

## Amphisbaenids (part of Squamata)

Some controversy as to exactly where they go.

Your text just lumps them in with the lizards and doesn't really say anything.

(Except the usual cladistic stuff).

Traditionally, these were/are a suborder within the Squamata, and we'll treat them as such.

We won't go through the families (there are 4 (5?)), but instead describe the suborder.

Essentially are legless lizards; some retain vestiges of limbs.

Look rather different than snakes, primarily due to annulated appearance (caused by scales arranged in "circular" pattern).

Most are burrowers and oviparous (a few viviparous).

One species (*Rhineura floridana*, family Rhineuridae) occurs in Florida.

One family (Bipedidae) had reasonable sized forelimbs (gives them a very odd appearance).

Some can break off their tail, but it generally does not regenerate.

Most are insectivorous; some live in ant colonies and feed on insects that are there (not necessarily ants).

## Lacertilia (also part of Squamata)

Lizards (obviously).

Text is annoying since it doesn't really give general characteristics, but instead discusses taxonomic relationships.

Wikipedia defines lizards as "not snakes" and also doesn't give a lot of characteristics.

In general, we have the following:

Usually (not always) four feet.

Tail autotomy in many lizards.

Many are brightly colored and have good vision.

Wide range of sizes (2 cm to 3m).

Earliest known lizard fossil is from the Triassic (something called *Tikiguania estesi*)

(Wikipedia does have a page about this (minus picture), but it's in Italian).

(There is apparently some controversy about this fossil).

Most lizards are carnivorous (insectivorous), but some are herbivores.

There are between 13 and 15 families (not counting the Amphisbaenids). We'll go through most of them and make a quick reference to the rest.

## Agamidae

Old world, including Australia.

Very diverse group - radiated to adapt to many different niches in Africa and elsewhere.

No strictly fossorial species, though one group does use borrows as retreats.

Includes some well known species such as flying/gliding lizards and *Moloch horridus* (an example of convergent evolution when compared to *Phrynosoma*).

Some can change their color somewhat based on their body temperature.

Acrodont dentition.

## Chamaeleonidae

Unmistakable group of lizards (Chameleons).

Projectile tongue, eyes that move independently, mostly (but not all) arboreal.

Most also have crests and/or horn like projections. Males frequently more colorful

But can obviously change their color (many blend in to their background extremely well).

Prehensile tail in most species.

Africa and India.

Mechanism of shooting tongue is extensively discussed on Wikipedia (turns out muscle action isn't sufficient).

Tongue is also covered with sticky secretions and other mechanisms that hold on the prey.

Some oviparous, some viviparous.

## Iguanidae

Mostly new world in distribution. However, do occur on some pacific islands and on

Madagascar.

Galapagos, of course, but also much further west (north of New Zealand).

Includes many of the lizards in the United States.

*Phrynosoma, Sceloporus, Holbrookia, Uma, Anolis, etc.*

Large diversity in the southwest U.S.

Some unusual species (e.g., Marine Iguana)

Swims in ocean, dives down to forage on algae.

Eastern fence lizard (*Sceloporus undulatus*) is fairly common in Fairfax.

#### Gekkonidae

Geckos. Another well known group of lizards.

Tail autotomy is very common (and annoying to some pet owners).

Very successful group with around 1000 species.

Mediterranean gecko introduced into the U.S.

Toes have been well studied for adhesive ability. Geckos can stick to most surfaces (some wise guy discovered that Teflon doesn't work).

(Use something called van der Waals forces, which works at the molecular level.)

Mostly nocturnal, but some diurnal.

Skin in many appears almost translucent.

Some species are parthenogenetic (e.g., Mourning Gecko).

Many can also vocalize (name "gecko" is an imitation of some of these sounds).

One group (subfamily, or family, depending on what you prefer) has no front limbs, and small flaplike hindlimbs.

Most are carnivorous (a few specialize on other geckos), but some will eat plant material.

#### Dibamidae

Blind skinks (thought to be related to Amphisbaenids).

Small group of lizards with about 10 species, mostly south East Asia with one species in

Mexico.

Won't say anything else about this family.

#### Xantusiidae

Night lizards.

Small lizards, a bit reminiscent of geckos (but not related).

