Grzimek's Animal Life Encyclopedia

Second Edition

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Volume 7
Reptiles

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Microteiids
(*Gymnophthalmidae*)

Class Reptilia
Order Squamata
Suborder Lacertiformes
Family Gymnopthalmidae

Thumbnail description
Small, terrestrial, egg-laying lizards, usually fully limbed but some with reduced limbs, most of which are secretive inhabitants of the tropical forest floor

Size
Adults are less than 2.3 in (60 mm) in snout-vent length

Number of genera, species
36 genera; 175+ species

Habitat
Microteiids are usually found in leaf litter or under logs in tropical forests; several species live in wet areas and escape into the water

Conservation status
Not listed by IUCN

Distribution
Neotropical, ranging from southern Mexico to north-central Argentina east of the Andes, including Caribbean islands

Evolution and systematics

The Gymnopthalmidae were considered part of the family Teiidae throughout most of the twentieth century but are now considered distinct by most practicing herpetologists. The gymnophthalmids are sister group to the teiids, and these two families comprise a group called Teioidea, whose closest relatives are lizards in the family Lacertidae, which is restricted to the Old World.

There are 36 genera (or more depending on the source) in the Gymnopthalmidae and more than 175 species. The family is not well known. New forms are discovered and described regularly, and taxonomic rearrangements undertaken by experts will result in changes in the names and number of genera and species. The most speciose genera are *Proctoporus* (28 species), *Bachia* (18 species), *Anadia* (15 species), *Psychoglossus* (15 species), *Leposoma* (12 species), and *Neusticurus* (11 species). These account for about half of all the gymnophthalmids described by 2002. Twelve genera are monotypic, containing only one described species. No subfamilies are recognized.

Physical characteristics

The gymnophthalmids are small terrestrial lizards. Most species have fully developed limbs, with the exception of two genera, *Bachia* and *Calyptommatus*, that have limbs reduced or absent, respectively. Dorsal scalation is variable; many species have small dorsal scales. Strongly keeled dorsal scales characterize the genus *Arthrosaura*. Gymnophthalmids have ventral scales larger than dorsal scales that can be either smooth or keeled. There are no osteoderms dorsally or ventrally. Tail length varies, and each tail vertebra has a fracture plane that allows the tail to be easily broken. Gymnophthalmids have good visual and olfactory systems. They have well-formed eyes and eyelids.

Distribution

Gymnophthalmids are strictly Neotropical lizards that occur from southern Mexico to north-central Argentina east of the Andes. Several genera and species occur on Caribbean islands, for example *Gymnophthalmus* spp., *Tretioscincus bifasciatus*, and *Proctoporus* spp.

Vanzosaura rubricauda. (Photo by Laurie J. Vitt. Reproduced by permission.)

Habitat

Gymnophthalmids are inhabitants of the forest floor or wet areas associated with tropical forests. They are denizens of leaf litter and detritus and can be found under logs, rocks, or other debris. In an analysis of an ecological community of Amazonian lizards, Vitt and Zani reported in 1991 that three species of gymnophthalmids were restricted to leaf litter. One species was found in relatively sunny spots whereas another was more commonly found in shade. A third, *Leposoma percarinatum*, was found along edges of swamps with fluctuating water levels.

Behavior

Gymnophthalmids are actively foraging lizards but secretive and hard to observe. These small lizards forage for small arthropod prey on the forest floor in leaf litter. Species of *Alopoglossus* and *Neusticurus* escape predators by diving into the water.

Feeding ecology and diet

All gymnophthalmids are insectivorous, foraging for arthropod prey found in the microhabitats where they live.

Reproductive biology

Reproductive biology is described for only a few species. All known species lay eggs, and clutch size is probably two for most species. Species of *Gymnophthalmus* and *Leposoma* are parthenogenetic, consisting only of females that produce fertile eggs.

