TAXONOMY

Name-Calling A Science

Using "$2 words" for plants and animals is a workable way to create order from chaos of common names. A million species have been given unique, descriptive scientific names.

By HORACE LOFTIN

➤ "THE HUGE, tawny —— glared and snarled at the hunters on the ground below his tree as they prepared to toss a lasso over the ——'s head. His heart filled with hate against these two-legged oppressors, the —— tensed his muscles to spring."

But what is a ——?

That is hard to say. It might be called a mountain lion or a cougar. On the other hand, you may know it as a puma or a panther. Or maybe in your part of the country it goes by the name deer tiger, Mexican lion, catamount or painter. All these are widely used names for the same animal. Wherever this great cat is found there is usually a local name for him, different from the one used on the other side of the mountain.

This sort of confusion within one country is perplexing enough. Then imagine the complications that arise when foreign names for the animal come into play. The mountain lion, puma or whatever you choose to call him is found from Patagonia in southernmost South America all the way north into Canada. Each of hundreds of different Indian groups has its own name for the big cat, not to mention the Spanish, Portuguese and French names used for it.

Just as this big cat has many, many common names, so are nearly all of the more common species of plants and animals loaded down with an array of common names that—if uncorrected—would break down any attempts to study all living things systematically.

Leaps Language Barriers

How would a biologist from the United States talk to a Mexican scientist about this cat, and know they both had exactly the same animal in mind? What name would a Japanese naturalist use to write about the cat, and have his German colleagues understand him precisely

Now, multiply this problem by 1,000,000; for that is about the number of different plant and animal species that up to now have been discovered and described by biologists. It would be as if every person in the world had only first names, and used different first names at different times.

The solution that was worked out to overcome the handicap of too many names for living things is essentially a simple one, although it took many centuries to develop. Suppose there is an individual known in different places as Robert, Rob, Bob, Bobby, Robin and Robby. The first question we ask is, whom is he kin to? Well, this fellow's father is a Stoopnagle. Then if we make up our mind that the name Robert will be his "real" first name, we have Robert Stoopnagle, which identifies him in our minds once and for all.

Relationship Is Key

Ask the same question about the mountain lion, puma, cougar, etc. Whom is he kin to? Well, he is a cat; and so, using the Latin word for cat, his surname would be *Felis*. Add on the descriptive Latin name *concolor* as a "first name," and we have the scientific name for the animal, different from the name of any other animal, and understood by all biologists, regardless of their nationality or language. The —— is *Felis concolor*.

This binomial, or two-name, system gives us the key to naming all living things in an orderly fashion, and at the same time indicates the relationship of one creature with another. For instance, now that we have the key name for cats in general, *Felis*, it is a relatively simple matter to name scientifically the other cats.

WHAT IS IT?—A cougar on one side of the mountain may be a puma, mountain lion, catamount or painter on the other. But to scientists, it is Felis concolor anywhere in the world. The scientific name is the same everywhere.

The common house cat is *Felis domestica*, the group (generic) name being *Felis*, and the "first" (specific) name, *domestica*, simply being the Latin for "domestic." In the same manner, lions are *Felis leo;* tigers are *F. tigris;* leopards are *F. pardus;* and jaguars are *F. onca.*

Notice that the generic name begins with a capital letter, while the specific name does not. Also, after a generic name has been used once or twice in an article, it is permissible to abbreviate it so long as the meaning remains clear.

System Ends Confusion

One of the most valuable uses of the scientific name is in clearing the confusion arising when two or more distinct species have the same common names. Take the common name "locust," for example. There are the locusts mentioned in the Bible that came in swarms, destroying everything green in their wake. Then there are the 17-year locusts in America, handsome insects that emerge from the soil every 17 years and do little harm beyond shattering the air with singing.

In non-scientific speech, they are both "locusts." They are, however, far from being the same insect. One is destructive, the other practically harmless; one has biting mouthparts, the other sucking mouthparts; one is a grasshopper, the other a cicada. The 17-year "locust" is needlessly feared and mercilessly attacked because of his undeserved bad name.

