REPORTING CATEGORY 3

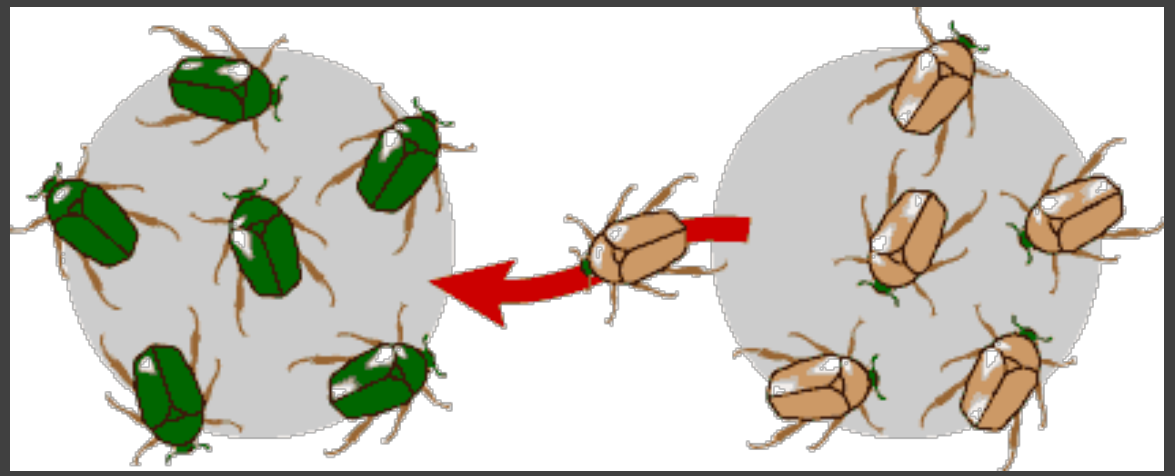
#8-GENETIC DIVERSITY

SURVIVAL OF THE FITTEST

-Traits that have advantages lead to increased fitness
-Traits will be passed down to offspring
-Fitter organisms reproduce more often
-Weaker organisms die out before they are able to reproduce
-Frequency of genetic traits will increase over time in a population

#15-GENE FLOW

INTRODUCTION OF GENES INTO NEW POPULATION



-Gene flow, aka migration, is any movement of genes from one population to another
-Can lead to increased genetic variation
-Examples are human immigration to a new country or pollen carried on the wind

#28-TAXONOMY

TAXONOMIC GROUPS USED TO SHOW RELATIONSHIPS

- Taxon (taxa-plural) is a category into which related organisms are placed
- There is a hierarchy of groups (taxa) from broadest to most specific
- Domain, Kingdom, Phylum, Class, Order, Family, *Genus*, *species*