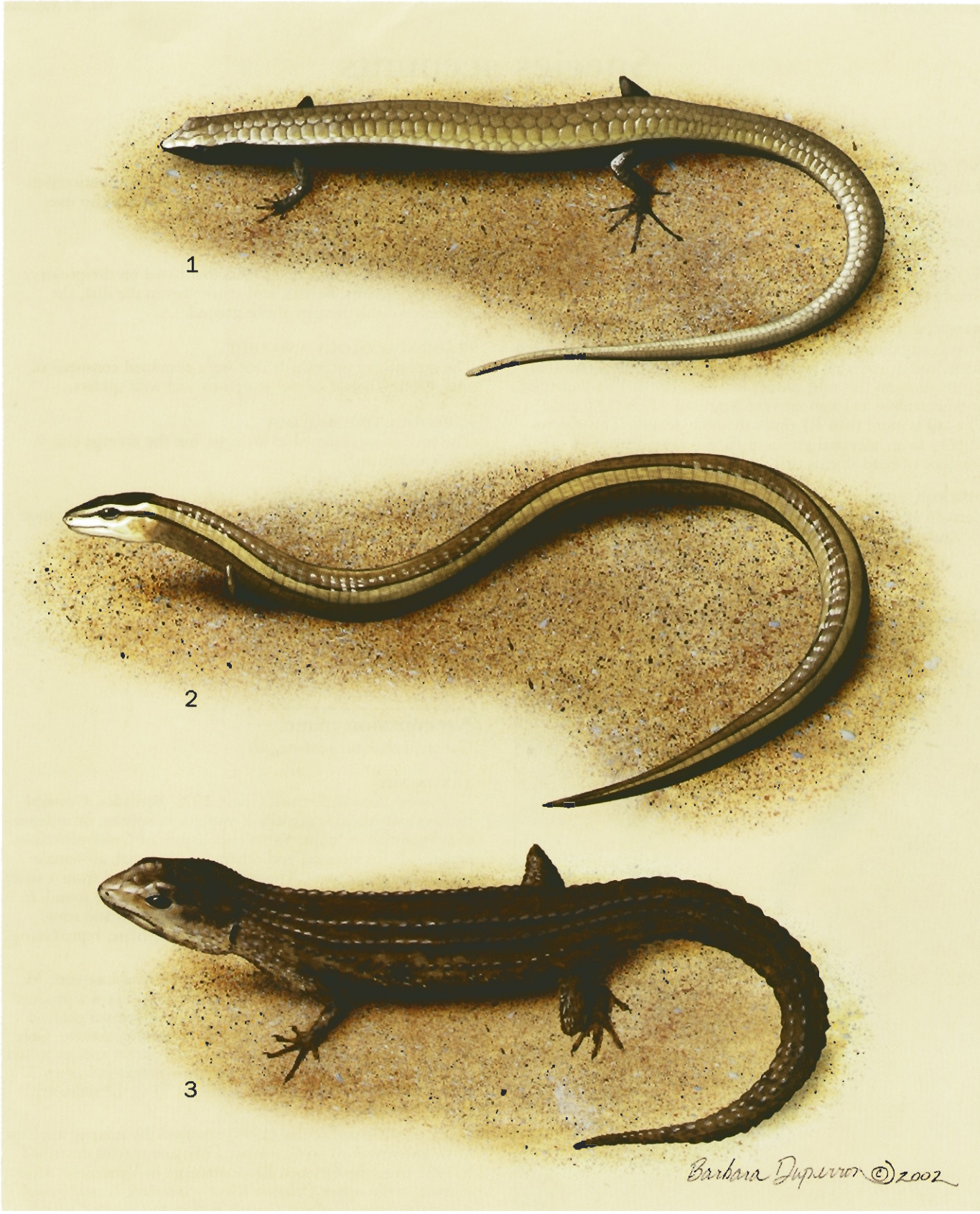
Conservation status

No species are presently listed by the IUCN, but gymnophthalmids are susceptible to habitat alteration.

Significance to humans

The significance of the gymnophthalmids to people is not readily apparent. The ecological role these lizards play in tropical systems may never be completely understood but may be important nonetheless. Gymnophthalmids are prey to myriad predators, and themselves consume a wide variety of invertebrate prey.

Alopoglossus angulatus. (Photo by Laurie J. Vitt. Reproduced by permission.)



1. *Gymnophthalmus underwoodi*; 2. *Bachia bresslaui*; 3. *Neusticurus ecpleopus*. (Illustration by Barbara Duperron)

Species accounts

No common name
Bachia bresslaui

TAXONOMY
Apatelus bresslaui Amaral, 1935, Estado de Sao Paolo, Brazil.

OTHER COMMON NAMES
None known.

PHYSICAL CHARACTERISTICS
This gymnophthalmids has an elongated body and tail, reduced limbs, and no external ear opening. Colli and others reported information on this rare species in 1998. The largest individual in their sample had a snout-vent length of 4.2 in (10.6 cm). The tail is more than 1.5 times the body length. This species belongs to an ancestral group of *Bachia*, as evidenced by the presence of head shields that are lost in derived taxa.

DISTRIBUTION
Cerrado ecosystem of central Brazil and northeastern Paraguay, South America.

HABITAT
The species is known to live in sandy soils. Distributional information is lacking and it is possible the species also uses other substrate types.

BEHAVIOR
Colli and others reported in 1998 that based on the presence of scorpions, ants, beetles, and other prey in the diet, the species probably forages above ground.

FEEDING ECOLOGY AND DIET
The diet of five individuals that were examined consisted of ants, beetles, beetle larvae, scorpions, and wolf spiders.

REPRODUCTIVE BIOLOGY
The species is presumed to lay eggs, but the average clutch size is unknown.

CONSERVATION STATUS
Not listed by the IUCN. This species may be more common and more widely distributed throughout the Cerrado ecosystem than previously thought. Threats include habitat destruction.

SIGNIFICANCE TO HUMANS
None known. ◆

No common name
Gymnophthalmus underwoodi

TAXONOMY
Gymnophthalmus underwoodi Grant, 1958, Barbados. *Gymnophthalmus underwoodi* is actually a complex of species, or independent evolutionary units. Some populations of *Gymnophthalmus underwoodi* are bisexual, and others are unisexual, all-female species (parthenogens). The species was described from a series of female specimens from Barbados; no males were found. It was later proved that the Caribbean populations and some South American populations are parthenogenetic, reproducing without males or sperm.

Charles J. Cole and others (1983, 1990) and Laurence M. Hardy and others (1989) showed that this species is a product of hybridization. They suggested that *G. underwoodi* evolved from *G. speciosus* and a yet-undescribed *Gymnophthalmus*. Cole not only predicted what the undiscovered parent species would look like, he also predicted the specific arrangement of its 22 pairs of chromosomes and the nature of 33 of the unknown species' proteins!

Later, Cole and others (1993) reported the missing ancestor of *G. underwoodi* to be *G. cryptus*, a bisexual species described in 1992 from the Orinoco River drainage in Venezuela. After it arose in the upper Orinoco River watershed, *G. underwoodi* dispersed throughout the Guiana region and reached islands in the West Indies. Because multiple hybridization events could have occurred, there may be other clonal lineages of *G. underwoodi* that exist in a complex of species. Experts presume that more cryptic species exist that have not been described by 2002.

