



SASKATCHEWAN
WILDLIFE
FEDERATION

Classroom in a Box: Discovering Saskatchewan's Fish Species

The purpose of this classroom in a box is to introduce your students to the fish that live in our rivers and lakes, learn about the special adaptations they have that make them perfect for living here, and talk about interaction between habitat and populations. This program will also provide you with the opportunity to get your class outside, allow your students to connect with the nature around them, and tap into their creative side!

Feel free to mix and match activities to suit your class dynamic and curriculum requirements. If you are already participating in the Fish In Schools program (FINS), then this is a great way for your students to get to know and understand the trout that you are raising, as well as the other fish that you can find in our province.

Introduction to fish in Saskatchewan

Saskatchewan is home to hundreds of fish species of all shapes, sizes, and colours. Some having been introduced while others have been living here for thousands of years (living dinosaurs!). Whether they are only a few mm's big or an arm's length, these fish live and thrive in adverse conditions. They are equipped with countless adaptations that make them perfect for their chosen habitats. Wetland loss, climate change, and invasive species all threaten their efficiency and make it hard to survive. Understanding how these species function and how we can make a positive impact is crucial to the future of our lakes, rivers, and sport fisheries.

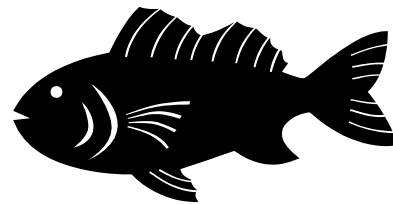
Activity 1: Fish Adaptations: Designing fish

Purpose:

To understand the different adaptations that fish have for various aquatic habitats.

Materials:

- 5 cards for each adaptation from the masters provided
- crayons
- large paper



Background:

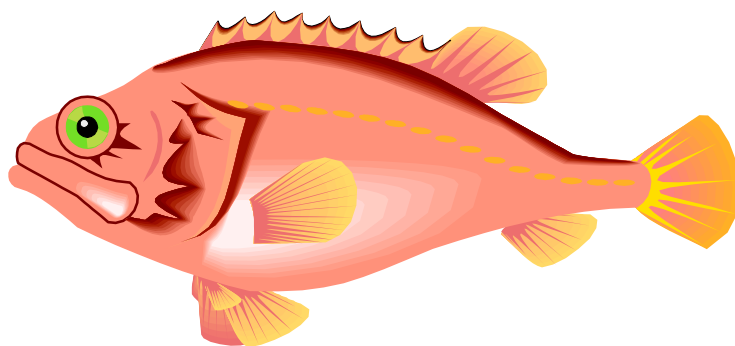
Aquatic animals are the product of countless adaptations over long periods of time. These adaptations, for the most part, are features that increase the animals' likelihood of surviving in their habitat.


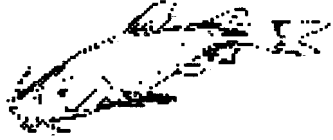



When a habitat changes, either slowly or catastrophically, the species of animals with adaptations that allow them many options are the ones most likely to survive. Some species have adapted to such a narrow range of habitat conditions that they are extremely vulnerable to change. They are over-specialized and are usually more susceptible than other animals to death or extinction.

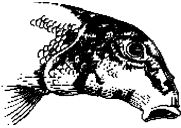
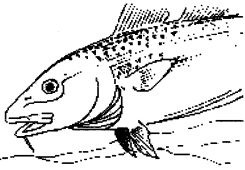

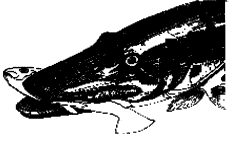

Activity:

- 1) In this activity the students will design a variety of fish adapted for various aquatic habitats.
- 2) Explain that adaptation means: the process of making adjustments to the environment. Give examples: porcupine has adapted quills for defense and claws for climbing trees, owls have developed special eyes to help with hunting.
- 3) Put the adaptation cards into 4 piles. One for habitat, one for colouration, etc. Divide the students into small groups of 2 or 3. Have 1 of the students from each group come up and draw a card from each pile.
- 1) Each group is to create a new species of fish using the characteristics on the cards they drew. They should draw the fish and its surrounding habitat, and name the fish. Encourage all kids in each group to participate.
- 2) Have each group present their fish to the rest of the group explaining its adaptations and habitat.
- 3) Show the students pictures of actual fish and have them point out the different characteristics and adaptations. This will help them to learn the different species of fish and understand their habitats. There are good pictures in the Saskatchewan Anglers Guide or feel free to use the fish posters that were included in this kit.

This activity has been adapted from “Fashion A Fish” in the program *Project Wild*.



