What is in a name?

Avoiding the Chaos of Common names

Discover why your bird's scientific name is the key to avoiding the chaos of common names.

By Donald Brightsmith

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In 1991, I attended one of my first aviculture meetings at the large and active Tucson Aviculture Society. I was new to the world of aviculture but not to the world of birds. I had been a bird-watcher all my life and was in Arizona working on my master's degree in bird ecology. As I looked around the room and admired the beauty of the pets that the members had brought, I started identifying the species I knew: scarlet macaw, peach-faced lovebird, budgerigar, cockatiel. Then I arrived at one I didn't know. It was solid green with a long tail, a large light-colored bill and a few red feathers around the neck. It looked familiar, but I wasn't sure. "What is that small green bird with the long tail? It looks like a green parakeet," I asked a knowledgeable-looking person wearing a club name tag. "I can't be sure, but it is definitely not a parakeet. It is a conure," he replied. Deflated, I slipped away and approached the owner to ask about the bird. I was told that it was a green conure, a native of Mexico. That night I pulled out my Field Guide to the Birds of Mexico and found the picture that matched my memory of the bird. There on the page in front of me was the name "green parakeet." I was right, but I doubt that there was a person at the meeting who would have agreed with me. In that group, the bird was a conure, period.

I was confused. With each meeting and each new issue of BIRD TALK, I found more names that differed between ornithologists and aviculturists. I learned that the

ornithologists use the group name "parrot," while the aviculturists split these into Amazons, Pionus and caiques. This transforms the blue-headed parrot into blue-headed Pionus; black-headed parrot into black-headed caique; and yellow-headed parrot into yellowheaded Amazon, double yellowhead or even Tres Marias double yellowhead. My head began to spin. I would have to learn one set of common names to communicate with my bird-watching and ornithological colleagues, another set of common names to use with my new friends in the world of aviculture, and Latin or Spanish names to communicate with the South Americans who don't speak English. Unfortunately, name confusion is an extremely common problem. Within this article I hope to give you a practical introduction to 1) why names are important, 2) the problems with common names, 3) why all species have scientific (Latin) names, 4) the concepts of genus, species and subspecies, and 5) why understanding relationships among species is important.

Why Are Names Important?

Wanted to buy: a female bird to be paired with my male bird for commercial breeding.

This would not be a very effective classified ad. The odds of getting a useful mate for your lonely male would be about nil. For breeders, obtaining the correct bird is mandatory. Imagine that you have just acquired a rare little parrot from South America. It has a green body, short squared tail and red on the top of its head. You look it up in your new book, Parrots: A Guide to the Parrots of the World (Juniper and Parr, 1998), and find that the newest member of your flock is a male red-capped parrot. Excited to add this to your breeding collection, you advertise for a female. A breeder in California responds, and soon you are meeting the newest member of your flock at the airport. When you peer down into the carrier cage, you see that the bird has a red cap, a purple chest and a long tail! This is not what you ordered! Or is it? Furious, you return to the same book, and find that your new addition, a native of Australia, is also called a red-capped parrot. Two birds, as different as can be, share the same name! The resulting hassle and confusion illustrate perfectly how important it is to have accurate and unambiguous names.

Names also serve another important function: They give identity. When genetically different forms are lumped under the same name breeders don't try to maintain them, and conservationists don't protect them. This is because it is difficult to develop support to preserve isolated populations

if they are considered part of a widespread and common species. For example, the local population of green conures on Socorro Island off the coast of Mexico appears to be declining due to predation by cats and overgrazing by sheep. Yet few people will worry because this is just one isolated population of the relatively common green conure. However, this population has recently been determined to be a different species “the Socorro conure” (Juniper and Parr, 1998). As a result, we can now state that the only known population of the Socorro conure is declining. This may have a much bigger impact and may eventually prompt efforts to conserve the species. For this reason, naming decisions can have important repercussions for the future of a species.