OTHER COMMON NAMES
None known.

PHYSICAL CHARACTERISTICS
These are small microteiids with a snout-vent length of 1.4–1.7 in (3.6–4.3 cm). The tail is about 1.5 times body length. The body is cylindrical, and the dorsal and ventral scales are smooth. The limbs are fully developed but small, with four fingers and five toes. These lizards usually are shiny bronze or olive on back, darker on the flanks, with a light dorsolateral stripe. The tail may be the same color as the body or range from bluish to orange or red.

DISTRIBUTION
The *Gymnophthalmus underwoodi* species complex occurs in the Guianan region of South America and in Trinidad and other islands of the West Indies.

HABITAT
These lizards are found in open types of tropical forest in leaf litter or grass. They are often found in microhabitat patches exposed to direct sunlight.

BEHAVIOR
Gymnophthalmus underwoodi, like almost all gymnophthalmids, is a secretive denizen of leaf litter, and its behavior has never been studied. Because their diet consists of small surface-dwelling arthropods, it is likely these lizards actively search for their prey among leaf litter and under logs and other objects. They do not obviously bask, but they do occur mostly in leaf litter receiving direct sunlight. These lizards are part of a large group of lizards that are heliothermic, the Teoidea, almost all of which are strictly diurnal and not territorial.

FEEDING ECOLOGY AND DIET
In a study of an Amazonian lizard community, Vitt and Zani (1991) documented several orders of small insects in the diet of this species, specifically dermapterans, collembolans, and dipterans.

REPRODUCTIVE BIOLOGY
Like other microteiids, this species lays eggs. Clutch size may range from one to four with an average clutch size of two.

CONSERVATION STATUS
Not listed by the IUCN. Lack of knowledge about the ecology of this species complex impedes fully informed decisions about conservation needs. Threats include habitat destruction, and it will be difficult to assess the importance of habitat loss to cryptic species in the *G. underwoodi* complex until the distributions of different forms are understood.

SIGNIFICANCE TO HUMANS
None known. ◆

No common name

Neusticurus ecpleopus

TAXONOMY
Neusticurus ecpleopus Cope, 1876, Peru.

OTHER COMMON NAMES
None known.

PHYSICAL CHARACTERISTICS
The body is cylindrical and the limbs are fully formed with five fingers and five toes. The maximum snout-vent length in males is 3.3 in (8.4 cm) and the tail is 1.4–1.8 times snout-vent length. There are six longitudinal rows of tubercles along the back and tubercles along the flanks. The tail is moderately compressed with a double crest formed by tubercles. The snout is blunt and the gular region is enlarged in adult males. These lizards are brown with black and lighter spots on the dorsum and flanks. The belly is orangish to reddish. Avila-Pires (1995) reported a relatively high degree of geographical variation.

DISTRIBUTION
Western Amazon along the slopes of the Andes from southern Colombia south to Bolivia.

HABITAT
Neusticurus ecpleopus is found along the banks of forest streams living in leaf litter and using muddy stream banks.

BEHAVIOR
In their study of the ecology of *Neusticurus ecpleopus*, Vitt and Avila-Pires in 1998 found that the species was active throughout the day and inactive at night. They do not bask in the sun. These lizards frequently enter water and swim to the bottom to escape predators. The flattened tail is thought to facilitate swimming.

FEEDING ECOLOGY AND DIET
Although a variety of small insect prey are consumed, the diet information provided by Vitt and Avila-Pires (1998) showed the lizards mostly consumed fly larvae, crickets, and ants. It is likely the diet reflects the availability of small insect prey where the lizards happen to be living.

REPRODUCTIVE BIOLOGY
Like other gymnophthalmids, *Neusticurus ecpleopus* lays multiple clutches in a reproductive season, most likely in clutches of two, but the exact number and frequency is unknown.

CONSERVATION STATUS
Not listed by the IUCN. The species is not uncommon along primary forest streams within its range. Threats include habitat destruction, particularly since *Neusticurus ecpleopus* lives in primary forest.

SIGNIFICANCE TO HUMANS
None known. ◆

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Lee A. Fitzgerald, PhD

Whiptail lizards, tegus, and relatives
(Teiidae)

Class Reptilia
Order Squamata
Suborder Lacertiformes
Family Teiidae

Thumbnail description
Medium to large-sized diurnal, actively foraging, egg-laying, terrestrial lizards with well-developed limbs, long tails, and rectangular scales on the belly

Size
2–24 in (55–600 mm) snout-to-vent length; 5–51 in (120–1,300 mm) total length

Number of genera, species
9 genera; 18 species

Habitat
Forest, savanna, desert, and grassland

Conservation status
Extinct: 2 species; Critically Endangered: 1 species; Vulnerable: 1 species; Data Deficient: 2 species

Distribution
Middle North America (45° north) to southern South America (40° south), including Caribbean islands

Evolution and systematics

The whiptails, tegu lizards, and their allies make up the Teiidae, sister family to the Gymnophthalmidae. Throughout most of the twentieth century these families were classified together. Although many herpetologists still use the vernacular names, macroteiids and microteiids, these groups are now considered distinct families by practically all herpetologists. Teiidae and Gymnophthalmidae together form a lineage, Teioidea, which is sister to the Old World family Lacertidae (wall lizards, rock lizards, and their allies). Teiids and lacertids are so similar in appearance and ecology that it can be difficult to identify specimens to family without knowing their geographic origin. Because of their common ancestry, Teioidea (teiids plus gymnophthalmids) and Lacertidae belong to the suborder Lacertiformes.

