Creating Food Chains & Webs

Image from imgarcade.com.

Specific Learning Outcomes

4-1-01: Use appropriate vocabulary related to their investigations of habitats and communities.
4-1-02: Recognize that each plant and animal depends on a specific habitat to meet its needs.
4-1-09: Recognize that plant and animal populations interact within a community.
4-1-10: Recognize that the food chain is a system in which some of the energy from the Sun is transferred eventually to animals.
4-1-11: Construct food chains and food webs, and classify organisms according to their roles.

General Learning Outcomes

4-0-1a: Ask questions that lead to investigations of living things, objects, and events in the local environment.
4-0-4e: Identify problems as they arise, and work with others to find solutions.
4-0-4g: Communicate questions, ideas and intentions, and listen effectively to others during classroom-learning experiences.
4-0-6d: Sort and classify according to an established classification system.
4-0-7b: Identify new questions that arise from what was learned.

Vocabulary

wetland, habitat, food web, food chain, producer, consumer, energy, predator, prey

Summary

Students are introduced to wetlands by organizing living things that are found in wetlands into food webs and food chains; classifying them according to their role within the chain and web.

Materials

- *Print and cut out cards (recommend laminating for reuse)*
- *Print or project image of wetland animal & plant scene*
- *Print activity sheet for students (one page per student **OR** one per pair, copy double-sided, one side with activity sheet, the other side showing the wetland scene with reference numbers)*
- *Chalk, White or Smart board*
- *Writing utensils*

Procedure

Warm Up

Begin by asking students to brainstorm what the word 'food chain' means when used in the context of nature and living things. Then ask students what they think 'food web' means in the same context.

Explain that a food chain is… (see note below). Show accompanying example of a food chain (which showcases living things found within a wetland setting). Have a brief discussion of what is shown in the example, and accompanying definition. Then ask students if only a muskrat could eat a cattail, or if a coyote only eats muskrats. Living things within a community have far more complex relationships then just one animal eating only one producer, etc.

A food chain is a means to show how energy is transferred from one living thing to the next. Food chains always begin with a producer, which will always be some form of plant. Plants convert the sun's energy into consumable energy. When a plant is consumed, the plant's energy is given to the animal who ate it, called the primary consumer. The consumer who eats the primary consumer is called the secondary consumer, and the chain continues from there.

A food web is a means to demonstrate the predator-prey and consumer-producer relationships within a habitat, and is made up of a network of food chains. A food web will always include producers (plants who convert the sun's energy to consumable energy) and consumers (those who eat living things). Food webs are able to show the more complex and interconnected nature of living things within a particular habitat or community.

Show accompanying example of a food web (which showcases living things found within a wetland setting), and have a brief discussion of what is shown in the example, and accompanying definition.

Activity

Explain that students will be organizing living things that are found in wetland habitats into food chains and webs, classifying them according to their role within the chain and web. A wetland is... (see note below). Wetlands cover almost half of Manitoba (41%), and are home to many different kinds of plant and animal communities.

Show or project image of the animal and plant wetland scene (first without the reference numbers), asking students if they recognize any animals. Then show or project the image of the wetland scene with the reference numbers, identifying all the living things within the scene.

Hand out the food chain activity sheet and a card to each student. Explain that students will use their cards (that each show one of the living things included in the wetland scene) to create three different food chains. Students are encouraged to reference the cards to help them figure out what eats what in order to help them build food chains. Students will then write in their answers on the activity sheet.

Wrap Up

Once students have finished filling in their food chains, explain that the class will create a food web using the food chains they all just created. As students offer their answers, draw the developing food web on a board, asking students how the different food chains connect with one another.

Conclude by explaining that as a class you will be visiting a wetland (like the one shown in the picture) called Oak Hammock Marsh where students will be exposed to the many different living things that are found in a wetland, including some of those used to create the food chains and food webs.

A wetland is an area of land that holds shallow water, with a maximum depth of two metres. The water makes the soil very moist, so plants who need moist soils will grow in and around the water; this is why a wetland can not be deeper then two metres, because otherwise these kinds of plants drown and do not receive enough sunlight. The water moves slowly because there are so many plants that slow the water down, absorbing some of the water like a sponge and filtering it as it moves through.

