
Lizards of the World



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What are lizards?



Lizards are the most diverse group of the Squamate reptiles scattered across all continents except Antarctica. Although most lizards generally share similar anatomical and physiological characteristics, the Squamate group contains over 6,000 sub-species that vary in their diet, physical appearance, behavior, and overall distribution. Most lizards are relatively small animals, like the **Leopard Gecko that measures 15-25cm** in length, except some like the Komodo Dragon that can grow up

to 3m. Some of lizards' distinguishing features are their rounded torsos with trunk bones that extend to the tail, short necks attached to quadrate skulls, four limbs/legs, and long tails. Similar to other reptiles, lizards produce overlapping scales that reduce water loss and act as protectors from the environment. They have long tongues, some forked, stretching outside the mouth to catch prey or lick their eyes to clean themselves, as in the gecko lizards.

The Evolution of Lizards

The first land vertebrates, the Tetrapoda, appeared 397 million years ago. During these early stages, both their eggs and larvae required a large body of water, such as a pond, river, or lake, to survive. Through the Early Pennsylvanian Epoch, the early tetrapods' evolution split into two, with one lineage leading to amphibians, preserving aquatic reproduction, and the other to Amniota.

Although the timing of the emergence of early reptiles is yet to be firmly established, fossil evidence from the Middle Pennsylvanian Epoch (318-312 million years ago) shows early reptiles together along with synapsids, which were reptiles with mammalian features, signaling their evolution during this period. Both possessed extraembryonic membranes, an adaptation that would lead to the evolution of terrestrial egg reproduction.

The earliest known true terrestrial reptile is the *Hylonomus*. This small, forest-dwelling reptile looks similar to modern lizards as they are up to 25cm in length, including the tail, and possess small sharp teeth for catching insects.

Lizards are diapsids, part of the group *Lepidosauromorpha*, which have first thought to appear in the Late Permian. However, reptiles today are only representative of a portion of the species that have previously existed.

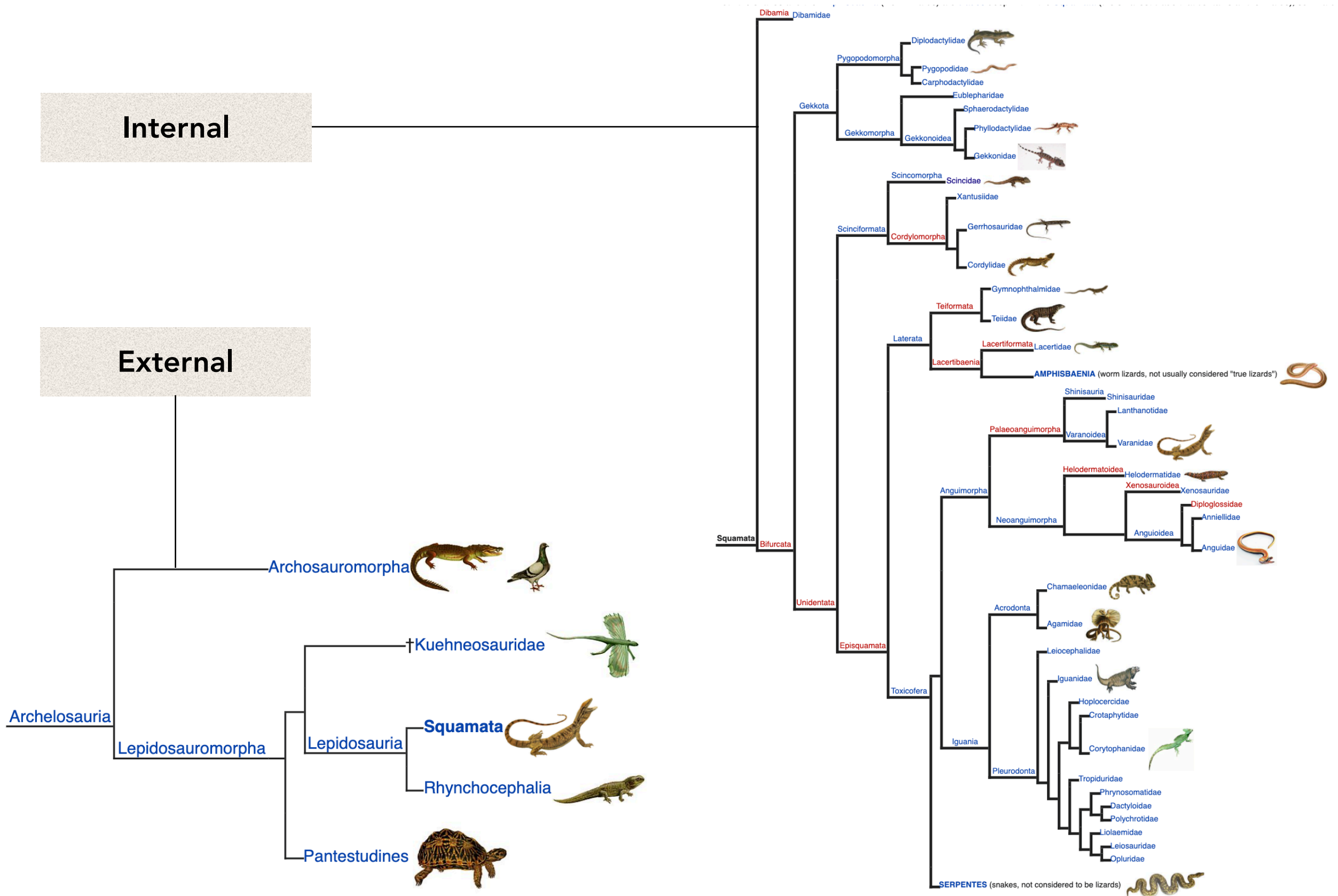
The evolutionary separations of lizards categorize into five key moments: 1) Diversification of Iguanas, 2) Evolution of Geckos

(*Scleroglossa*), 3) *Branching of Gekkonidae*, 4) *Diversification of Diploglossa*, 5) *and the Evolution of Snakes*. During these stages, lizards developed optical nerve systems to track moving prey and their chemical sensory systems in their tongues to effectively catch prey - for olfactory and food detection.

During each key movement of the evolutionary stages, lizards underwent drastic morphological changes to adapt to their surrounding conditions. Limbs changed by elongating, shortening, or even disappearing; tongues had a functional revision altogether and for some species even splitted into two nodes; eyes and ear sizes reduced or disappeared with new mechanisms that allowed them to detect the surroundings, temperature, and chemical hormones, replacing the functions of eyes, ears, and other sensory organs. Some species even developed a system to communicate through ultraviolet (UV) radiation. However, one exception is the *Varidanae* lizards or monitors. Their initial evolution was very fitting for their survival in their habitat. As most of their original body structure remained unchanged, their fossils that are 800,000 years old are very similar to that of modern-day descendants.

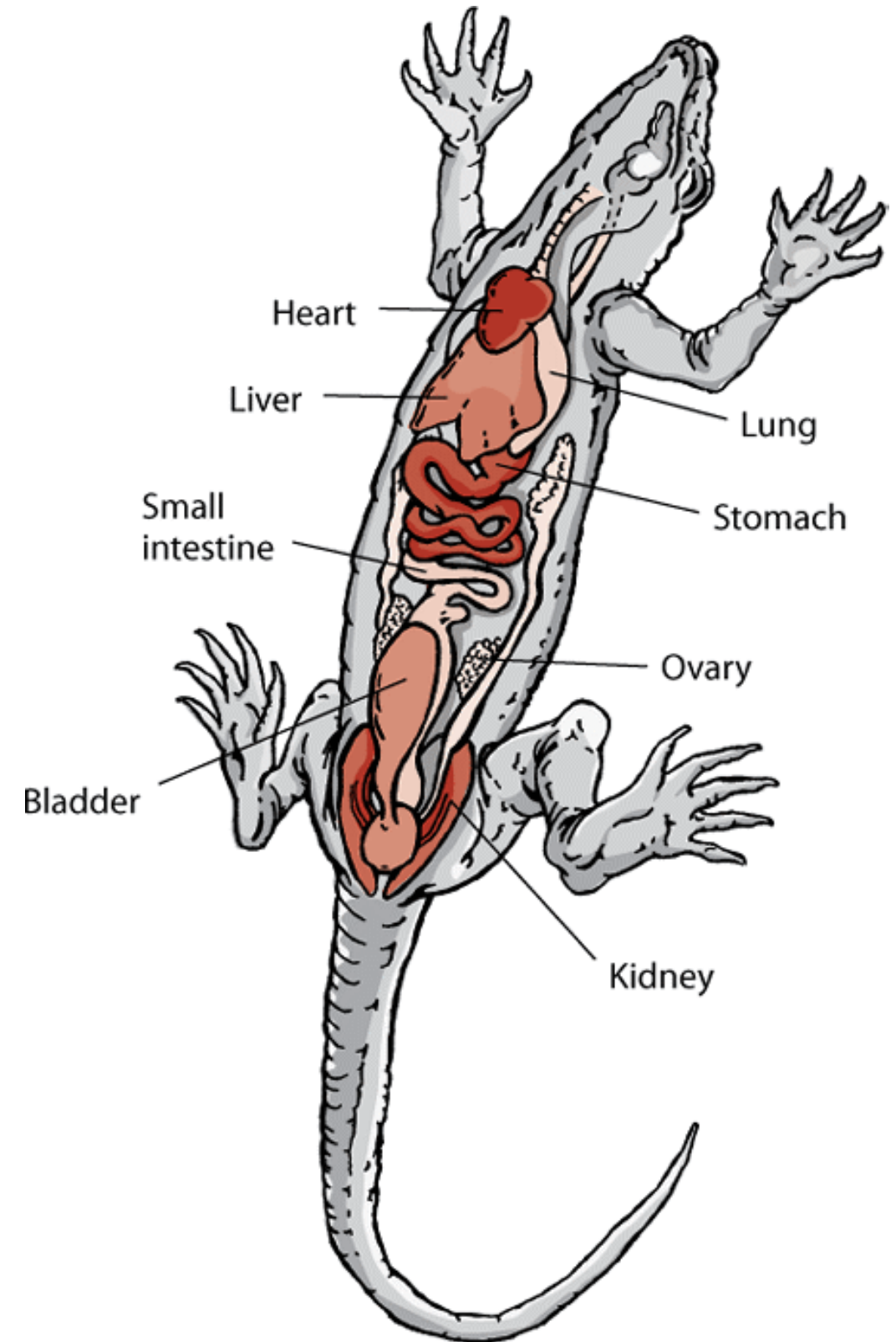
By the late Jurassic period, the main branches of lizard evolution were determined: Iguana, Gecko, Tuatara, and Anguinae.