An extinct subfamily of teiids, the polyglyphanodontines, existed in both North America and Mongolia in the Cretaceous period, an indication that ancient teiids once were widespread in the northern hemisphere. New and Old World polyglyphanodontines were distinguishable by the mid to late Cretaceous, but there is no consensus among experts whether teiids evolved in the New or the Old World. It is agreed, however, that teiids were extinct in North America by the end of the Cretaceous, whereas the family diversified in tropical America. North American *Cnemidophorus* species must have recolonized North America from South American ancestors.

Two subfamilies of Teiidae, Teiinae and Tupinambinae, are recognized on the basis of several characteristics of the skull bones and mandible. Members of Teiinae are distributed in North, Central, and South America, whereas Tupinambinae occur only in South America. Teiinae includes the genera *Ameiva*, *Teius*, *Cnemidophorus*, *Dicrodon*, and *Kentropyx*. With 56 known species in 2001, and others being described from South America, *Cnemidophorus* accounts for more than half of all the teiids. *Ameiva* and *Kentropyx* are well represented, whereas *Dicrodon* and *Teius* each contain three named species. The subfamily Tupinambinae contains the genera *Tupinambis* (six species), *Dracaena* (two species), *Callopistes* (two species), and *Crocodilurus* (one species).

The California whiptail lizard (*Cnemidophorus tigris mundus*). (Photo by Animals Animals ©Zig Leszczynski. Reproduced by permission.)

Physical characteristics

Teiids range from small (2.1 in [55 mm] snout-to-vent length, 4.7 in [120 mm] total length), such as in *Cnemidophorus inornatus*, to large (23.6 in [600 mm] snout-to-vent, 59 in [1,500] mm total length), such as in *Tupinambis rufescens*. They are fully limbed, terrestrial lizards that are diurnal, active foragers. All teiids lay eggs. Teiids are distinguished from Old World lacertids by having head scales not fused to the skull bones (fused in Lacertidae) and teeth that are solid on the base (hollow in Lacertidae). Teiid teeth are held to the jaws with cementum, a characteristic so distinctive that fossil teiid jawbones can be identified through the presence of this feature alone. Teiids are characterized as having small granular scales on the dorsum and rectangular plate-like scales on the belly. In one genus, *Kentropyx*, the belly scales are modified into pointed and keeled scales hypothesized to be an adaptation for climbing in bushy vegetation. Despite interesting morphological differences among genera, all teiids are relatively long bodied and long limbed with relatively narrow heads. All teiids have long tails, often more than 1.5 times body length. Fracture planes in each tail vertebra allow their tails to be easily broken. Teiids have good visual and olfactory systems. They have well-formed eyes and eyelids and long, forked tongues.

Distribution

Teiids are strictly New World lizards, distributed from the northern United States and through Mexico, Central America, and South America, except the extreme southern cone beyond approximately 45° latitude. Teiids, especially *Ameiva* and *Cnemidophorus* occur on many Caribbean islands. Teiids are widespread east of the Andes in South America and occur in the interandean valleys and coastal areas of Peru and southern Ecuador (e.g., *Dicrodon*, *Callopistes flavipunctatus*, and *Ameiva*). *Callopistes maculatus* occurs from northern to central Chile. *Dracaena guianensis* is Amazonian, whereas *Dracaena paraguayensis* inhabits the Pantanal ecoregion in Brazil, Bolivia, and Paraguay.

Habitat

As their continuous geographic range indicates, teiids are found in a variety of habitats, including wet and dry forests, primary and secondary forests, savannas, grasslands, deserts, and beaches. Regardless of habitat type, teiids need warm microhabitats where they can bask in direct sun to raise their body temperature for activity. For this reason, teiids usually are found using relatively open areas. In tropical forests, for example, they are frequently observed around treefall, along roads, and in clearings. The open habitats of deserts and beaches are well

A black and white tegu (*Tupinambis teguixin*) eating an egg in South America. (Photo by Animals Animals ©Zig Leszczynski. Reproduced by permission.)

suited to the teiid lifestyle, and teiids occupy almost all such areas in North and South America within their latitudinal range. Habitat use by teiids is clearly tied to their thermal biology. In Costa Rica, one researcher demonstrated the effect of body size on the ability of three species of *Ameiva* to use different habitats. The smallest species could heat and cool rapidly and used the hottest, most open habitat. The largest species used the most shaded forest, where it would not be susceptible to overheating, and the medium-sized species used forest that was intermediate in shadiness. Juveniles of the large species shared microhabitat with adults of the small species, a finding that added support to the idea that thermoregulatory needs are coupled to habitat use among the sun-loving teiids.

Two genera of teiids are semiaquatic, *Crocodilurus* and *Dracaena*.

Behavior

Teiids are classic examples of actively foraging lizards. Teiids generally live in burrows they excavate themselves or that are made by other animals. A typical macroteiid day begins with the lizard basking in direct sun to raise its body temperature. Whiptails, especially *Cnemidophorus* and *Ameiva*, prefer relatively high body temperatures for activity, commonly measured in the field at 98.6°F–140°F (37°C–40°C). Once activity temperatures are achieved, a macroteiid embarks on long foraging or mate-seeking expeditions within its home range. Teiids maintain high body temperature while active by shuttling between sun and shade.