Naturalist's Note:

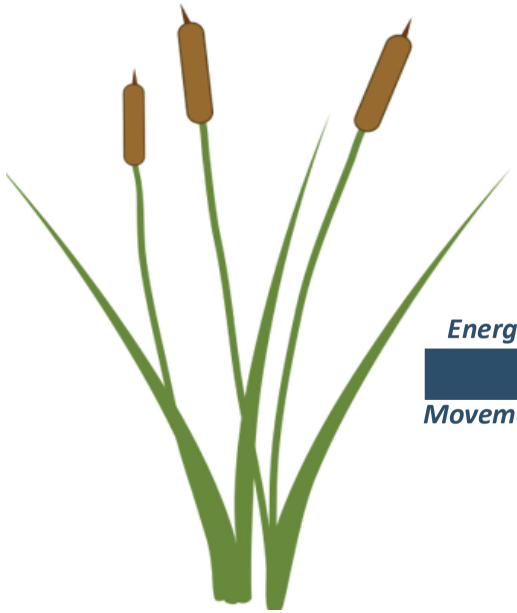
When organizing animals into food chains and food webs, or when classifying animals as either herbivore, omnivore, or carnivore, it should be noted that these classifications are not as straight forward as 'this animal only eats this, and this animals only eats that.' In nature, animals behave in a far more complex manner.

For example, a white-tailed deer is classified as a herbivore (only eating vegetation), but they in fact do eat mice or even baby birds if the opportunity arises, for the nutrients in that food source is far too valuable to pass up. You may ask 'why are white-tailed deer classified as herbivores then if they also eat meat?' White-tailed deer are classified as herbivores because they only seek out vegetation, eating meat only if the opportunity presents itself, where as an omnivore seeks out both vegetation and meat. Additionally, herbivores teeth are shaped differently then those of omnivores and carnivores, which them best for eating vegetation.

All animals are opportunistic to some extent, and will usually not pass up valuable nutrients when they are presented with some.

Food Chain

A food chain is a means to show how energy is transferred from one living thing to the next. Food chains always begin with a producer, which will always be some form of plant. Plants convert the Sun's energy into consumable energy, so when a plant is consumed, the plant's energy is given to the animal who ate it, and is referred to as the primary consumer. The consumer who eats the primary consumer is called the secondary (second) consumer, and the chain goes on and on from there.



Cattail
(Producer)

Energy
Movement

Muskrat
(Primary Consumer)

Coyote
(Secondary Consumer)

Cattail image from clipground.com. Muskrat image from naturalunseenhazards.wordpress.com. Coyote image from yedraw.com.

