

# Oceanography

# Investigating Invertebrates



Students will learn about invertebrates and what phyla they are in through an invertebrate classification game. Additionally, students are challenged with a scavenger hunt to explore the different species of invertebrates.

## Materials

- Paper
- Tape
- Pens/pencil crayons
- Pennies
- Device with connectivity

## Safety Considerations

- Age appropriate supervision for internet use

## Keywords & Concepts

A **phylum** is a taxonomic category that ranks organisms. **Taxonomy** is a branch of science that classifies (or ranks) organisms (living things). The order goes: Domain, Kingdom, Phylum, Class, Order, Family, Genus, species

Invertebrate Phyla:

- **Porifera** (sponges): multicellularity, specialized cells but no tissues, asymmetry, incomplete digestive system
- **Cnidaria** (jellyfish, corals): radial symmetry, true tissues, incomplete digestive system
- **Platyhelminthes** (flatworms, tapeworms, flukes): cephalization, bilateral symmetry, mesoderm, complete digestive system
- **Nematoda** (roundworms): pseudocoelom (which is a fluid-filled body cavity lying inside the external body wall of the nematode that bathes the internal organs, including the alimentary system and the reproductive system), complete digestive system
- **Mollusca** (snails, clams, squids): true coelom (body cavity), organ systems, some with primitive brain
- **Annelida** (earthworms, leeches, marine worms): segmented body, primitive brain
- **Arthropoda** (insects, spiders, centipedes): segmented body, jointed appendages, exoskeleton, brain
- **Echinodermata** (seastars, sea urchins, sand dollars): complete digestive system, coelom, spiny internal skeleton

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## Setup Steps:

- 1) Tape all photos of invertebrates in a large rectangle on a desk or large piece of poster paper. On the inside of the rectangle, have the phyla's as flappy paper tabs with the list of what invertebrates fall under each, as shown in the photo.



## Phyla:

- Porifera
  - i) Tube sponge
- Cnidaria
  - i) Green hydra
  - ii) Sea pen
  - iii) Sea anemone
  - iv) Sea fan
- Platyhelminthes
  - i) Land planarian
  - ii) Fluke
- Annelida
  - i) Deep sea tube worms
  - ii) Earthworm
  - iii) Fan worm
  - iv) Peanut worm
- Nematoda
  - i) Parasitic horsehair worm
  - ii) Pinworms
- Mollusca
  - i) Tree snail
  - ii) Leopard slug
  - iii) Nudibranch
  - iv) Squid
  - v) Razor clam
  - vi) Octopus
  - vii) Nautilus
- Arthropoda
  - i) Daphnia Magna
  - ii) Copepod
  - iii) Millipede
  - iv) Spider
  - v) Moth
  - vi) Grasshoppers
  - vii) Tick
- Echinodermata
  - i) Star fish
  - ii) Sand dollar
  - iii) Sea cucumber
  - iv) Sea urchin



# Investigating Invertebrates



Before playing, allow players to peek under all the flaps, to refresh their memory of what creatures are in each phylum.

- 1) Give each player a die (number cube). Also, each player needs two identical tokens of some kind. One token will stay on the picture track, and the other will be placed on top of a phylum flap to represent their guess.
- 2) Players place one of their tokens on Start.
- 3) All players roll their dice at the same time.
- 4) After players have all landed on their creatures, they think about what phylum that creature might be in. They make a guess and indicate this by placing their other token on top of the flap
- 5) Once all players have placed their guess tokens (on the flaps of the invertebrate phylums), then they are all allowed to lift that flap to see if they are correct.
- 6) If they are correct, they get a point. (Using pennies or small candies makes it easy to keep track of points.)
- 7) If they are not correct, then they just gained valuable information about what is under that flap! This information will probably come in handy during a future turn.
- 8) Once all the players have gotten back to the START/FINISH, they add up their pennies to see who won.

## Extension:

As an added challenge to the invertebrate guessing game, when you are guessing which phyla the invertebrate fits in, see if you can name some of the features of it as well!

# Investigating Invertebrates



Some features of different phyla:

	Symmetry	Body Cavity	Segmentation	Other Features	Examples
<i>Porifera</i>	Asymmetrical	None (have pores)	None	Spicules for support	Sea sponge
<i>Cnidaria</i>	Radial	Mouth but no anus	None	Stinging cells (cnidocytes)	Jellyfish, coral, sea anemone
<i>Platyhelmintha</i>	Bilateral	Mouth but no anus	None	Flattened body (↑ SA:Vol ratio)	Tapeworm, planaria
<i>Annelida</i>	Bilateral	Mouth and anus	Segmented	Move via peristalsis	Earthworm, leech
<i>Mollusca</i>	Bilateral	Mouth and anus	Non-visible (mantle & foot)	May have a shell (made by mantle)	Snail, octopus, squid, bivalves
<i>Arthropoda</i>	Bilateral	Mouth and anus	Segmented	Exoskeleton (chitin)	Insects, spiders, crustaceans

## Scavenger Hunt

Using the website: <https://ibis.geog.ubc.ca/biodiversity/efauna/index.shtml>

See if you can fill in the rest of the table on the following page.