Phylogeny (Internal and External)



External Anatomy

Lizards have dry skin with scales that vary in texture. In some species, the tail is fragile and can break off and regenerate, though not perfectly, **or even act as protective mechanisms in cases of predators**. Lizards adapt to various environments **over time** as they can swim, climb, and even glide; they also have clawed **or webbed** feet that assist them in climbing **or when traveling on water**. Lizards use their tongues to smell. As their tongue captures air particles to bring them into the mouth, a specialized organ detects the scent. Lizards also have external ears that allow them to have better hearing than snakes. **Some** have eyelids that protect and clean their eyes when they blink, **while others have** fixed eyecaps. Some lizards, including the chameleons and anoles, have specialized features like the color of their scales that can camouflage. Males of some species even have a dewlap, a loose flap of skin that can extend to intimidate or attract **females**.

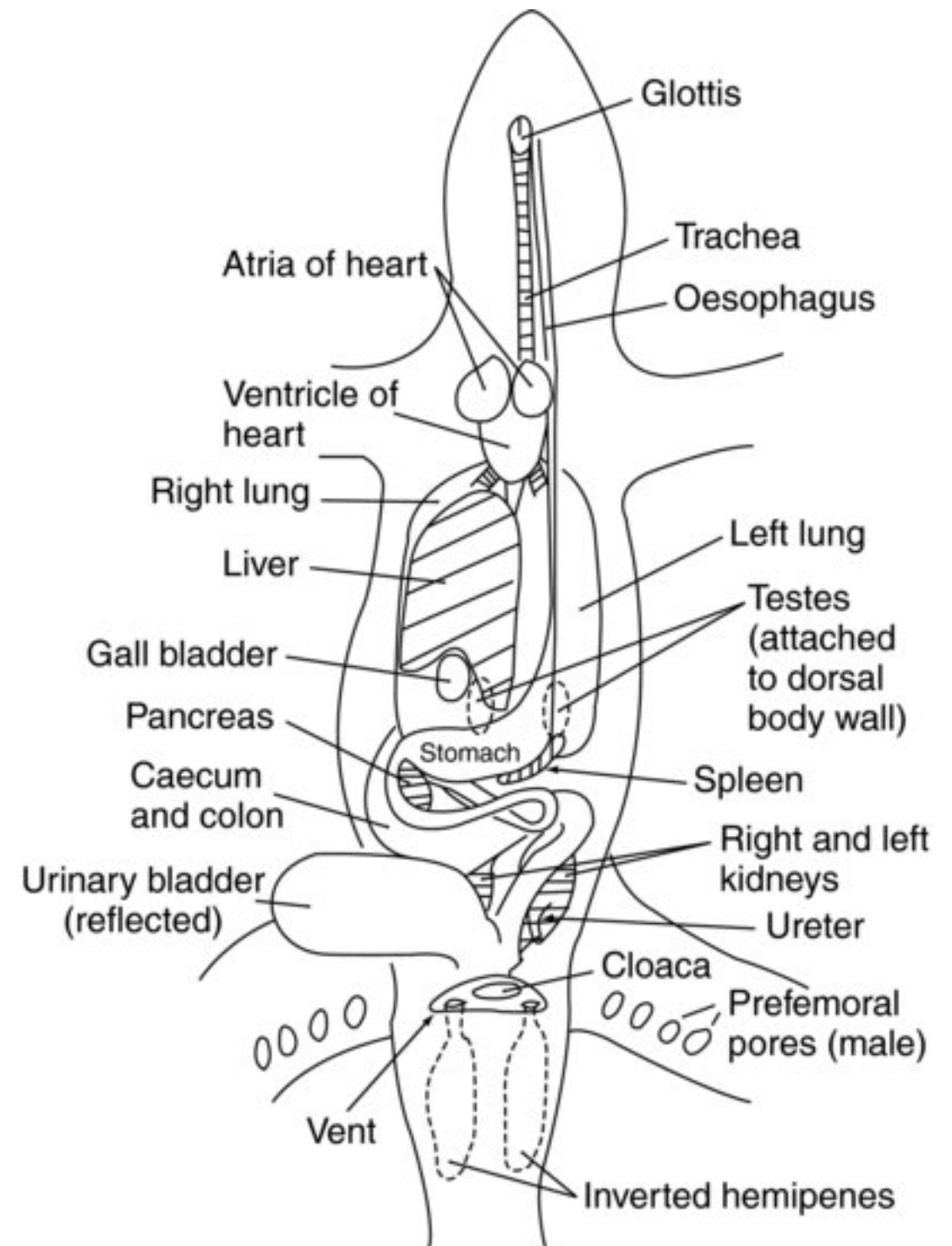


Internal Anatomy

Male iguana diagram internal

Lizards have a three-chambered heart and are ectotherms (cold-blooded), meaning that they must absorb heat from the environment. While their eggs fertilize internally, **and lay eggs**, some give live birth. It is also difficult to distinguish the gender of most lizard species through physical examination.

Lizards have a musculoskeletal system that is similar to mammals. Most lizards possess four limbs, an axial skeleton, and a similar anatomical layout to small mammals. They have a rigid skull and less mobile jaws than a snake; they also have four rows of teeth, one on each jaw. They are also peg-like in shape and are continually reproduced (except for the Agamidae and Chamaeleonidae).



Lizards do not have fang teeth; however, venomous lizards, including the beaded lizard and the Gila monster, possess hollow teeth to exert venom from the sublingual gland into their prey after biting.

In the skull of lizards, there is the atlantal cervical vertebra and its single occipital condyle, the thoracic vertebrae and lumbar vertebrae with paired ribs on either side, and the coccygeal vertebrae with the ventral haemal arches that allows access to the ventral tail vein for venipuncture. There are two forms in the tail autotomy of 13 out of the 20 lizard families: the intervertebral autotomy, where the tail breaks between the vertebrae, and the intravertebral autotomy, in which the fracture planes exist in the vertebrae in the middle part of the tail. In the intravertebral autotomy, the skin folds over the wound to seal and prevent infection. Scales that form on the new tail do so haphazardly without matching the size and shape of the rest of the tail.

Lizards have paired nostrils. Next to these, particularly in iguanids, are a pair of salt secreting glands, which excrete excess sodium and sodium chloride to help conserve water. This appears as a white crystalline deposit sneezed out by the lizards. Most species lack vocal folds in their larynx; however, **geckos** possess them and make various sounds.

Lungs differ based on evolutionary progression. Primitive lizards have sac-like structures, whereas advanced lizards

have mammalian sponge-like lung structures. Lizards can over-inflate their lungs to make themselves appear larger when threatened. The falling partial pressure of oxygen in the bloodstream stimulates respiration and causes the rib cage's upwards and outwards movement. Lizards do not have a diaphragm; therefore, it is difficult to distinguish between the thorax and the abdomen. Therefore, like snakes and birds, they have a common body cavity, known as the coelom.

The majority of lizards possess a large, mobile, fleshy tongue. However, some species have specialized tongues. For instance, the chameleons' tongue is coiled in their lower jaw to project out at their prey; the green iguana's tongue has a vomeronasal organ present at the tip of its tongue.