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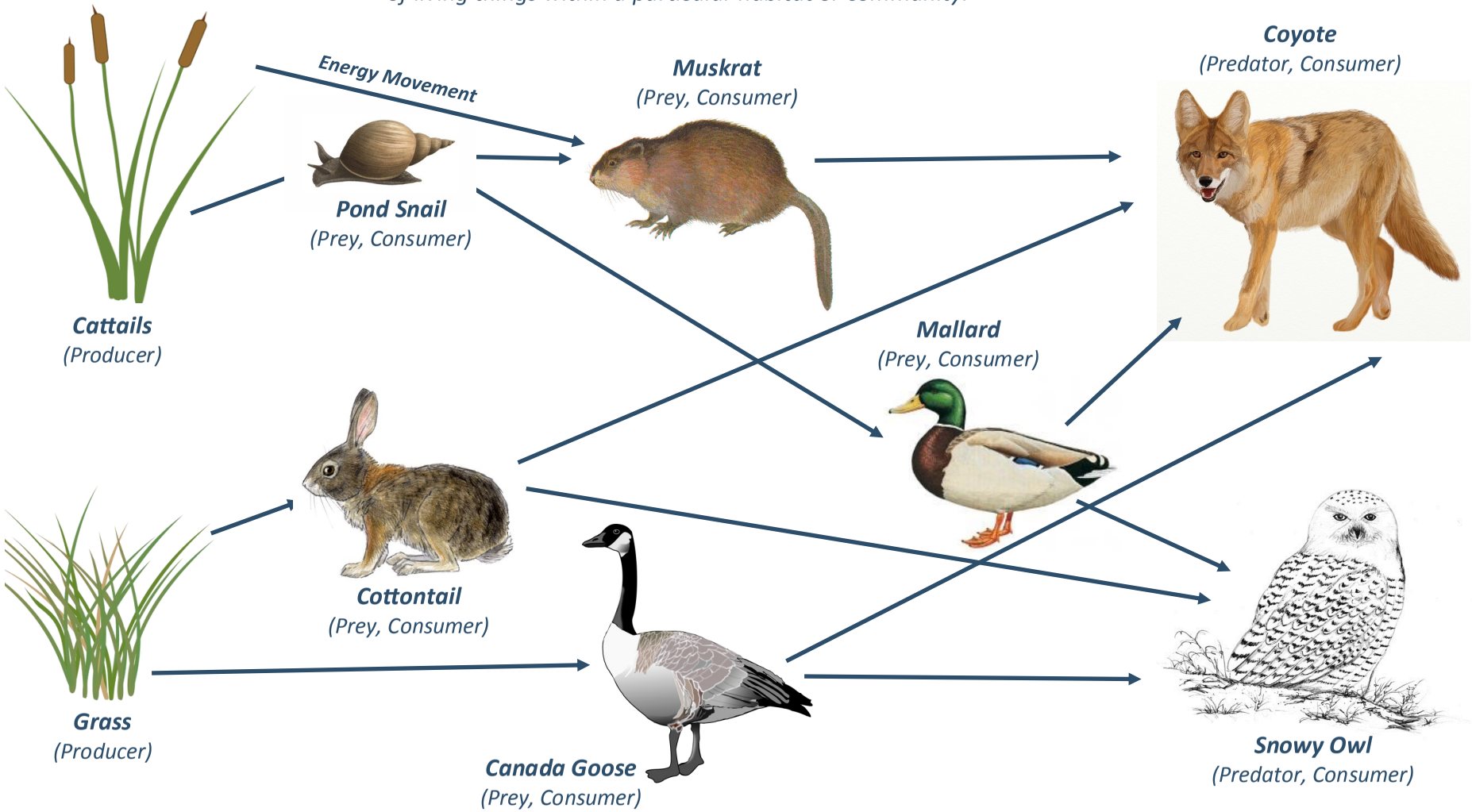
Food Web

A food web is a means to demonstrate the predator-prey and consumer-producer relationships within a habitat, and is made up of a network of food chains. A food web will always include producers (plants who convert the Sun's energy to consumable energy) and consumers (those who eat living things). Unlike a food chain, food webs are able to show the more complex and interconnected nature of living things within a particular habitat or community.



Cattail image from clipground.com. Muskrat image from naturalunseenhazards.wordpress.com. Coyote image from yedraw.com. Pond snail image from memrise.com. Cottontail image from kidssearch.com. Canada goose image from pngimg.com. Snowy owl image from birdwatchersgeneralstore.com. Mallard image from hbw.com. Grass image from supago.fr

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OAK HAMMOCK MARSH INTERPRETIVE CENTRE

Image courtesy of Ducks Unlimited, Puddler Spring 2016 Issue. Coyote image from yedraw.com.

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OAK HAMMOCK MARSH INTERPRETIVE CENTRE

