--bats and hutias--it probably regularly attracts boas. Although juveniles and hatchlings are seldom seen, boas ranging from 5 to 12 feet in length are common. There have been anecdotal reports of animals up to 21 feet long, although the maximum recorded SVL is only 13 feet (Schwartz and Henderson, 1991). Most captive Cuban boas rarely exceed 8 feet and have a nasty disposition, but because the boas on the base reach extraordinarily large sizes and remain very docile, they are a favorite of base residents, many of whom have kept them as pets.

Although dwarf ground boas (*Tropidophis* spp.) are common on a number of Caribbean islands, as a result of its preference for wet habitats, the Cuban dwarf boa, *T. melanurus*, is rare at Guantanamo. The only specimen we ever saw was a large female, unfortunately found dead on the road during a heavy rain. Others who have successfully located dwarf boas on the base have done so during light rains on less accessible roads (P. Tolson, pers. comm.).

Three other snake species reside at Guantanamo, but are only known from a few sightings. Like the amphisbaenians, these species are probably fairly common, yet remain underground for most of their lives. Although the blind snake, *Typhlops biminiensis*, is purported to be rarer than the dwarf boa on the base, we were lucky enough to encounter three of these beautiful pink snakes, all of which were hiding under rotting wood in moist habitats. Reaching lengths of 15 inches, blind snakes typically feed on ants, termites and their pupae (Lando and Williams, 1969). The other two snakes occurring on the base, the burrowing colubrids, *Arrhyton landoi* and *A. taeniatum*, prefer some humidity, but *A. landoi* has been found in xeric areas as well (Schwartz and Henderson, 1991). The one burrowing snake we saw on the base, *A. landoi*, was in dry habitat underneath a board. When uncovered, the 10-inch-long hatchling immediately "swam" into the gravel, yet we were able to capture and photograph this beautifully striped animal. The burrowing nature of these snakes is reflected in their prey, which commonly include blind snakes and amphisbaenids (Schwartz and Henderson, 1991).

#### Aquatic Reptiles

Over the years, there have been sporadic reports of crocodiles in many of the more remote mangrove areas of the base and near the Cuban fenceline at the head of the Guantanamo River. Although base residents have referred to them as caimans, they have been documented to be American crocodiles, *Crocodylus acutus* (Silva Lee, 1997). Recently there were a number of sightings of these animals in the Guantanamo River, which drains into the bay from northwest Cuba. Some say the crocodiles are attracted to this region by a Cuban meat packing plant that routinely dumps scraps into the river. While we have yet to see a crocodile in this area despite many hours of river cruising, this unsavory practice could account for the two large tiger sharks we saw there.

Because sea turtles range so widely throughout the Caribbean, they were not included in the original species count for the base (Lando and Williams, 1969). Numerous species probably occur in the waters around Cuba, but the two most common turtles in Guantanamo Bay are the Hawksbill turtle, *Eretmochelys imbricata* and green turtle, *Chelonia mydas*. Throughout most of the year, sea turtles can be seen foraging near the marine grass beds. Incredibly, some of the larger green turtles have occasionally been observed swimming up to the beach and resting peacefully on the volleyball courts. Both species nest on beaches surrounding Guantanamo Bay, and are the focus of protective efforts and a local public education campaign. Unfortunately, the omnipresent vultures on the base are particularly adept at finding turtle nests and greedily dig up and consume the eggs.

### Final Thoughts

For such a small piece of land, Guantanamo Bay has experienced an unusually tumultuous history. Despite a series of drastic transformations from the early days of open commerce to its newest role as a safe haven for Cuban and Haitian refugees, the extraordinary biodiversity of Guantanamo has managed to survive intact. Whatever the future may hold, we can only hope that with awareness and stewardship the distinctive herps and other native wildlife of the Guantanamo region will continue to flourish.

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