Common (English) Names

As I have already illustrated, confusion of common names is rampant. Aviculturists use one set of names, and ornithologists use another. While the two sets do show substantial overlap, there are still enough differences to cause confusion. Among ornithologists there has been a concerted effort to standardize English names in recent years. For North America and Central America, the American Ornithologists Union has published a list of all of the species that occur from Canada to Panama with one set of official English names. Similar lists published by the British Ornithologists Union for Europe and the Australian Ornithologists Union for the Pacific region now provide one set of English names for most of the world's birds, but major areas such as South America remain unstandardized. Acceptance of this set of names is spreading but is not universal. Despite ornithologists' efforts at standardization, it is unlikely that aviculturists and members of the pet trade will rush out and adopt this new naming regime. Aviculturists will not rush to embrace a naming system where the sun conure is demoted to the sun parakeet, the black-capped conure is changed to the rock parakeet,

and the Maximilian's Pionus becomes the scaly-naped parrot. Unfortunately, members of the pet trade have been unable to arrive at a single standardized set of names. As a result, you may find the same species of bird offered for sale as Pacific parrotlet in one location and celestial parrotlet in another, and similar possibilities for confusion abound. Authors of many parrot books try to appeal to both ornithologists and aviculturists and are notorious for using a bizarre mix of names. Forshaw's (1989) classic Parrots of the World uses the group names Amazon, conure and caique like the aviculturists but then uses the term "parrot" for the Pionus like the ornithologists. The macaws provide another good example of name mixing, as Forshaw uses the aviculture names greenwing, Buffon's and Illiger's but then adopts the ornithological names blue and yellow, chestnut-front (for severes) and red shoulder (for Hahn's). Similar mixes of names can be found in Juniper and Parr's Parrots: A Guide to Parrots of the World, which goes so far as to resurrect the old avicultural name Tovi parakeet for the orange-chinned parakeet. Similar confusion reigns in books, pet shops and importation records where the species may be listed under any of two or more names.

But, it gets worse. In Latin America, there has been no attempt at all to standardize Spanish names. For example, just the simple word "macaw" varies widely among countries and may be translated as guacamayo (Costa Rica, Peru, Argentina), guacamaya (Guatemala), paraba (Bolivia) or lapa (Costa Rica). As a result, sharing information between ornithologists and aviculturists in the U.S. and abroad gets prohibitively difficult if you spend half the time just trying to figure out what species people are talking about.

Latin To The Rescue

Problems of name standardization are nothing new. In the mid-1700s, a Swedish naturalist by the name of Carolus Linneaus faced a similar problem. Scientists from all over Europe were describing and discussing species in myriad languages, so Linneaus proposed a solution. He published Systema Natural, a book in which every species known to science was given a standard Latin name. Latin was the logical choice because it was the language of science and used by academics throughout Europe. The system proposed by Linneaus proved a successful solution to the naming problem and has since been adopted worldwide. Today, every new species discovered the world over is assigned a scientific name in Latin. Each Latin name is composed of two words, the genus and the species, and they are always printed in italics. The genus name, always capitalized, comes first and usually describes some distinctive color, shape or behavior. For example, agap means "brotherly love" and ornis means "bird," from which the lovebirds get their genus name Agapornis. The same genus name is applied to groups of species that share similar characteristics. In the lovebird genus Agapornis, there are nine species, and all are small, stocky parrots with short, rounded tails and proportionally large bills (the genus is also defined by a few peculiar skeletal characteristics).

The second word in any scientific name is the species name. This, again, is a Latin word (or Latinized Greek word) that describes some aspect of the bird's appearance or behavior. Alternately, the species may be named for a place (for example, the Moluccan or pink cockatoo, Cacatua moluccensis, from the Malucu province in the Philippines) or named after a person (as with Fischer's lovebird, Agapornis fischeri). Many times, the English name is just a translation of the Latin name, as

with the masked lovebird, A. personata, where personat means "masked." However, this is not always the case; the name of the peach-faced lovebird, A. roseicollis, translates to "rose-collared" lovebird (see the sidebar, "What Does Your Bird's Scientific Name Mean?" for more examples).

Sometimes you may see a Latin name with three words, such as Psittacus erithacus erithacus. In this case, Psittacus indicates the genus and erithacus the species for the African grey. The second erithacus indicates the subspecies: in this case, the Congo African grey. One might wonder if the species and subspecies names are the same due to a lack of imagination, but this is not the case. It simply indicates that this is the "nominate subspecies," or the subspecies that was discovered first, and the nominate subspecies always has the same species and subspecies name. The other common subspecies of the grey is the Timneh African grey. When the first Timneh greys were discovered, it was obvious that they were similar to the Congos and they were therefore put in the same species: Psittacus erithacus. They could easily be distinguished by their smaller size, darker gray body and darker red tail, and for this reason the Timneh was given its own subspecies: *P. e. timneh*.