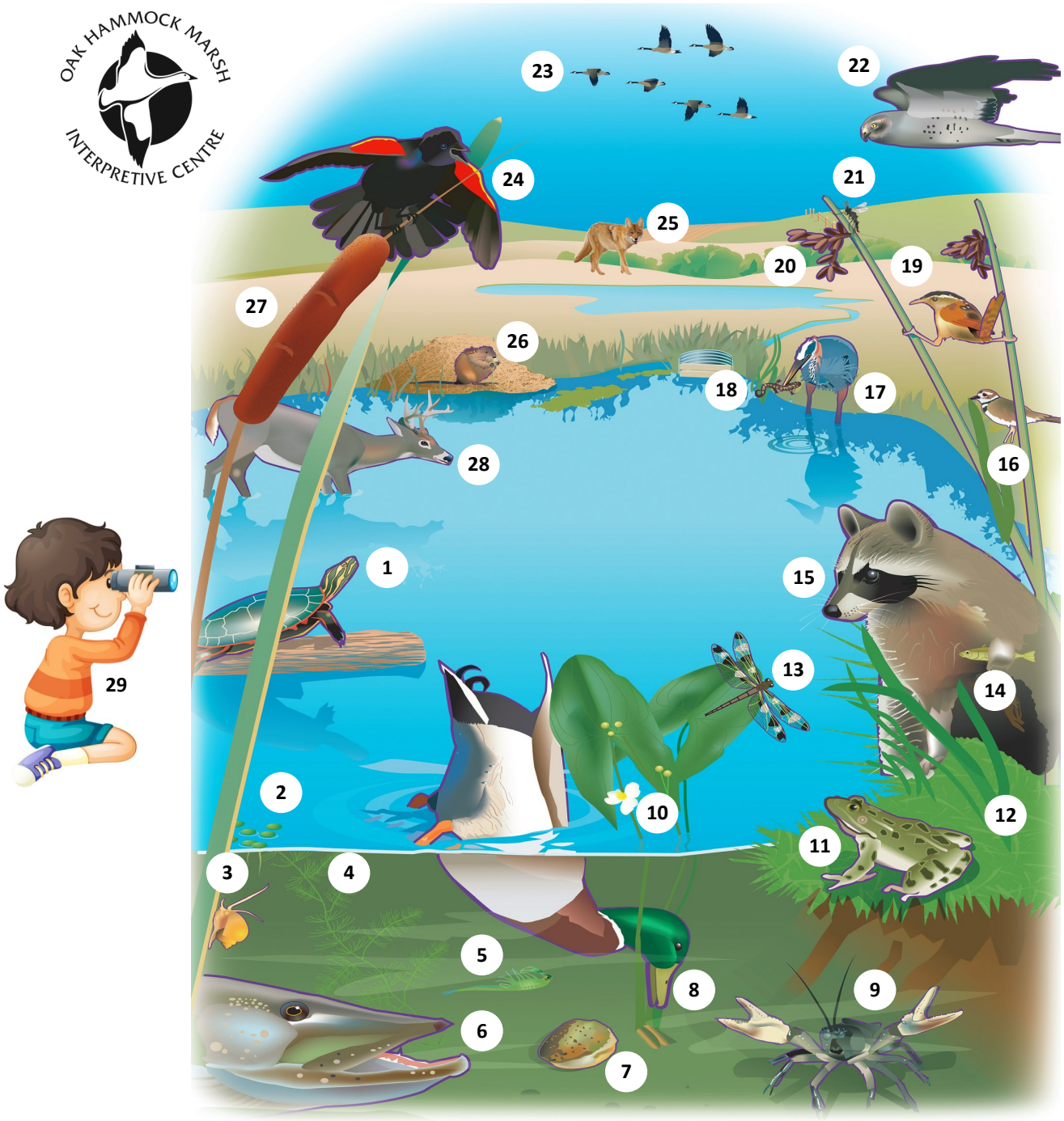

Image courtesy of Ducks Unlimited, Puddler Spring 2016 issue. Human image retrieved from Pinterest. Coyote image from yedraw.com.

1. Painted Turtle
2. Duckweed
3. Pond Snail
4. Coontail
5. Fresh Water Shrimp
6. Northern Pyke
7. Clam
8. Mallard
9. Crayfish
10. Arum-leaved Arrowhead
11. Northern Leopard Frog
12. Grass
13. Dragonfly
14. Minnow
15. Raccoon
16. Killdeer
17. Great Blue Heron
18. Yellow Spotted Salamander
19. Marsh Wren
20. Bulrush
21. Midge
22. Northern Harrier
23. Canada Goose
24. Red-Winged Blackbird
25. Coyote
26. Muskrat
27. Narrow-leaved Cattail
28. White-tailed Deer
29. Human

