Classification

Standards

- S5L1. Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.
- a. Demonstrate how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal)

Vocabulary

- classify – to group things according to similarities and differences characteristics
- group - two or more organisms connected in some way
- kingdom – third rank of the study of the classification of organisms (life, domain, kingdom, phylum, class, order, family, genus, species)

Vocabulary

- vertebrate - is an animal with a backbone (spine)
- invertebrate – is an animal with no back bone, usually it has an exoskeleton
- consumer – animals that eat other animals and plants
- decomposers – bacteria and fungi that break down dead organisms

Vocabulary

- reptile - a cold-blooded vertebrate animals with scales, shields, or plates covering their bodies (ex: lizards, snakes, crocodiles)
- amphibian – cold blooded vertebrate creatures with moist skin which spend part of their life in water and part of their life on dry land (ex: frogs, toads, salamanders)

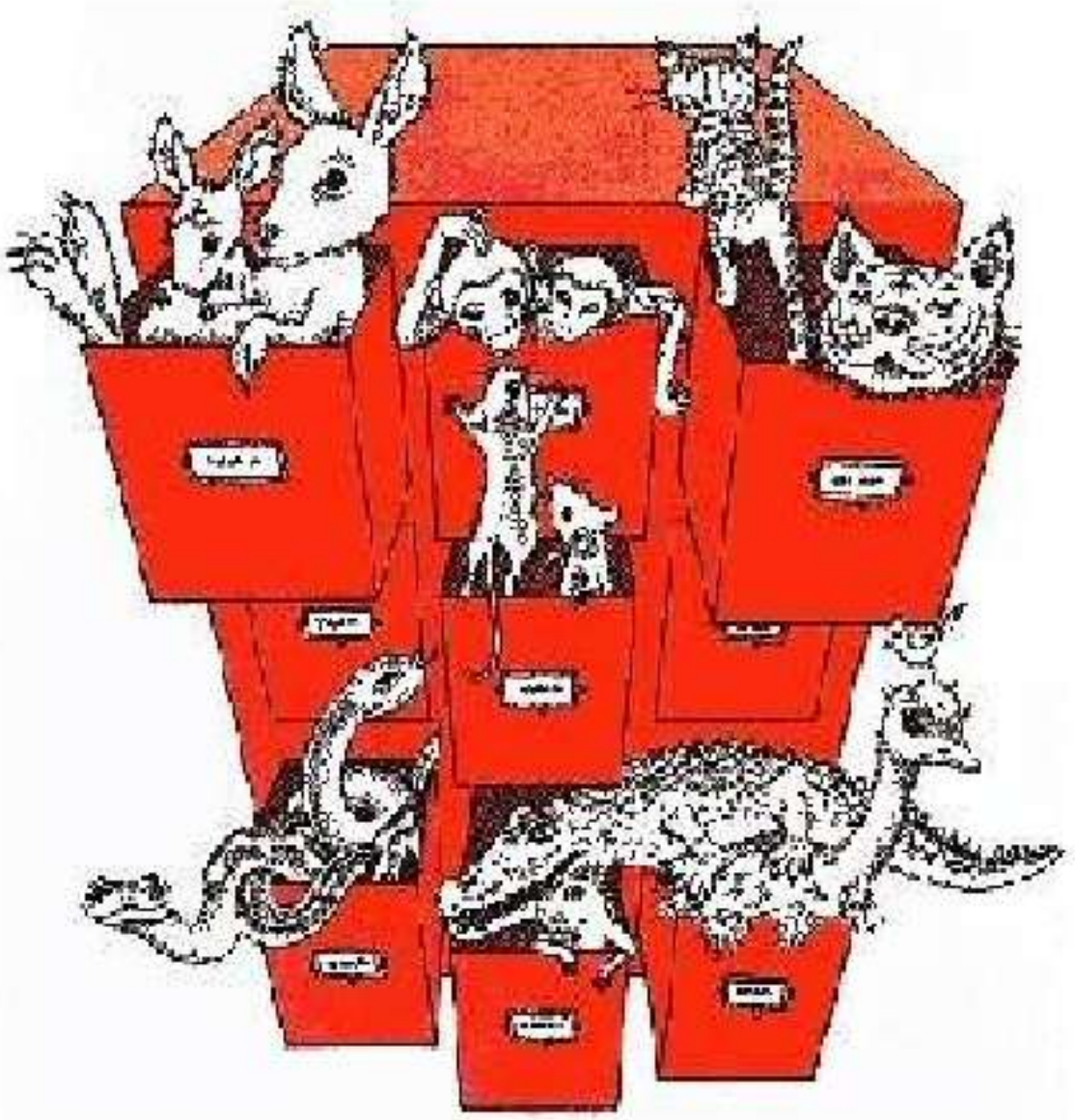
Vocabulary

- mammal – warm blooded air breathing vertebrates which have sweat glands, hair/fur, ear bones for hearing (humans, whales, bears, horses, hippo, squirrels, rats, platypuses)
- cold-blooded – cannot control its body temperature; adapt to temperature of its surrounding (ex: snakes, crocodiles, insects, turtles)