Feeding ecology and diet

Teiids are opportunistic feeders, and they are very good at finding and taking advantage of concentrated patches of prey such as insect larvae, ants, and termites that they dig out of the leaf litter or other cover. An individual may find several food sources during a foraging bout, and their meals are made up of different kinds of prey. Across the family, prey size correlates with body size. The large species of *Ameiva*, *Teius*, and the tegus (*Tupinambis*) include large amounts of fallen fruit in their diets. Tegus are omnivorous, consuming vertebrate prey and carrion as they encounter it. Tegus also are known to be important egg predators and have been reported to be the most important predator of caiman nests in the Venezuelan Llanos. Tegus have heterodont dentition as adults with pointed teeth in the front of their mouths for seizing prey and molariform teeth in the back of their jaws for crushing hard

prey. Exceptions to the rule of opportunism among teiids are the caiman lizards (*Dracaena* spp.). These very large (more than 12 in [300 mm] snout-to-vent length), spectacular teiids are aquatic specialists that live around streams and swamps and feed primarily on snails. They have laterally compressed tails for swimming and foraging in water. Caiman lizards are named for the enlarged dorsal scales that look like crocodilian skin. Caiman lizards have a blunt head and molariform teeth for crushing their molluscan prey.

Reproductive biology

Teiids are not territorial, and several individuals' home ranges may overlap. Males are larger than females and compete for mates. Males follow receptive females and guard them against competing males. All teiids are egg layers. The number of eggs laid by females correlates with body size both among and within species. The largest species, *Tupinambis merianae* and *T. rufescens*, may lay approximately a dozen eggs when they reach sexual maturity, but by the time a female reaches maximum size, she may lay 30 or more eggs. The nesting ecology of most teiids is simple. Females deposit their clutches in the ground or within logs or debris. Tegus in southern South America, *T. merianae*, *T. rufescens*, and *T. duseni*, build elaborate nests of vegetation in their underground burrows into which they deposit their eggs. Females attend the nests throughout the incubation period. *T. teguixin* in northern South America lays its eggs in active termite mounds in trees.

The reproductive biology of whiptails and their allies is particularly noteworthy because of the existence of unisexual species. Unisexual species have no males, and individual lizards have no sperm. Mothers lay fertile eggs that develop into identical daughters, that is, clones. This mode of asexual reproduction is called parthenogenesis, and biologists sometimes refer to parthenogenetic species as parthenoforms. Parthenogenetic teiids arise when two sexual species hybridize. Parthenogenesis has been an important mode of speciation for whiptails of the genus *Cnemidophorus*, which contains at least 12 unisexual species. It is known, for example, that the unisexual desert grassland whiptail (*C. uniparens*) originated from hybridization events between the Texas spotted whiptail (*C. gularis*) and the little striped whiptail (*C. inornatus*). Hybridization events could easily have happened multiple times, hence parthenogenetic species exist in clonal complexes, as in the Laredo striped whiptail (*C. laredoensis*) complex. Some parthenoforms have the typical condition of two sets of chromosomes (diploid), whereas others have three sets (triploid). The advantage of parthenogenesis is that when a mother produces identical daughters, each of her genes doubles in frequency in each descendant generation. Because all the individuals are reproducing females, teiid populations grow more rapidly than do populations of sexual species. Within the Teiidae, there is a parthenogenetic species of *Kentropyx* and one of *Teius*; parthenogenesis also is known in seven other families of squamates.