But mention the name *Schistocerca gregaria* to an insect specialist anywhere in the world and speaking any language, and he will know you refer to the destructive desert locust. Write about *Magicicada septidecim* and your scientific reader knows you refer only to the 17-year "locust," or cicada. System ends confusion.

The binomial system was worked out by

Devised by Linnaeus

a Swedish botanist, Carl Linnaeus, who for this contribution won the undying gratitude of men of science from his day to ours. A basic date in the history of biology is 1753, the year Linnaeus presented his perfected system of classification.

The Linnaean system goes far beyond the naming of species. It pictures life as a great branching tree. The giant trunk represents all living things. This soon divides into two large branches—the animal kingdom and the plant kingdom. These in turn become more finely subdivided, until the terminal branches of the tree of life, the million twigs representing the known species of the earth, are reached.

Starting at the "tree trunk," the major divisions living things are classified into are: (1) All living things; (2) kingdom; (3) phylum; (4) class; (5) order; (6) family; (7) genus; and (8) species.

Let us trace *Felis concolor* backward through the tree, to see how the Linnaean system groups and names the principal divisions of living things.

Tracing One Classification

The outermost twig is the species—*concolor,* in this case. The species twig arose from a larger branch, the genus—*Felis.* Several genera (plural of genus) make up a family. The family branch from which *Felis* sprouted is called Felidae.

A group of families make up an order. The Felidae are members of the order Carnivora, or "meat eaters." This order includes such families as the Hyaenida (hyenas), Canidae (dogs), and Ursidae (bears).

Several orders form a class. The Carnivora are in the class Mammalia, which great group of animals is chiefly characterized by the presence of mammary glands on the females which give milk for the young. Man himself *(Homo sapiens)* belongs to the class Mammalia.

The next great branching—phylum—is made up of classes. The class Mammalia, along with Amphibia (frogs, newts), Reptilia (snakes, lizards), Aves (birds), and several classes of fishes are included in the phylum Chordata (or Vertebrata).

A combination of phyla makes up one of the two great branches of life—the plant and the animal kingdoms. They in turn comprise the whole of living things.

So we have traced *Felis concolor* over the broad pattern of classification used by scientists everywhere, from his place as a distinct kind of life, a species, to a point where he is related to all living things. The outline of plant and animal classification parallels in general the course of evolution, through which a single undifferentiated living cell gave rise to the million forms of life known so far to science.

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PUBLIC SAFETY

Preventing Accidents

➤ "ACCIDENTS ARE the number one crippler of children under five years old in the United States today," declares Lawrence J. Linck, executive director of the National Society for Crippled Children and Adults.

Preventing such accidents is the responsibility of parents but "over-protection" is not the answer, in Mr. Linck's opinion. He urges careful teaching of children combined with "intelligent precaution."

Because most accidents happen to children under five in the home, he listed the following steps in accident prevention:

1. Children should be taught early in life that fires burn them; falls hurt them; poisons make them ill, and knives and scissors cut them.
2. Poisons, disinfectants and medicine should be kept in locked cabinets or high out of the child's reach.
3. Children should be shown the dangers of bonfires and matches and how to avoid them, but at the same time fireplaces should be screened and matches kept out of reach of toddlers.
4. Handles of kitchen pots should be turned toward the back of the stove and out of the reach of children.
5. Guns, if kept in the house at all, should be put away unloaded and under lock and key.
6. Children should be taught how to walk carefully with sharp knives, scissors and glass containers, as soon as they are able to understand the dangers of such things. Until that time make sure sharp instruments are safely put away.
7. Children should be guarded from perilous climbs and from dangerous ledges and stairs. Screens should be fastened securely with screening nailed tightly to frame.

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PHYSIOLOGY

Supercharging Fails to Aid Athletes' Recovery

➤ ATTEMPTS TO speed recovery of college athletes from exhaustion after violent exercise by having them breathe pure oxygen, a so-called oxygen supercharging, were labeled "useless" in a report by Dr. Sid Robinson, Indiana University professor of physiology, at the meeting of the National Collegiate Track Coaches Association in Lincoln, Nebr. (See SNL, Feb. 21, p. 119.)

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