Most species' stomachs are simple sac-like organs, with glands that secrete hydrochloric acid, pepsin, and mucus. The small intestine is more developed in carnivorous species than in herbivorous species and is relatively short.

The gall bladder bile is biliverdin, as with birds. The large intestine is more developed in herbivorous species than in carnivorous or omnivorous species. They have a large intestine that is often sacculated and divided into chambers by leaf-like membranes, increasing the intestinal surface area to colonize for vegetation digestion.

Lizards have paired bean-shaped kidneys. While the position varies depending on the type of species, some males have the sexual segment on the kidneys that enlarges during the breeding season and assists in producing seminal fluid.

Many lizards possess a bladder, though it is not like the sterile bladder of mammals; the bladder of lizards is connected to the cloaca. Urine first enters the cloaca before the bladder; then, it absorbs or stores some fluid from its contents, possibly contributing to fluid reabsorption.

Lizards are uricotelic, meaning their primary nitrogenous waste product is uric acid. It is relatively insoluble, allowing for the conservation of water.

In terms of the heart, lizards have a paired atria, a single common ventricle that functions as two. Deoxygenated blood flows to the pulmonary arteries while the oxygenated blood enters the paired aortas. The heart also possesses a large ventral abdominal vein that passes ventrally and through the midline below the body wall. This returns blood from the tail area. There are no specific, separate lymph nodes; instead, it has lymphatic vessels.

Regarding its reproductive system, lizards have paired testicles near their respective kidneys, specifically for those with abdominally positioned kidneys. The testes are located below the lungs and liver for those with pelvic kidneys.

Male lizards have paired penises known as hemipenes that lie at the base of the tail, on either side of the midline. The hemipenes are like inverted sacs in the tail base during rest; however, during copulation, one will engorge with blood. A groove is created where the sperm and spermatid fluid drop from the cloaca as it everts. The hemipenes then guide this into the female lizard's cloaca.

Female lizards have paired ovaries near their kidneys. The ovaries link to the muscular vagina, ensuring that eggs are only laid when the timing is correct. Most females are likely to reproduce in the spring when the weather warms and the length of daylight increases.

Lizards may be either: ovoviviparous (producing eggs that first develop inside the mother's body), viviparous (directly giving birth), or oviparous (laying eggs). Reptile eggs are generally soft-shelled and leathery. One to two species are **parthenogenetic**, where females can reproduce without male fertilization.

Sexual maturity varies between species. Sex determination is dependent on chromosomes. However, the gecko family is temperature-dependent, with 99% of eggs incubated between 26.7-29.4°C becoming female, while 90% of eggs set at 32.2°C becoming male.

Bone Structure

The front of the braincase of most lizards is made up of thin cartilage and membrane. Their eyes are separated by a thin, vertical interorbital septum. Most lizard skulls are kinetic, where the upper jaw can move in relation to the rest of the cranium. This increases the gap of the jaws and assists in pulling the struggling prey into the mouth.

The acrodont teeth are the weakest as they do not have a firm attachment inside the jaw. It is fused to the jaw bone and can easily be broken with enough force. It is also more susceptible to bacterial and fungal infections, like mouth rot. They are pointed to help with chewing. These teeth cannot be replaced when lost; however, new teeth can grow as the old one wears down, which occurs less frequently in adulthood. Some lizards have both acrodont and pleurodont teeth in their mouth, showing rare heterodonty characteristics (different teeth types/ shapes/sizes) in reptiles.

The pleurodont teeth are superficially attached but anchored to the inside of the jaw, giving them stronger roots but weaker attachment as they are not fused to the bone. They can continuously grow back after being lost in their original space. However, tooth shape varies between species.

Most lizards are quadrupedal and have powerful limb musculature, allowing them to accelerate and change directions rapidly. Toe modifications are also prevalent amongst lizards: some have fringes on the toes to increase

surface area, preventing the lizard from sinking into the desert sand. Lizards that move on the ground or through sand have long tails, whereas burrowers have extremely reduced tails.

Some, like arboreal geckos, have lamellae (fine plates) on the undersides of their toes. Each lamella is made of brushlike setae in which its tips divide hundreds of times into tiny spatulae (spoon-shaped strands), with each final strand less than 0.25 micrometers in diameter. These enhance climbing ability, allowing some to even climb vertical panes of glass.

True chameleons' feet digits are divided into two groups by webs of skin. On each hind limb, three toes face away from the body and two face toward the body; this pattern is reversed on each forelimb. Each foot can be divided into an inner and an outer portion which can be opposed when a branch is gripped. They also have prehensile tails, which assist in gripping.

Several lizards can run bipedally, including the frilled lizards and the basilisk lizards. Specifically, the basilisk lizards can do so across the water for short distances using their tails as a counterweight. Some can parachute or glide through the air. The most highly adapted of these are the flying lizards *Draco*, which have lateral folds of skin supported by elongated ribs to help them glide.

Why are Lizards becoming endangered?

Statistics: While 4% of the lizard populations have vanished in the past 35 years, 6% of the world's lizard species could disappear in the next 40 years. If climate change continues without being managed, these numbers can increase to 20% in the next 70 years.

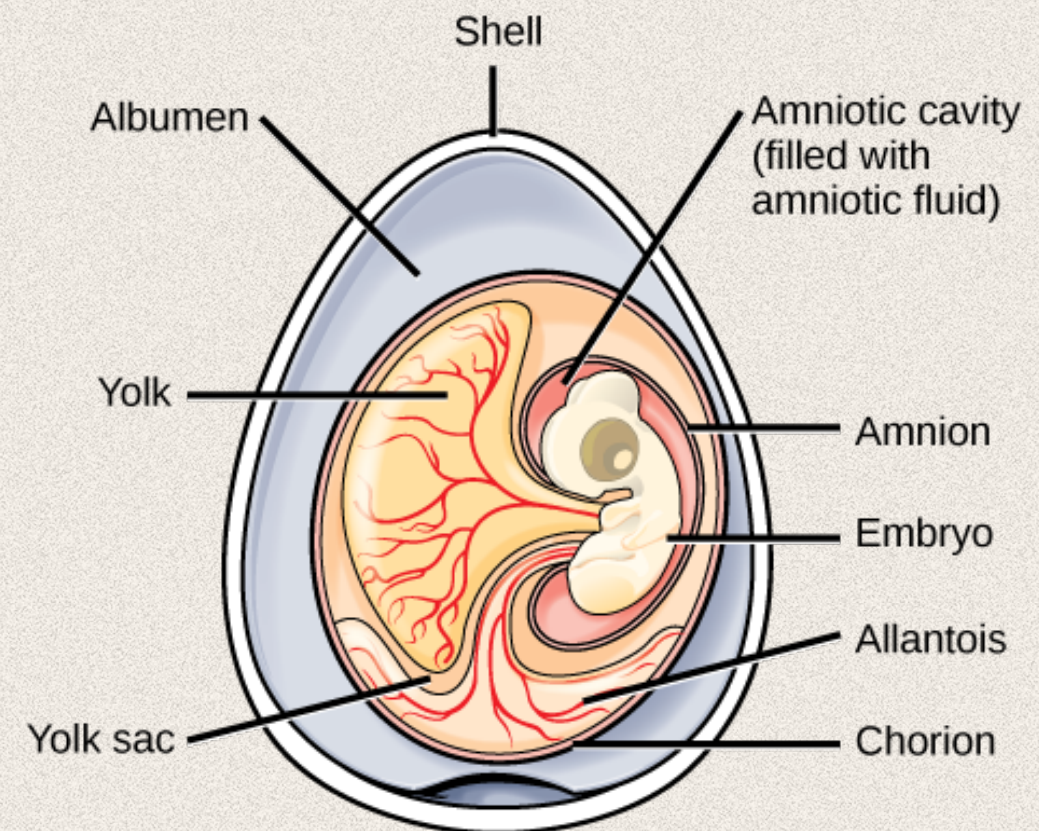
1. Global Warming

Due to significant increases in average global temperatures, lizards spend more time searching for shades to cool down and less time on activities linked to their survival. As the temperature increases and gets too hot to forage, they may fail to search for food and provisions. Although lizards do not directly die from global warming, this may significantly reduce their population in a few generations as they may fail to reproduce.

Case study: In the Yucatan peninsula in Mexico, predatory lizard species prefer to bask at temperatures of 88 degrees Fahrenheit. At this point, they are best at hunting insects for food. If it gets any hotter, they may retreat to the shade. The March temperature in Yucatan was 86 degrees in the 1970s. Since then, the temperature has increased to 91 degrees, causing lizards to spend more time in the shade and lose approximately four hours of their hunting time. As a result, they cannot eat enough to stay healthy and can no longer reproduce. From this study, a mathematical model predicting what is happening to worldwide lizard populations has

accurately been applied to lizard extinction events in multiple countries and continents, highlighting the global crisis facing lizards. According to this study, population crashes occurred in territories with the warmest springs, the time of the year when lizards reproduce.