- warm-blooded – can control its body temperature; body temperature stays the same regardless of environment (birds, chicken, monkeys, cows, dogs)
- fish - aquatic vertebrates that are typically cold-blooded, covered with scales, and equipped with fins
- bird - warm-blooded creatures, like mammals, but they lay eggs, like most reptiles

classify

- put things in groups
- use observation & comparison
- place similar organisms in 1 group



King Philip Come Out For Goodness Spaghetti!

Kingdom Phylum Class Order Family

Genus Species

How do scientists classify animals?
S5L1.a Demonstrate how animals are sorted into groups.

Kingdom

Animal

Plant

Fungi

Protisist

Monera

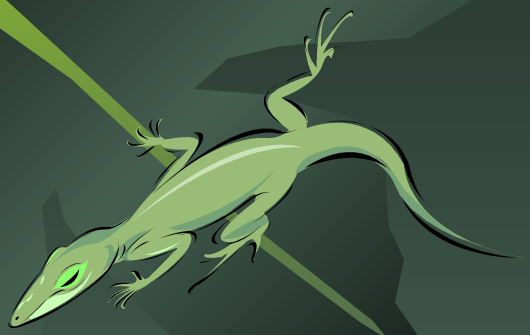
How do scientists classify animals?

S5L1.a Demonstrate how animals are sorted into groups.

Animal Kingdom

Vertebrates

- Animals with backbones



Invertebrates

- Animals without backbones

How do scientists classify animals?
S5L1.a Demonstrate how animals are sorted into groups.

Classifying Vertebrates

Mammal

Reptile

Bird

Fish

Amphibian

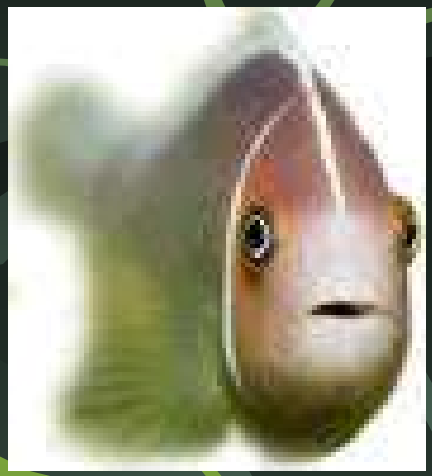
How do scientists classify animals?

S5L1.a Demonstrate how animals are sorted into groups.

Animals With Backbones

AMPHIBIAN

MAMMAL



FISH

BIRD

REPTILE

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Mammals

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Mammal Characteristics

- They include a wide range of animals: ape, lions, kangaroos, bats, and etc.
- They breath with their lungs.
- Their young grows inside the mother.
- They have hair or fur.
- The are warm blooded.
- They feed milk to their young.

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Reptiles

Turtle / Tortoise

Snake

Lizards

Alligator / Crocodile

Reptile Characteristics

- They breathe with their lungs.
- They lay their eggs on land.
- They have dry scaly skin.
- They are cold-blooded (their body temperature changes with their environment)
- They live in hot, dry deserts and in warm, wet tropical rain forests.
- Black snakes, Bearded dragons, Turtles, Crocodiles, and Alligators are reptiles.

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Amphibians

Frog / Toad

Salamanders

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Amphibian Characteristics

- They are cold-blooded (their body temperature changes with their surroundings)
- Amphibians hatch from eggs and they can live on land as an adult.
- Young amphibians breathe through gills like fish.
- Adult amphibians breathe air from lungs.
- Some have smooth moist skin.
- Examples are frogs, salamanders, newt, and mud puppies.