Conservation status

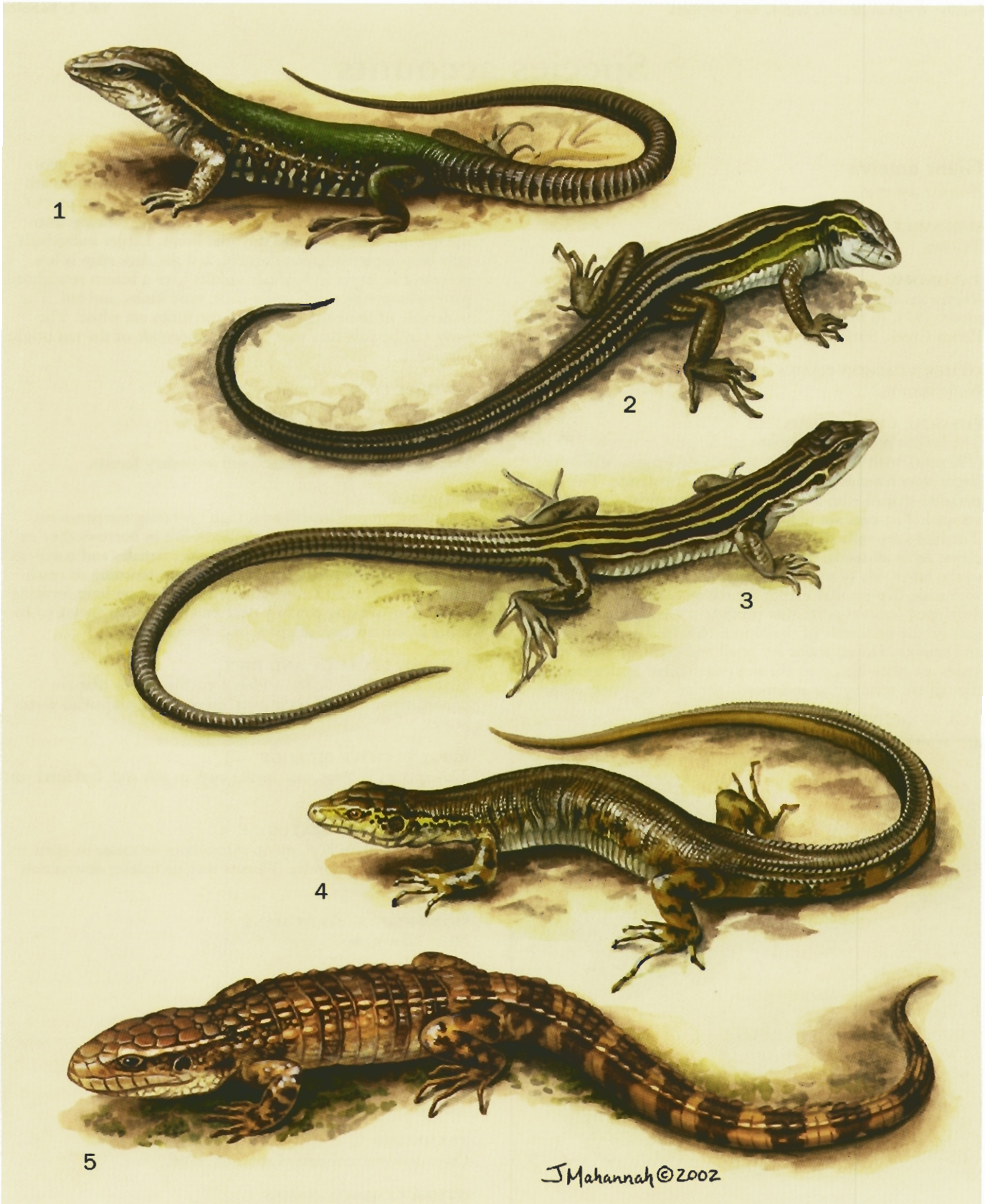
The Teiidae, for the most part, are common lizards that do well in a variety of habitats and in most circumstances appear to endure human influences. The *Ameiva* and *Cnemidophorus* endemic to Caribbean islands and the tupinambines subject to the pet trade and exotic leather trade are two major exceptions. Two species of *Ameiva* are categorized as Extinct by the IUCN, and another, the St. Croix ground lizard (*Ameiva polops*), is Critically Endangered. The St. Lucia whiptail (*Cnemidophorus vanzoi*) is listed as Vulnerable. There are not enough data to determine the conservation status of *Callopistes* and other macroteiids that have been exploited for the pet trade. Island-dwelling lizards are clearly sensitive to human impact, and conservationists need to be aware of threats to teiids on islands or in otherwise restricted geographic ranges.

Several species of tegu are commercially exploited in very large numbers as pets or for skins. There is a long history of commercial trade in two species of tegu lizards (*Tupinambis merianae* and *T. rufescens*) from Argentina and Paraguay. In the 1980s, an average of 1.9 million tegus were traded yearly for the exotic skin trade, making tegus among the most exploited reptiles in the world. Tegu skins are prized for the pattern of tile-like belly scales, and they are used for cowboy boots, shoes, belts, and other exotic leather accessories in North America, Europe, and southeast Asia. Tegu lizards are listed in CITES Appendix II, and the trade is legal and monitored internationally. Harvest quotas are 1,000,000 for Argentina and 300,000 for Paraguay, and both countries have established management programs for the lizards that depend on trade controls and harvest monitoring. The caiman lizards (*Dracaena* spp.) have been exploited for their skins but not as extensively as the tegus. Tegus, *Callopistes*, and several species of *Ameiva* have appeared in the pet trade in large numbers. Mainland macroteiids appear to have a life history that enables their populations to withstand harvest by humans, but prudent conservation will require careful monitoring and management programs to ensure the take is sustainable over the long term.

Significance to humans

People have used tegu lizards for as long as there are historical records. South American Indians hunt and eat tegu, and tegu lizards are exploited commercially for their skins. In the areas where skins are traded, hunters sell the skins and consume the meat. Tegu fat is prized throughout Argentina and Paraguay for medicinal purposes. The trade in tegu lizards is economically important to local people and to the tanning industry. Thousands of hunters contribute to the total harvest of one million skins annually, and the export value of tegu skins is several millions of dollars.

The significance of the smaller teiids to people is less apparent, but these animals may still be important. Teiids are prey to myriad predators and themselves consume a variety of invertebrate prey and disperse seeds of the fruit they eat. Whiptails and their allies can occur at relatively high population densities and probably play an ecological role in their habitats. *Cnemidophorus tigris* has been studied in the Mojave desert, for example, and its populations have been shown to track its key habitat resources remarkably closely.



1. Giant ameiva (*Ameiva ameiva*); 2. Six-lined racerunner (*Cnemidophorus sexlineatus*): 3. Desert grassland whiptail (*Cnemidophorus uniparens*): 4. Crocodile tegu (*Crocodilurus lacertinus*): 5. Caiman lizard (*Dracaena paraguayensis*). (Illustration by Jacqueline Mahannah)

