Common Names, Scientific Names, and Taxonomy: The Name of the Game

Have you ever wondered how, or why any given species of animal has or is called by a certain name? Where do these names come from, do they ever change, and who decides what to name and call them? And perhaps most importantly, how do we most effectively communicate them? Well, as it turns out, many different species of amphibians and reptiles, and many other animals for that matter, can go by many different formal and informal names, oftentimes depending upon where in the world one may live, and who one may talk to. As one would then quickly imagine, this can get very confusing and overwhelming as to just which species one may be talking about or referring to, especially if multiple individuals from differing regions or areas of the world are involved. So how do we combat such a widespread problem? This is where proper naming, and more specifically, the branch of taxonomy comes into play!

This is especially important when one considers that fact that one species of animal can have many such different names, or when one given name can be used to call multiple different species of animals. So how do these names work? To start, taxonomy is the specific branch of biology concerned with the naming and classification of all life and organisms on Earth, including all plants, animals, and other forms of life. It orders, ranks, and groups related species together, and gives each of them a unique name known as taxon, or taxa. Many might already be aware that scientific names and the field of taxonomy exists or have heard of them in some capacity or another, whether they are with the animals they choose to keep in captivity, and/or view and photograph in the wild, but a relatively fewer know or are familiar with what this branch of systematics actually mean, how to properly use them, or why they are important to learn and know.

First off, there are the truly “common” names, which are also often referred to as “vernacular” or “colloquial” names. These are simply the names commonly assigned to any given species of animal by the layperson in a given area or locale, and often have very local usages. “Pine snakes” in Wisconsin and the Midwest, which may also be the more widely used and accepted name of “fox snakes” is one such example, as are “blue tailed lizards” to describe juvenile five lined skinks, and more widely known, “cottonmouths” or “water moccasins” given to any of the harmless and nonvenomous species of watersnakes which often are confused with, and bear strong resemblances to the venomous, semi aquatic pit viper species. While many more examples can be citied, and can sometimes instill a curiosity to further learn more about the animal if the desire to do so is present, using these names, as it can then very quickly be gathered, often becomes very confusing and unreliable, and in most cases, are to be discouraged in favor of more widely accepted naming systems.

The second type of names are any given species’ “official” common names. Unlike the more colloquial names previously mentioned, these names usually hold a much more authoritative and credible meaning when they are used. As such, certain recognized individuals, or recognized committees of individuals, most often the Committee On Standard English And Scientific Names established by the Society for the Study of Amphibians and Reptiles, or SSAR, are routinely tasked with choosing which “common” names that are being used get to represent the “official” common names used, at least for

most, if not all of our native, Canadian and United States species of reptiles and amphibians. Other such similar global or international committees are likewise tasked with choosing the official "common" names for all of our more foreign, or "exotic" species as such. Similarly, the Integrated Taxonomic Information System (IT IS) provides authoritative taxonomic information for North American species, and species worldwide at https://www.itis.gov/ . In these instances, "common" does not necessarily refer to how widespread the usage of the name actually is, as much as it is simply the plain language name that is not the scientific or Latin name for the species. And once an "official" common name has been given, further rules or guidelines for their usage may also apply, including, but not limited to them being considered officially "compound" or "hyphenated" names (such as milksnake, kingsnake, and hog-nosed snake, etc.), and when a specific species of animal is being discussed, is often considered a proper noun with capitalization.

When it comes to the common naming of many different plants or animals, and especially with reptiles and amphibians, many species earn their common names, whether they end up becoming their official common name or not, based on some characteristic of that animal which can be readily seen, observed, or deduced, although some "official" common names can still be based on erroneous common myths and wive's tails, such as with the case of the "Milksnake" (*Lampropeltis triangulum*), which was widely and erroneously believed to have entered barns in order to drink milk from cows, when in actuality, the snakes were likely there due to their being a source of shelter and food in the forms of rodents. An animal's coloration, patterning, behaviors, observed diets, a particular geographic range or distribution of where they may be found, and oftentimes its other physical or morphological features can all make it into why any particular species may have the common name(s) that they do. "California Kingsnake", "Bearded Dragon", "Rattlesnakes" due to their presence of rattles, "Fence Lizards", "Garter Snakes", "Diamondback Terrapin", and many others are just a few of the species of animals which their common names can be used to describe them and what they look like, among other aspects.

Finally, scientific, or Latin names are the third form of name which can be given to an animal, and typically provide the most value and clarity in which species is being discussed or referred to. In the vast majority of cases, a species has, or is assigned only one, universally used and accepted scientific name, thereby eliminating many communication barriers and confusion which would oftentimes otherwise take place. Learning and using scientific names often can become a useful and valuable scientific tool for making further scientific inquiries, and can provide much more insight into a given species once one becomes familiar with using them. As alluded to earlier, the field or branch of taxonomy ranks and classifies organisms at differing levels with relation to how closely or distantly they are related to, or can be grouped with one another, and are known as taxa, or taxon. A standard, example scientific classification ranking, from broadest and most encompassing on the top, to the narrowest and most specific classification, is herein follows:

Life
Domain
Kingdom
Phylum
Class
Order

Family
Genus
Species

In many cases, organisms may furthermore be divided or placed into sub-taxa, or sub-categories as well, such as “suborder”, “sub-family”, “sub-genus”, and even “subspecies”. A subspecies is a group or population of individuals within its given species’ geographic range which vary somewhat due to morphological, genetic, or sometimes other characteristics, but not yet enough so to be recognized as a separate species. Subspecies cannot be recognized independently, and species with no recognized subspecies are simply referred to down to their species level, and for subspecies to be valid, at least two or more must be recognized.