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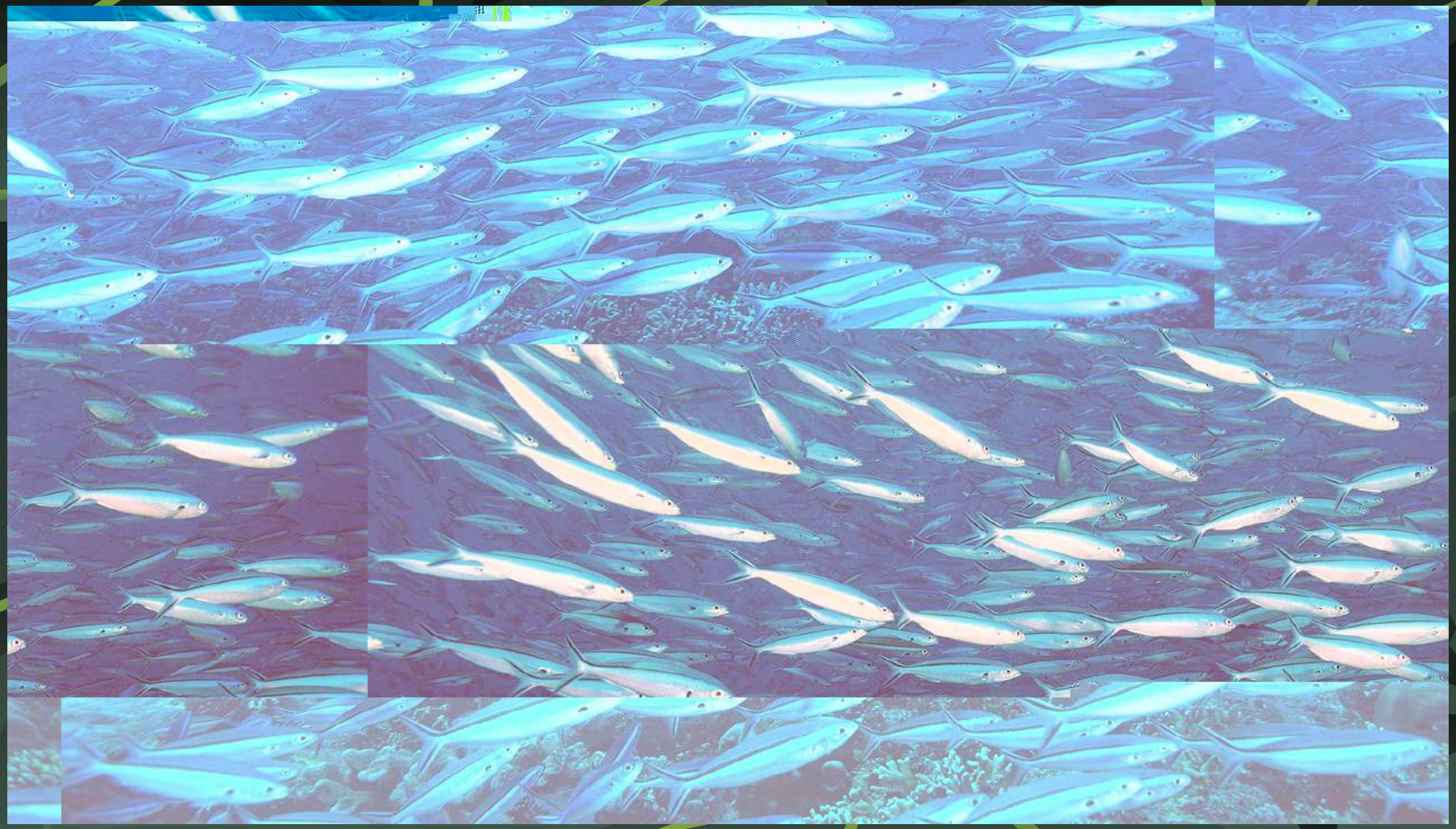
Fish



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Fish Characteristics

- They are the largest group of vertebrates.
- Many are covered with scales.
- They have fins.
- They are cold-blooded (their body temperatures changes with the temperature of the water).
- They breathe through gills.

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Birds

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Bird Characteristics

- They breathe with their lungs
- Birds lay eggs.
- Birds have wings.
- Birds are covered with feathers.
- Birds are warm-blooded (their body temperature doesn't change)
- Examples of birds would be a red bird, hawk, and chicken.

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Invertebrate Classification

- What is an Invertebrate?
- Invertebrates are animals that do not have backbones.
- 97 % of the animal kingdom is made up of invertebrates.
- Some can be found in ponds, oceans, and other water environments.
- Insects and some other invertebrates have exoskeletons.

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Many invertebrates have an exoskeleton. An Exoskeleton is a hard outer covering that protects an animal's body and gives it support.