Lizards that give birth to live young are particularly affected by global warming, as they have evolved slightly lower body temperatures; otherwise, their young can die or develop abnormalities. Larger species of lizards are also at a higher risk as they have fewer locations to find shade and water proportionate to their body size in the drying landscape.



Why are Lizards becoming endangered?

The lizards are dying out in their original habitats, resulting in them moving to the higher, cooler ground. There is only so much higher ground that they can reach. However, viable habitats that fit this profile are shrinking.

2. Over Collection

Over-collection is an issue affecting certain species of lizards in some regions of the world, where sought-after species are found. **Statistics, over foraging, pet trade?**

3. Habitat Destruction

Deforestation affects lizards at different altitudes in two different ways. At lower elevations, deforestation reduces the number of individuals but not which species occur in an area. However, deforestation has the opposite effect at

higher elevations: the population rises due to the movement of individuals from lower elevations to the newly created warmer zones, but species disappear as it is too hot for those originally living at the higher elevations.

In the past, viviparity was a key trait for evolutionary success. It allowed lizards to invade and adapt to cold environments; however, it is now ultimately leading to multiple events that result in extinction.

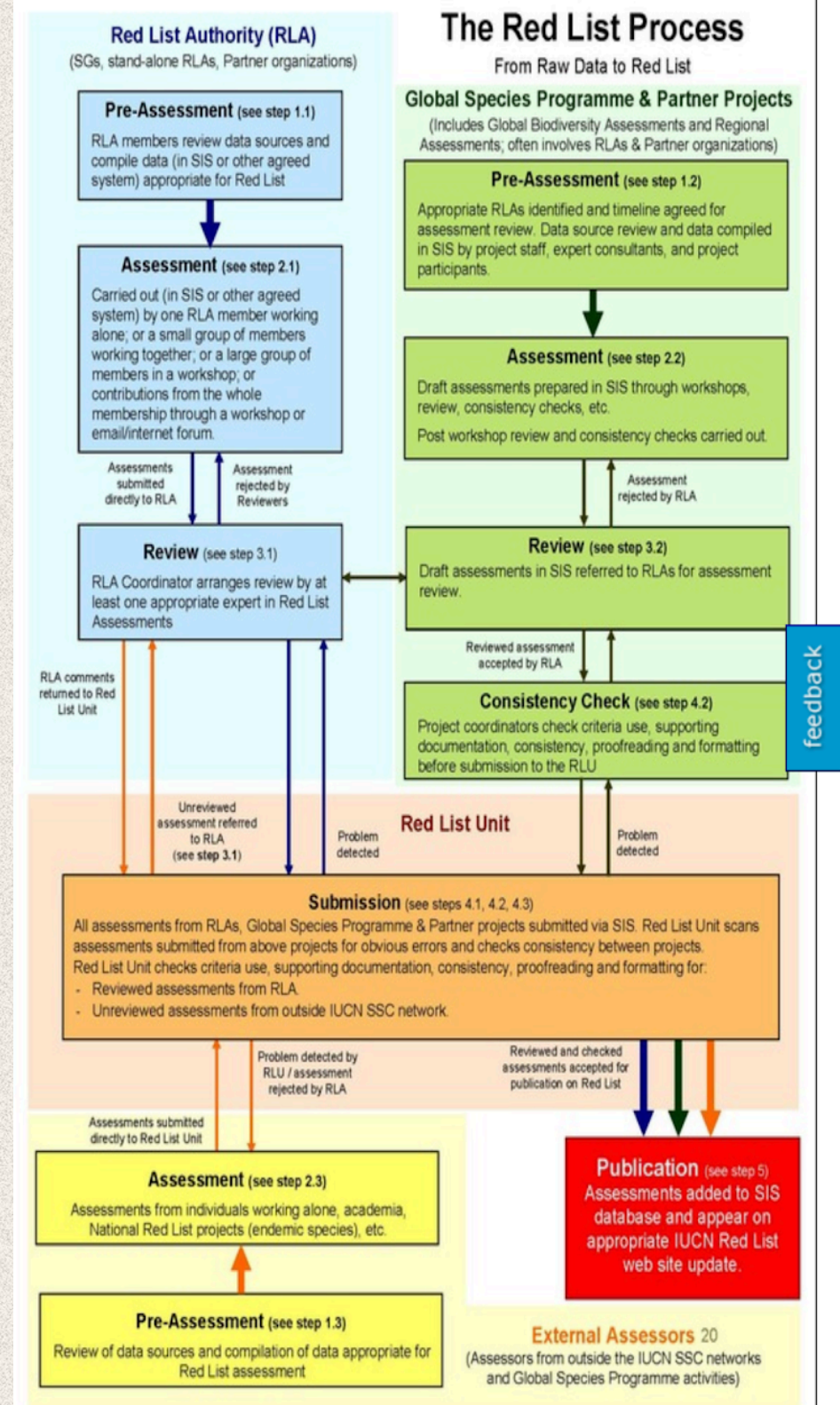
According to Dr. Pincheira-Donoso, “These lizards are one of the most diverse groups of animals, and are able to adapt to remarkably diverse conditions. Unfortunately, a reduction in cold environments will reduce their areas of existence, which means that their successful evolutionary history may turn into a double edged sword of adaptation. Their extinctions would be an atrocious loss to biodiversity.”

What are the long-term/large-scale effects of the mass extinction of lizards?

According to the article “World’s Lizards Under Threat from Climate Change” from the Science journalism website LiveScience, one-fifth of the world’s lizard population will decrease by the year 2080, leaving a crucial impact on the food chain. How well lizards worldwide adapt to global warming is an important matter, as mentioned by Barry Sinervo, the biology professor at the University of California. He claimed that lowland species are moving to highland, and furthermore, if highland species are unable to adapt to climate change, lizards will gradually become extinct.

Lizards are highly sensitive creatures when it comes to climate change, resulting in the loss of 5 percent of the total population. In Mexico, 12 percent has already gone missing; 30 percent in Southern Europe. The problem is that lizards play an essential part in the food chain as they are the main predators of insects and the prey of many species, including birds and snakes. Therefore, the decrease of lizards will negatively impact the ecosystem: the bird and snake populations will diminish and result in the boom of the insect population. **This may have affects on humans, especially on agriculturally developed regions, reducing food sources, if lizards, who act as a middleman between preys and predators, become extinct.**

Image is not relevant



Typically endemic to the Americas, the over 700 species of iguanids prosper in warm, tropical climates. These striking, relatively large lizards usually possess a distinct crest of spines along their back, a large dewlap, a loose fold of skin, beneath their head and neck, and a long, whip-like tail. Despite possessing long, sharp claws, iguanids are typically herbivorous and even possess a specialized digestive system that breaks down cellulose. As lizards live in both arboreal and terrestrial environments, iguanids are not active hunters; instead, they prefer to lie in ambush when hunting for their prey, giving only a short pursuit if necessary. They exhibit a similarly proactive approach when rearing their young, as despite guarding their eggs will provide little to no care for their young once born.

Iguanids

**Fiji Crested Iguana
(*Brachylophus vitiensis*)**

**Galápagos pink land iguana
(*Conolophus marthae*)**

**Richard's rock iguana
(*Cyclura ricordii*)**

Iguanids

Diet: Herbivorous

It consumes leaves, shoots, fruits, flowers from trees, and shrubs, preferably from the hibiscus and the *Vavaea amicorum*.

**Physical Appearance:**

The Figi crested iguana has long tails, limbs, and fingers and is 20 centimeters in length. Compared to females, males have more defined dorsal spines and a larger dewlap that allow the males to mate and regulate their body temperature.

This species has a dark to light green color with blue shades and white bands across its body and a distinct yellow nose. While males have darker shades of green mixed with black speckles, females have a lighter green color. Although the bands are not as wide as the banded Fiji iguana, Figi crested iguana has a clearly defined white band with a small crest at the top of its neck though females have a smaller crest than males.

Distribution: This species is distributed around the Vito Levu, Vanua Levu, Yasawa, and Mamanuca islands of Fiji, though it was initially found throughout all the 14 Fiji islands.

Conservation Status: Critically endangered.

As of 22 June 2012, there are 12,000~14,000 mature individuals, but these numbers are globally decreasing. However, its population isn't fragmented as there are no extreme fluctuations. It lives up to 10-15 years.

Figi Crested Iguana

Habitat: This species lives in forests and rocky areas (mountain peaks, cliffs) in the Western dry half of Fiji.

Behavior: It is arboreal and diurnal. It spends the days foraging, basking, and later retreats to treetops at night.

Galápagos pink land Iguana



Physical Appearance:

The Galapagos pink land iguana is a terrestrial species with muscular limbs, a rigid body, rough skin texture, and sharp claws. Along with its short head, it is typically 120cm in length.

Due to the lack of pigmentation, it has a pink base color, allowing blood to be seen underneath, with black vertical stripes.

Behavior:

No information

Diet:

Herbivores
It feeds on prickly pear leaves, fruits, and plants native to Galapagos.