Taxonomy

At first glance, this system may seem neat and tidy, but the more you analyze it, the clearer the problems become. How different do birds have to be to be different subspecies? If two birds are obviously different, are they different subspecies or different species, and how can you tell? These

questions are difficult, and the attempts to answer them have developed into the field of taxonomy. Despite much effort, even the leading experts do not always agree which birds are different enough to be called subspecies and which subspecies are different enough to be called species. For example, the thick-billed parrot and the maroon-fronted parrot, natives of northern Mexico, are

considered subspecies of Rhynchopsitta pachyrhyncha by Forshaw (1989) and as different species, R. pachyrhyncha and R. terrisi, by Juniper and Parr (1998).

To help determine what are species and what are subspecies, taxonomists use a variety of techniques. When faced with a bird that is obviously new, the first question to ask is whether or not it is just an aberrant individual. Albinos, lutinos, partial albinos, piebalds and a variety of other genetic anomalies occur in nature, but these novelties are usually isolated occurrences, and such individuals do not warrant status as new species or subspecies.[Editor's note: The above genetic anomalies are color mutations that occur within a species Ñ not the result of the interbreeding or hybridization of two different species.] Similarly, hybrids do not warrant species status. So the first step when confronted with a novel bird is to determine if there is a wild population with a good number of members that all share the same characteristics. The next step is to compare the new individual with the known species and subspecies. For this, the collections in museums like the British Museum, the Smithsonian and the American Museum of Natural History are invaluable. Here, thousands of bird skins are kept in drawers carefully categorized so they can be quickly taken out and compared.

If you have an entire population of birds that do not match any of the known subspecies, you likely have a new subspecies. Once you know you have a new subspecies, how can you be sure it is not a new species? To answer this we must first define what we mean by a species. We all have an inherent concept of species. Confronted with any randomly chosen pair of birds, it is usually very simple to determine if they are the same species or not. Similarly, when scientists ask members of native tribes which species are the same or different, the natives identify species almost exactly the same as the scientists. This shows that species are for the most part intuitive and simple to determine. In some instances, the determinations are much more difficult to make. One example of this is the blue-throated macaw (Ara glaucogularis). For many years experts were uncertain if this macaw was a separate species or just a subspecies of the more common blue-and-gold macaw (A. ararauna). In such instances, it is obvious that we need a more exact definition of what constitutes a species.

The Oxford Dictionary of Zoology defines a species as a group of interbreeding or potentially interbreeding individuals that do not reproduce with members outside that group under natural conditions. This is known as the biological species concept, and despite the fact that it does have a few problems, it is the most widely used definition of a species. Simply put, this definition states that the subspecies that are members of the same species will interbreed and produce healthy fertile offspring, while members of two different species should not. So, this provides a test. If two forms occur in the same area in the wild but show little or no evidence of hybridization, they are different species. In the example of the blue-throated macaw, when scientists found blue throats and blue & golds living side by side without hybridizing in the savannas of Bolivia, it was obvious that they were different species. What about species that hybridize in captivity? Should the scarlet and military macaws be considered one species just because they interbreed when kept together? No, because as the end of the definition states, hybridization only matters under natural conditions in the wild. Birds like these macaws may be physically able to produce hybrids, but in the wild they choose only to mate with members of their own species. Alternatively, they may occur in different habitats, at different elevations or in different geographic areas, and, as a result, they may rarely or never produce hybrids in the wild. Other techniques have been developed to test if populations that do not overlap in nature are different species, but the ability or failure to produce hybrids in the wild is still considered the most useful way to determine species status.

