In [biology](http://en.wikipedia.org/wiki/Biology), a **species** is one of the basic units of [biological classification](http://en.wikipedia.org/wiki/Biological_classification) and a [taxonomic rank](http://en.wikipedia.org/wiki/Taxonomic_rank). A species is often defined as a group of [organisms](http://en.wikipedia.org/wiki/Organisms) capable of interbreeding and producing fertile offspring. While in many cases this definition is adequate, the difficulty of defining species is known as the [species problem](http://en.wikipedia.org/wiki/Species_problem). Differing measures are often used, such as similarity of DNA, morphology or ecological niche. Presence of specific locally adapted traits may further subdivide species into "[infraspecific taxa](http://en.wikipedia.org/wiki/Infraspecific_taxa" \o "Infraspecific taxa)" such as [subspecies](http://en.wikipedia.org/wiki/Subspecies) (and in botany other [taxa](http://en.wikipedia.org/wiki/Taxa) are used, such as [varieties](http://en.wikipedia.org/wiki/Variety_(botany)), subvarieties, and formae).

Species [hypothesized](http://en.wikipedia.org/wiki/Scientific_hypothesis) to have the same ancestors are placed in one [genus](http://en.wikipedia.org/wiki/Genus), based on similarities. The similarity of species is judged based on comparison of physical attributes, especially their [DNA](http://en.wikipedia.org/wiki/DNA) sequences, where available. All species are given a [two-part name](http://en.wikipedia.org/wiki/Binomial_nomenclature), a "binomial name". The first part of a binomial name is the [generic name](http://en.wikipedia.org/wiki/Name_of_a_biological_genus), the genus of the species. The second part is either called the [specific name](http://en.wikipedia.org/wiki/Specific_name_(zoology)) (a term used only in zoology) or the [specific epithet](http://en.wikipedia.org/wiki/Specific_name_(botany)) (the term used in botany, which can also be used in zoology). For example, [*Boa constrictor*](http://en.wikipedia.org/wiki/Boa_constrictor) is one of four species of the [*Boa*](http://en.wikipedia.org/wiki/Boa_(genus)) genus. The first part of the name is capitalized, and the second part has a lower case. The binomial name is written in italics.

A usable definition of the word "species" and reliable methods of identifying particular species are essential for stating and testing biological theories and for measuring [biodiversity](http://en.wikipedia.org/wiki/Biodiversity), though other taxonomic levels such as families may be considered in broad-scale studies.[[1]](http://en.wikipedia.org/wiki/Species#cite_note-SahneyBentonFerry2010LinksDiversityVertebrates-0) Extinct species known only from fossils are generally difficult to assign precise taxonomic rankings, which is why higher taxonomic levels such as families are often used for fossil-based studies.[[1]](http://en.wikipedia.org/wiki/Species#cite_note-SahneyBentonFerry2010LinksDiversityVertebrates-0)[[2]](http://en.wikipedia.org/wiki/Species#cite_note-SahneyBenton2008RecoveryFromProfoundExtinction-1)

The total number of non-bacterial species in the world has been estimated at 8.7 million,[[3]](http://en.wikipedia.org/wiki/Species#cite_note-plos-2)[[4]](http://en.wikipedia.org/wiki/Species#cite_note-Guardian-3) with previous estimates ranging from two million to 100 millio

**Common names and species**

The commonly used names for plant and animal taxa sometimes correspond to species: for example, "[lion](http://en.wikipedia.org/wiki/Lion)", "[walrus](http://en.wikipedia.org/wiki/Walrus)", and "[Camphor tree](http://en.wikipedia.org/wiki/Camphor_tree)" – each refers to a species. In other cases common names do not: for example, "[deer](http://en.wikipedia.org/wiki/Deer)" refers to a [family](http://en.wikipedia.org/wiki/Family_(biology)) of 34 species, including [Eld's Deer](http://en.wikipedia.org/wiki/Eld%27s_Deer" \o "Eld's Deer), [Red Deer](http://en.wikipedia.org/wiki/Red_Deer) and [Elk](http://en.wikipedia.org/wiki/Elk) (Wapiti). The last two species were once considered a single species, illustrating how species boundaries may change with increased scientific knowledge.

[[edit](http://en.wikipedia.org/w/index.php?title=Species&action=edit&section=3)