TABLE 18-1 *Classification Hierarchy of Organisms*

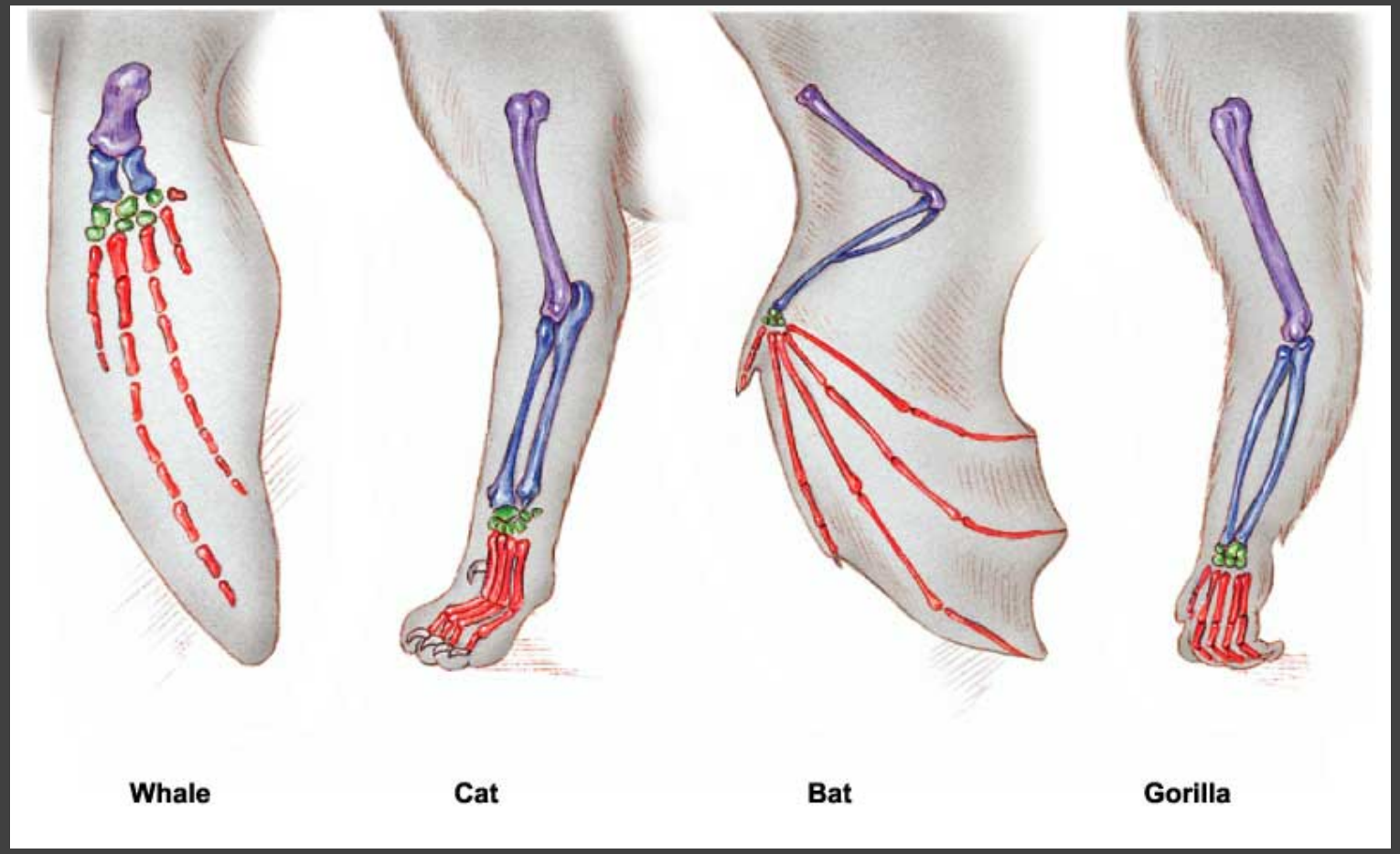
	Bobcat	Lion
Kingdom	Animalia	Animalia
Phylum/division	Chordata	Chordata
Class	Mammalia	Mammalia
Order	Carnivora	Carnivora
Family	Felidae	Felidae
Genus	*Lynx*	*Panthera*
Species	*Lynx rufus*	*Panthera leo*

#8-CLASSIFICATION

CHARACTERISTICS OF KINGDOMS

Classification of Living Things						
DOMAIN	**Bacteria**	**Archaea**	**Eukarya**			
KINGDOM	**Eubacteria**	**Archaebacteria**	**Protista**	**Fungi**	**Plantae**	**Animalia**
CELL TYPE	Prokaryote	Prokaryote	Eukaryote	Eukaryote	Eukaryote	Eukaryote
CELL STRUCTURES	Cell walls with peptidoglycan	Cell walls without peptidoglycan	Cell walls of cellulose in some; some have chloroplasts	Cell walls of chitin	Cell walls of cellulose; chloroplasts	No cell walls or chloroplasts
NUMBER OF CELLS	Unicellular	Unicellular	Most unicellular; some colonial; some multicellular	Most multicellular; some unicellular	Multicellular	Multicellular
MODE OF NUTRITION	Autotroph or heterotroph	Autotroph or heterotroph	Autotroph or heterotroph	Heterotroph	Autotroph	Heterotroph
EXAMPLES	*Streptococcus, Escherichia coli*	Methanogens, halophiles	*Amoeba, Paramecium,* slime molds, giant kelp	Mushrooms, yeasts	Mosses, ferns, flowering plants	Sponges, worms, insects, fishes, mammals

