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How Are Species Named?



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Introduction

People naturally give names to the organisms they come across, but due to differences in language, region, and knowledge, the same species may go by many different common names, or the same name may be used to refer to several different species. In order to have a record of all the species that have been discovered, and to make it possible to precisely communicate about them, a formal scientific process for naming and describing species has been developed over the course of history.

The process for naming species

Species are considered scientifically described when they have been given a two-part Latin name and have had a description published in a peer-reviewed scientific journal.

The scientific name and description serve as the universal, formal reference for future identification. The description also includes information about the type material, which is an actual preserved individual of the species. This specimen is usually the one on which the description is based and is stored in a museum or collection, to be accessed if necessary to serve as a real-life reference.

Sometimes the type material is an illustration or photograph, if the organism in question is very rare or threatened. Since type material also typically contains detailed information about the location and date that the specimen was collected and the name of the collector, it can serve as a historical artifact as well. For example, sampling tissue from museum specimens of sea birds can provide evidence that environmental levels of mercury have risen over time.

Describing new species

In order to describe a new species, scientists must carry out a thorough investigation to make sure that the species has, in fact, not yet been described. This often involves consulting with other experts on the particular taxon, visiting museums and collections to examine voucher specimens, reviewing the historical literature, and carrying out DNA sequencing.

Once it has been determined that the species has not previously been named, the scientist must select a name and write a description. The name must follow certain Latin grammatical rules (though these allow room for creativity) and can be simple, descriptive, geographic, commemorative (i.e. named after a person), nonsensical, or some combination.

The description includes a thorough listing of physical characteristics, including variation in these that the scientist has observed in the population. These proceed from general to specific (e.g. first describing overall shape and size, then proceeding to describe each body part in more detail) and pay special attention to those characteristics that can be used to distinguish it from other species. The description needs to be both scientifically objective and visually vivid, which means that writing it “combines two of the most difficult types of writing: the technical description and the poem” (Winston). The conventions for different taxa (International Code of Nomenclature for algae, fungi, and plants (ICN), the International Code of Zoological Nomenclature (ICZN), or the International Code of Nomenclature of Bacteria (ICNB)) provide vocabularies and specialized terminologies that are used in those fields.

The descriptive article also typically includes a discussion of the organism’s higher taxonomic placement, and any information on ecology and behavior that the author has. In the past, descriptions of plants and fungi were required to be published in Latin, as Latin was historically the universal language of science. In 2011, recognizing that the Latin requirement may slow down description of plants that are imminently threatened with extinction, the ICN changed the requirement to allow formal descriptions in Latin or English. Newly described species are regularly added to EOL.

References

Winston, Judith. *Describing Species: practical taxonomic procedure for biologists*. 1st. New York: Columbia University Press, 1999.