Species accounts

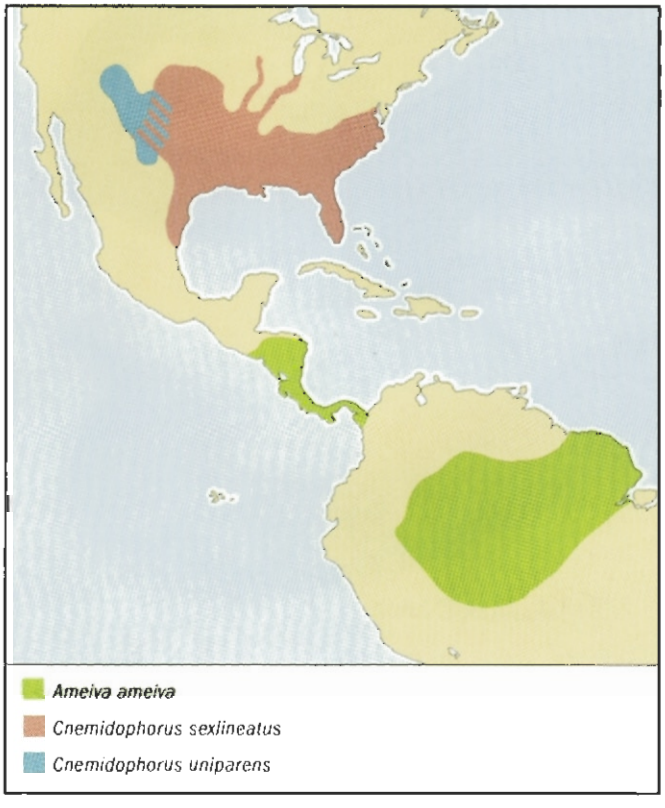
Giant ameiva
Ameiva ameiva

SUBFAMILY
Teiinae

TAXONOMY
Ameiva ameiva Linnaeus, 1758, America, restricted by Hoogmoed, 1973, to the confluence of the Cottica River and the Perica Creek, Suriname.

OTHER COMMON NAMES
None known.

PHYSICAL CHARACTERISTICS
The largest males reach snout-vent lengths of nearly 7.87 in (200 mm), with the tail about twice body length. Males are larger than females with enlarged jaw musculature. The head is pyramid-shaped with a blunt snout. The tympana are well developed. The eyes are fully developed with functional eyelids. The limbs are fully developed with five fingers and toes with claws. As in all teiids, the teeth are pleurodont, being attached to the inner side of the jaw. The tongue is forked and covered with scale-like papillae except for the smooth tips. Well-developed femoral pores that produce a waxy secretion are present on the underside of the hind limbs. Head scales are large and smooth. Dorsal scales are small and granular. The ventral scales are plate-like, smooth, and rectangular. Scales around the tail are rectangular and mostly keeled except near where the tail joins the body. Color pattern varies across the geographic range of this species and also with age. Juveniles are mostly brown, sometimes with the head and anterior part of the back green, with a dark strip on each side running from the eye down the flanks to the hind limbs. Larger individuals may be completely green dorsally, and the dark strip is less prevalent in larger individuals. Adults have a brown reticulated pattern anteriorly, with green back, hind limbs, and tail. The underside of the head, chest, and forelimbs are white. The belly can be pale turquoise and the underside of the tail bright turquoise.



DISTRIBUTION
Central and South America.

HABITAT
Wet and dry forests, primary and secondary forests.

BEHAVIOR
These are diurnal lizards with high operating temperatures around 98.6°F (37°C). Giant ameivas live in burrows they excavate themselves. Males are larger than females and compete for mates. These active lizards bask in the morning to reach preferred operating temperature and embark on long foraging expeditions seeking patchily distributed prey that they find by using a combination of visual and olfactory cues.

FEEDING ECOLOGY AND DIET
Giant ameivas are active, widely foraging lizards that are opportunistic feeders on insects, fallen fruits, and small vertebrates.

REPRODUCTIVE BIOLOGY
This species is oviparous, laying eggs in soft soil, leaf litter, or rotting logs.

CONSERVATION STATUS
The giant ameiva is common throughout its range in open areas in wet or dry forests. Threats include habitat destruction and alteration.

SIGNIFICANCE TO HUMANS
None known. ◆

Six-lined racerunner
Cnemidophorus sexlineatus

SUBFAMILY
Teiinae

TAXONOMY
Cnemidophorus sexlineatus Linneaus, 1766.

OTHER COMMON NAMES
French: Cnémidophore à six raies; German: Sechsstreifen-Rennechsen.

PHYSICAL CHARACTERISTICS
Adults average 2.1–2.9 in (55–75 mm) in snout-to-vent length, with a maximum size of 3.3 in (85 mm). Females are slightly

larger than males. Individuals are striped without spots, with seven longitudinal light stripes on the greenish brown to black ground color. The head, neck, aud anterior part of the body are bright yellowish green. The tail is bright blue in hatchlings and fades to brown in adults.

DISTRIBUTION
Eastern North America in the United States from Chesapeake Bay south to Key West, west to southern South Dakota, sourh to eastern New Mexico.

HABITAT
This species occurs in xeric habitats that are relativcly open with patchy vegetation and well-drained soil.

BEHAVIOR
These teiids overwinter in burrows that they excavate themselves or that were made by other animals. They emerge in April over most of their range, and activity peaks in midsummer. Palmer and Braswell (1995) reported that in North Carolina they are the "last lizards to become active in the spring and the first to enter hibernation in the fall." Hatchlings appear in late summer, by which time adults are not nearly as active. Six-lined racerunners, like other teiids, are heliothermic lizards thar prefer relatively high body temperatures. They are active on hot sunny days. Mark Paulissen (1988) studied foraging ecology, activity, and temperature selection by these lizards and reported a mean body temperature of 98.2–98.8°F (36.8–37.1°C). While active, six-lined racerunmners thermoregulate by shuttling between sun and shade. They hide under rocks, logs, trash piles, or any suitable object that gives them safe refuge. Six-lined racerunners use speed as their defense.