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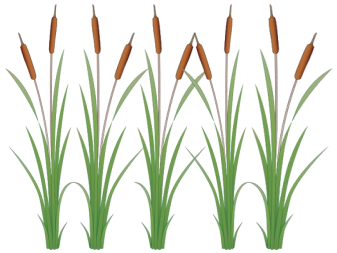
Narrow-leaved Cattail

Plant



Eats:
Turns sunlight into energy

Eaten By:
Muskrat
Humans
Pond Snail
Mallard
Painted Turtle

Coontail

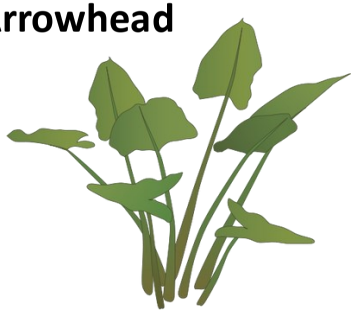
Plant

Eats:
Turns sunlight into energy

Eaten By:
Pond Snail
Mallard
Painted Turtle
Muskrat

Arum-leaved Arrowhead

Plant



Eats:
Turns sunlight into energy

Eaten By:
Pond Snail
Mallard
Painted Turtle
Muskrat
Canada Goose

Bulrush

Plant

Eats:
Turns sunlight into energy

Eaten By:
Pond Snail
Muskrat
Mallard
Painted Turtle
Canada Goose

Grass

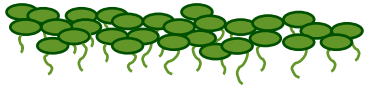
Plant

Eats:
Turns sunlight into energy

Eaten By:
Muskrat
Coyote
Canada Goose
Painted Turtle
Red-winged Blackbird
White-tailed Deer

Duckweed

Plant



Eats:
Turns sunlight into energy

Eaten By:
Mallard
Painted Turtle
Canada Goose

Pond Snail

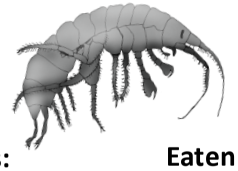
Invertebrate

Eats:
Narrow-leaved Cattail
Coontail
Arum-leaved Arrowhead
Bulrush

Eaten By:
Muskrat
Painted Turtle
Northern Pyke
Crayfish
Mallard
Canada Goose
Raccoon
Minnow
Yellow Spotted Salamander
Killdeer

Fresh Water Shrimp

Invertebrate



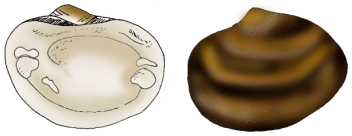
Eats:
Dead things (they are ***scavengers*** so they eat everything that has died in the *water*)

Eaten By:
Mallard
Minnow
Northern Pyke
Northern Leopard Frog
Yellow Spotted Salamander
Painted Turtle
Killdeer
Marsh Wren
Red-winged Blackbird

Cattail, Arrowhead, Bulrush, & Grass images from supagro.fr. Coontail image from cayugacounty.us. Snail image from memrise.com.

Clam

Invertebrate



Eats:
Microscopic organisms

(Clams are ***filter feeders***, pulling food out of the water)

