17.1 The Linnaean System of Classification

Bell Ringer:

- Look on page 517 and read the caption in green and white that goes with the picture.
- -How would you classify this organism??
- -What characteristics could you use to classify the pangolin in the photograph?

17.1 The Linnaean System of Classification

KEY CONCEPT

Organisms can be classified based on physical similarities.

17.1 The Linnaean System of Classification

Linnaeus developed the scientific naming system still used today.

- Taxonomy is the science of naming and classifying organisms.

White oak:
Quercus alba

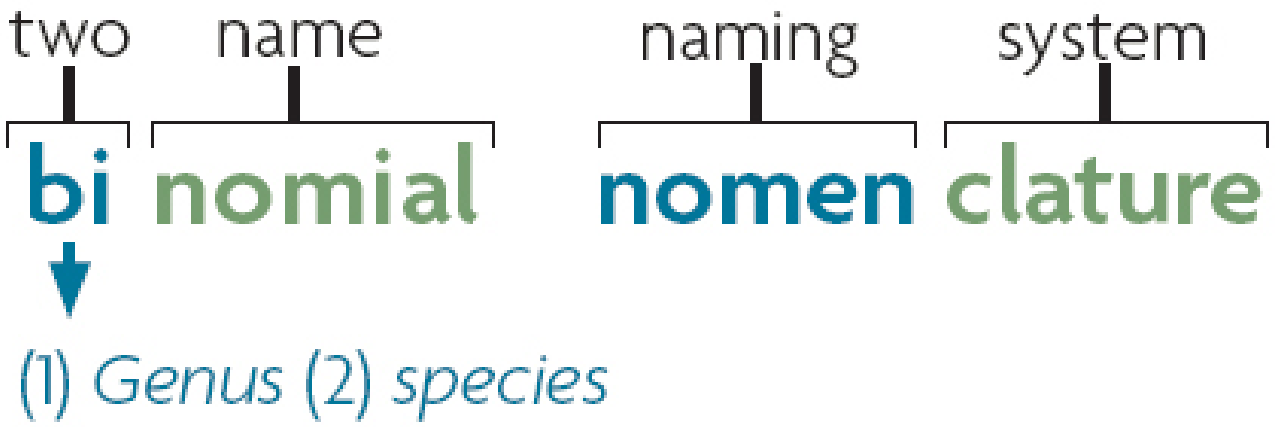
- Carl Linnaeus changed his name to Carolus because he was so serious about his classification work.

17.1 The Linnaean System of Classification

- A taxon is a group of organisms in a classification system.
- The basic taxon in the Linnaean system is the species

17.1 The Linnaean System of Classification

- Binomial nomenclature is a two-part scientific naming system.
  - uses Latin words
  - scientific names always written in italics
  - two parts are the genus name and species descriptor



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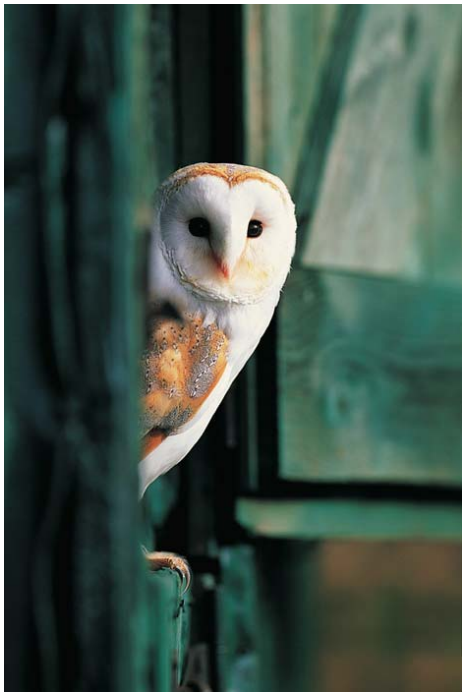
- A genus includes one or more physically similar species.
  - Species in the same genus are thought to be closely related.
  - Genus name is always capitalized.
- A species descriptor is the second part of a scientific name.
  - always lowercase
  - always follows genus name; never written alone



Tyto alba

17.1 The Linnaean System of Classification

- Scientific names help scientists to communicate.
  - Some species have very similar common names.
  - Some species have many common names.

    Example: Roly-Poly, Pill Bug, Sow Bug, Potatoe Bug…etc are all common names for Armadillidium vulgare

  - What might be a problem with using common names?