There are six groups of invertebrates. They are:

1. **Sponges,**
2. **Corals, Hydras,**
3. **Jellyfish,**
4. **Starfish and Sea Urchins,**
5. **Mollusks,**
6. **Arthropods**

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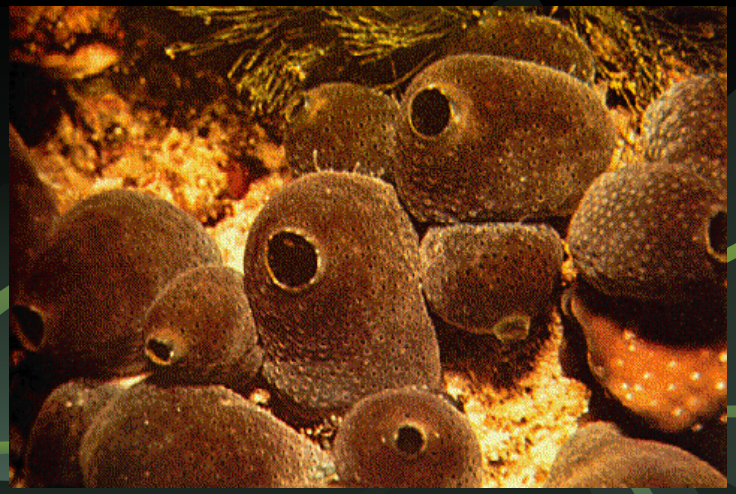

Sponges

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Sponges Characteristics

- They look like plants but they are animals.
- Sponges stay fixed in one place.
- Their bodies are full of holes and their skeleton is made of spiky fibers.
- Water flows through the holes of their body which enables them to catch food.

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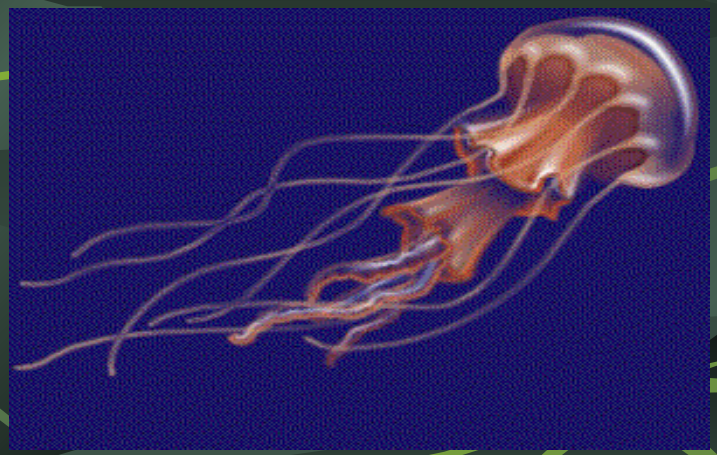
Corals, Hydras, and Jellyfish



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Characteristics

- Corals look like plants but they belong to the animal kingdom.
- They have soft tubelike bodies with a single opening surrounded by armlike parts called tentacles.
- They feed by catching tiny animals in their tentacles.
- Hydras have tentacles that catch their food.
- They move from place to place.
- Hydras are much smaller animals.
- Jellyfish catch shrimp,fish, and other animals in its tentacles also.

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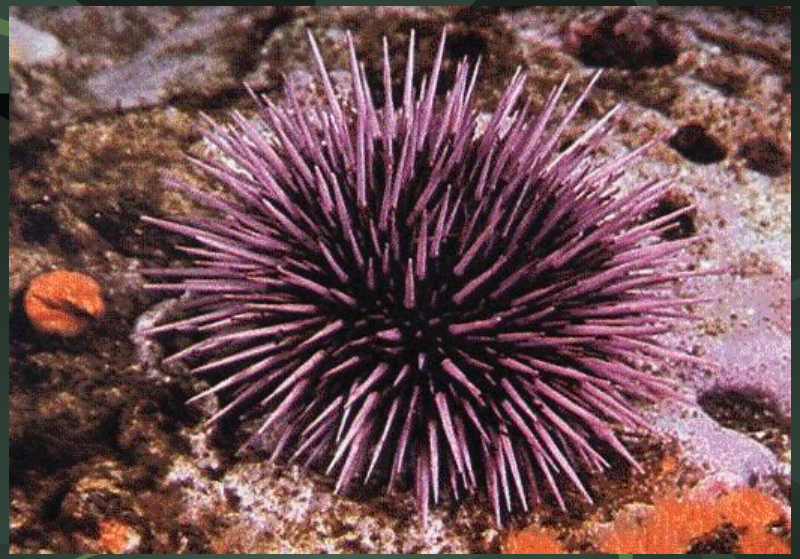
Starfish and Sea Urchins



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Characteristics

- It belongs to a group of invertebrates that have tiny tube feet and body parts arranged around a central area.
- A starfish has five arms and no head!
- The hard, spiny covering of the starfish gives the animal protection.
- A sea urchin belongs to this same group.
- Its body is covered with spines.