What about genera? Unfortunately, there is much less agreement about exactly what should be included in each genus. In some instances, the distinctions are not obvious. Is the Queen of Bavaria conure (or golden conure) an aberrant member of the genus Aratinga that includes the sun, jenday and orange-fronted conures as suggested by Forshaw (1989), or is it the only member of the genus Guaruba as indicated by Juniper and Parr (1998)? Despite the occasional difficult cases, many of the genera are intuitively obvious. For example, the lovebirds of the genus Agapornis I discussed previously share many characteristics and are clearly distinguished from the other parrots, as are the Psittacula parakeets of India and Africa (including the Indian ringneck [P. krameri manillensis]), which all have long central tail feathers, a heavy bill and some sort of collar around the neck (or a contrastingly colored head). As a result, grouping birds into genera is still useful.

These shared characteristics go beyond just the level of the genus. For example, it is obvious that parrots as a group are very different from finches, and both are very different from bats and other mammals. Fortunately, the Linnean system of classification provides a nested hierarchy that allows these many levels of classification. In the full Linnean system, all life is assigned to a kingdom, phylum, class, order, family, subfamily, genus and species, and subspecies, where needed. (See the sidebar, "The Linnean System of Classification," for an example.) Taxonomy has been a great help to the advancement of science. It has provided the standardized set of names that allows us to communicate about organisms. It gives us tools for defining species and determining which individuals belong to different species. It has also grouped similar creatures together, allowing us to simplify and organize the vast complexity of life that surrounds us. The taxonomic order provides organization to bird books and museum collections and facilitates the rapid location of species of interest. Taxonomy has also played an important role by defining the species and subspecies that are the basic units of conservation. Yet taxonomy is based only on superficial similarity, and it does not really tell us about the relationships among organisms; this is the province of the field of systematics.

Systematics

Scientists have been striving to understand the relationships among organisms since Darwin proposed the theory of evolution, but only in the past decades with the explosion of molecular biology has the field of systematics really taken off. Now with the ability to rapidly sequence genes, systemitists can examine the genetic code of species and subspecies to determine how they are related. As with taxonomy, this field is not without its ambiguities and difficulties, but great strides are being made in illuminating the relationships among organisms and giving us tantalizing peeks at how evolution has progressed. For example, one recent study of New World parrots suggested the pattern of relationships shown in Figure 1. Based on this work, the authors show that

the Spix's macaw (Cyanopsitta spixii) may be more closely related to the peach-fronted conure (Aratinga aurea) than it is to the blue-and-gold macaw (Ara ararauna) or the hyacinth macaw (Andorhynchus hyacinthinus). While it is doubtful that people will start calling the Spix's macaw the "Spix's conure," this shows us that the superficial similarities we use to group organisms may not accurately reflect their evolutionary relationships.

Knowing evolutionary relationships is valuable because it gives us glimpses at how evolution has progressed. This knowledge shows us what features of a species may be new evolutionary innovations and what characteristics are just leftovers that the species has inherited from its ancestors. For example, my investigations have shown that the most ancient and ancestral parrots likely nested in tree cavities. But, some parrots have evolved the ability to nest in entirely different locations. Grey-cheeked parakeets (Brotogeris pyrrhopterus), orange-fronted or halfmoon conures (Aratinga canicularis), and hooded parrots (Psephotus dissimilis) nest in termite mounds. Quaker parakeets (Myiopsitta monachus) nest in stick nests; and some hyacinth macaws (Andorhynchus hyacinthinus), greenwinged macaws (Ara chloroptera) and Patagonian conures (Cyanoliseus patagonus) nest in burrows in cliffs. Knowing that these behaviors are new evolutionary innovations

prompts questions about why these species evolved to use new nesting sites while most parrots remained dependent on old tree cavities.

Knowledge of species relationships can also be applied to questions about conservation. Conservation work often involves the study of species that are highly endangered. Because they are so rare, each individual is valuable, and mistakes that result in the death of individuals or lost time are very costly. As a result, scientists often prefer to develop and test techniques on closely related species. For example, investigators developing release techniques for the Puerto Rican Amazon are currently working with Hispaniolan Amazons. Given the relationships shown in Figure 1, scientists interested in testing techniques for the critically endangered Spix's macaw must now consider looking at large conures as possible surrogates. Or they must determine how the small macaws (severe, yellow collar, Illiger's, etc.) are related to Spix's before investing large amounts of money developing new field techniques. As you can see, knowledge of relationships may help conservationists save time and money and may increase the success of endangered species programs.