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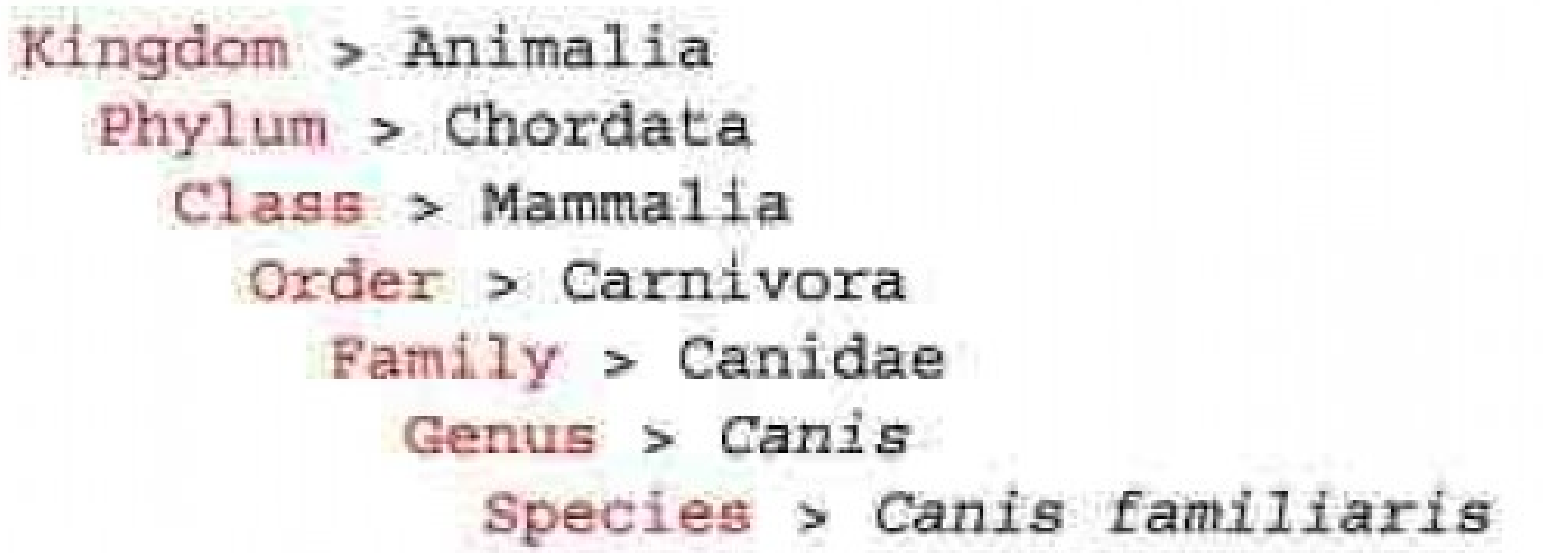
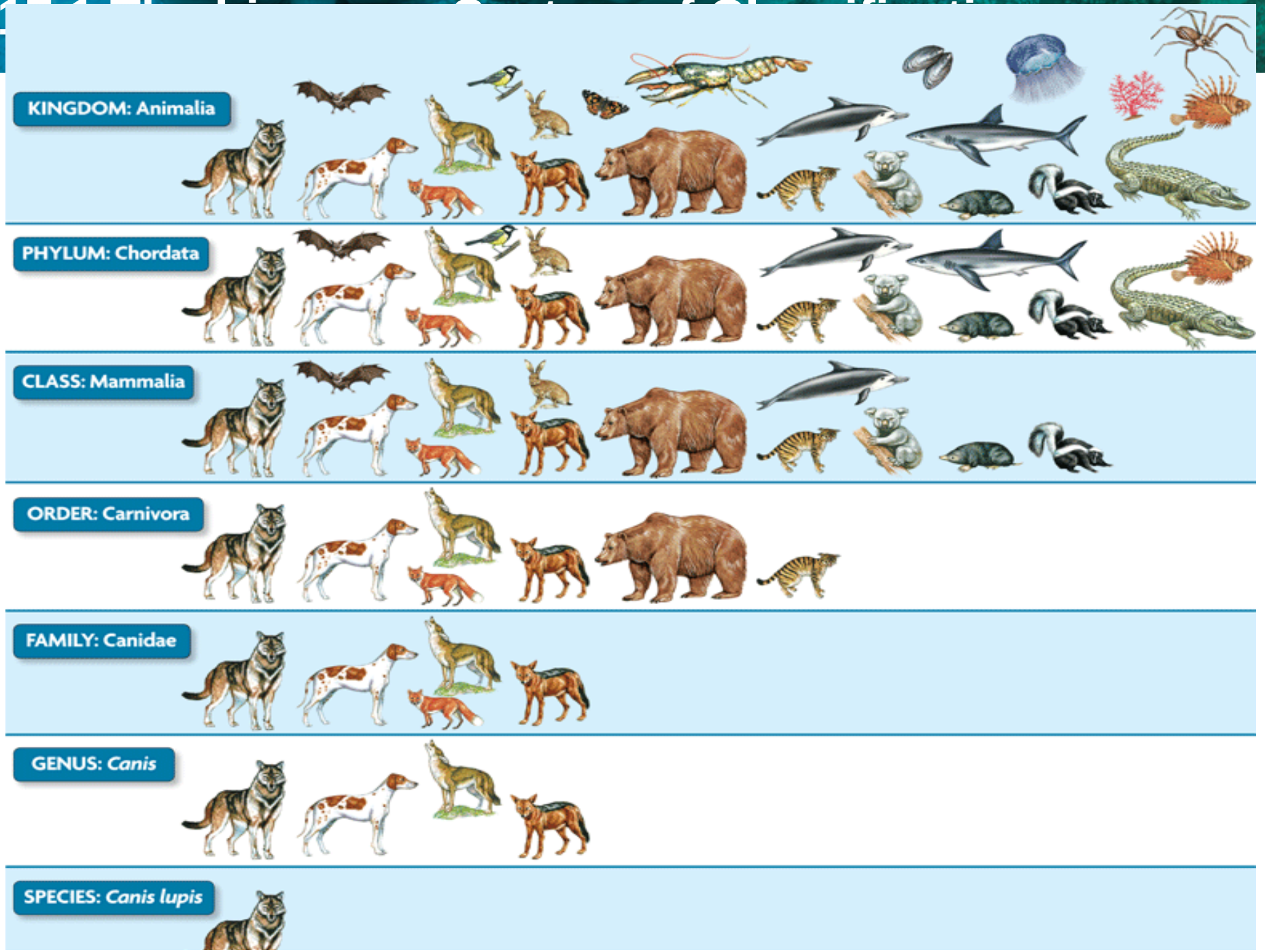
COMMON NAMES	SCIENTIFIC NAME	
	Genus	**species**
Roly-poly, pill bug, sow bug, potato bug	*Armadillidium*	*vulgare*
Dandelion, Irish daisy, lion's tooth	*Taraxacum*	*officinale*
House sparrow, English sparrow	*Passer*	*domesticus*
Mountain lion, cougar, puma	*Puma*	*concolor*
Red maple, scarlet maple, swamp maple	*Acer*	*rubrum*

