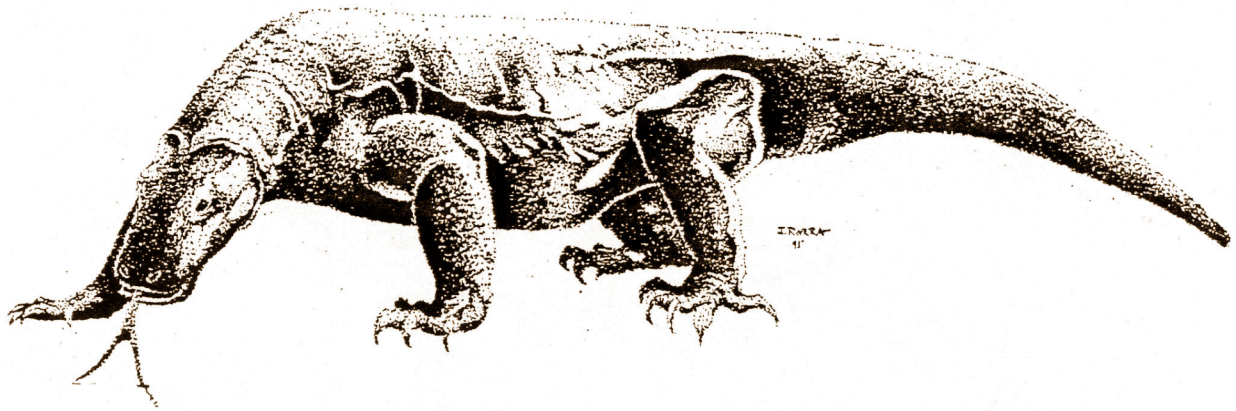


LIZARDS

I WHAT IS A LIZARD?

Lizards first appeared about 200 million years ago, evolving alongside the dinosaurs. Today, there are more than 4,000 different species and subspecies of lizards, making them the most diverse members of the class Reptilia. In the New World lizards are found as far north as southern Canada and as far south as Terra del Fuego at the southern tip of Argentina. In the Old World, one species, the viviparous lizard, (I didn't know viviparous was a species) occurs above the Arctic Circle in Norway. Others are found as far south as the southern tip of New Zealand. Lizards range in size from 2.5 cm - 3 m (1 in to 10 ft) in length. There are only two lizards that are truly venomous, the Gila monster of the southwestern United States and the Bearded lizard of Mexico.



Komodo dragon

II PHYSICAL CHARACTERISTICS

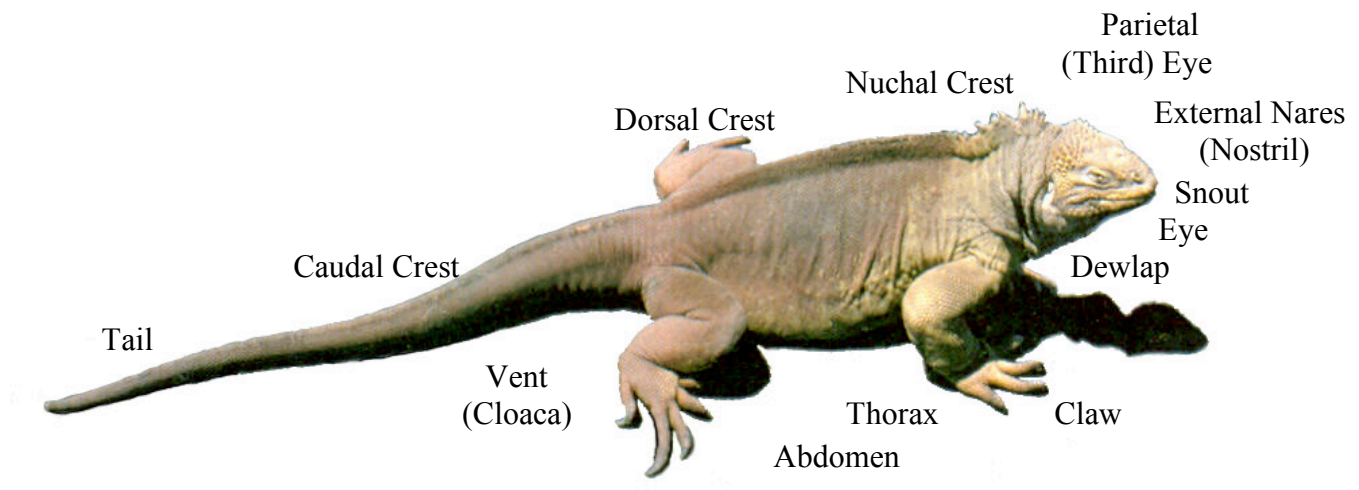
A Scaly Skin

One anatomical feature all lizards share is their scaly skin. A lizard's skin has many important functions.