Conservation Status:

Critically endangered
Only ~200 of them exist in the wild. Its only geographical area is on the slopes of the Wolf volcano on Isabela; however, it is vulnerable to explosions as the volcano is still active.

Habitat: It is a terrestrial reptile that lives in flat, rocky areas.

Distribution: This species is found across 25km on the slopes of the wolf volcano in the north of Isabela and is found all year round.

Physical Appearance:

The Richard's rock iguana can reach up to 1m-1.2m in length though males are larger than females. This species has a greyish green color marked with pale gray strokes though juveniles have a more distinct line shown than adults.

Diet: Herbivores

It consumes a wide variety of locally available plants. Insects are rarely consumed.

Habitat: This species lives in dry tropical forests with cacti and shrubs, rocky, sandy flat areas, mountain peaks, and inland cliffs.

Distribution: This species is found in the Dominican Republic and in Haiti's forests. Its population is severely fragmented due to invasive species, agriculture, and human intrusions.

Richard's rock Iguana

Conservation Status:
Endangered

There are 3000-4000 mature adults in the wild, but these numbers are decreasing. It lives up to 15.5 years.

Behavior: Mating occurs from May through June as males bob their heads and females nest in sandy beach areas. It is diurnal and retreats to its burrows in sandy areas at night. These burrows are usually situated in rocky, thorny areas with shrubs and other vegetations.



Anguids consist of one hundred species of primarily carnivorous, terrestrial lizards, including alligator lizards, slow worms, and glass lizards. They possess a diverse range of body types, with some possessing short but strong limbs and a triangular head with powerful jaws, and others with tiny limbs and an undefined head that are similar in appearance to snakes. This variance is also present in their size, ranging from the 15cm pygmy alligator lizard to the 1.4m long recently discovered subspecies of the European glass lizard. They are both oviparous and ovoviviparous species that rely on running to move around. Sadly, many species of anguids are listed as endangered on the IUCN's red list, most often falling victim to the illegal pet trade and habitat loss.

Anguids

Jalapa Arboreal alligator lizard

San Cristobal Galliwasp

Roughneck alligator lizard

Jalapa Arboreal Alligator Lizard



Physical Appearance:

The Jalapa arboreal alligator lizard is 7.8 to 18.4 cm in length. It has keeled stomach scales, yellow eyes, and a slender fork tongue. It is primarily green in color, but its shades vary by environment and season.

Diet: Omnivores

It forages for abundant insects like crickets and grasshoppers and bromeliad plants.

Behavior: It is slow-moving and is calm in captivity. It is most active in temperatures between 75 and 80°F; it tends to hide from light and is intelligent in conserving energy.

Distribution: This species is found in 2 Guatemala regions, Alta Verapaz and Jalapa.

Conservation Status:
Critically endangered

Habitat: This species lives 2,000-2,000 feet above sea level, mainly on the trunks of large decaying trees in Oak and Pine forests. It lives in temperatures between 50 and 90°F.

San Cristobal Galliwasp



Physical Appearance:

The San Cristobal galliwasp has a long, slender body with short limbs and is very quick.

Behavior:

Conservation Status: Critically endangered.

Many have been killed by invasive species and by humans as they have been thought to be venomous.

Distribution: It is endemic to the island of Hispaniola, Dominican Republic, and Haiti.

Habitat: This species lives in subtropical and tropical moist lowlands. It resides under leaf litter and not on forest debris.

Diet: Carnivores

It consumes insects and earthworms and rarely consumes small mammals and other reptiles.

Anguids



Physical Appearance: It has hard, rough keeled scales, surrounding the entirety of its body. Its body is rectangular and it is box headed.

Diet: Small invertebrates such as ants, termites, crickets and flies. In captivity, they consume crickets, slugs, spiders. ??? (could not find)

Habitat: This species is found in forests. It has a severely fragmented population as the number of forests declined.

Roughneck Alligator Lizard

Distribution: This species is located in the volcanic transversal belt in Mexico and Michoacán. It is found between 2000 and 2500m above sea level.

Conservation Status: Endangered
Tourism, recreation development, non-timber crop farming, livestock farming, ranching, hunting, and trapping have been a major threat to its population.

Behavior:
??? (could not find)



Chameleon

Figi Crested Iguana
(*Brachylophus vitiensis*)

Galápagos pink land iguana
(*Conolophus marthae*)

Richard's rock iguana
(*Cyclura ricordii*)

Nguru Pygmy Chameleon

Physical Appearance:

The Nguru pygmy chameleon is 4.7-5.7 cm long. It has spinous and cranial projections, a prominent casque, and exaggerated dorsal crest and spines. It has a rough, dark green skin that allows it to camouflage within tree barks and rocks.

Diet: They are strictly insectivores feeding on small insects such as small crickets, flies.

Habitat: This species is found in forest leaf litter and low bushes between 50cm to 1,500 meters above sea level.

Behavior: Because of its small size, its habitat range spans only up to a few meters. Its temper is known to be docile.



Distribution: This species is found in the Nguru Mountains in Tanzania.

Conservation Status:
Critically endangered

Rhinoceros Chameleon

Distribution: This species is found in Western Madagascar, currently restricted to the humid regions of Ankarafantsika National Park



Physical Appearance:

The Rhinoceros chameleon can grow to about 27 cm though males can grow twice as big as females. It has a projected proboscis-like snout and a small crest of triangular, projecting scales on top of the head and down the spine. It is generally grey or light brown with darker-colored transverse bars.

Diet:

It feeds on insects and invertebrates.

Habitat: This species is found in dry deciduous forests and tree barks.

Conservation Status: Vulnerable

Behavior: The male chameleon has extreme territorial competition and uses its long snout to battle with other males. It is a tree-dweller and has a very fast tongue.

Chameleon

Physical Appearance:

The lesser chameleon is 16-24 cm in length. Males have brown, black, and white patterning. Females are adorned with alternating greenish-black and yellow bands. Blue-violet and red-black spots are on each side of the chest. They have a rostral appendage that protrudes from the end of their snout.

Distribution: This species is found in the Tapia forest in central Madagascar.

Diet: Exclusively insectivorous
It feeds on crickets, Turkistan roaches, beetles, and fruit flies.

Conservation Status: Endangered



Lesser Chameleon

Habitat: This species lives in dry arboreal habitats in grasslands 1000-1650m above sea level.

Behavior: This species has a solitary lifestyle and is aggressive towards members of its species. It hunts opportunistically.

There are approximately 1,500 species of geckos that are widely distributed on every continent except Antarctica. Ranging from 1.4cm to 36cm, they are small, primarily carnivorous lizards that are nocturnal and are highly vocal. They use their sounds for social interactions, mating calls, and in expressions when they are threatened or alarmed. The geckos' eyes have a transparent cornea instead of eyelids and possess a fixed lens that enlarges in darkness to bring in more light. Therefore, nocturnal geckos have exceptional night vision. However, because they cannot blink, many species lick their corneas to keep themselves clean. They also possess specialized toe pads, known as the setae, that allow the geckos to adhere to surfaces. Along with their self-cleaning setae, the gecko skin has antibacterial properties. The geckos are also polyphyodonts meaning that they can continually replace their teeth.

Geckos

**Turquoise Dwarf Gecko
(*Lygodactylus williamsi*)**

**Marbled gecko
(*Oedodera marmorata*)**

**Mcgregor's Flapped legged gecko
(*Luperosaurus macgregori*)**

Turquoise Dwarf Gecko

Distribution: This species is found in Western Madagascar, currently restricted to the humid regions of the Ankarafantsika National Park.

Habitat: This species lives in the tropical forests in Tanzania. Occupying less than 8km within its geographical range, it dwells in large trees and leaves.

Physical Appearance:

The coloration of male and female Turquoise dwarf geckos differ. Males are very vibrant with a vivid blue upper body. They have dark black stripes on their face and orange shades underneath their upper bodies from their neck to tail. Females are olive, green, and copper with slight blue overtones. The color of the gecko's underbody is cream with a slight tint of orange. It is 2.5 inches in length and has footpads to adhere to vertical surfaces.

Diet: Insectivores, **herbivores**

It consumes small-sized local insects no longer than 1/4 inches and nectar from flowers and fruits.

Conservation Status:

Critically endangered
Due to habitat destruction and the heavily collected pet trade, its population is decreasing.

Behavior: It is bold, active, and social; its social gestures include lateral flattening, puffing its throat patches, and head bobbing. Males are often territorial.



Geckos

Distribution: This species lives in the northwest forest areas of New Caledonia.

Habitat: This species lives on trees in forests, shrublands, and humid tropical areas with a lot of air ventilation.

Diet: Insectivores
It feeds on small local insects, including fruit flies and fruit nectars.

Physical Appearance:

The Marbled gecko has a rough skin texture, a thick neck almost wide as its head, and reduced claws. It has footpads that ease their climbing. It is up to 61mm; its smaller size differs the Marbled geckos from other new Caledonian geckos. It has brown tone colors with black marbled patterning across its body. It can display lighter, darker, or more transparent coloring depending on its mood and humidity.



