Invertebrate Inquiry

Image by Lisa Wright.

Specific Learning Outcomes

6-1-01: Use appropriate vocabulary related to their investigations of the diversity of living things.
6-1-09: Recognize that the animal kingdom is divided into two groups, vertebrates and invertebrates, and differentiate between the two.
6-1-10: Provide examples of a variety of invertebrates to illustrate their diversity. Include sponges, worms, molluscs, and arthropods.
6-1-11: Compare and contrast adaptations of common arthropods, and describe how these adaptations enable them to live in particular habitats.

General Learning Outcomes

6-0-1a: Formulate specific questions that lead to investigations.
6-0-1b: Identify various methods for finding the answer to a specific question and select one to implement.
6-0-2a: Access information using a variety of sources.
6-0-2c: Make notes on a topic, combing information from more than one source and referencing sources appropriately.
6-0-5a: Make observations that are relevant to a specific question
6-0-5f: Record and organize observations in a variety of ways.

Vocabulary

wetland, invertebrate, vertebrate, exoskeleton, endoskeleton, sponges, worms, molluscs, arthropods, taxonomy, classification system, classification key, adaptation

Summary

Students continue their exploration of wetlands by learning about invertebrates commonly found at Oak Hammock Marsh. Using a classification key, students will identify various invertebrates and then learn about the adaptations that enable them to live in a wetland habitat.

Materials

- *Computer and projector to present slideshow*
- *Print out the 'Invertebrate Key' for each student*
- *Either print in colour and cut out (recommend laminating for future use), or provide digital copy of invertebrate pictures for student assignment*
- *Access to the internet*
- *Access to a library*

Procedure

Warm Up

Begin by reminding students about their visit to the Wetland Discovery Centre, briefly reviewing the day's activities. If the students went *Critter Dipping* or participated in *Look what I Found*, ask the students to list some invertebrates they caught while at the marsh.

Present the provided slideshow presentation, which discusses the diversity, classification, and adaptations of invertebrates, providing brief descriptions and examples from the phyla Porifera, Mollusca, Annelida, and Arthropoda.

The Activity

The slideshow will lead into the activity, which allows students to learn about a particular invertebrate and their adaptations that makes them suitable to live in a wetland habitat, all while practicing how to use a classification key.

Have the thirty invertebrate images either displayed on a table or presented digitally so every student can pick four different invertebrates to identify by using the classification key (one key per student).

Once students have identified the four invertebrates, they will choose one to research. Using various sources, students are expected to learn about the invertebrate's adaptations that help it survive in a wetland habitat.

Students will have to find a means to present their research findings (you may either assign the medium or have students decide themselves) such as a poster, oral presentation, etc. Students must include their invertebrate's species name, the phylum the invert is a part of, and six different adaptations (three structural and three behavioural), including a description on how each adaptation helps the invertebrate survive in a wetland.

<u>Optional:</u> Students can create a class PowerPoint where each student is responsible to develop one slide which includes all the required information about their invertebrate. Have each student present their slide to the class, then follow with a discussion.

Wrap Up

Wrap up this activity by having students compare and contrast their invertebrates and their adaptations. Students can create a Venn Diagram or a list of the invertebrates' similarities and differences. Review as a class some of the similar and different ways of surviving in a wetland.

Conclude by reiterating that wetland habitats like Oak Hammock Marsh provide homes for a wide diversity of invertebrates. Learning more about these invertebrates and their unique adaptations deepens our understanding and respect for these living things and their need for healthy habitats.

Identification Tips:

When students are looking at their invertebrate pictures, encourage them to notice…

- Number of legs
- Number of tails
- Number of wings, and placement when resting
- Shape (worm-like, flying, beetle-like, etc.)
- Hard shell or casing
- Colour

Size is normally also an important feature to observe, however, with images, the size is not as accurately or easily estimated.

HARRY J. ENNS WETLAND DISCOVERY CENTRE

Invertebrate Key

1. A) Legs not clearly visible **(Go to 2)**

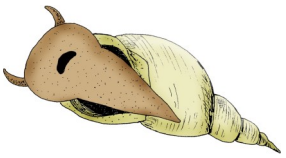
   B) Legs clearly visible **(Go to 6)**

2. A) Body contained within a shell or casing **(Go to 3)**

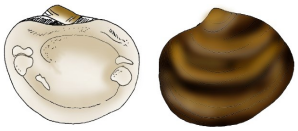
   B) Body worm-like without a hard shell **(Go to 4)**

   C) Very small body with visible antennae **(Go to 19)**

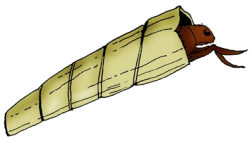
3. A) Single shell coiled into a spiral, moves using muscular foot: ***Pond Snail***



