

Classification

Section 18-1

The Need For Systems

Key Idea: Biologists use **taxonomic systems** to organize their knowledge of organisms. These **systems** attempt to provide consistent ways to name and categorize organisms.

- **Taxonomy** is the practice of naming and classifying organisms.

The Need for Systems

- About 1.7 million species have been named and described by scientists.
- Scientists think that millions more are undiscovered.
- Taxonomic systems use categories to organize organisms.

Scientific Nomenclature

Key Idea: All scientific names are made up of two **Latin** or **Latin**-like terms.

- **Genus** is when a taxon is used to group similar species.
- **Binomial nomenclature** is a two-word naming system

Early Scientific Names

- Various naming systems were invented in the early days of European biology.
- A simpler and more consistent system was developed by Swedish biologist Carl Linnaeus in the 1750s.
- His system included the genus name and a single descriptive word for each species.

Naming Rules

- The unique, two-part name for a species is now called a *scientific name*.
- No two species can have the same scientific name.

The Linnaean System

Key Idea: In the Linnaean system of classification, organisms are grouped at successive levels of the hierarchy based on similarities in their **form** and **structure**.

Levels of the Linnaean System

- The eight basic levels of modern classification are domain, kingdom, phylum, class, order, family, genus, species.

Modern Linnaean System

- Each level has its own set of names for taxa at that level
- Each taxon is identified based on shared traits.
- The category *domain* has been invented since Linnaeus' time.

Modern Linnaean System

- The category *kingdom* encompasses large groups, such as plants, animals, or fungi.
- Six kingdoms fit within the three domains.
- A *phylum* is a subgroup within a kingdom.
- A *class* is a subgroup within a phylum.

Modern Linnaean System

- An *order* is a subgroup within a class.
- A *family* is a subgroup within an order.
- A *genus* (plural, *genera*) is a subgroup within family.
- Each genus is made up of species with uniquely shared traits, such that the species are thought to be closely related.