How to Sex Every Reptile and Amphibian! Is Your Pet Male or Female?-Amphibian 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!

Amphibians:

-Frogs and Toads. Frogs and toads have several different methods of being able to distinguish males from females, depending on the species and/or taxa. Most are generally sexually dimorphic in size, with females being much larger than males, although there are always exceptions. Males can also sometimes be distinguished by the presence of their vocal sacs, which may either appear as more thinly lined and baggy appearing areas around the throat, or can sometimes be differently or more brightly colored in males than females. Male frogs of many species can also have much larger tympanic membranes, or the flat, "ear-like" discs on the sides of their heads behind the eyes, which are typically only equal to or smaller than the sizes of the eyes in females. Some groups of frogs, such as the dart frogs (dendrobatids) and mantellas, have larger toe pads in males, and other sexually dimorphic characteristics such a more prominent dorsal arch in females, and larger overall size, length, or girth in females compared to males.

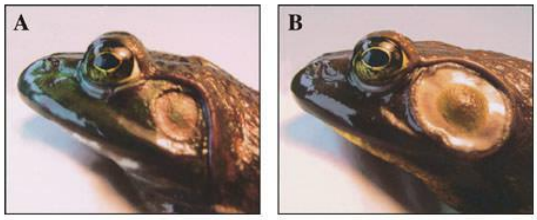

**Figure 1. Comparison of Typanic Membranes in American*

Bullfrogs, female (A), and male (B). Credited to Peter M. Narins, et. al.

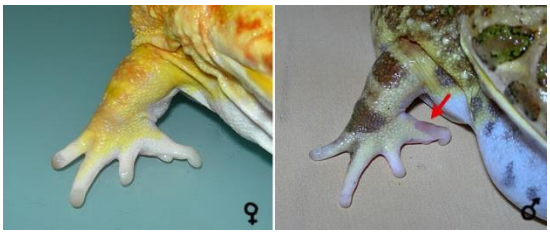

**Figure 2. Example of a modified appendage, in this case, the Nuptial Pad, seen in male anurans (right), but absent in females (left). Credited to Frog Forum.*

Males of many species can also have modified spines, nuptial pads, or other modified appendages on their front and/or hind feet used for mating and amplexus, or sometimes thicker and muscular fore-limbs for the same purpose. Finally, many frogs and toads can display sexual behaviors more likely indicative or males, such as constant croaking or vocalizations relative to females, and/or greater willingness to perform amplexus behavior. Frogs and toads are typically extremely difficult, if not impossible to otherwise sex in their younger, or tadpole forms before sexual maturity, at least not without more advanced techniques.

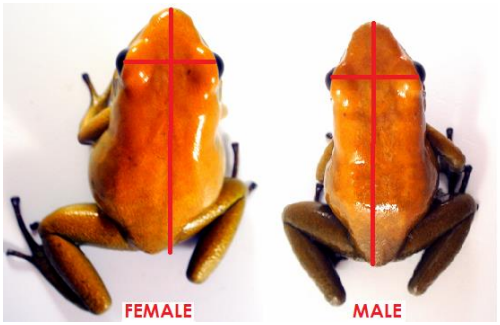

**Figure 3. Example of Sexual Dimorphism in size, length, and girth between male and female Dart Frogs. Credited to Josh's Frogs.*

-Salamanders, Newts, and Other Caudates. Salamanders and newts have several different methods of being able to distinguish males from females, depending on the species and/or taxa. Most are generally sexually dimorphic in size, with females being much larger than males, although there are always exceptions. Males of many species can also have modified spines, nuptial pads, or other modified appendages on their front and/or hind feet used for mating, or sometimes thicker and muscular fore-limbs for the same purpose. Finally, look for oftentimes, larger and more pronounced cloacal bulges near the hind limbs and tail in male salamanders or newts when compared to females. Salamanders and newts are typically extremely difficult, if not impossible to otherwise sex in their younger, or larval forms before sexual maturity, at least not without more advanced techniques. Some species, or intermediate life stages such as efts, can be very difficult to impossible to sex outside of their breeding seasons. Some species of newts can also have genital glands, submaxillary glands, or mental glands on the sides of the head or throat as well.

**Figure 4. Example of the Cloacal Bulge in Salamanders between males (top) and females (bottom). Credited to Michael Benard.*

-Caecilians. Caecilians are a bizarre and lesser studied group of amphibians, in which for many species, sexing is not possible through visual or external means, and males and females appear identical. Some of the aquatic members (the Typhlonectids) can be visually sexed however by examining the widened cloacal disks of males when compared to the more narrow, slit-like and elongated cloacal disks. Only mature adult caecilians, in any event, can be reliably sexed, if doing so is possible.