Eaten By:
Mallard

Canada Goose

Raccoon

Crayfish

Invertebrate

Eats:
Minnow

Northern Leopard Frog

Pond Snail

Eaten By:
Raccoon

Painted Turtle

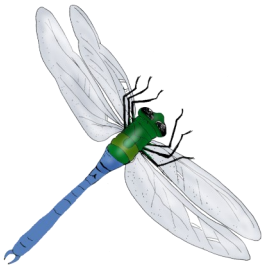
Great Blue Heron

Yellow Spotted Salamander

Killdeer

Dragonfly

Invertebrate



Eats:
Midge

Eaten By:
Marsh Wren

Red-winged Blackbird

Killdeer

Northern Leopard Frog

Minnow

Fish

Eats:
Fresh Water Shrimp

Pond Snail

Minnow

Eaten By:
Northern Pyke

Raccoon

Great Blue Heron

Muskrat

Crayfish

Minnow

Yellow Spotted Salamander

Northern Pyke

Fish

Eats:
Pond Snail

Fresh Water Shrimp

Minnow

Northern Leopard Frog

Mallard ducklings

Eaten By:
Raccoon

Great Blue Heron

Coyote

Human

Northern Leopard Frog

Amphibian

Eats:
Midge

Dragonfly

Fresh Water Shrimp

Eaten By:
Crayfish

Raccoon

Great Blue Heron

Northern Pyke

Muskrat

Coyote

Humans

Painted Turtle

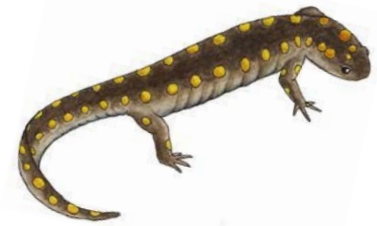
Northern Harrier

Northern Leopard Frog

White-tailed Deer

Yellow Spotted Salamander

Amphibian



Eats:
Minnow

Crayfish

Pond Snail

Fresh Water Shrimp

Eaten By:
Raccoon

Great Blue Heron

Muskrat

Coyote

Painted Turtle

Reptile

Eats:
Pond Snail

Crayfish

Fresh Water Shrimp

Northern Leopard Frog

All Plants (included in the game)

Eaten By:
Coyote

Raccoon

Crayfish image from seafoodsource.co. Minnow image from earthguide.ucsd.edu/fishes. Pyke & Turtle image from Wikimedia Commons. Salamander image form exploringnature.org.

Mallard

Bird

Eats:
Narrow-leaved Cattails
Arum-Leaved Arrowhead
Bulrush
Duckweed
Coontail
Pond Snail
Fresh Water Shrimp
Clam

Eaten By:
Northern Harrier
Coyote
Humans
Northern Pyke (ducklings)
White-tailed Deer (eggs)

Killdeer

Bird

Eats:
Midge
Pond Snail
Fresh water Shrimp
Crayfish

Eaten By:
Northern Harrier
Coyote
White-tailed Deer (eggs)

Marsh Wren

Bird

Eats:
Dragonfly
Midge
Fresh Water Shrimp

Eaten By:
Northern Harrier
Coyote
White-tailed Deer (eggs)

Red-winged Blackbird

Bird

Eats:
Dragonfly
Midge
Fresh Water Shrimp
Seeds from Grasses

Eaten By:
Northern Harrier
Coyote
White-tailed Deer (eggs)

Great Blue Heron

Bird

Eats:
Yellow Spotted Salamanders
Minnow
Crayfish
Northern Leopard Frog
Northern Pyke

Eaten By:
Coyote
White-tailed Deer (eggs)

Northern Harrier

Bird

Eats:
Mallard
Killdeer
Marsh Wren
Red-winged Blackbird
Northern Leopard Frog
Muskrat

Eaten By:
Coyote
White-tailed Deer (eggs)

Canada Goose

Bird

Eats:
Grass
Arum-leaved Arrowhead
Bulrush
Duckweed
Dragonfly
Midge
Pond Snail
Clam

Eaten By:
Coyote
Human
White-tailed Deer (eggs)

Raccoon

Mammal

Eats:
Pond Snail
Northern Leopard Frog
Crayfish
Northern Pyke
Minnow
Clam
Yellow spotted Salamander
Painted Turtle

Eaten By:
Coyote
Humans

Mallard image from hbw.com. Killdeer, Wren, Blackbird, Heron, Harrier, and Goose images from audobon.org. Raccoon image from yedraw.ca.

