How to Sex Every Reptile and Amphibian! Is Your Pet Male or Female?-Lizard (and Crocodilian) Edition!

One of the most commonly asked questions, by both new and seasoned pet owners and reptile keepers alike, are the sex or gender of their pets. Unlike mammals, and even many other more familiar groups of animals in which their sexes are much more familiar to us, and can be much more readily distinguishable, reptiles and amphibians have vastly differing anatomies and physiologies, which oftentimes might make determining their sexes more challenging or difficult. Many can be sexually dimorphic in size between males and females, while others can be difficult to determine sex until their sub-adult or adult forms, being very difficult, if not impossible to determine in their younger forms, or as hatchlings or juveniles. Others yet can be parthenogenetic, consisting of primarily one sex, or even, in some cases, the ability to switch sexes depending on environmental and physiological conditions! Sometimes, the deposition of infertile eggs, ova, or other specific health and reproductive cues can also occasionally indirectly point to the likely sex of an animal as well.

While determining the sex of some animals can still be relatively easy once one learns what to look for and recognize, other methods should still be attempted only by veterinarians or other more experienced hobbyists or enthusiasts in order to prevent possible injury and undue stress to the animal. Many also display sexual behaviors characteristic of males or females, although there can often be overlap. Whether one is inquiring into the sex of their animal for the purposes of a new and exciting breeding project, or simply out of curiosity for one's own best knowledge and ability to provide the most tailored care and husbandry as possible, the following document shall be a great starting point for learning more about whether your pet is male, female, or in some cases, both!

Lizards:

-**Geckos**. There can be several different methods to determine the sexes of geckos, depending on the species and taxa. Some species may be slightly sexually dimorphic in size between males and females, although not typically prominent. Look for the presence of more prominent cloacal, or hemipenile bulges on both sides of the base of the tail in males than in females. Males of many species can also have more pronounced or noticeable pre-anal, or femoral pores than in females, which are absent or much less pronounced. Finally, some geckos can exhibit sexual behaviors more likely indicative of males, such as more frequent vocalizations or other territorial behaviors. Some species can also be parthenogenetic as well, or consist only of females.

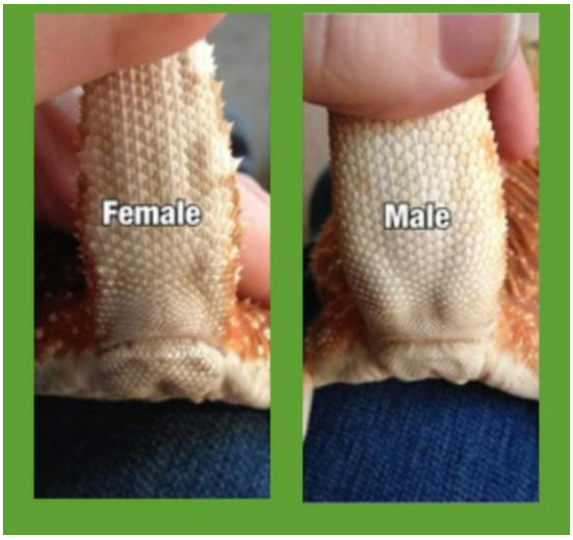

**Figure 1. Example of the Hemipenial Bulges at the base of the tail in female (left), and male (right) Bearded Dragons. Credited to GodzillatheBeardedDragon.*

-Agamids. There are several prominent characteristics which can be examined in agamid lizards, such as bearded dragons, water dragons, uromastyx, and related species. Overall sexual dimorphism in size are not usually significant, although males can be slightly larger in size, have more prominent crests or spines, and larger and broader heads. Look for more prominent cloacal or hemipenial bulges on each side of the base of the tail in males compared to females. Also look for more prominent and visible pre-anal, or femoral pores on the underside of the groin and hind limbs than in females, which have absent or much less pronounced pores. Frequency and nature of sexual behaviors, such as head bobbing, arm-waving, pushups, and other bodily communications more likely to be indicative of males can also be used, although cannot also rule out the occasional female. Hatchling or young agamids are much more difficult to sex reliably unless by more advanced means. Some species of agamids, such as the African rock agamas (*Agama picticauda*) and similar species in the genus, can also be visibly sexually dimorphic in colors, with males having bright to dark navy blue bodies, and red or orange tails and heads, whereas females and juveniles lack these colors and may be more of a brown or gray in color.