#52-HOMOLOGOUS STRUCTURES



-Structures That Have Different Mature Forms But Develop From The Same Embryonic Tissues

-Strong Evidence That All Four-Limbed Animals With Backbones Descended, With Modification, From A Common Ancestor

#39-ADAPTATIONS

SURVIVAL OF THE FITTEST

- **Adaptations Can Be:**
  - **Physical**
    - **Speed, Camouflage, Claws, Quills, Mimicry, etc.**
  - **Behavioral**
    - **Solitary, Herds, Packs, Activity, etc.**

Traits must be inheritable to be passed on generation to generation

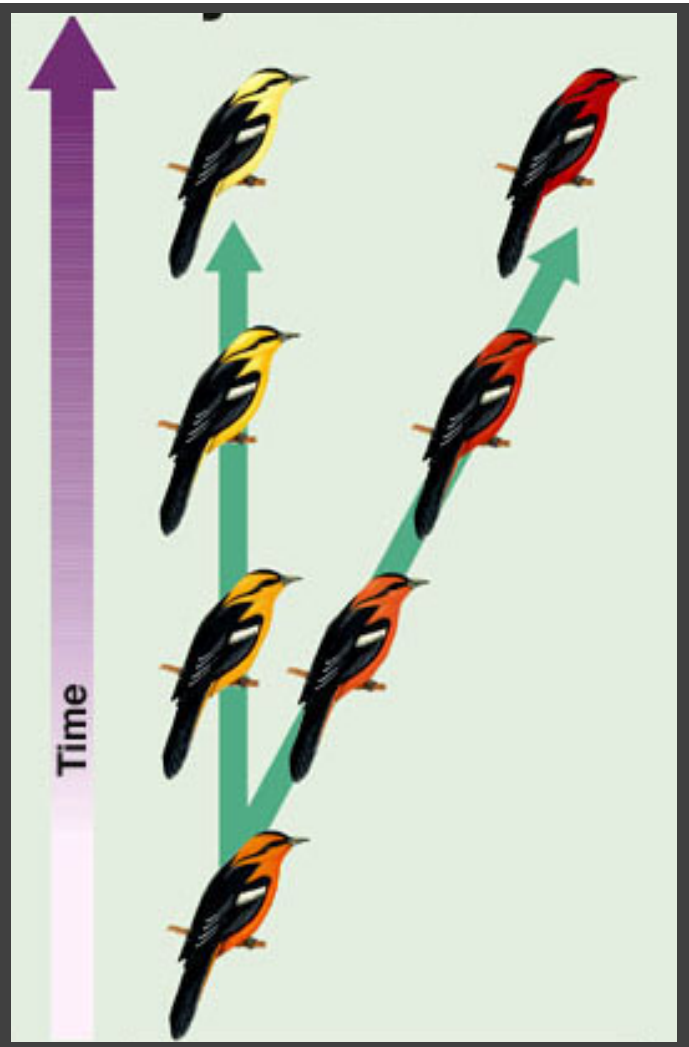
#25-COMMON ANCESTRY

COMMON DESCENT WITH MODIFICATION

Darwin proposed that organisms descended from common ancestors

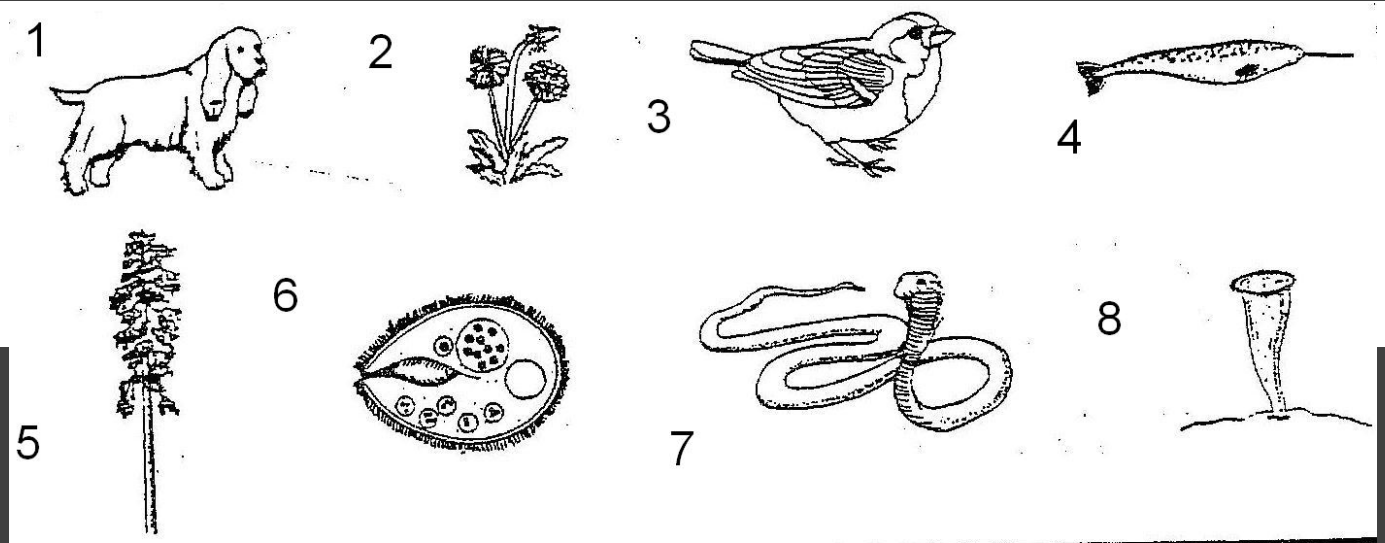
Idea that organisms change with time, diverging from a common form

Caused evolution of new species



#19-DICHOTOMOUS KEYS

USED TO CLASSIFY ORGANISMS



1a. organism with two or four functional legs . . . go to **2**
1b. organism without two or four legs . . . . . go to **3**

2a. organism without wings . . . . . *Canis familiaris* . . . . . .dog

2b. organism with wings . . . . . *Passer domesticus* . . . . . .house sparrow
3a. organism is unicellular . . . . . go to **4**
3b. organism is multicellular . . . . . go to **5**

4a. organism swims freely in water . . . . . *Balantidium* sp. . . . . .balantidium

4b. organism anchored to substrate . . . . . *Stentor* sp. . . . . .stentor
5a. organism is heterotrophic . . . . . go to **6**