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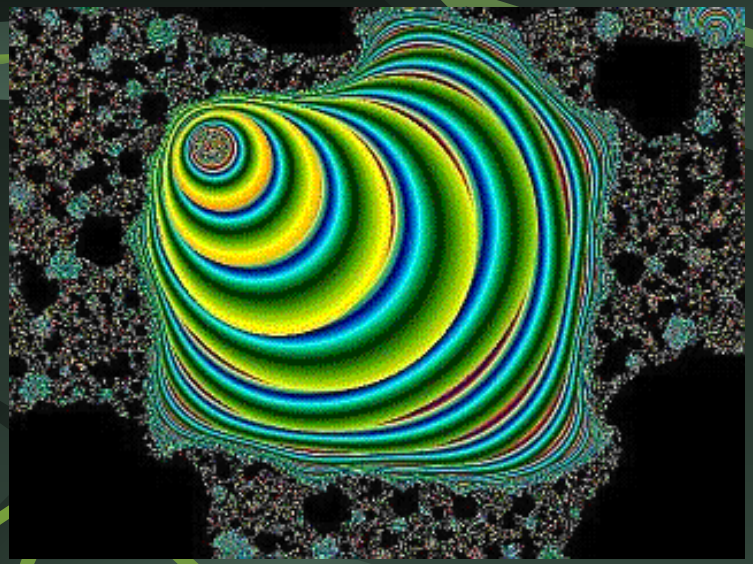
Mollusks



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Mollusk Characteristics

- A mollusk has a hard shell, a rough tongue, and a muscular foot.
- A snail is a mollusk with a single hard shell.
- A clam has two shells joined together by a hinge.
- Squids and octopuses are also mollusk.
- Their hard shells are small, but they are inside their bodies.

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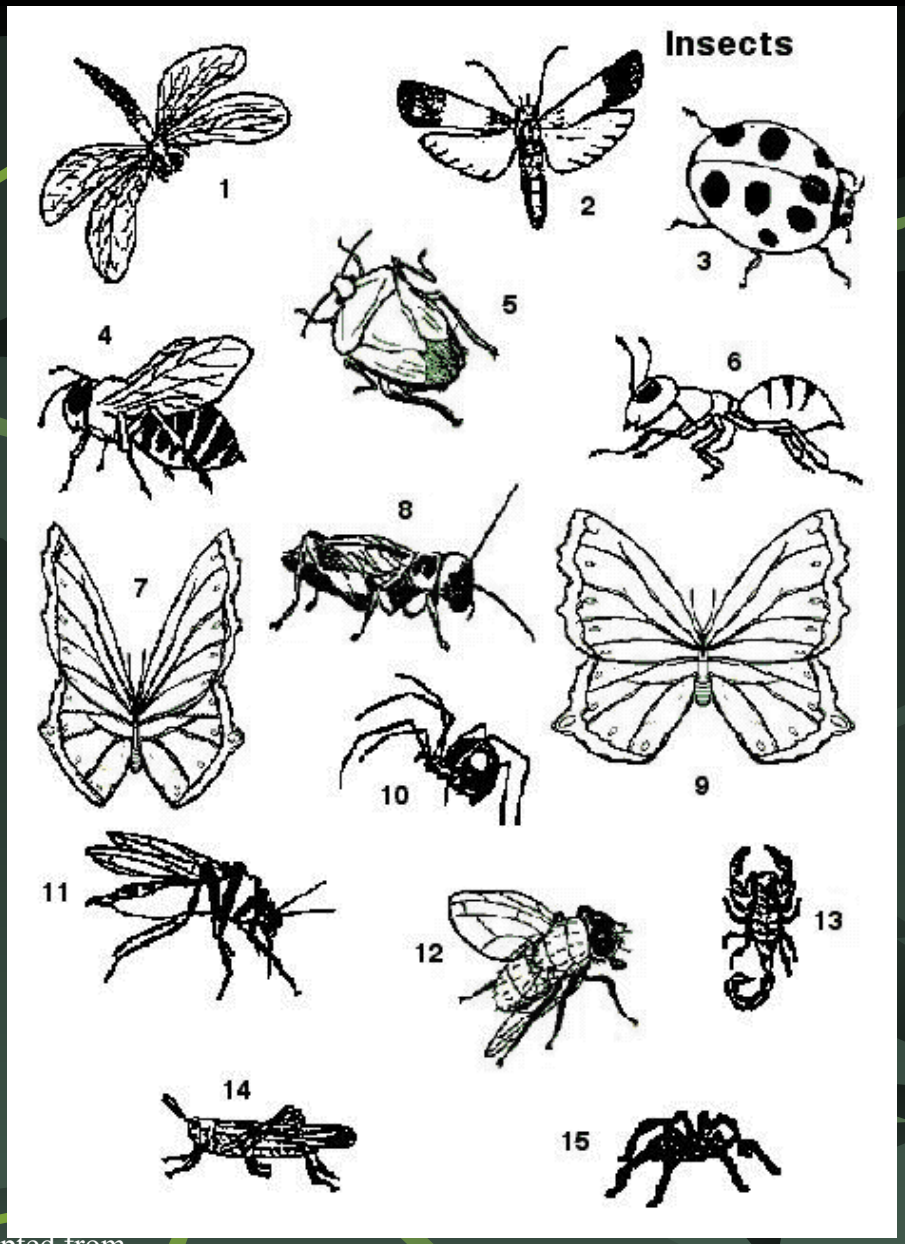
Arthropods