17.1 The Linnaean System of Classification

- **Linnaeus' classification system has seven levels.**
  - Each level is included in the level above it.
    - Levels get increasingly specific from kingdom to species.




KINGDOM: Animalia
PHYLUM: Chordata
CLASS: Mammalia
ORDER: Carnivora
FAMILY: Canidae
GENUS: Canis
SPECIES: Canis lupis

17.1 The Linnaean System of Classification

- If two species are in the same order what other levels must they have in common?

- What is the difference between genus and species?

17.1 The Linnaean System of Classification

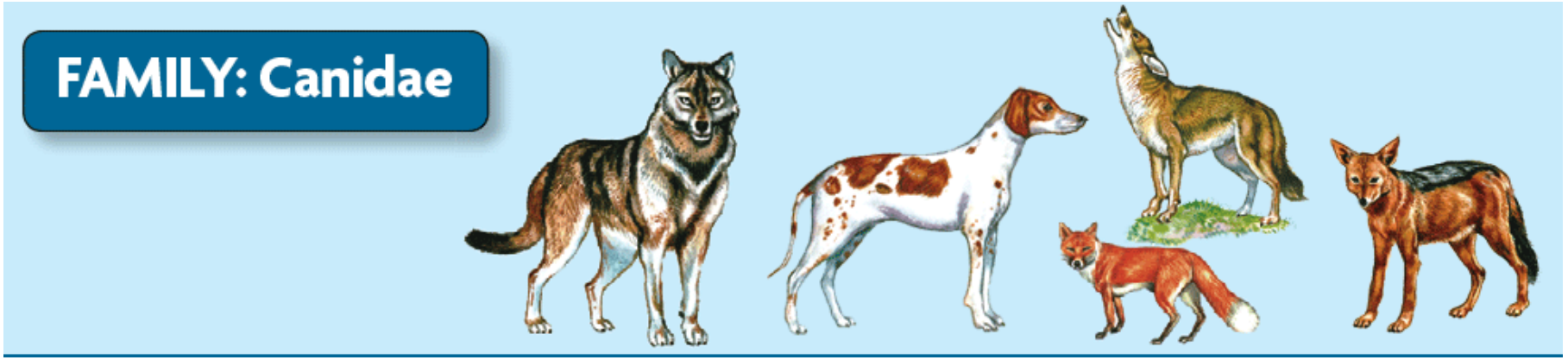
Bell Ringer

- 1-Give me two reasons why having a classification system is a benefit.
- 2-Now make an analogy that compares scientific naming to something in everyday life.
- (ex- Binomial nomenclature is like an address that includes city and state because a state has many cities as a genus has many species. Also a city name cannot be used alone because the same city names can occur in different states like Portland –Maine and Oregon)

17.1 The Linnaean System of Classification

The Linnaean classification system has limitations.

- Linnaeus taxonomy doesn't account for molecular evidence.
  - The technology didn't exist during Linneaus' time.
  - Linnaean system based only on physical similarities.



17.1 The Linnaean System of Classification

- Physical similarities are not always the result of close relationships.
- Genetic similarities more accurately show evolutionary relationships.
- Genetic similarities between two species are more likely than physical similarities to be due to a common ancestor.

17.1 The Linnaean System of Classification

- Why is the red panda misleading in terms of classifications based on relatedness?