FEEDING ECOLOGY AND DIET
These are active foraging lizards that feed opportunistically on insects and other arthropods, often digging up hidden prey. Dietary studies document feeding on grasshoppers, spiders, butterflies, moths, land snails, beetles, beetle larvae, and ants.

REPRODUCTIVE BIOLOGY
Females reach maturity in their second season and lay one to six eggs in a clutch depending on their body size and reproductive frequency. Nesting takes place in spring and summer, and hatchlings appear by mid July. Hatchlings are 1.2–1.8 in (31–45 mm) snout-to-vent length.

CONSERVATION STATUS
Not threatened.

SIGNIFICANCE TO HUMANS
None known. ◆

Desert grassland whiptail
Cnemidophorus uniparens

SUBFAMILY
Teiiinae

TAXONOMY
Cnemidophorus uniparens Wright and Lowe, 1965.

OTHER COMMON NAMES
Spanish: Huico de pastizal-desértico.

PHYSICAL CHARACTERISTICS
This is a small, all-female whiptail with a maximum snout-to-vent length of 3.4 in (86 mm). It is striped without spots, containing six cream to white stripes on the olive-brown to black background. The venter is white. The tail is bright blue in hatchlings and blue-green to olive-green in adults.

DISTRIBUTION
Chihuahua, Mexico, north in Chihuahua desert to central New Mexico, United States, west to Sonora, Mexico, and southeastern Arizona, United States.

HABITAT
Desert grassland.

BEHAVIOR
This whiptail is mostly active during morning, with a smaller peak of activity in late afternoon. As do those of most teiids, the home ranges of individuals overlap.

FEEDING ECOLOGY AND DIET
As do other whiptails, these active foraging lizards feed opportunistically on insects and other arthropods.

REPRODUCTIVE BIOLOGY
The desert grassland whiptail is an all-female species that reproduces parthenogenetically. Reproductive individuals may express both male-like behavior and initiate pseudocopulation with other females. This behavior stimulates reproduction in captivity, but its significance in natural populations is unknown. Females attain reproductive maturity at 2.4 in (60 mm) snout-to-vent lengrh and lay one to four eggs depending on size.

CONSERVATION STATUS
Not listed by IUCN.

SIGNIFICANCE TO HUMANS
None known. ◆

Crocodile tegu
Crocodilurus lacertinus

SUBFAMILY
Tupinambinae

TAXONOMY
Crocodilurus lacertinus Daudin, 1802. Islands adjacent to tropical South America.

OTHER COMMON NAMES
None known.

PHYSICAL CHARACTERISTICS
The crocodile tegu is the only species in its genus. It has a typical marcoteiid body form anteriorly, but the tail is at least twice body length and laterally compressed. Dorsal scales along the tail converge into one row, as in a crocodile's tail. Adults are brown or greenish above with orange mottling on limbs. The venter is yellow or whitish.

DISTRIBUTION
Amazon hasin and upper Orinoco River drainage, South America.

HABITAT
Forested stream sides.

BEHAVIOR
This species is semiaquatic, foraging along water's edge or in the water. Crocodile tegus are excellent swimmers, using the laterally compressed tail to propel them through the water. These lizards may forage in water and escape predators by diving into the water.

FEEDING ECOLOGY AND DIET
These are opportunistic feeders of insects and other arthropods.

REPRODUCTIVE BIOLOGY
This species is oviparous, but details of its natural history are not well studied.

CONSERVATION STATUS
Not threatened, and widespread in most of its range. Threats include habitat destruction.

SIGNIFICANCE TO HUMANS
None known. ◆

Paraguayan caiman lizard
Dracaena paraguayensis

SUBFAMILY
Tupinambinae

TAXONOMY
Dracaena paraguayensis Amaral, 1950. São Lourenço, Mato Grosso, Brazil.

OTHER COMMON NAMES
French: Dracène de la Guyane; German: Krokodilteju.

PHYSICAL CHARACTERISTICS
These are large teiids that may reach more than 39 in (1 m) total length and more than 17.7 in (450 mm) snout-to-vent length. Individuals have large, blunt heads and molariform crushing teeth for dealing with hard-shelled molluscan prey. The dorsum has enlarged scales that look like a crocodile's scutes. The tail is laterally compressed with two rows of crest-like scales.

DISTRIBUTION
Pantanal region of southwestern Brazil and northern Paraguay.

HABITAT
Seasonally flooded freshwater marshes and savannas in the Pantanal region.

BEHAVIOR
This semiaquatic lizard basks on tree limbs and on the banks of pools and water courses. It forages in the water for snails. Excellent swimmers, caiman lizards use the laterally compressed tail to propel themselves through the water. They forage in water and escape predators by diving into the water.

FEEDING ECOLOGY AND DIET
Specialists on snails as prey, caiman lizards capture large freshwater snails and crush them in powerful jaws. They have specialized molariform teeth for crushing hard prey.

REPRODUCTIVE BIOLOGY
This species is oviparous, but few details of its natural history are known.

CONSERVATION STATUS
Not threatened, and common in the Pantanal ecoregion. Caiman lizards are valued by the exotic leather trade for their skins, which are used to make leather for boots and other fashion accessories. Threats include destruction of wetlands in the Pantanal and direct overexploitation of the species for the skin trade. Trade levels in the 1990s were not high, but no management plans for the species are in place.

SIGNIFICANCE TO HUMANS
Local people in parts of the species' range often believe the myth that caiman lizards are venomous and dangerous. Their skins are valued by the exotic leather trade. ◆

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