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Arthropod Characteristics

- Arthropods are a group of invertebrates with jointed legs and hard exoskeleton that protect the arthropod.
- As it grows, it **molts,** or sheds its old exoskeleton.
- Then it grows a new exoskeleton that allows its body to continue to grow.
- A lobster is an arthropod.
- The largest group of arthropods are insects.

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Arthropods: Insects, Spiders, and Centipedes/Millipedes

- They are the only invertebrates that can fly.
- Insects have bodies divided into three parts, and six legs.
- Spiders have jointed legs (eight legs), jaws and fangs.
- Centipedes and millipedes are also arthropods.
- Centipedes uses its many legs to run from enemies.
- Millipedes roll up their bodies when they sense danger approaching.

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How do scientists classify animals?

Mammals	Birds	Fish	Amphibians	Reptiles

Standard

S5L1. Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.

b. Demonstrate how plants are sorted into groups.

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Vocabulary

- producers – plants that produce their own food
- photosynthesis – when light energy, oxygen, and water combine to produce food for plants
- vascular plant – plant with a vascular system (xylem and phloem)
- nonvascular plant - a plant without vascular tissue (ex: liverworts, mosses, algae)
- Xylem – transports water and salt in vascular plants
- Phloem – transports food (sugar) in vascular plants

Vocabulary

- coniferous - plants that produce cones as their fruit (ex: pine trees)
- deciduous – plants that shed leaves during the winter months then grow them back during spring (ex: fruit trees, pecan trees, etc.)

How are Plants Classified?

- There are more than 260,000 species of plants.
- They can be divided into two groups:
  - Nonvascular
  - Vascular

How are Plants Classified?

- Nonvascular Plants:
  - have no pipes to transport water and nutrients
  - depend on diffusion and osmosis to move material from one part of the plant to another
  - They have to be small: **mosses, liverworts**

Algae (Non-Vascular)

Green algae is a type of non-vascular plant that lives in water. They have no vascular system to help carry water and nutrients.


Algae

Liverworts (Non-Vascular)

Liverworts and mosses lack vascular tissue that circulates liquids. They neither have flowers nor produce seeds.


Liverworts

Seaweeds (Non-Vascular)

The largest and most complex marine forms of algae.


Seaweeds

How are Plants Classified?

- Vascular Plants
  - Have tissues that deliver needed materials throughout a plant - called *vascular tissues.*
  - Can be almost any size.
  - Are divided into **gymnosperms** and **angiosperms**

How are Plants Classified?

- **Gymnosperms** – cone-bearing plants
- **Angiosperms --** flowering plants

Fern (Vascular)

Ferns are plants with a vascular system (xylem and phloem). They have tubes that can be found in the roots, stems, and leaves.


Fern

Club Moss (Vascular)

The club moss is a small sized plant possessing a ground hugging stem that can reach lengths of up to four feet when fully grown. The club moss is characterized by possessing dense spirals of yellow green colored leaves and is a low growing evergreen plant, having a three foot long stem that runs along the ground.