**Some lizards, such as these bearded dragons, can also be visually sexed using a flashlight under dark conditions, particularly when they may still be too young or small to be able to visually sex in other ways. Here, the organs can be illuminated, with the dual, or double hemipenes seen in males (on the left), while females can be seen to have only a single cloacal pocket. © RedHot Chili Dragons.*

-Monitors and Tegus-There are oftentimes not as many obvious characteristics of distinguishing males and females to go by when it comes to sexing monitors or tegus. There can often be sexual dimorphism in which males may be slightly larger in size, and may have larger and more pronounced secondary sexual characteristics such as larger heads, larger scalation, jaws, jowels, or other features than do females. The presence of slight hemipenial or cloacal bulges can also be felt for to distinguish male from female lizards. Younger animals can be much more difficult to reliably sex.

-Iguanas, Basilisks, Anoles, Chameleons, and Other Iguanids- Prior to reaching sexual maturity, these lizards can be much more difficult to reliably sex, but once sexual maturity is reached, are usually easily determined for most species. Sexual dimorphism in size is usually not too prominent, but look for many obvious secondary sexual characteristics in males compared to females, such as larger and more pronounced or exaggerated crests, spines, horns, casques, jowels and dewlaps, tails, larger heads and jaws, and more muscular limbs, or bodies, all depending on the species. More pronounced pre-anal, or femoral pores on males, than on females (which may be absent or much less pronounced), as well as feeling for the presence of a slight hemi-penial or cloacal bulge in males compared to females can also often be determinants.

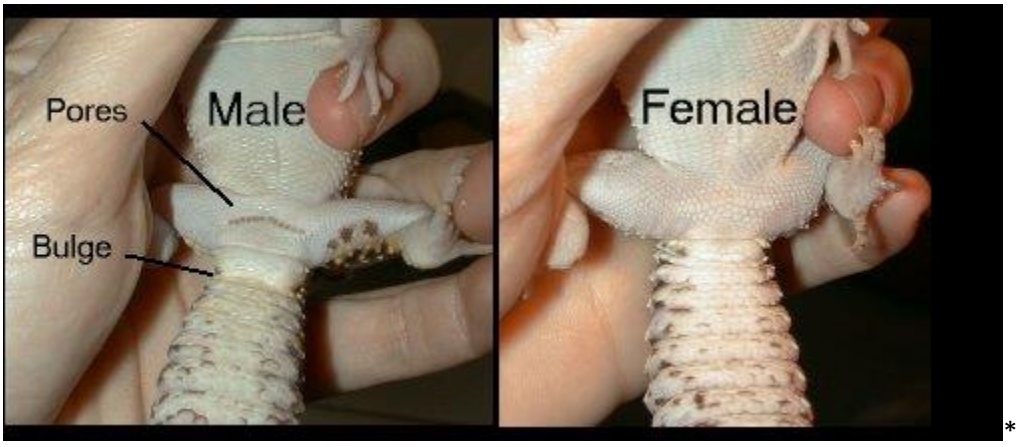

**Figure 2. Example of the presence or absence of Femoral Pores in male (left) and female (right) Leopard Geckos. Credited to Reptilecare.com*

Finally, look for obvious sexual or territorial behaviors much more likely to be exhibited more frequently by males than females such as push-ups, head bobbing, and other behaviors signaling dominance or territoriality, as opposed to females, which might also occasionally display some of these behaviors, but for different meanings usually more associated with signaling agitation, annoyance, or defensive behaviors. Also look for more rapid and/or vibrant colors in males than females, in some groups of animals, such as chameleons, which may be signified with increased territoriality, aggression, and/or sexual selection. Male chameleons can also have more prominent tarsal spurs on their hind limbs or feet used in mating and copulation.

