

Lesson Plan – Taxonomy and Classification

Summary

This lesson will introduce students to the classification of living things, how animals are grouped and why all living things have a scientific name.

Content Area

Life Science, Biology

Grade Level

K-2

Key Concept(s)

- Living things are given a universal scientific name used for classification worldwide.
- Living things are put into groups according to shared body features and characteristics.

Objectives

Students will be able to:

- Understand why all living things have a universal scientific name used worldwide.
- How scientists sort and group living things.
- Identify features of animals and how features are used to group organisms.
- Understand that each animal has different structures that serve different functions.

Resources

Biology for Kids - Taxonomy

http://www.biology4kids.com/files/studies_taxonomy.html

National Science Education Standard or Ocean Literacy Essential Principle	Learning Goals
Unifying Concepts and Processes 1. Systems, order, and organization	Types of organization provide useful ways of thinking about the world.
Unifying Concepts and Processes 5. Form and Function	Form and function are complementary aspects organisms in the natural world.
A.1: Abilities necessary to do scientific inquiry	Ask a question about objects, organisms, and events in the environment.
C.1: Characteristics of organisms	Each plant or animal has different structures that serve different functions in growth, survival, and reproduction.
Principle 5 (K-2: A) The ocean supports a great diversity of life and ecosystems.	There is a great diversity of organisms in the ocean.
Principle 5 (K-2: A.4) The ocean supports a great diversity of life and ecosystems.	Ocean organisms have a variety of different structures and behaviors that help them to survive in the ocean.

Why use scientific names and not common names?

What if your job was to help me protect the reef by keeping people from taking the wrong kind of fish?

What if I said the fish not to take is red fish?



Sebastes



Lutjanus



Epinephelus morio
Red grouper

Common names are different in different places.
 Scientific names are the same around the world!

Species known as "Redfish"

Country	Species	Other common names
Australia, UK	<i>Centroberyx affinis</i>	Redfish, eastern nannygai
Australia	<i>Lutjanus erythropterus</i>	Crimson snapper
Australia	<i>Lutjanus malabaricus</i>	Malabar blood snapper
Australia	<i>Lutjanus sebae</i>	Emperor red snapper
Barbados	<i>Etelis oculatus</i>	Queen snapper
Trinidad and Tobago	<i>Lutjanus buccanella</i>	Blackfin snapper
Trinidad and Tobago	<i>Lutjanus purpureus</i>	Southern red snapper
Trinidad and Tobago	<i>Lutjanus synagris</i>	Lane snapper
Trinidad and Tobago	<i>Rhomboplites aurorubens</i>	Vermillion snapper
UK	<i>Oncorhynchus nerka</i>	Sockeye salmon
UK/USA	<i>Sebastes fasciatus</i>	Acadian redfish
USA	<i>Lutjanus campechanus</i>	Red snapper
USA	<i>Sciaenops ocellatus</i>	Red drum
USA	<i>Sebastes norvegicus</i>	Ocean perch
USA	<i>Sebastes viviparus</i>	Norway redfish



How do scientists sort living things?

Taxonomy: the study of how and why we name things the way we do!



Bacteria

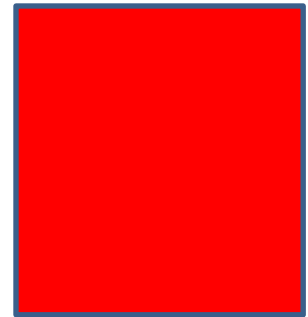
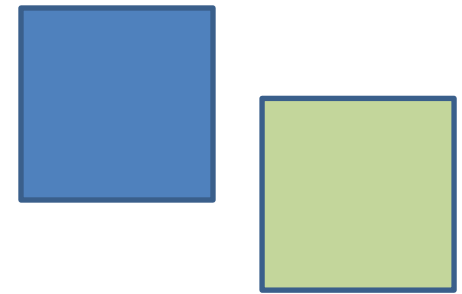
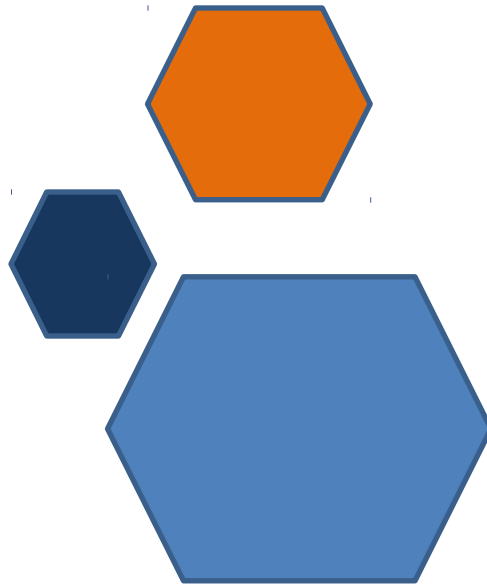
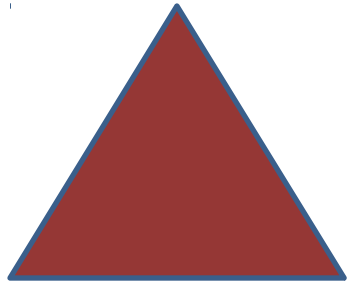
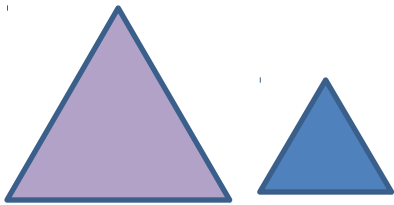
Protoctista (algae, protozoa)