   B) Body shell composed of two hinged parts: ***Bivalve Clam***



   C) Body encased in hollow tube resembling a twig, head at times visible: ***Caddisfly Larva***



4. A) Body with large suction disc at each end: ***Leech***

   B) Body worm-like with distinct head region and indistinct legs **(Go to 5)**

5. A) Dark or bright red colour: ***Midge Larva or "Bloodworm"***

   B) Clear or transparent colour: ***Phantom Midge Larva***

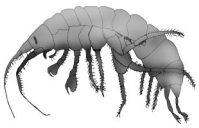
   C) Dark colour, wiggles wildly when disturbed, same width from head to tail: ***Mosquito Larva***

   D) Dark colour, body shaped like a comma, enlarged head region: ***Mosquito Pupa***

6. A) Two or three pairs of legs (Go to 7)

   B) Four pairs of legs **(Go to 8)**

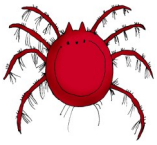
   C) Many pairs of legs: ***Sideswimmer***



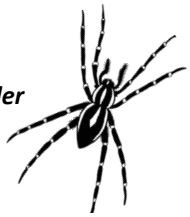
7. A) Invertebrate is primarily aquatic, swimming under the water's surface **(Go to 9)**

   B) Invertebrate is on the water's surface, on the land or in the air **(Go to 10)**

8. A) Small, round body that is red or black in colour: ***Water Mite***



   B) Body with two segments, long legs and 'W'-shaped markings on the abdomen: ***Dock Spider***



9. A) One pair of legs is long and oar-like **(Go to 11)**

   B) Body is long and narrow, with a distinct head region and visible eyes **(Go to 12)**

   C) Body is wide, rounded and wings meet in a straight line along the back **(Go to 13)**

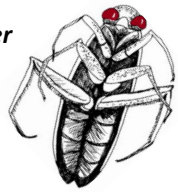
   D) Body is wide, rounded and wings meet and overlap along the back: ***Giant Water Bug***

10. A) Invertebrate has one pair of wings **(Go to 14)**

    B) Invertebrate has two pairs of wings **(Go to 15)**

    C) Wings are not visible, invertebrate runs on the surface of the water: ***Water Strider***

11. A) Swimming on its back, large red eyes, green or black and white in colour: ***Backswimmer***



    B) Swimming right-side-up, solid black in colour with fine yellow bars: ***Water Boatman***

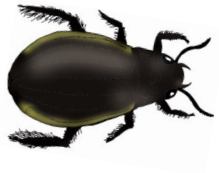
12. A) Invertebrate has three tails **(Go to 16)**

    B) Invertebrate has two tails **(Go to 17)**

    C) Invertebrate has no tail: ***Dragonfly Nymph***

13. A) Shiny brown, with dull yellow markings on sides, range from 10mm to the size of a large coin:

Predacious Diving Beetle



B) Shiny black, able to zoom around on the surface of the water, 10mm in size or less, may carry a bubble:

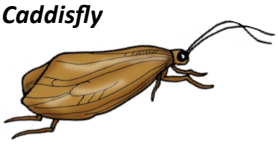
14. A) High pitched hum when flying, biting adults, range from 2-4mm: ***Mosquito***

B) Non-biting adults, males have feathery antennae, range from 3-6mm: ***Midge***

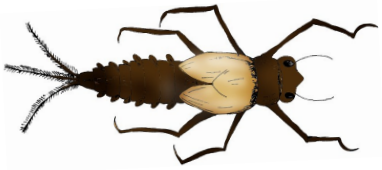
15. A) Body is helicopter-shaped **(Go to 18)**

B) Invertebrate has two tails, wings held in vertical position when resting: ***Mayfly***

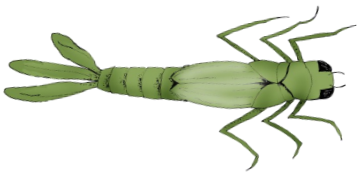
C) Invertebrate has no tail, wings furry and held down over the body when resting: ***Caddisfly***



16. A) Large gills are located on the abdomen and not on the tails, so tails appear long and thin: ***Mayfly Nymph***

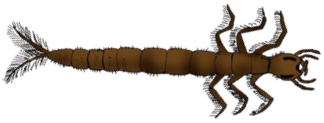


B) Fine gills located on the tails make them appear wide and leaf-like: ***Damselfly Nymph***

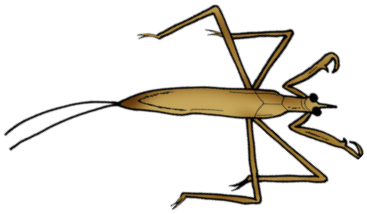


17. A) Tails are short and gills make them appear leaf-like, mandibles very large, streamlined body:

Predacious Diving Beetle Larva, or "Water Tiger"