-Skinks. Being such a large and variable group of lizards, the sex determination methods for skinks can vary quite a bit depending on the species. Many of the smaller species are somewhat sexually dimorphic in size and coloration, with sexually mature adult males developing brighter coloration around their heads, jaws, thoats, and ventral, or undersides. Larger species, such as blue tongued, monkey-tailed, and shingleback skinks, among other species, can also be somewhat sexually dimorphic in size, with males having larger, broader heads than females, a more tapered body, and slightly smaller bodies and hip bones than females. Hatchlings and younger skinks are much more difficult to sex, although they can be sexed using more advanced techniques such as genetic analysis or ultrasound.

**Figure 3. Comparison of the slight sexual dimorphic and secondary sex characteristics in male (left) and female (right) Green Iguanas. Note the larger, bulkier head, jowels, and dewlap of the male compared to the female. Credited to Lizards101.com.*


**Sex Comparison of Gila Monsters, Male, below, Female, above. © DocSeward.com*

-Helodermids. The helodermids include the most well known venomous lizards, the Gila Monster and the Mexican Beaded Lizard. Helodermids can be a little difficult to sex, although these lizards are, at least in many cases, sexually dimorphic in body size and form. Mature males tend to have a stockier or stouter overall build, and larger, broader heads than do females. Females, by comparison, tend to have comparatively smaller or narrower heads, and slightly more slender, “pear-shaped” bodies. These

physical differences are not always reliable in determining the sex of helodermids, however. The only other way of accurately sexing helodermids at this time, is through ultra sounding them.

-**Other Lizards**. With such a variety of all "other lizards", such as whiptails, racerunners, alligator lizards, armadillo lizards, legless lizards, swifts and fence lizards, plated lizards, lacertas, and other species, methods of sex determination vary considerably, and depend upon the exact species. Many species can be sexually dimorphic in size and color, and/or have secondary sexual characteristics, such as large, broader heads in males, brighter, or brighter and more vibrant coloration developed on the head, jaws, throats, and undersides or ventral surfaces of breeding adult males. Some species, or taxa can also be parthenogenetic, while others have more pronounced cloacal or pre-anal bulges in males than in females. Some other species can be more difficult to differentiate sexes, or indistinguishable, without more advanced analysis.

**Figure 4. Example of breeding coloration as a secondary sex characteristic in Southeastern Five lined Skinks. Note the reddish-orange coloration on the head and jaws of the male (top) compared to the female (bottom). Credited to AnimalSpot.*

Tuataras: While tuataras are not lizards, and are certainly unlikely to be available in the private herpetocultural sector or pet industry, including these unique reptiles for comprehensiveness should at least be noted. Male tuataras are sexually dimorphic, having a more distinct and prominent row or line of crests and spines, longer limbs, and larger and broader heads than do females.

Crocodilians (Crocodiles, Caimen, and Alligators):

-When it comes to sex determination for crocodilians, including crocodiles, alligators, and caimen, eggs are often temperature-sex dependent, as with a few other groups of reptiles, with lower or higher temperatures more likely to produce one sex over the other, although there can always be exceptions to this rule. When it comes to sexing these animals themselves, there can be some level of sexual dimorphism in size and secondary sex characteristics and behaviors between males and females, with males of at least many species reaching larger, bulkier overall sizes than females. Otherwise, examine the cloaca or vent of the crocodilian. For older or larger animals, the vents of males can be characterized as being noticeably more bulged as opposed to flat, or convex in females. For further confirmation of the presence of a penis (males) or a clitoris (females), feel for or visually examine for the respective organs. "Popping" or "spreading" of the vent or cloaca in younger, or hatchling animals can also sometimes be used as a sex determination technique by very gently applying pressure or other

appropriate tools to the cloacal region to evert either the reproductive organs.

**Figure 5. The ventral, or cloacal bulge evident in male (left) and flat vent in female (right) Crocodilian species. Credited to Crocodilian.com.*