Plantae

Fungi

Animalia

Sometimes it is easy to see how and why things are sorted the way they are.



Sometimes, it is more difficult to see why things are together. These are all molluscs!



Worm-like molluscs



Bivalvia (mussle, clams)



Gastropoda
(snail, slug,
limpet, nudibranch)



Cephalopoda
(octopus, squid,
nautilus)



Polyplacophora Chiton



Scaphopoda (tusk shells)



Monoplacophora

All living things are sorted into one of five Kingdoms

- Kingdom
 - Within each Kingdom, living things are further sorted according to their characteristics.
- Phylum
- Class
- Order
- Family
- Genus
- Species



Bacteria

Protocista (algae, protozoa)

Plantae

Fungi

Animalia

There are about 30 different phyla of animals. How well do you know them? The images below show 25 different animal phyla. Move the cursor over a photo to see its phylum.



The Big Nine

The vast majority of all animal species (over 95%) belong to the phyla listed here, sometimes called the 'Big Nine'. These groups are covered by our Biology Of series of video and DVD programs.

Phylum Porifera

Phylum Cnidaria

Phylum Platyhelminthes

Phylum Nematoda

(with coverage of other groups)






Phylum Mollusca

Phylum Annelida

Phylum Arthropoda

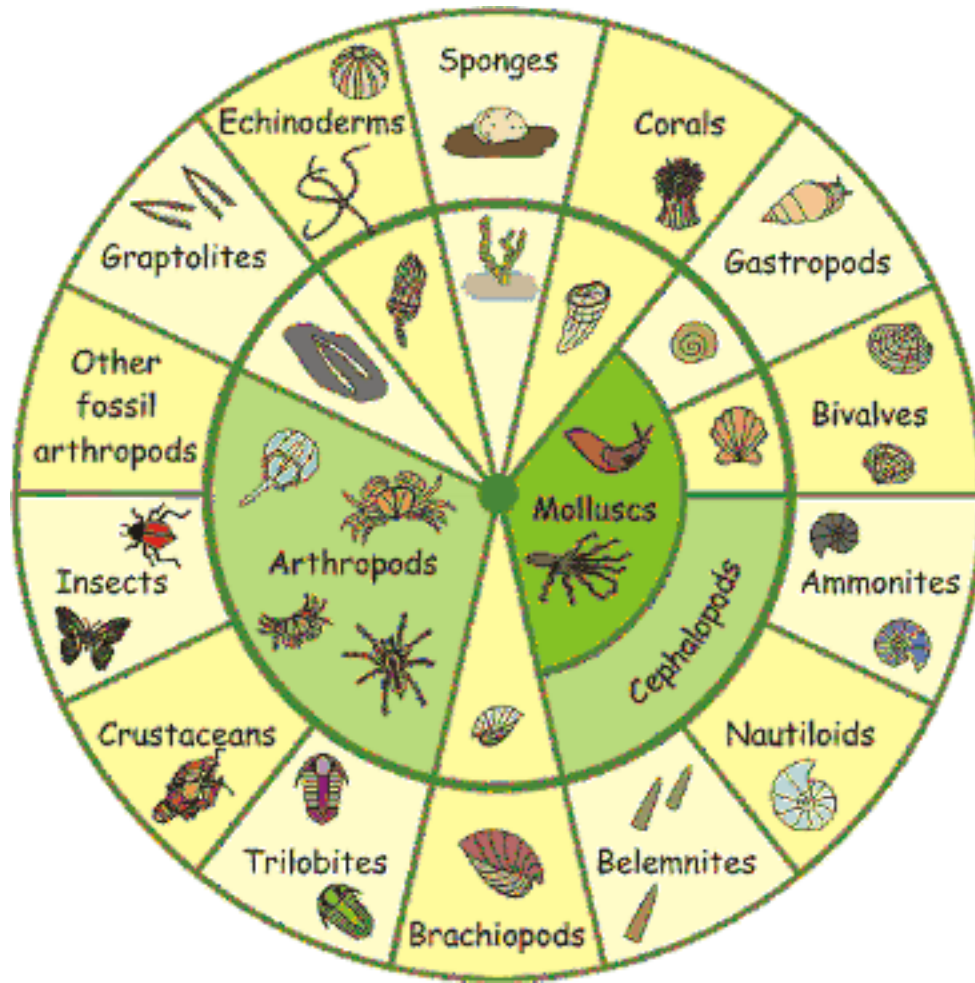
Phylum Echinodermata

Phylum Chordata

	KINGDOM	PHYLUM	CLASS	ORDER	FAMILY	GENUS	SPECIES
	Animalia	Chordata	Mammalia	Primate	Hominidae	<i>Homo</i>	<i>sapiens</i>
	Animalia	Chordata	Mammalia	Primate	Hominidae	<i>Gorilla</i>	<i>bering</i>
	Animalia	Chordata	Mammalia	Cetacea	Delphinidae	<i>Orcinus</i>	<i>orca</i>
	Animalia	Mollusca	Cephalopoda	Octopoda	Octopodidae	<i>Hapalochlaena</i>	<i>maculosa</i>
	Animalia	Mollusca	Gastropoda	Mesogastropoda	Strombidae	<i>Strombus</i>	<i>alatus</i>

Animals without a Backbone

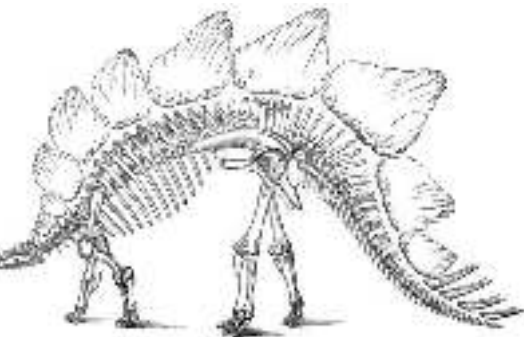
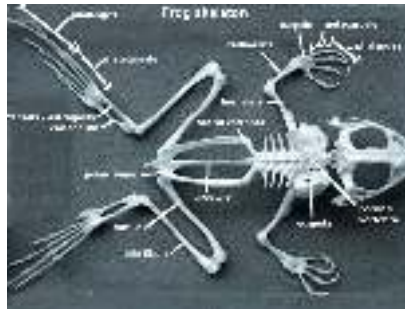
- **Invertebrates (animals without backbones)**
 - Worms, insects, sea stars, clams, snails, corals

