

Classification

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The classification system used today was created in the 18th century by Swedish biologist Carl von Linne (Linnaeus). In this system organisms are grouped on the basis of common features into categories of increasing similarity. To find out more about Linnaeus try www.ucmp.berkeley.edu/history/linnaeus.html.

The broadest categories in common use are called **kingdoms** with each kingdom being further divided in the following way:

- Organisms in a kingdom are divided into phyla.
- Organisms in a phylum are divided into classes.
- Organisms in a class are divided into orders.
- Organisms in an order are divided into families.
- Organisms in a family are divided into genera (singular = genus).
- Organisms in a genus are divided into species.

The Concept of a Species

In Linnaeus's classification system, a species is the narrowest (most specific) grouping of organisms. However, a group of organisms within one species are not identical. They are similar enough for us to think of them as one 'kind' or species. A more formal definition of a species states:

A species is a group of individuals that are more or less alike, and that are able to interbreed and produce fertile offspring under natural conditions.

Five Kingdoms of Life

Although early classification systems recognized only two kingdoms, the plant and animal kingdoms, one more recent system in common use recognizes five kingdoms:

1. **Monera** (Greek moneres - single): Microscopic, single-celled organisms with simple cells - bacteria and blue-green algae.
2. **Protista** (Protoctista) (Greek protos - first): Mainly microscopic, single-celled organisms but with complex cells. Marine examples include diatoms, dinoflagellates and seaweeds (algae).
3. **Plantae** (Latin planta - plant): Includes multi-celled organisms such as mosses, ferns, conifers and flowering plants but not seaweeds (algae).
4. **Fungi** (Latin fungus): Once part of the plant kingdom, organisms such as mushrooms and toadstools are now placed in their own kingdom.
5. **Animalia** (Latin anima - breath, soul): The animal kingdom includes multi-cellular animals with backbones and those without.

To find out more try www.ucmp.berkeley.edu/alllife/threedomains.html.

The Animal Kingdom

Of the 33 major animal groups (phyla) within the animal kingdom, 28 are found in the sea compared with only 11 found on the land and 14 found in freshwater. The following list should help you to find more information about marine phyla.

Sponges and other encrusting things

Sponges are colourful animals that are commonly found as soft growths on the undersides of rocks on a rocky shore. Other encrusting organisms that may be found on intertidal rocks include bryozoans and tunicates (ascidians).

- Phylum Porifera - sponges (10,000 species)
- Phylum Ectoprocta (Bryozoa) - bryozoans (5,000 species)
- Phylum Chordata - a phylum that includes mammals, fish and birds as well as encrusting tunicates and sea squirts

Things With Stings

The phylum Coelenterata is an old name for animals that now belong in two Phyla.

- Phylum Cnidaria - sea jellies, sea anemones, hydroids and corals (9,500 species)
- Phylum Ctenophora - comb jellies (90 species)

A World of Worms

A long, thin, worm-like body seems to be a successful formula for a number of marine phyla.

- Phylum Platyhelminthes - flat worms (20,000 species)
- Phylum Annelida - segmented worms and polychaete worms (12,000 species)
- Phylum Nemertina - ribbon worms (900 species)
- Phylum Sipuncula - peanut worms (300 species)
- Phylum Echiura - spoon worms (140 species)

Crusty Creatures

Until recently, insects, spiders, crabs, shrimp barnacles and a stunning number of animals (over one million) with a hard outer casing and jointed legs all belonged to the Phylum Arthropoda. However, many biologists now divide this 'super-group' into a number of new phyla.

- Phylum Crustacea - crabs, shrimp and barnacles (40,000 species)
- Phylum Uniramia - insects, millipedes and centipedes (963,000 species)
- Phylum Chelicerata - spiders, scorpions and sea spiders (75,000 species)

Soft Bodies and Shells

Another really large phylum with many marine species is the Phylum Mollusca. Among the 110,000 species chitons, snails, sea slugs (nudibranchs), bivalves, squid, sea cuttles (cuttlefish) and octopuses. All of these molluscs have soft body and many have a shell or number of shells.

Spiny Skin and Tubes

Phylum Echinodermata is a wholly marine group that includes sea stars, brittle stars, sea urchins, sea cucumbers and feather stars (6000 species).

The *Shape of Life* was a TV series detailing animal classification and evolution that now has a web site that allows teachers to use some wonderful animations and other amazing video segments. Go to <http://shapeoflife.org>.