Club moss / Vascular

Conifers (Vascular)

Conifers are the gymnosperm with needle-like or scaled leaves that grow the most well known type of male and female cones as reproductive organs.

Conifers

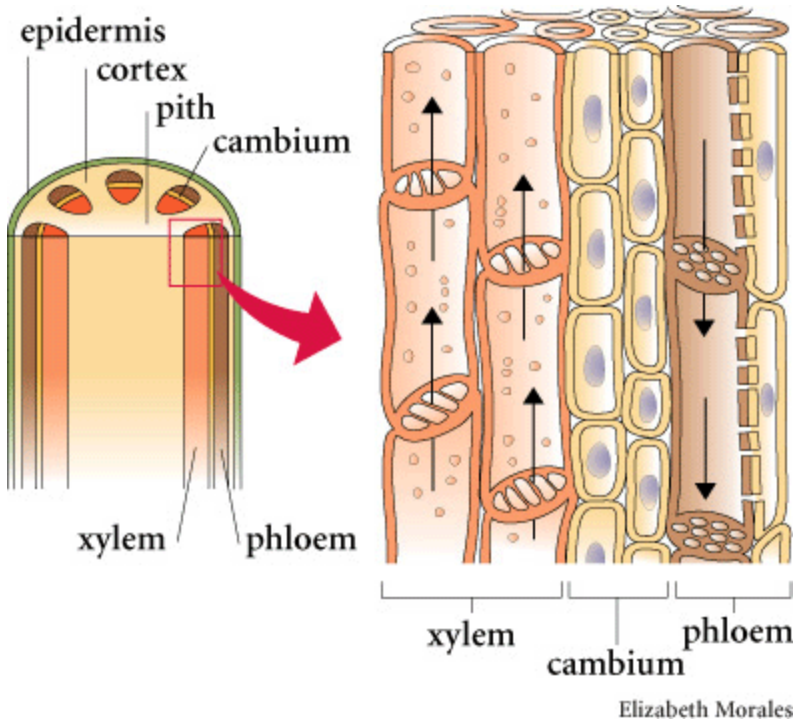
Flowering Plants (Vascular)

Flowering plant is a plant that produces flowers at some part and time in its reproductive cycle.


Flowering Plants

Transport in Plants

- Plants need a transport system so that cells deep within the plants tissues can receive the nutrients they need for cell processes
- The problem in plants is that roots can obtain water, but not sugar, and leaves can produce sugar, but can't get water from the air

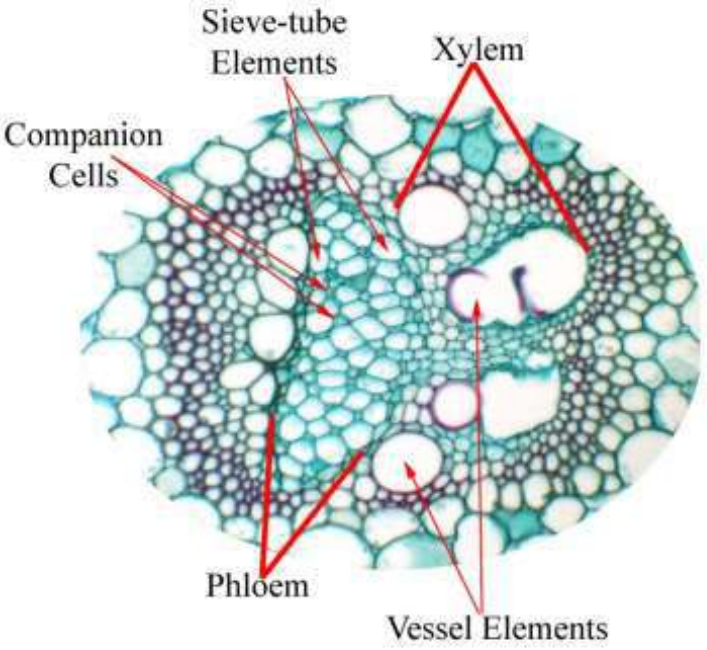


What substances need to be moved?