Typically, a scientific or Latin name consists of two words or parts known as a binomial, or species epithet. This bionomial represents the animal’s genus name, followed by the specific species. When two or more subspecies are recognized, this name becomes three parts known as a trinomial, and when these names are described, the first species to have been found or described by science becomes the “nominate” subspecies. This means that the third part of these names are the same as the species epithet repeated to indicate them as they were initially described. Using a more specific example, here is the official classification for the Eastern Hognose Snake (*Heterodon platirhinos*) using sub-taxa, for which there are no further subspecies currently recognized:

Life: All living, physical, and animate entities
Domain: Eukaryota
Kingdom: Animalia
Phylum/Sub Phylum: Chordata/Vertebrata
Class: Reptilia
Order: Squamata
Suborder: Serpentes
Infraorder: Alethinophidia
Family: Colubridae
Subfamily: Xenodontinae
Genus: Heterodon
Species: *Heterodon platirhinos**

Another example, using a subspecies, and in this case, the Western Painted Turtle (*Chrysemys picta belli*), would be as follows:

Life: All living, physical, and animate entities
Domain: Eukaryota
Kingdom: Animalia
Phylum/Sub Phylum: Chordata/Vertebrata
Class: Reptilia
Order: Testudines
Suborder: Cryptodira

Family: Emydidae
Subfamily: Deirochelyinae
Genus: Chrysemys
Species: *Chrysemys picta*
Subspecies: *Chrysemys picta belli*

When using or discussion these scientific names, several other guidelines and rules of usage also typically apply, and also are as follows:

-Species epithets, and binomials or trinomials are typically italicized and/or underlined, while the beginning of the genus is always capitalized and the beginning of the species and subspecies epithets are always lower cased.

-When scientific names for the same species are referred to multiple times in a given time or place, their full name must always be used the first time, while in subsequent referrals, the genus may be abbreviated to the first capitalized letter of that genus, followed by the full specific epithet. For example, after being used the first time, the scientific name for the Common Gartersnake (*Thamnophis sirtalis),* can be shortened to T. sirtalis. When subspecies are being considered or discussed, the first two names can then also be abbreviated, but only after both have already been introduced and established previously. As an example, after previous introduction, the subspecies of Common Gartersnake known as the Chicago Gartersnake may be referred to as *T. s. semifasciatus.*

-In some cases, a scientific name, or species epithet may be incomplete, either because the specific species within an otherwise known genus may be unknown, or when one is simply just referring to, or wishes to address all, or multiple species or members in a genus. In these cases, the second portion of the scientific name would simply be denoted as “sp.” for individual animals of a species, or as “spp.” for multiple members or individuals in that genus. Some examples of this would include all Slider Turtle species (*Trachemys spp*.), or an individual North American whiptail lizard found for which its exact species is unknown as (*Aspidoscelis sp*.).

-Scientific and Latin names are often used interchangeably, and are often considered one in the same, but this is not always the case. Sometimes, different scientific names can be derived from different languages, such as Greek instead of Latin, and sometimes they may be named after a person being honored by the original discoverer or researcher of that species or subspecies. Etymology is the branch of linguistics that examines the origins, meanings, and history of words and parts of words and languages.

-In some cases, a species’ scientific or Latin name is the same as at least one of their common names in usage, making these fairly simple. The Green Iguana (*Iguana iguana*), and Common Boa, or “Boa constrictor” are examples of these.

-Several other reasons and benefits also exist for using scientific names, one of which being cases for species which do not have, or have not yet been assigned any common names. These cases may be due to the fact that the species being described is generally much lesser known and/or encountered naturally by the layperson or broader range of the public, or that because these collective bodies of

people have yet to otherwise become widely involved in naming the animal in question. Likewise, and in some cases, an "official" common name may be assigned for other taxonomic purposes, such as to further distinguish between variants of, or otherwise extremely similar taxa, but which are not in widespread common usage.

To summarize, so with all of these different names in common and scientific usage, and the different rules and guidelines for using each of them, several ultimate questions could be asked: how can one possibly know which names are proper to use, and when is it appropriate to use each of them? These questions can perhaps be ultimately answered simply by remembering who one's audience may be, or who one may be talking to or exchanging discourse with. For instance, in a more professional, academic, or research based context, particularly when that data or findings may be new or novel, using scientific names, or at least accompanying them to an "official" common name, is highly preferred. Likewise, if one is addressing or discussing a given species in only casual conversation or to a layperson or other broader group of people, using at least the standard, "official" common names is acceptable. For instance, in these situations, it would be acceptable to simply use the name "ball python" rather than always their scientific name of "*Python regius*" in order to avoid coming across as elitist or prestigious.

The branches of taxonomy and naming, or classification of organisms is a very fluid and dynamic field which is constantly changing as we continually are developing new ways and methods of conducting research and making discoveries. Many species are constantly being upgraded or downgraded to full species status, or are being split into subspecies, or even into separate species, such as with the oftentimes confusing North American Ratsnakes (*Pantherophis spp*.), and as such, much is not always set in stone indefinitely. Despite all of these challenges and complexities, learning scientific names and taxonomy can oftentimes serve as a tool for becoming much more educated, knowledgeable, and familiar with these animals that we all love and are interested in, and ultimately science, nature, and the natural world that is all around us. It all can seem like a lot to learn, but by taking the initiative to learn little by little, hopefully, it also can serve as a drive to never cease learning in any ways that we can, while always asking questions whenever and wherever necessary in all of our (hopefully) never ending quests for knowledge and species diversity.