Marbled Gecko

Conservation Status:
Critically endangered

Behavior:
No information

Mcgregor's Flapped Legged Gecko

Physical Appearance:

The McGregor's flapped legged gecko has a very wide head, an elongated body and tail for optimal balance on foliage, and footpads with large claws for both climbing and adhering to smooth surfaces. It has greyish colors with several murky patternings that allow it to camouflage.

Diet: Insectivores

Behavior: It is nocturnal and runs to move around. During the day, it camouflages on top of branches and trees, hiding from sunlight between crevices of trees and rocks.

Conservation Status: Endangered

Distribution: This species is found in the Luzon rainforests in the Philippines Islands of Calayan, Barit, and Babuyan Claro.

Habitat: This species lives in terrestrial, tropical forests and trees and shrubs found along the coast with minimal human disturbance.



Wall lizards are typically small-to-medium-sized lizards that have earned their name as they are mostly found on walls or other smooth surfaces, including rocks and boulders. These exposed, vertical surfaces are their preferred habitats as they spend a significant portion of their day in the sunshine. When the temperature drops in the evenings and at night, the wall lizards retreat into cracks and crevices prevalent in craggy areas.

Wall lizards are highly territorial, with males defending an area of up to twenty-five square meters. They catch their prey using speed and agility within this space, primarily hunting arthropods such as moths, flies, and grasshoppers. The walls and rocks they are found on are not only their habitat - they use these hard surfaces to thrash their prey on before swallowing it whole.

Unlike many members of the lizard family, wall lizards do not possess a huge range in physical variation. Species typically have long, slender bodies, with tails multiple times bigger than their bodies. Their tails can also be shed when required for survival, such as when escaping a predator, although the regrown tail may not be visually consistent with the rest of the body.

Wall Lizards

**Lifford's Wall Lizard
(*Podarcis lifordi*)**

**La Palma Giant Lizard
(*Gallotia auaritae*)**

***Acanthodactylus
harranensis***

Lilford's Wall Lizard



Physical Appearance:

Lilford's wall lizard is a streamlined lizard with a short head and rounded body. It is usually green or brown with dorsolateral stripes and streaks of dark lines down the spine. It has unpeeled scales and can grow up to 8cm.

Diet:

It mainly consumes insects, spiders, and other arthropods and sometimes vegetables, flowers, fruits, nectars, and pollen.

Behavior: Sometimes cannibalistic
It consumes juveniles and tails of other lizards of its species. It is opportunistic around birds and scrap foods that remain in its nests.

Distribution: This species is found in the islands of Menorca and Mallorca in the Balearic Islands and its neighboring rocky islets.

Conservation Status: Endangered

Habitat: This species is found in low altitudes, mainly in rocky areas, scrublands, and woodlands.

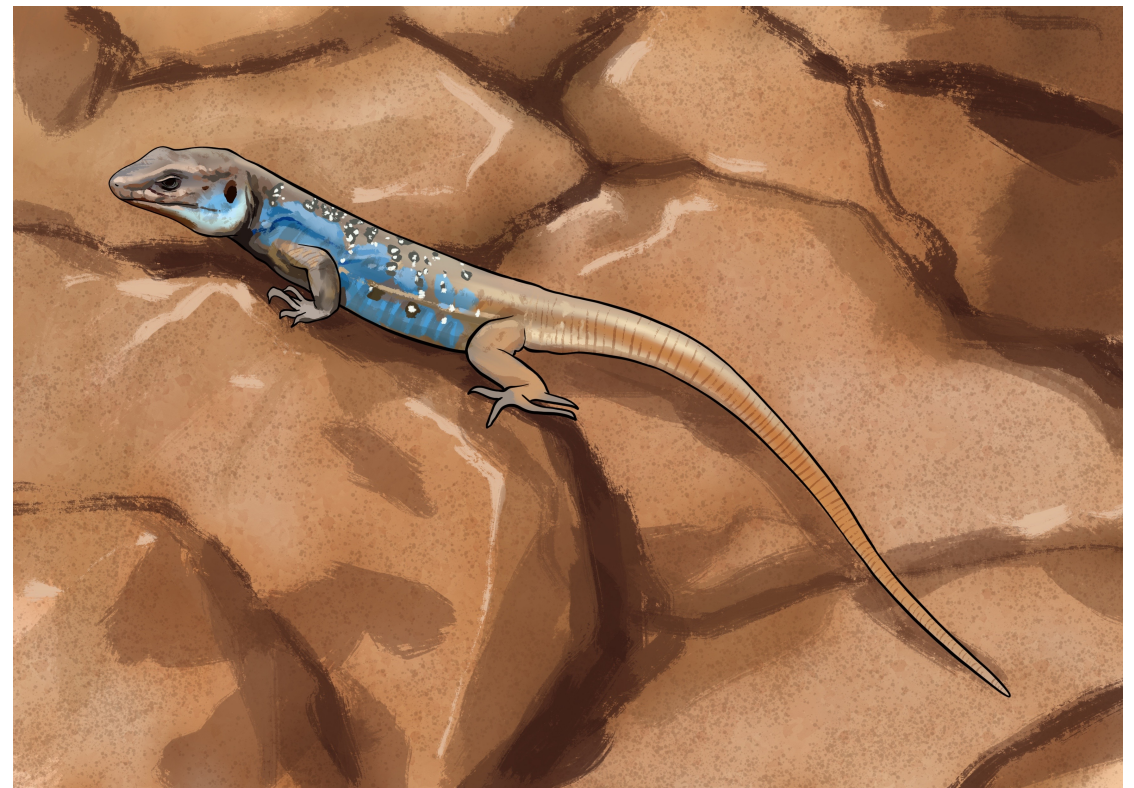
La Palma Giant Lizard

Physical Appearance:

According to the most recent sighting, a 4-year-old La Palma Giant lizard has been proved to be 30 cm long. Scientists have not been able to study any living specimen; fossils and sub-fossils do not allow proper analysis.

Conservation Status: Critically endangered

The human influence resulted in the decrease of the lizards' population beginning 2000 years ago by introducing cats, consuming the lizards, and performing agricultural activities that destroyed their habitat. The La Palma Giant Lizard is not the first reptile that has first thought to be extinct but has possibly been rediscovered. Other examples include the El Hierro giant lizard, La Gomera giant lizard, and the Tenerife Speckled lizard.



Distribution: This species lives in La Palma and the Canary Islands in Spain.

Diet: Omnivores

Behavior: It lays eggs.

Habitat: This species lives in xerophytic vegetations and adapts to survive in an environment with little water. It is found in elevations from sea level to 800m.

Harran Fringed-toed Lizard

Physical Appearance:

The Harran fringed-toed lizard is a relatively large acanthodactylus. It has a short snout and body; the length of its tail is longer than its body. It has stripe-like dark, white spots across its dorsal body. Its dorsal tail scales are smooth and hardly keeled, which differs from its taxonomy. Its proximal dorsal caudal scales also have no keeling.

Distribution: It is endemic to Southeast Anatolia in Turkey.

Diet: Insectivores

Behavior:

Conservation Status: Critically endangered
There are fewer than 1,000 mature individuals locally.

Habitat: This species lives in the Rocky areas. It does not live in areas with intensive agriculture.

Image is not representative of the species



Over 1,275 species of skinks are found in most continents and habitats except for the coldest and some semiaquatic regions. The skinks are primarily ground dwellers or burrowers and are less than 20cm in length. They usually possess cylindrical bodies, cone-shaped heads, and long, tapering tails. They typically have smaller legs in proportion to their body size, but some do not have legs at all. Some skinks use a transparent scale over their eyelid to allow the animal to see and protect its eyes while burrowing. There are both oviparous and ovoviviparous species present. Most skinks are carnivorous in their diet; however, their larger species are typically herbivorous.

Skinks

**Pindai Dwarf Skink
(*Nannoscincus exos*)**

Paracontias fasika

**Bermuda Skink
(*Plestiodon longirostris*)**

Pindai Dwarf Skink



Physical Appearance:

Pindai dwarf skink has tiny limbs and a long body and tail. While the top portion of its body is very flat, it has a square-like body. It has a brown color on the top with darker brown shades on its side and bottom.

Habitat: This species lives in the soil grounds of forests where there is much foliage to cover. It lives in humid habitats but is now prone to droughts due to the newly introduced species.

Distribution: This species is found in the new Caledonian forest and the Sclerophyll forest. There has been a dramatic reduction in its population due to the clearance and wildfire of the sclerophyll forest.

Behavior: The Pindai Dwarf Skink is a Cryptozoic species that is moisture-dependent, terrestrial, and semi-fossorial. It hides under stones and litter.

Diet: Insectivores

Conservation Status: Critically endangered

Skinks



Physical Appearance:

The Bermuda skink has a pointy triangular snout, completely black eyes, and long toes and claws to quickly climb rocks. It is mainly grayish-toned except for its orange head; during its juvenile stage, it has green, blue, and grey shades from its chin to the bottom portion of its belly. Its hatchlings have bright blue tails. Males have larger heads.