- The transport system in plants is called vascular tissue
- Xylem tissue transports water and minerals
- Phloem tissue transports sugars

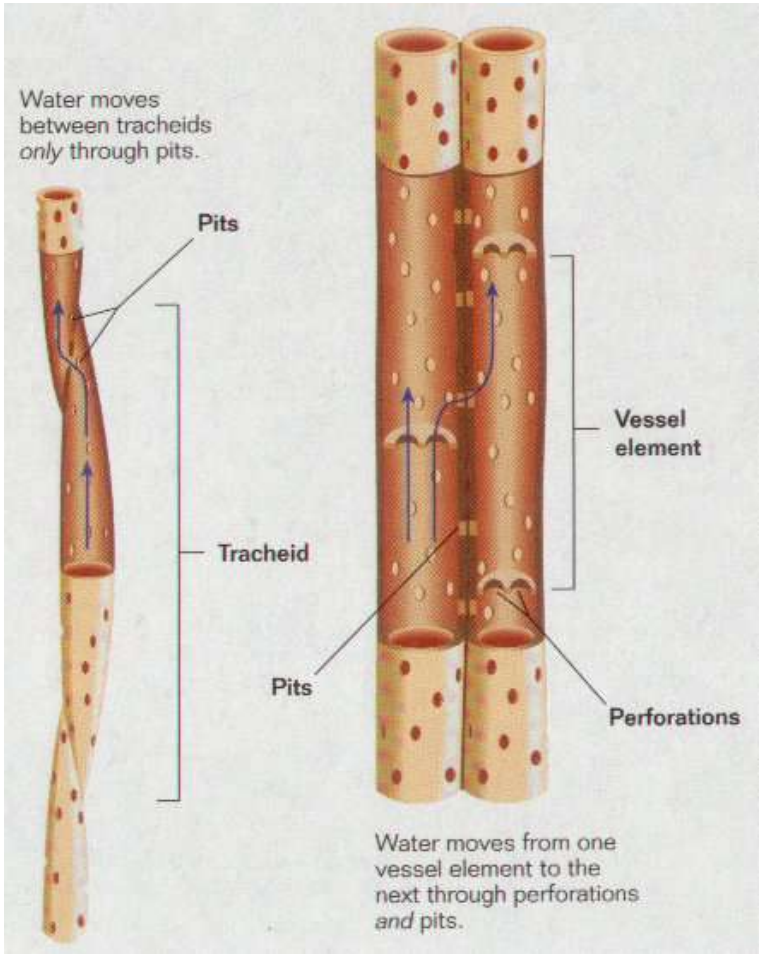
The Vascular Tissues

- Xylem and phloem are found together in vascular bundles, that sometimes contain other tissues that support and strengthen them



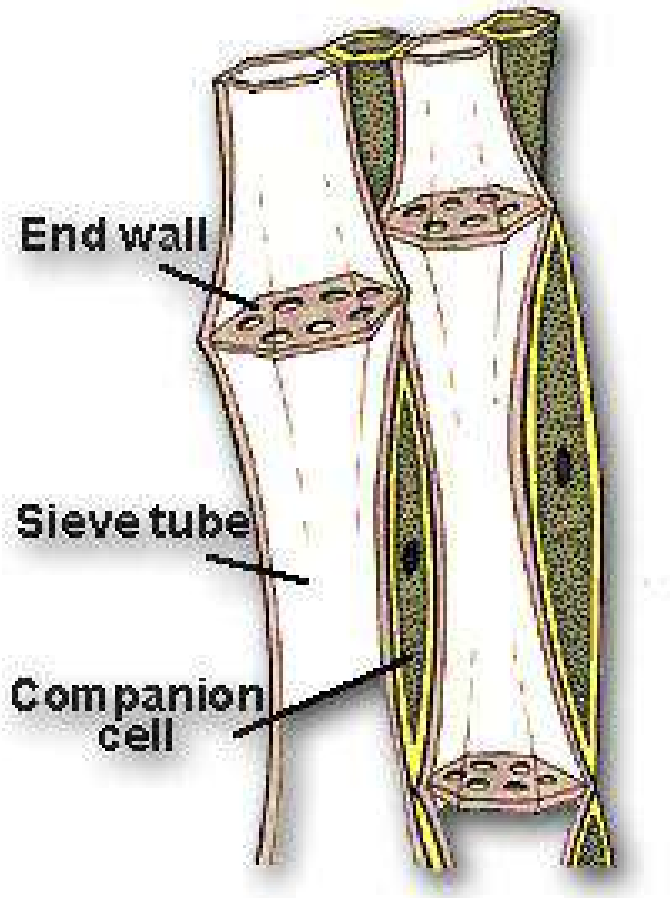
Structure of Xylem

- Used to transport water and minerals from roots to leaves



Structure of Phloem

- Function to transport sugars from one part to another



characteristics	moss	ferns	conifers	flowering plants
vascular	No	Yes	Yes	Yes
seeds	No	No	Yes	Yes
flowers	No	No	No	Yes