<p>Habitat Fast flowing river</p>	<p>Body Shape Torpedo (for moving fast)</p> 
<p>Habitat Deep, cold lake</p>	<p>Body Shape Flat belly (for feeding on the bottom)</p> 
<p>Habitat Ocean (salt water)</p>	<p>Body Shape Hump backed (stable in moving water)</p> 
<p>Habitat Marsh</p>	<p>Body Shape Vertical disk (can feed above or below)</p> 
<p>Habitat Slow ,moving creek</p>	<p>Body Shape Eel-like (can hide in rocks)</p> 

<p>Colouration Light coloured belly (predators have difficulty seeing it from below)</p>	<p>Mouth Shape Sucker shaped mouth (feeds on small plants)</p> 
<p>Colouration Dark upper side (predators have difficulty seeing it from above)</p>	<p>Mouth Shape Long upper jaw (feed on prey it looks down on)</p> 
<p>Colouration Vertical stripes (can hide in vegetation)</p>	<p>Mouth Shape Long lower jaw (it feeds on prey it sees above)</p> 
<p>Colouration Spotted (can hide in rocks)</p>	<p>Mouth Shape Duckbill jaws (for grasping prey)</p> 
<p>Colouration Horizontal stripes (can hide in vegetation)</p>	<p>Mouth Shape Large mouth (engulfs prey)</p> 

Activity 2: Designing Habitat

Purpose: The purpose of this activity is to get students to identify the components that are essential for most aquatic animals to survive.

Materials:

- Recipe cards with fish and descriptions (provided for classes)
- Art supplies eg. Modeling clay, string, cardboard, foam, paints, pebbles
- 5L jars

Background: Zoos and aquariums use artificial habitats to bring animals and fish closer to humans, so we can learn about (and, in some cases, save!) species. There are a lot of things that need to be considered when designing these habitats.

Some animals like moving water, others like it static. Some fish like to live in deep water, while others like shallower warm water. Rocky vs sandy, salt vs fresh, lots of vegetation or little vegetation, these are all examples of different ways habitats can differ for different creatures. The idea behind this activity is to create a mini habitat for the creature you chose using craft supplies. Use your imagination! Can't have running water in a jar? What would it look like if you could?

Activity:

1. Separate the class into groups. Each group gets a jar and they get to choose a card from the deck with an aquatic animal on it.
2. Once they have their fish and their jar they can use different resources to find out what sort of habitat their fish prefers.
3. Once that have the basic information they need, they can use different crafting supplies to create mini aquaria or terrariums that would suit their fish.
4. At the end, students can compare notes to see how different creatures will need drastically different habitats. If you are a FINS school you already have an example!

This activity was adapted from "Designing a habitat" in the program *Project Wild*

Activity 3: Pond Exploration

Purpose:

To explore the number of different types of aquatic organisms and determine the health of the pond.

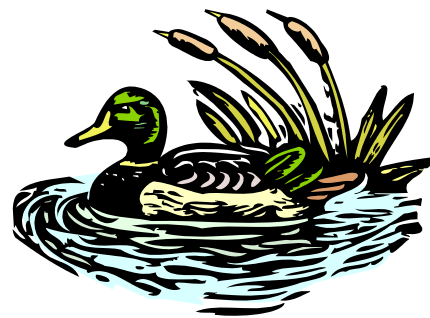
Materials:

- 1 large plastic container (4 litre ice cream pail, light coloured dishpan or rubbermaid container)
- 1 small white plastic container per child (margarine or yogurt containers)
- 1 white plastic spoon per child
- Magnifying glasses or boxes (enough to share)
- Identification guides (optional)
- Copies of the “Poke Into A Pond Checklist”.

Background: Good water quality is essential to the survival of fish species in Saskatchewan. The presence or absence of small aquatic organisms is a huge indicator of the quality of the water. Water with a varied range of aquatic creatures is typically considered a “healthy” environment, one that many other creatures such as fish can live in. These creatures make up the bottom of the food chain. They often eat plants or other insects and they provide food for large species such as perch or walleye or ducks that could also be living in the pond.

Activity:

1. Take your group to a pond, slough or waterhole. Avoid dugouts or other water bodies that have steep sides, deep water near the edge or fast water movement. Dusk and dawn are the best times to study activity around and in ponds, lakes, rivers and wetlands. Late May and June are the best months, although autumn is a good time to see migrating waterfowl.
2. Stop and watch for a while before you reach the pond. Encourage everyone to be quiet as you approach. See what kind of birds, animals and other creatures are found nearby.
3. At the waters edge, check the water before it gets stirred up. See what’s flying just above the surface, skimming across it, or swimming just beneath it.
4. Pour some pond water into the large plastic container to create the group ‘pond’.
5. The students use their personal container to scoop up some aquatic life. Using their plastic spoon, they can gently remove some of the creatures and add them to the group ‘pond’. All of the exciting finds can then be shared with the group.















Note: Please ensure that hands are wet before handling any pond creatures. Your dry skin can remove the slimy waterproof coating on aquatic organisms.








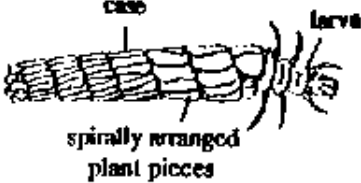




6. Organisms can be spooned into magnifying boxes or small containers to be viewed more closely. The kids can try to identify the creatures or even sketch them to look at later.
7. When you've finished looking, gently pour all the water and the creatures back into the pond.

Note: Don't let the creatures sit too long in the sun. Many of them need shade and cool water.