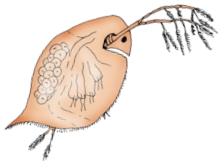
B) Tails are long and thin, strong front legs are specialized for seizing prey, resembles a floating stick:



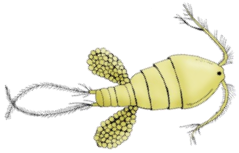
18. A) Wings held in a horizontal position when resting, body length can reach 75mm: ***Dragonfly***

B) Wings held along the back when at rest, body length ranges from 26mm to 65mm: ***Damselfly***

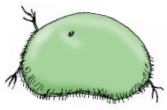
19. A) Pink or orange in colour, moves jerkily, semi-transparent body makes pulsing heart visible: ***Water Flea***



B) Teardrop-shaped body, single eye in middle of head with prominent antennae: ***Copepod***



C) Tiny clam-like shell that is grey, brown or green, with seven pairs of limbs: ***Seed Shrimp***



Teacher's Invertebrate Answer Key

1. Pond Snail
2. Dragonfly Nymph
3. Water Boatman
4. Side Swimmer (aka Fresh Water Shrimp)
5. Predacious Diving Beetle Larva (aka Water Tiger)
6. Backswimmer
7. Caddisfly Larva
8. Midge (adult)
9. Water Strider
10. Damselfly Nymph
11. Dragonfly (adult)
12. Mayfly Nymph
13. Daphnia (aka Water Flea)
14. Damselfly (adult)
15. Caddisfly (adult)
16. Seed Shrimp
17. Mayfly
18. Mosquito Pupa
19. Midge Larva (aka Bloodworm)
20. Bivalve Clam
21. Predacious Diving Beetle (adult)
22. Phantom Midge Larva
23. Whirligig Beetle
24. Water Mite
25. Water Scorpion
26. Leech
27. Copepod
28. Mosquito Larva
29. Dock Spider
30. Giant Water Bug

Ducks Unlimited Canada

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Ducks Unlimited Canada

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Ducks Unlimited Canada

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Ducks Unlimited Canada

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Ducks Unlimited Canada

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Ducks Unlimited Canada

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Photo from factslegend.org.

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Photo from Flickr, Alberto Garcia.

Photo from fynnmood.sg.

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Photo from fishpondinfo.com.

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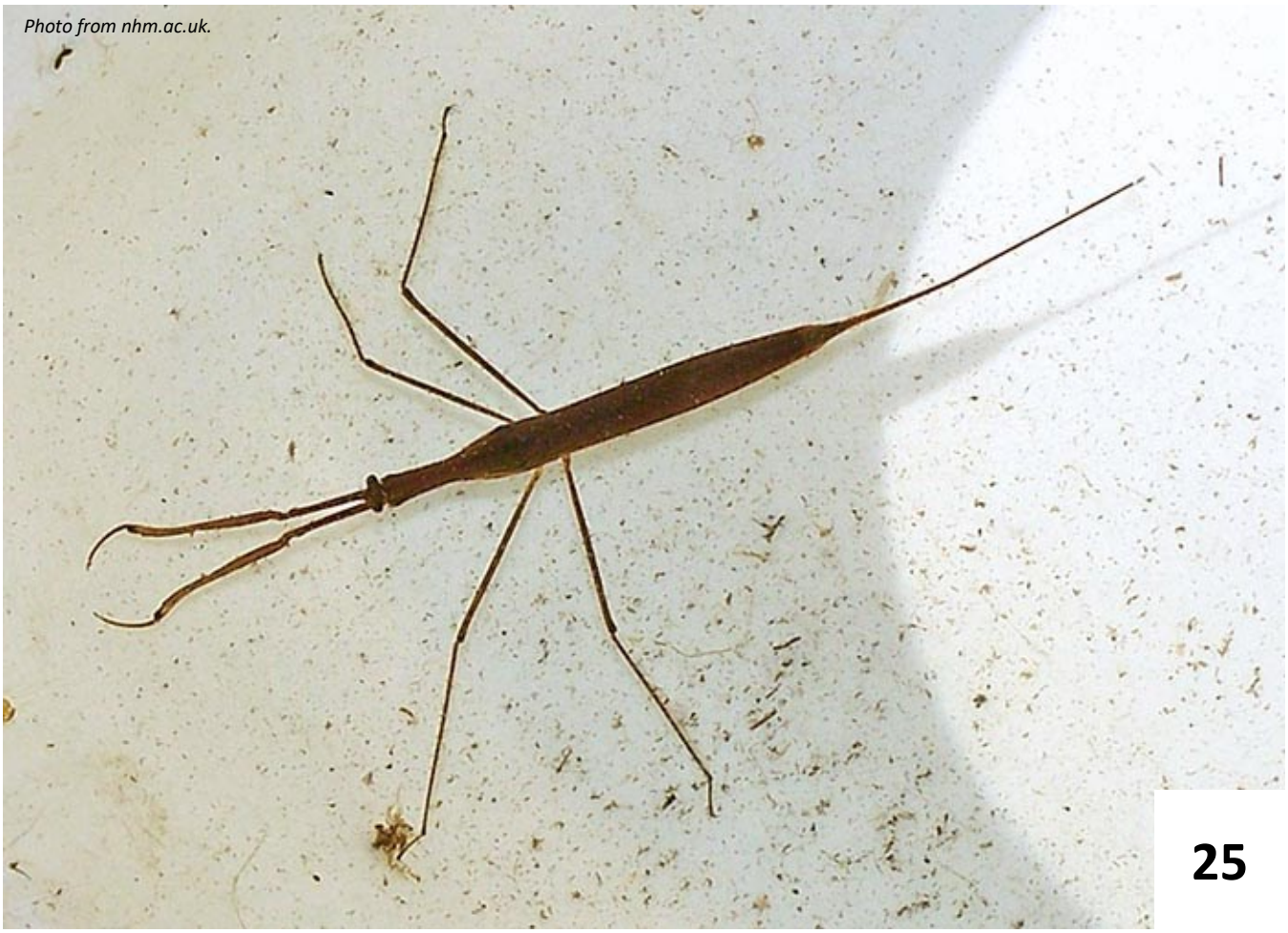