Diet: Insectivores

It consumes small invertebrates and terrestrial crustaceans.

Distribution: This species mainly live in Southampton Island, Bermuda, and other smaller islands and nature reserves on the mainland. Its population is severely fragmented into isolated pockets.

Conservation Status: Critically endangered
Its population has decreased due to habitat destruction and new predators. It lives up to 27 years.

Bermuda Skink

Habitat: This species is found in rocky coastal areas.

Behavior: It is a terrestrial species and is diurnal.

Prehensile tailed skink

Diet: Herbivorous
It consumes fruits and vegetables.

Conservation Status: Endangered
It is endangered due to logging and pet trade exports.

Distribution:
This species is found in the Solomon Islands, Choiseul Island, New Georgia, Isabel, Guadalcanal, etc.

Physical Appearance:
The Prehensile tailed skink is one of the largest skinks. It is 81cm and has an extremely long tail and toes for climbing. It has a monkey-like appearance with a wide triangular head, long slender body, smooth scales, and curved nails. It has a green base color with brown and black speckles and zebra-like stripes.

Behavior: It is a Crepuscular animal and is arboreal. It functions within a social group. Male and female specimens are territorial towards other specimens that are not part of their group.

Habitat: This species lives in dense tropical forests.



Rottnest Island Bobtail



Physical Appearance:

The Rottnest island bobtail is a large skink that ranges from 12.4cm to 31cm in length and weighs between 600 to 900g. It is heavily armored with large, rough, pinecone-like scales and has a large triangular-shaped head, a short, stumpy tail, a yellow belly, and short legs. Its head is sometimes lighter in color with orange flecks and has an ink-blue tongue. It is olive-brown to black with irregular pale bands on its body and tail.

Distribution: This species lives on Rottnest Island, Western Australia.

Diet: It consumes plant materials, especially fruit, insects, slugs, snails, eggs, feces, and dead animal carcasses, including maggots.

Habitat: It lives in Limestone heath, Settlement, Woodland, and Coastal habitats.

Behavior: The Bobtail's tail is used to defend against predators by confusing them with its head-like shape. It is also used to store fat reserves.

Conservation Status: Vulnerable
The Rottnest Island Bobtails are protected under the Rottnest Island Authority Act 1987.

Monitor lizards are giant lizards with approximately 80 different species native to Africa, Asia, and Oceania. Ranging in size from as small as 20cm to up to 3m, they typically possess large claws, powerful tails, long necks, and well-developed legs. Most of these species are partially venomous and carnivorous, eating a range of terrestrial and aquatic animals and the carrion; however, some are herbivorous. Monitor lizards are thought to be one of the most intelligent reptiles as they employ cooperative hunting behaviors. As they quickly move to catch their prey, they can stalk their prey to anticipate their path and ambush them. In one study, monitor lizards have even shown an ability to count. When these lizards are domesticated, they seek human attention and play.

The monitor lizards have one of the highest metabolic rates of all reptiles. Because their heart structure differs from many other reptiles, they allow for similar pressure differentials as mammals, allowing for oxygenated blood to quickly distribute throughout the body. They are oviparous, with some species capable of undergoing parthenogenesis.

Monitor Lizards Varanidae

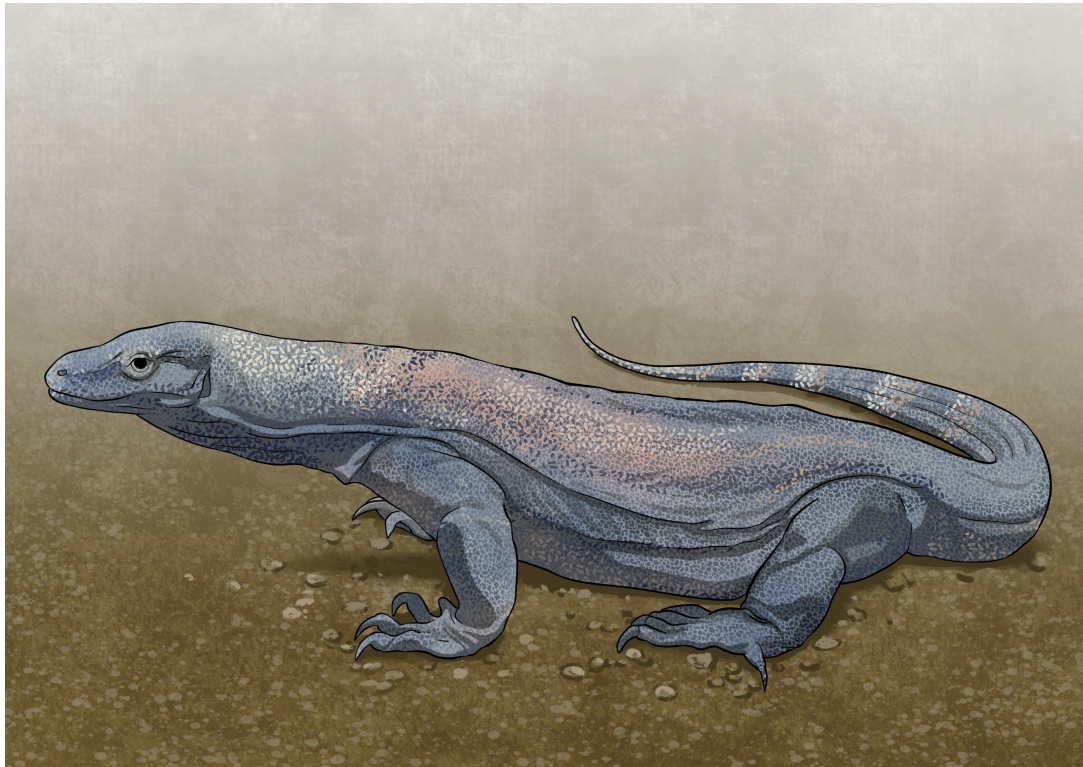
**Komodo Dragon
(*Varanus komodoensis*)**

**Panay Monitor Lizard
(*Varanasi mabitang*)**

**Gray's Monitor (*Varanasi
olivaceus*)**

Monitor Lizards Varanidae

Distribution: These species inhabit in specific regions of the islands of Indonesia and lesser Sunda islands, including Komodo, Inca, Gili Dasami, and Gili Montag.



Diet: Carnivore

It consumes deers, pigs, smaller Komodo dragons, water buffalos, etc. It ambushes to catch prey.

Conservation Status: Vulnerable

To protect the Komodo dragons, Indonesia established the Komodo national park in 1980. It is now a UNESCO world heritage site. It lives up to 30 years in the wild.

Physical Appearance:

The komodo dragon is the heaviest lizard on Earth. It is 330 pounds and 10 feet long; its tail is as long as its body. It has a long flat head with rounded snouts, a long muscular body with sharp claws, a forked tongue, and a thick skin that contains small bones to reinforce its scales, the osteoderms. The adult komodo dragon has blackish-brown coloration along the whole body; the juvenile is black with yellow stripes and dots.

Behavior: Although the komodo dragon has enough stamina to walk up to 7 miles per day, it prefers to stay close to its home. It uses its venom glands to hunt prey. Males sometimes wrestle each other during mating season for a female. If there are no males, the families undergo parthenogenesis and can reproduce independently.

Komodo Dragon

Habitat: This species is found in Indonesia's Lesser Sunda Islands, tropical forests, and hot and dry grassy savannah.

Panay Monitor Lizard

**Diet:** Frugivore

It mainly consumes fruits as its primary source of nutrients.

Distribution: This species is found on the Panay Island and in forests in the northwestern and western mountain ranges and peninsulas of the Philippines.

Physical Appearance:

The Panay Monitor lizard has a v-shaped elongated head with a pointy snout, a long tail and neck, and blunt teeth to adapt to its vegetarian diet. It has keeled ventral scales; the scales in its head are large while the scales in its body are small. Its neck has small portions of yellow scales. It is up to 175cm and 3.6kg. It has a dark black color with long black curved claws.

Behavior: It is highly arboreal and moves from tree to tree by jumping. It uses tree holes as its hiding places and frequently changes the trees it uses. If it faces a predator, it either acts like it's dead or climbs up a tree to its highest point.

Habitat: This species is found in moist lowland and subtropical/tropical forests at altitudes of 200m-1000m.

Conservation Status: Endangered

Due to habitat loss, its population is currently decreasing. Only twelve specimens have been caught since 2002.

Monitor Lizards Varanidae

Distribution: This species is found in the Philippine island of Luzon, Catanduanes, and Polillo archipelago.

Diet:
It mainly consumes fruits but also eats snails and crabs.

Habitat: This species is found in the rainforests of the Philippines and in densely forested mountain slopes that are about 400m above sea level.

Physical Appearance:

The Gray's Monitor has greenish-gray color with dark intersecting bands on its body and tail and limbs with black speckles. Its younger specimen has a more pronounced pattern with a yellowish base color. It can grow up to 2m for large males. Females and males are different in size: females are 50cm from their head to torso, and males are 65cm. Its hind legs are longer than its front legs and larger than typical limbs.