Active at dusk, dawn, and sometimes during the day (“night” lizard not really appropriate).

Several species of *Xantusia* get into the southwest U.S.

Seem to have a low reproductive rate and correspondingly higher life expectancy.

Viviparous.

It is thought males and females may form pair bonds that last for some time.

Not well known, despite being in the U.S.

One cave dwelling species is known for eating figs.

#### Lacertidae

“Wall lizards” etc.

Found in Africa and Eurasia.

Includes some very common lizards in Europe (genus *Lacerta*)

Highly variable in appearance, though usually have long tails.

Most insectivorous, but a few actually specialize on seeds.

Most oviparous, but *Lacerta vivipara* actually viviparous (most populations).

Thought to be roughly equivalent (ecologically) to Teiids.

Generally found in drier areas. Most are ground dwellers, with a few arboreal species.

#### Gymnophthalmidae

Mostly south American. Numerous genera with over 160 species.

Generally small, with transparent lower eyelid (can see with their eyes closed).

Usually smooth scales, some have reduced limbs.

Eat small invertebrates.

A few can dive to escape predators.

## Teiidae

Whiptails.

Fairly widespread in the New World.

Again, (seems fairly common) most are insectivorous, but a few are herbivorous.

A few larger ones go after other lizards, etc.

Includes several parthenogenetic species (apparently over 30% of *Cnemidophorus* are parthenogenetic - *Cnemidophorus* is one of the biggest genera within the Teiids)..

Strangely, new species are discovered fairly regularly.

## Cordylidae

Girdled lizards.

African.

Typical for lizards - diurnal, insectivorous, mostly oviparous, but one ovoviparous species.

(I don't believe your text always keeps track of viviparous vs. ovoviparous).

A few omnivorous species.

Some can “curl” themselves up making it difficult for predator to swallow.

Won't say any more about them.

## Scincidae

Skinks.

Another group of fairly well known lizards.

Worldwide, but not too far north.

Scales with osteoderms underneath. Scales often give a “shiny” or smooth appearance.

Fairly large percentage of viviparous species (45%).

Reduced limbs are fairly common in some groups.

Most have tail autotomy.

Several species are quite common in our area.

### Anguidae

Alligator lizards/Glass lizards.

Like skinks, have osteoderms underneath their scales.

Many have a fold running longitudinally between the dorsal and ventral sides that help in breathing (osteoderms behave a bit like armor).

Some do not have limbs

Common tail autotomy.

Ovipary and Vivipary both occur.

Some fossorial, most terrestrial.

### Xenosauridae

Knob scaled lizard.

Small group with just 7 species. Only in small areas of China and Mexico. Need moist environment to survive (rest on branches over water).

Won't say more about them.

### Helodermatidae

Gila monster and Beaded lizard.

Only two species, in southwest U.S. to southern Mexico (Beaded lizard occurs further south).

Well known for having well developed venom.

Venom is delivered by the lower jaw - flows up grooves in teeth in the lower jaw (capillary action).

Reports of some turning upside down when biting, presumably to aid in the delivery of venom.

Venom is not deadly to humans except in very rare cases (last confirmed fatality was in 1939).

Bite is, however, quite painful, and the silly animals keep chewing and biting and not letting go.

Not terribly aggressive unless you mess with them.

Also distinctive is a beaded “skin”, due to osteoderms in the scales.

Eat small vertebrates, insects & carrion. Sometimes eat prey that is fairly large compared to their size.

Protected in Arizona (and elsewhere).

## Varanidae

Monitor lizards.

Thick skinned larger lizards.

A few species may have osteoderms ventrally.

Smaller species eat insects and small vertebrates.

Larger ones go after bigger vertebrates.

At least one species (*Varanus olivaceous*) is known to eat fruit.

Komodo Dragons (*Varanus komodoensis*) are the largest lizard:

Length up to 3.1m (TL).

There are records of Komodo Dragons going after humans.

As already discussed, bite seems to have a fair amount of venom in it.

(Previous theory about septic bacteria disputed.)

There's a theory that they may have evolved to prey on pygmy elephants that used to live in the area, but this is impossible to prove.

They seem to do quite well if not subject to habitat destruction, etc.

Varanids are quite intelligent for reptiles and can be trained (and even domesticated to some degree).