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Phylum	Common Name	Scientific Name	Family	Atlas Page - where is it in BC?	Appearance
Annelids	Freshwater leech				
Arachnids	Jumping Spider				
Cnidarians			Cyaneidae		
Crustaceans		Eubbranchipus intricatus			
Echinoderms		Antedonidae		In Foggy Bay	
Lophophorates	Purple Encrusting Bryozoan				
Molluscs		Octopodidae		Highest distribution around Victoria's peninsula	
Nemertean		Cerebratulidae			Bright Red
Porifera		Microcionidae			Bright Yellow



# Investigating Invertebrates



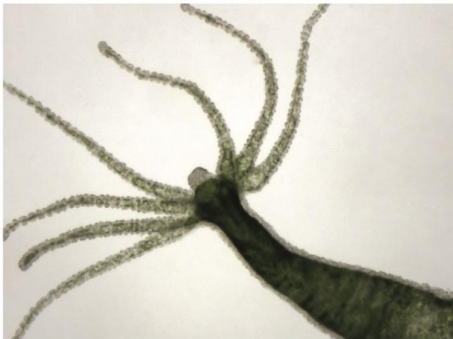
*Daphnia magna*



*Tree snail*



*leopard slug*



*green hydra*



*sea pen*



*sea anemone*



*land planarian*



*deep sea tube worms*



*parasitic horsehair worm*

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*ribbon worms*



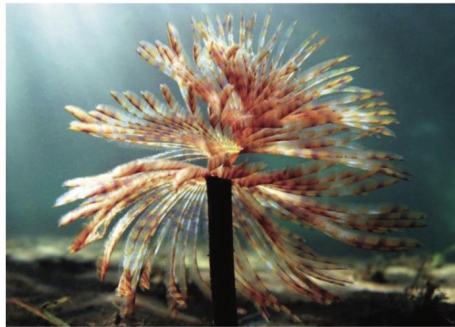
*flake*



*earthworm*



*pinworms*



*fan worm*



*peanut worm*



# Investigating Invertebrates



*copepod*



*millipede*



*spider*



*moth*



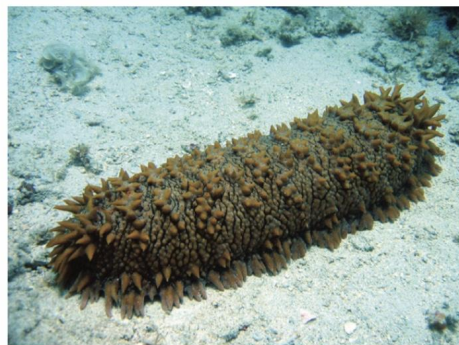
*grasshopper*



*sea star*



*sand dollar*



*sea cucumber*



*sea urchin*

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# Investigating Invertebrates



*philodina*



*nudibranch*



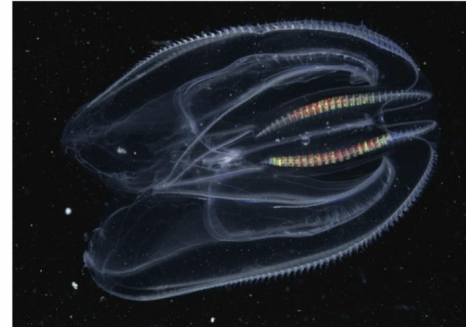
*water bear*



*squid*



*tube sponge*



*comb jelly*



# Investigating Invertebrates



*tick*



*arrow worm*



*roundworms in soil*



*tapeworm*



*sea fan*



*razor clam*



*octopus*



*nautilus*

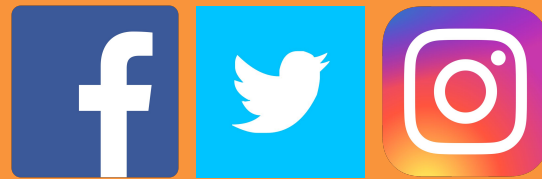


*mealworms*

#SVatHome

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project or results with us?

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Have a question?

Reach us at  
[svcamp@engr.uvic.ca](mailto:svcamp@engr.uvic.ca)