Gray's Monitor

Conservation

Status: Endangered
It is endangered due to the pet trade and habitat destruction.

Behavior: It is diurnal and tree-dwelling. It only leaves the trees to eat. It rarely basks and has a passive thermoregulator of 28C-38C.

Note: South Korea seems only to have two lizards endemic to the region, and neither appear to be endangered. Also, there seem to be no endangered lizards on the checklists of the North Korean endangered animals.

South Korea's Endangered Lizards

**Smith's Skink
(Plestiodon coreensis)**

**Mountain Grass Lizard
(Takydromus wolteri)**

**Korean Skink
(Scincella Vandenburgi)**

**Mongolia Racerunner
(Eremias argus)**

Scincella huanrenensis

**Schlegel Japanese Gecko
(Gekko japonicus)**

**Amur Grass Lizard
(Takydromus Amurensis)**

South Korea's Endangered Lizards

Smith's Skink



Physical Appearance:

The Smith's skink has a brownish color, from the head and dorsal to its tail, for camouflage. On the sides, it has a red color and is 38.47g.

Habitat: This species is found in the Manchurian Mixed Forests.

Distribution: This species is found in Northwest Korea, specifically Yongampo, North Korea, and Sindo Island, South Korea.

Behavior: It is secretive and runs to move around.

Diet: Insectivores

Conservation Status:

??? (doesn't appear listed as endangered anywhere; simply endemic to a small region)

South Korea's Endangered Lizards

Distribution: This species lives in the central territories and Jeju Island of South Korea and the Tsushima Island of Japan.

Conservation Status:
Least Concerned

Physical Appearance:

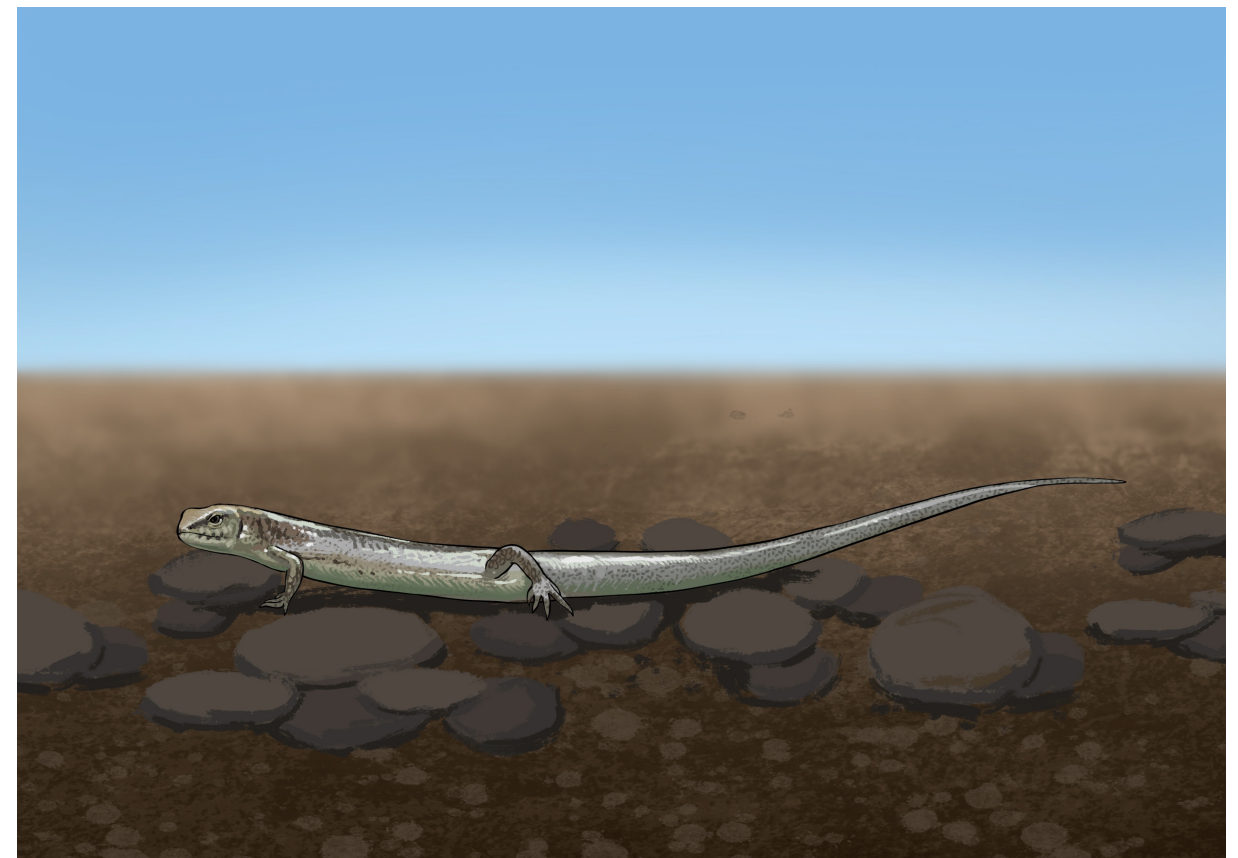
The Korean skink is very small and has a slender body with a tiny head and an elongated tail. It has twig-like limbs and a grey-toned color.

Diet:

Korean Skink

Habitat: This species is found in the temperate forests in the coastal regions and inland hills. It lives under debris, logs, and rocks on the forest floor.

Behavior: It lays 1-9 eggs in early summer.



Scincella huanrenensis



Physical Appearance:

The Scincella huanrenensis has short limbs and is brown with a distinct white stripe. The length of its body is 49mm-51mm; its tail is 4mm-57mm.

Habitat: This species is found in forests in mountainous areas. It lives under foliage and rocks.

Distribution: This species is found in the Bang Tae Mountain and Dae Sung Mountain of Gangwon-Do, South Korea.

Behavior: It gives live birth.

Diet: Insectivores
It consumes small insects.

Conservation Status: Critically endangered

South Korea's Endangered Lizards



Physical Appearance:

The Amur Grass lizard is brown with a thick line of saturated brownish color on its side. Males have a more vibrant coloring for attraction and a larger head than females. The femoral pore, an external organ for secreting pheromones for mating, is found on the bottom of its hind legs. The length of its body is 7cm-9cm; its tail is 10cm.

Distribution: It is found in Korea, China, Russia, and Japan; it resides in all regions of Korea except for Jeju-island.

Diet: Insectivores
It consumes spiders, earthworms, etc.

Conservation Status: Unknown
Although its conservation status is unknown due to habitat destruction, this species is often seen.

Habitat: This species is found around mountain trails and in grassy areas where there are a lot of vines.

Behavior: It lays 4 eggs a year on average and breeds around June to July. Eggs take a month to hatch.

Amur Grass Lizard

Mountain Grass Lizard

Physical Appearance:

The Mountain Grass lizard has a sharp snout, 5 toes, and up to 8-9 keeled scales across the upper dorsal body to its tail. It has a white stripe across its lateral side and white coloring on its bottom body. The length of its body is 46mm; its tail length is about 2.5 times longer.

Distribution: This species is found across all geographic ranges of Korea, including Jeju island and in some parts of China and Russia.

Behavior: It begins its hibernation around September and wakes up around April to begin its mating season in May. It lays about 4-5 eggs in June-July around rock crevices under dense forest foliage. It is secretive and alert.

Habitat: This species is found in areas of low elevation in cool forests and grasslands near streams.

Conservation Status: Least concerned
Although its conservation status is the least concerned, its population is still declining due to habitat destruction.

Diet: Insectivores

It primarily consumes crickets, spiders, and other small insects.



Mongolia Racerunner



Physical Appearance:

The Mongolia Racerunner resembles a leopard as it has a speckled, spotted patterning with brown, black, and white patterns. It has a keeled scale on its tail and is 6.49g.

Diet:

It consumes plant material, especially fruits, insects, slugs, snails, eggs, feces, and dead animal carcasses, including maggots.

Distribution:

Habitat: This species is found in deserts, rocky areas, grasslands, scrublands, forests, and freshwater wetlands.

Behavior: This species is diurnal and undergoes dioecious reproduction. It relies on running for movement.

Conservation Status: Unknown
In Korea, it is designated as an Endangered level 2 species.

Schlegel's Japanese Gecko



Physical Appearance:

The Schlegel's Japanese gecko is pale in color with white, grey, and light brown highlights suitable for camouflage in urban plaster, brick, and wood environments.

Behavior: This species is diurnal and undergoes dioecious reproduction. It relies on running for movement.

Conservation Status:

Its population is abundant and stable but possibly has been affected by harvesting, used in traditional Chinese medicine, and the construction of buildings.

Distribution:

Habitat: This species is found in deserts, rocky areas, grasslands, scrublands, forests, and freshwater wetlands.

Diet:

It consumes insects and spiders by utilizing sit-and-wait tactics.