- ◆ It acts as a barrier or line of defense against microorganisms and toxic chemicals.
- ◆ It helps to conserve or prevent water loss.
- ◆ It can absorb or reflect heat.

Some lizards change color to enhance these functions, e.g. chameleons and anoles. In the Horned toad and Australian thorny devil the skin has spikes or horns used for defense. In others such as the iguana, dorsal crests and fingers of soft leathery "spikes" develop. A bony plate of osteoderm makes the scales more resistant to attackers in the lateral fold lizards, spiny-tailed lizards and skinks. The skin of limbed lizards contains modified keratinous structures known as claws, at the fingertips. These clawed fingertips are particularly well developed in climbing species and are useful for obtaining grip, providing self-defense and excavating or digging a nest prior to egg laying.

Shedding occurs when skin becomes worn and dried out and needs to be replaced. New skin is constantly being formed beneath the epidermis. Unlike snakes that shed their skin in one complete piece, lizards shed their skin in patches.

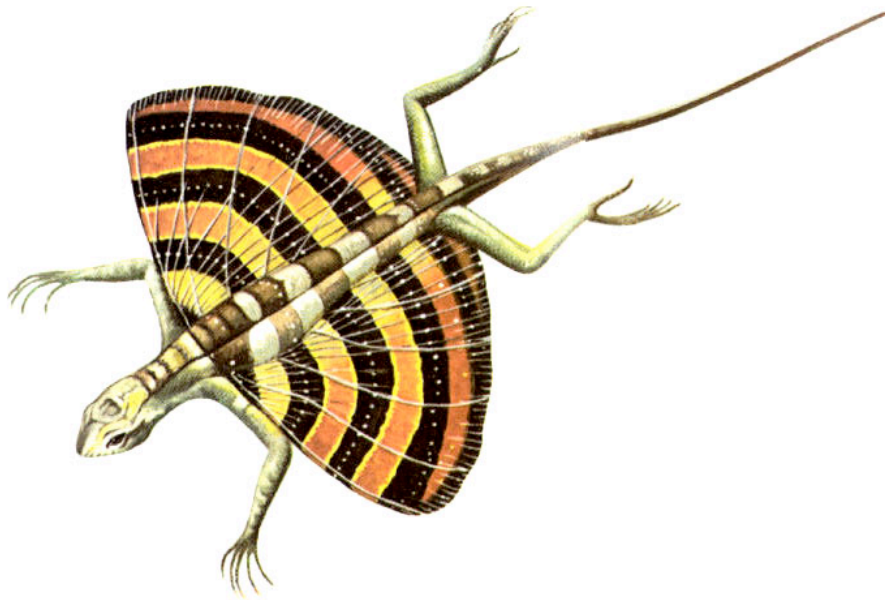


B Locomotion

A few species of lizards, such as the legless lizard, have greatly reduced or absent limbs. Limb reduction is a special advantage in habitats that have narrow openings. These species of lizard use snake-like movement to move.

All other lizard species have four legs each with five toes. Depending on their method of locomotion, lizard bodies can be cylindrical, depressed (flattened against the ground), or compressed (flattened vertically) the legs can be short or long, stout or slender. Burrowing lizards, like the legless lizard, have cylindrical bodies, whereas crevice dwellers, like the Leopard gecko have a depressed body. Aquatic and arboreal species, like the iguana, have compressed body forms. Stout, long-legged species, like Gould's iguana have long slender legs for jumping between perches, stretching from one branch to another and swimming. Tree-dwelling lizards usually display some of the most impressive adaptations for locomotion. The Flying dragon of Southeast Asia glides from tree to tree using a membrane that joins the fore and hind limbs. Like some birds, chameleons improve their grip in the trees with zygodactyls feet (some toes facing forward and some facing backward).

Several species of lizards have prehensile tails, which they wrap around vegetation to steady themselves as they move through their environment.