5b. organism is autotrophic . . . . . go to **7**

6a. organism lives in oceans . . . . . *Monodon monoceros* . . . . .narwhal

6b. organism lives on land . . . . . *Ophiophagus hannah* . . . .king cobra

7a. organism is a tree . . . . . *Pinus ponderosa* . . . . . .ponderosa pine

7b. organism is an herb . . . . . *Taraxicum officinale* . . . . .dandelion

-Used to identify organisms
-Characteristics given in pairs
-Read both characteristics and either go to another set of characteristics OR identify the organism

#54-CLASSIFICATION

Kingdom	Organization	Type of Nutrition	Representative Organisms	
Protista	Complex single cell, some multicellular	Absorb, photo-synthesize, or ingest food	 paramecium;  euglenoid;  slime mold;  dino-flagellate	Protozoans, algae, water molds, and slime mold
Fungi	Some unicellular, most multicellular filamentous forms with specialized complex cells	Absorb food	 black bread mold;  yeast;  mushroom;  bracket fungus	Molds, yeast, and mushrooms
Plantae	Multi-cellular form with specialized complex cells	Photo-synthesize food	 moss;  fern;  pine tree;  nonwoody flowering plant	Mosses, ferns, nonwoody and woody flowering plants
Animalia	Multi-cellular form with specialized complex cells	Ingest food	 coral;  earthworm;  blue jay;  squirrel	Invertebr-ates, fishes, reptiles, amphibians, birds, and mammals

c. Domain Eukarya
Eukaryotes, structurally diverse and organized into the four kingdoms depicted here.