Muskrat

Mammal

Eats:
Narrow-leaved Cattail

Bulrush

Coontail

Arum-leaved Arrowhead

Pond Snail

Fresh Water Shrimp

Northern Leopard Frog

Minnow

Northern Pyke

Yellow Spotted Salamander

Grass

Eaten By:
Northern Harrier

Coyote

Humans

White-tailed Deer

Mammal

Eats:
Grass

Northern Leopard Frog

All Bird Eggs (included in the game)

Eaten By:
Coyote

Human

Coyote

Mammal

Eats:
Grass

Northern Pyke

Norther Leopard Frog

Yellow Spotted Salamander

Painted Turtle

All Birds (include in the game)

Racoon

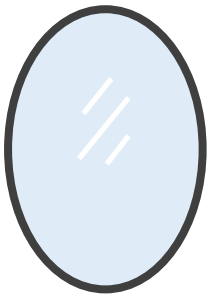
Muskrat

White-tailed Deer

Eaten By:
Humans

Human

Mammal



Eats:
Narrow-leaved Cattail

Mallard

Canada Goose

Northern Pyke

Muskrat

Raccoon

White-tailed Deer

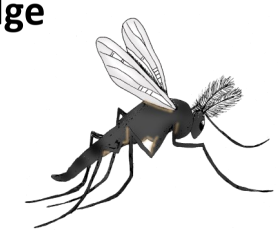
Northern Leopard Frog

Coyote

Eaten By:
None

Midge

Invertebrate



Eats:

Larvae are **scavengers** (eating dead things) but adults eat nothing.

Eaten By:
Dragonfly

Northern Leopard Frog

Killdeer

Marsh Wren

Red-winged Blackbird

Canada Goose

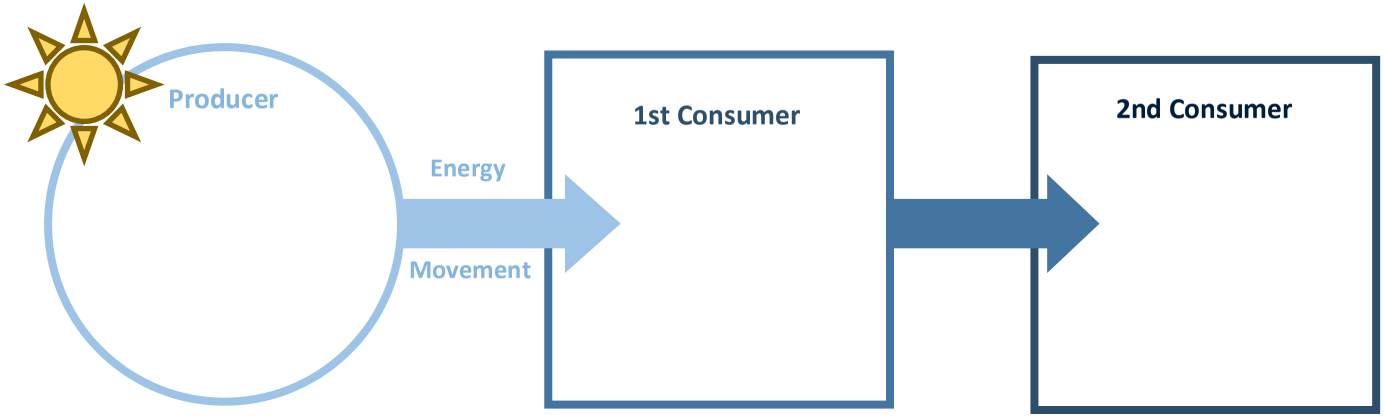
Muskrat image from naturalunseenhazards.wordpress.com. Deer image from moziru.com. Coyote image from yedraw.com.