Flying dragon

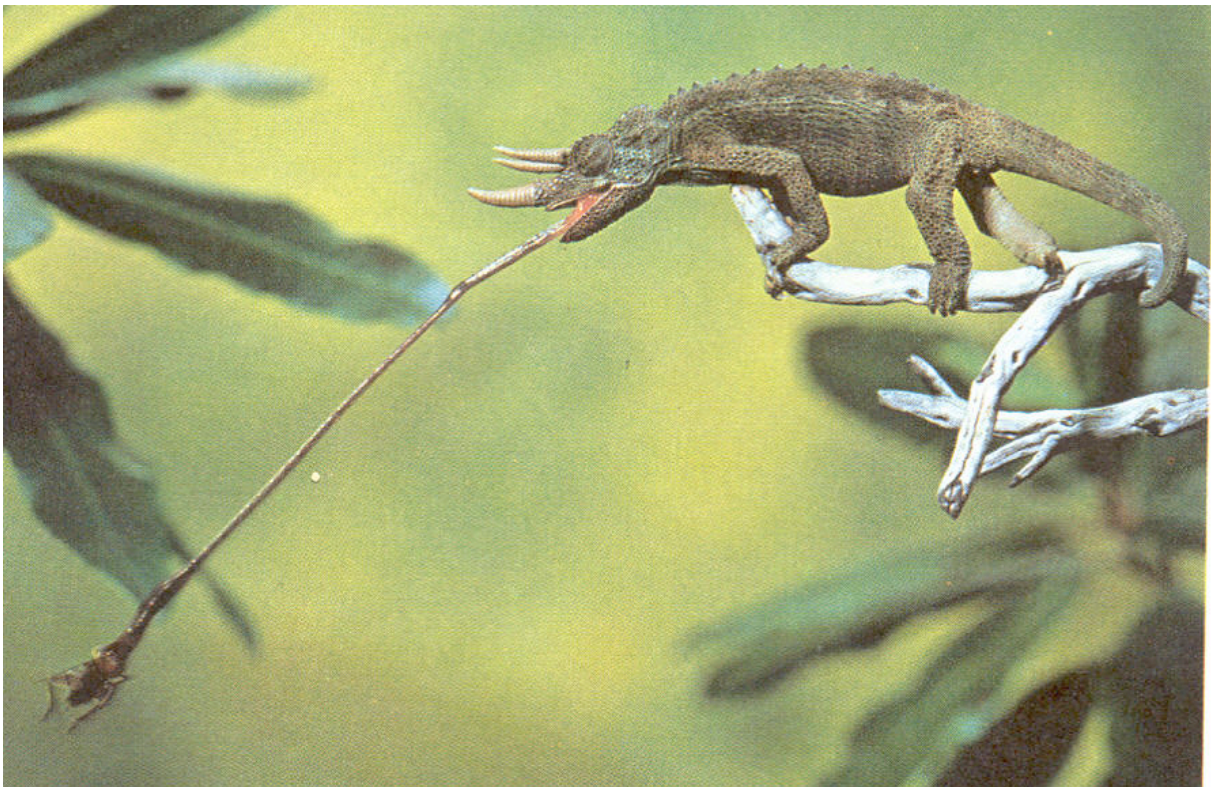
The Illustrated Encyclopedia of Plants and Animals © 1979 p. 290

C Senses

1. Taste and Smell

Lizard tongues not only serve as organs of taste, but also to detect odor. Similar to, but not as well developed as snakes, lizards have a specialized organ in the roof of the mouth known as a **Jacobson's organ**. When a lizard propels its tongue into the air it picks up odor molecules and retracts them into the mouth. Once back inside the mouth the tongue deposits these molecules onto the surface of the Jacobson's organ, which then translates them into olfactory information. Lizards use their Jacobson's organ in addition to their nostrils for odor detection.

The tongue is also used for obtaining prey. A true chameleon will flick out its tongue, fasten it onto a prey item and then reel it back to eat. A few species of lizards also use their tongue to wash their eye caps.



A chameleon uses its tongue to obtain prey.
Note the prehensile tail and zygodactyls feet.

The New Larousse Encyclopedia of Animal Life© 1980 p.311

2. Sight

In diurnal lizards, vision tends to be sharp, whereas, in nocturnal or burrowing animals, it is less sophisticated. Lizard eyes are placed on the side of the head, permitting the lizard to see in two different directions at once. Peripheral vision also allows them to see behind and alongside them. A few lizards such as the chameleon have eyes mounted in rotating turrets. This enables them to look forward, upward, downward, sideways and backwards without having to tilt the head or move the body in any significant way. The iguanid lizards and the tuatara have a third eye, known as the median eye, on the top of their head. The median eye was well developed in prehistoric reptiles, but does little more than differentiate between light and dark in these modern lizards.