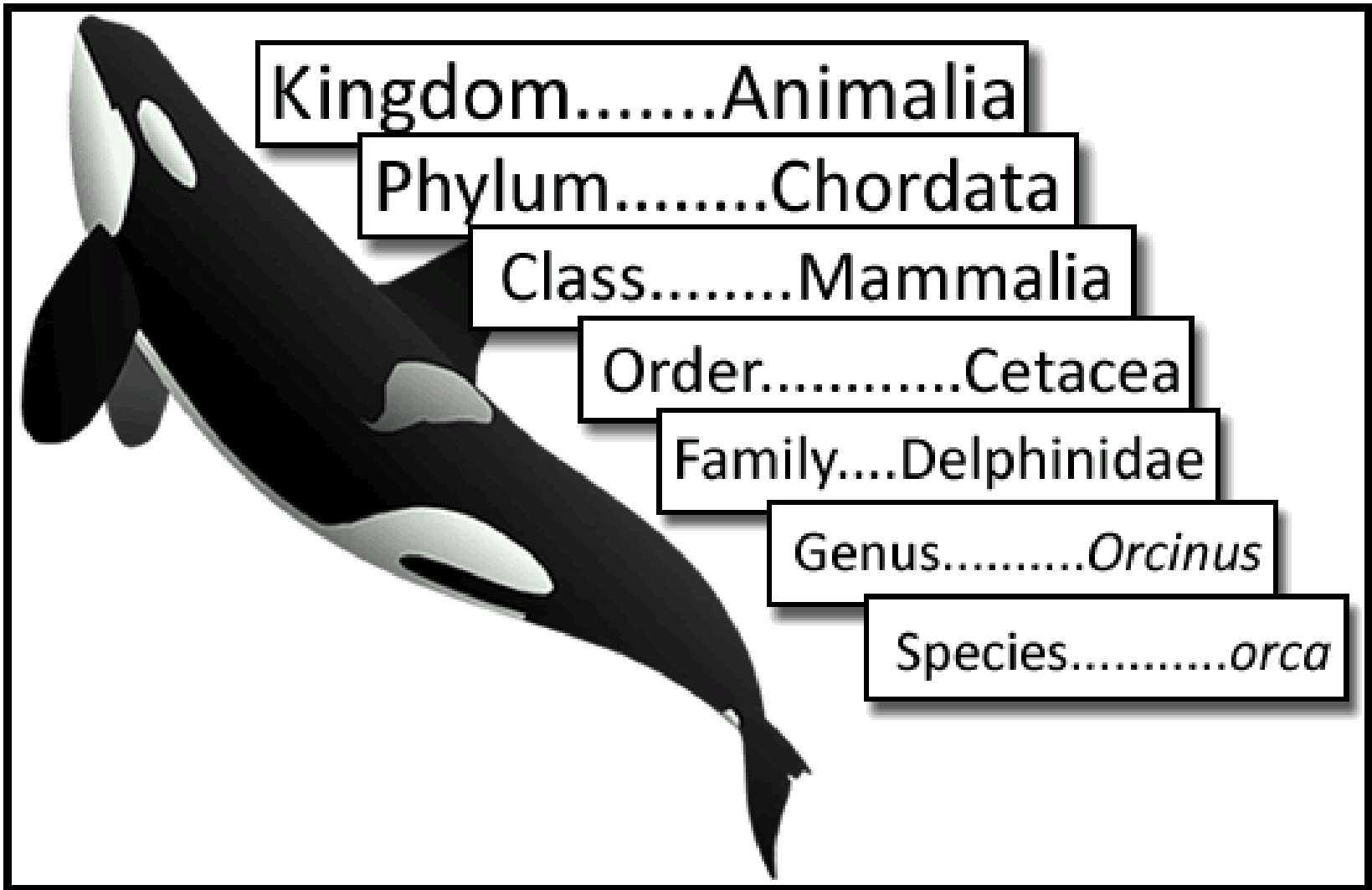


Animals with a Backbone

- **Vertebrates (animals with a backbone)**

- Fish (fish, sharks, sting rays, whale sharks)
- Amphibians (salamanders, frogs, toads, newts)
- Reptiles (alligators, lizards, snakes, turtles; they have scales, and lay hard eggs--amphibians do not!)
- Birds (have feathers, most can fly, lay eggs, hollow bones)
- Mammals (hair or fur, milk for young, keep the same body temperature (endotherm), live birth)





Kingdom.....Animalia

Phylum.....Chordata

Class.....Mammalia

Order.....Cetacea

Family...Delphinidae

Genus.....*Orcinus*

Species.....*orca*

Activity

Taxonomy: Sorting Living Things into Groups

1. Pick one animal and draw a picture of it on the back of this page.
2. Do you think your animal has a backbone? Circle invertebrate if you think no. Circle vertebrate if you think yes.

Invertebrate

Vertebrate

3. Make your best guess as to the group the animal belongs to. Use the list below to help. Write what you think it is: _____

Invertebrates (animals without a backbone):

worm insect clam coral Other invertebrate sponge sand dollar crab spider

Vertebrates (animals with a backbone):

Fish: fishes sharks sting rays eels goldfish other fish

Amphibian: frogs toads newts salamanders tree frogs other amphibian

Reptile: alligator lizards snakes turtles dinosaur other reptile

Bird: ducks geese eagles herons hawks other bird

Mammal: raccoon mouse dog human cat other mammal

4. List three characteristics of your animal (e.g., what makes it what it is? Does it have feathers, blubber, scales, fur, a shell, gills, spines, a blowhole, lay eggs?)

1. _____ 2. _____ 3. _____



GULF OF MEXICO
COASTAL OCEAN
OBSERVING SYSTEM

Acknowledgements

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