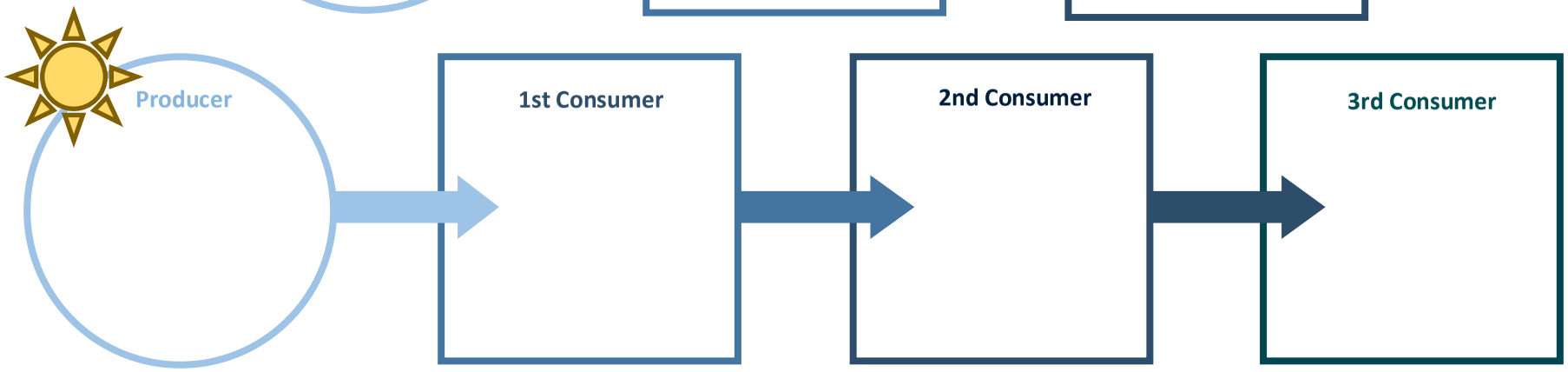
OAK HAMMOCK MARSH
INTERPRETIVE CENTRE

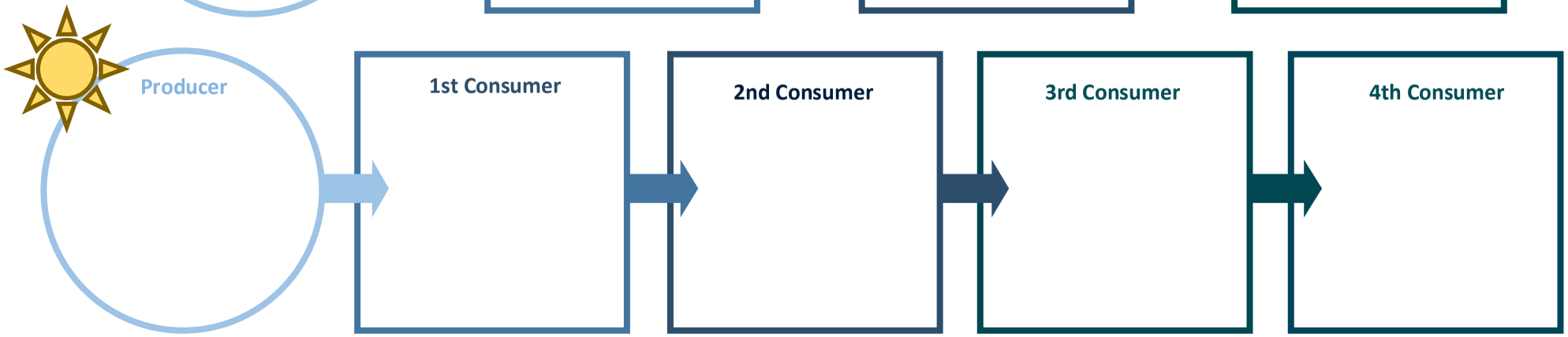
Name: _____

Create a Food Chain

Energy is passed from the sun to one living thing to another through a food chain, each living thing adding another link to the chain. Create your own three food chains by filling in the spaces provided.







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OAK HAMMOCK MARSH
INTERPRETIVE CENTRE

Create a Food Chain

Name: *Example*

Energy is passed from the sun to one living thing to another through a food chain, each living thing adding another link to the chain. Create your own three food chains by filling in the spaces provided.

Producer
Narrow-leaved Cattail

→ **Primary Consumer**
Muskrat

→ **Secondary Consumer**
Northern Harrier

Producer
Coontail

→ **Primary Consumer**
Fresh Water Shrimp

→ **Secondary Consumer**
Northern Leopard Frog

→ **Tertiary Consumer**
Raccoon

Producer
Arum-leaved Arrowhead

→ **Primary Consumer**
Pond Snail

→ **Secondary Consumer**
Crayfish

→ **Tertiary Consumer**
Northern Pyke

→ **Quaternary Consumer**
Human

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