Systematics also provides a solid base for decisions about how to name and classify organisms. Returning to the debate over the genus of the Queen of Bavaria conure, Figure 1 illustrates that the Aratinga conures are more closely related to the Spix's macaw than they are to the Queen of Bavaria conure. This gives us a solid scientific reason to say that the Queen of

Bavaria deserves to be honored with its own genus, Guaruba. One of the most useful things about an accurate classification is that we know much about an organism just by the groups it belongs to. If you tell me you have a bird, I immediately know it has feathers, a bill and it can probably fly. If it is a parrot, I know it has a strong hooked beak, grasping feet and most likely nests in some sort of cavity. If you say it is a cockatoo, I know it has a crest, eats seeds and fruit, comes from Australia or the surrounding area, and has the potential to be a loving pet. All this information I can get without seeing the bird and without knowing what species it is. While I could be wrong on some of the details, especially if it is an odd species, the amount of information that is stored in our classification systems is impressive. As you can see, the advantage of accurately classifying organisms is that it provides a wealth of background information. Yet this use of classification is dependent on accuracy, the likes of which can be provided only by detailed systematic analyses.

With this we return to our opening question: "What's in a name?" Species names are extremely valuable. They are labels that we can use to identify, classify and categorize. When names are carefully assigned and based on systematic analyses of relationships, names tell us much about the species that carry them. Thanks to Linneaus and the generations of taxonomists since, we have a single set of standard Latin names that we can all use to make sure that we avoid the confusion faced by the poor breeder who wanted a red-capped parrot. So, the next time you look at your birds, be they zebra finches (Poephila castanotis), budgerigars (Melopsittacus undulatus), cockatiels (Nymphicus hollandicus) or hyacinth macaws (Andorhynchus hyacinthinus), remember that each has two names, Latin and English, and that each holds a wealth of information and history.

What Does Your Birds Scientific Name Mean?

African grey parrot (Psittacus erithacus): unknown parrot (psittacus = parrot, erithacus = unknown bird)

Budgerigar (Melopsittacus undulatus): waved song-parrot (undu = waved, melo = song, psitta = parrot)

Cockatiel (Nymphicus hollandicus): Holland nymph or Holland bride

Crimson rosella (Platycercus elegans): elegant broad tail (platy = broad,cercus = tail)

Green-cheeked conure (Pyrrhura molinae): mill red tail (pyrrh = reddish, ura= tail, molina = mill)

Maximilian's Pionus (Pionus maximiliani): MaximilianÕs fat parrot (pion =fat or rich)

Quaker parakeet (Myiopsitta monachus): monk fly parrot (myio = a fly, monachus = a monk)

Senegal parrot (Poicephalus senegalus): Òall-headÓ from Senegal (poi = to make or made of, cephalus = head)

Sulphur-crested cockatoo (Cacatua galerita): capped cockatoo or cheerful cockatoo (galer = capped [in Latin] or cheerful [in Greek])

Spix's macaw (Cyanopsitta spixii): Spix's dark-blue parrot (cyan = dark blue)

Thick-billed parrot (Rhynchopsitta pachyrhyncha): billed parrot with a thick beak (rhych = bill, pachy = thick)

Umbrella cockatoo (Cacatua alba): white cockatoo (cacatua = cockatoo; alba =white)

Yellow-headed Amazon (Amazona oratrix): Amazonian talker (oratrix = orator)

Yellow-naped Amazon (Amazona auropalliata): golden-cloaked from the Amazon (aur = gold, pallio = a mantle or cloak)

Zebra finch (Poephila castanotis): chestnut-eared grass-lover (poe = grass or grassy place, phila = love or loving, castan = chestnut, otis =ear)

The Linnean System of Classification

Kingdom	Animalia	Animals
Phylum	Cordata	Animals with nerve cords (including birds, fish, reptiles and mammals)
Class	Aves	Birds
Order	Psittaciformes	Parrots
Family	Psittacidae	All parrots except the cockatoos
Subfamily	Arinae	New World parrots
Genus	*Amazona*	Amazon parrots
Species	*farinosa*	Mealy Amazon
Subspecies	guatemalae	Blue-crowned or Guatemalan Amazon