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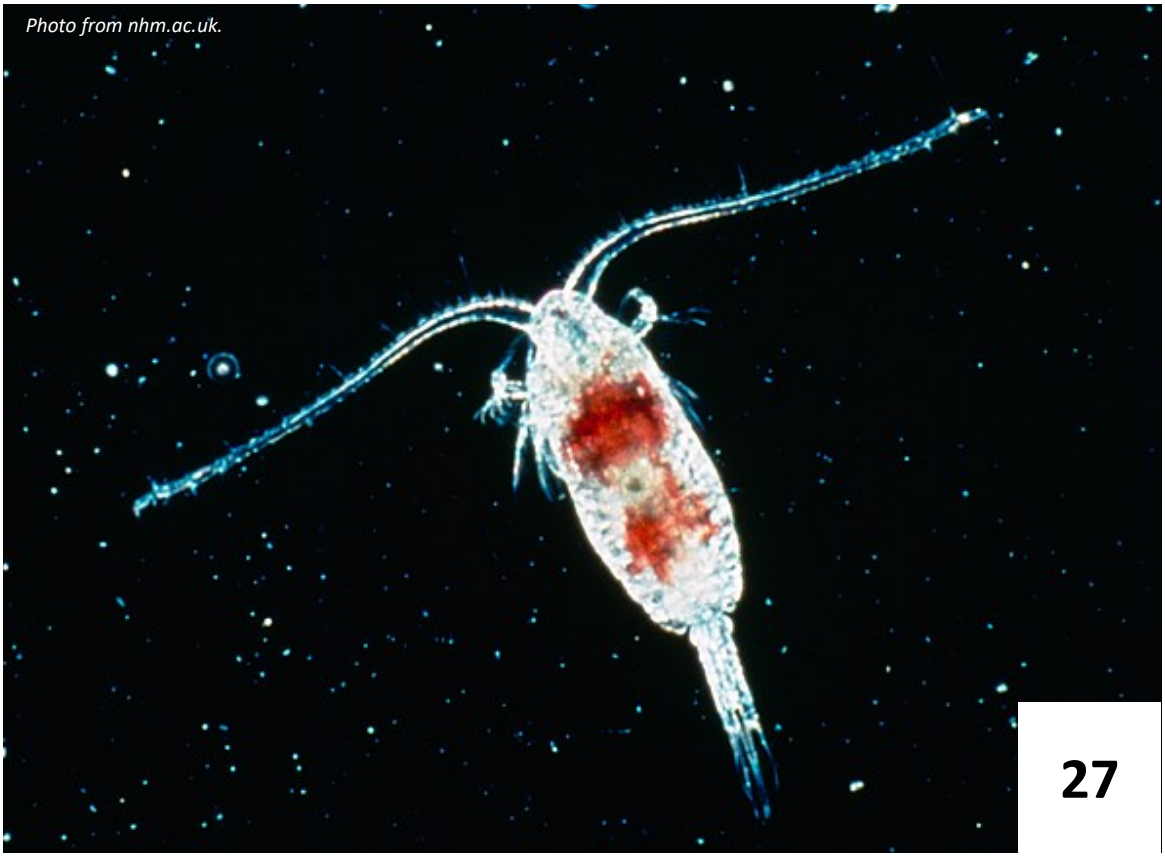

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