3. Hearing

Most lizards have a visible external ear opening and will respond to sound and vibrations. Since only a few geckos have voices, and it is not known whether or not they use their vocal abilities to communicate, the only reason lizards would have to use hearing is to detect predators or prey.

D Defense Mechanisms

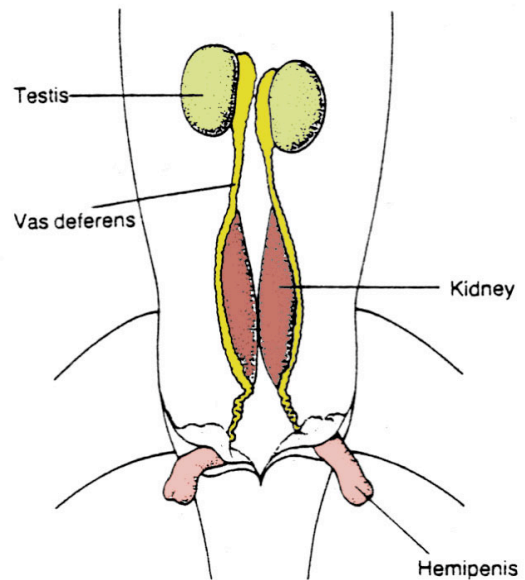
For lizards, camouflage is the most effective way to avoid predation. For example, chisel-teeth lizards and chameleons can change their color to blend into their background. Most lizards are also agile and swift, and when under attack, will attempt to escape. Other lizards have special features to scare away predators. The slow Blue-tongued skink of Australia will gape and hiss while displaying its bright blue tongue. The Australian frilled lizard displays a large “collar” of loose skin and inflates its body when startled. The horned lizards of North America and the Moloch of Australia are spiny, offering attackers an unpalatable mouthful of sharp scales.

E Feeding Behavior

Most lizards are predators and feed on insects, mammals, birds, and other reptiles. For example, the Komodo dragon is a scavenger-predator that will eat goats and even water buffaloes. Their teeth resemble those of flesh-eating sharks. On about 2% on all know species of lizards are primarily herbivores. The marine iguana of the Galapagos Islands dives 15 m (50 ft) or more to feed on algae, kelp and other marine plants. Many species of lizards shift their diets with maturity and seasonal changes in the availability of food.

III REPRODUCTION

Male lizards have a paired, internal sexual organ called the hemipenes. One hemipenis may be used three or four times before the lizard switches to the other one, usually because of depletion of sperm.



In some species of lizards, there are all female populations that produce viable offspring by a process called parthenogenesis. The majority of lizards lay hard-shelled eggs on land; while a few give birth to live young. Lizards may breed yearly, several times, yearly, or every other year. Most lizards exhibit little maternal care, except for finding a suitable site for egg laying.

Courtship and breeding habits are listed on the individual fact sheets.

IV LIZARD CONSERVATION

Of the 4,000 species of lizards, a few hundred are considered seriously endangered. Many more are threatened or are of special concern because of dwindling numbers and loss of habitat. In some societies, lizards are eaten and are an important source of protein for native peoples. Their hides are used to make wallets, shoes, belts and other luxury items. Many species are also in demand for the pet trade, particularly preferred because of good temperament, bright or unique coloration, size, or markings.

In the United States a few species of lizards, like the Gila monster, have State or Federal Endangered Species status, which means they cannot be collected, possessed or traded, except by breeders and institutions with permits. On an international level, the trade in lizards and other threatened or endangered species is governed by CITES (Convention International Trade in Endangered Species).

Comparison Between Snakes and Lizards:

The lizard came before the snake in evolution, but they are closely related.

SNAKES	LIZARDS
Without movable eyelids	Movable eyelids
The two halves of the lower jaw independently movable, connected in front by an elastic ligament	The two halves of the lower jaw fixed (not movable)
Appendages usually absent. If present, then only as vestiges of the hind limbs.	Appendages usually present (absent in some forms - viz., the legless lizards)
Ventral scales modified into broad plates, called scutes, used as an aid to locomotion	Ventral scales not modified into scutes
Pelvic girdle absent	Pelvic girdle present
Ear opening absent	Ear opening present