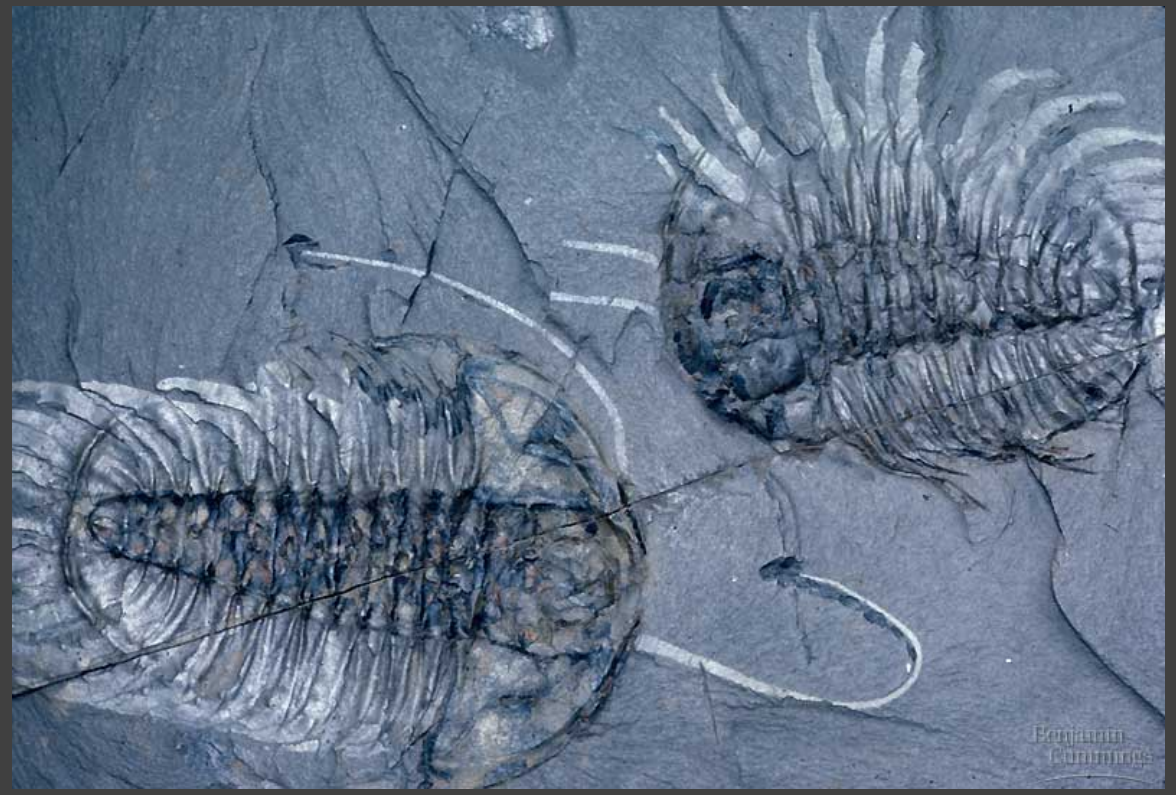
#3-TAXONOMY

STANDARDIZED SYSTEM

- Classification is the arrangement of organisms into orderly groups based on their similarities
- Classification is also known as taxonomy
- Taxonomists are scientists that identify & name organisms

#34-FOSSIL RECORD

IDENTIFY ANCESTRY AND PHYLOGENY



-history of life as documented by fossils
-changes observed within an animal group are used to describe the evolution of that group
-can see effects of natural selection on a species over a large period of time