8. You may wish to have the students wade out a little farther into the pond with rubber boots or old shoes. This often churns up the bottom and makes it very difficult to see anything in the water. Encourage dipping from the edge, then allow them to wade into the water near the end of the activity.

The activity was adapted from "Poke into a Pond" from *Wonders of Wildlife (2008)* and "Water Canaries" from *Project Wild (2017)*

<p>Water Boatman</p>  <p>┌ About this long</p>	<p>Water Strider</p>  <p>┌ About this long</p>	<p>Freshwater Shrimp</p>  <p>┌ About this long</p>
<p>Mosquito Larva</p>  <p>┌ About this long</p>	<p>Mosquito Pupa</p>  <p>┌ About this long</p>	<p>Water Mite</p>  <p>┌ About this long</p>
<p>Predacious Diving Beetle Larva</p>  <p>┌ About this long</p>	<p>Predacious Diving Beetle</p>  <p>┌ About this long</p>	<p>Pond Snail</p>  <p>Can be as large as this drawing.</p>
<p>Wheel Snail</p>  <p>Can be as large as this drawing.</p>	<p>Water Flea</p>  <p>┌ About this long</p>	<p>Leech</p>  <p>Size varies</p>

<p>Crayfish</p>  <p>Size will vary.</p>	<p>Frog</p>  <p>Size will vary</p>	<p>Whirligig Beetle</p>  <p>┌─┐ About this long</p>
<p>Dragonfly Nymph</p>  <p>┌──────────┐ About this long</p>	<p>Damselfly Nymph</p>  <p>┌──────────┐ About this long</p>	<p>Copepod</p>  <p>Very tiny</p>
<p>Backswimmer</p>  <p>┌──────────┐ About this long</p>	<p>Caddisfly Larva</p>  <p>┌──────────┐ About this long</p>	<p>Seed Shrimp</p>  <p>┌─┐ About this long</p>
<p>Fairy Shrimp</p>  <p>┌──────────┐ About this long</p>	<p>Spider</p>  <p>Size varies.</p>	<p>Tadpole</p>  <p>Size varies</p>

Activity 4: Holy Perch!

Purpose: 1. The purpose of this activity is to define “limiting factors” for survival and give examples.
2. Recognize that some fluctuations in fish populations are natural, and that ecological systems under go constant change.

Materials: Something to mark two starting lines.

Background: A variety of factors affect the ability of fish to successfully reproduce and maintain their populations. Some of these factors include: space, food, shelter, oxygen.

While fish might already be sheltered from some of the elements such as the wind, shelter is really important for fish to avoid predators. Some predatory fish in Saskatchewan include pike, perch, and walleye.

Though water is plentiful, oxygen is a limiting factor for fish because if there is not enough oxygen for their gills to extract from the water they cannot survive.

Food, whether it is plant matter, insects, or other fish, is an obvious limiting factor just like it is for us.

The one factor that can have an impact on the 3 other factors is space. If too many fish live in a pond there will not be enough food, shelter, or oxygen to go around. This can cause fluctuations in populations. In some cases this can also cause “stunting” a term which is used when too many fish live in a small area and they do not have enough room to grow so they all remain very small. This happens frequently with yellow perch.

In this activity students have the chance to see how these populations fluctuate naturally in relation to these limiting factors.

Activity:

1. To begin this activity explains to your students that this activity emphasizes the most essential things that fish need to survive. Review the limiting factors for survival: space, food, oxygen, and shelter. In this game we are going to look at interactions between three of them, space, food, and shelter. We are going to assume that the oxygen content in this particular lake is optimal for survival. Lay down some tape or rope as starting points about 15m apart or as much room as you can for smaller areas.
2. Ask your students to count off into fours. Ones can go stand behind one line and the two-fours behind the other.
3. The “ones” are perch. They require shelter to hid from larger fish, they need space to avoid stunting, and they need food to eat. The perch need to “find” these limiting factors. When the perch are looking for food they place both hands on their stomachs. When they are looking for space they spread both arms out to their sides and when they are looking for shelter they place their hands over their head like a house. You can tell your perch to choose one of the factors

that they are looking for and keep it in their heads, warn them that once they choose they cannot change it until the next round.

4. The twos, threes, and fours are the resources (food, shelter, space). Explain the same rules you did to the perch to the resources. They get to choose to be one resources for each round but must stick to the one they chose until the round is completed just like the perch. Tell them to choose in their head which one they want to be.
5. The round begins when students are lined up behind their respected lines (perch on one side resources on the other) with their backs to one another. On the count of three students turn around and display either what resource they are looking for (if they are a perch) or what resource they are (if they are a resource).
6. If the perch sees the resource they are looking for they run across to the other side, still displaying whether they are hungry (hands on stomach), looking for shelter (hands above head) , or looking for more space (arms open wide). When they find the resource they were looking for they bring them back to the perch side. The resources that were taken have now become perch. This represents the perch's ability to survive. It is first come first serve, so if two perch go for the same "shelter" the first one to reach the shelter wins. If a perch is unable to find the resource they are looking for they "die" and in the next round they become one of the resources.
7. During the first round, all of the perch should be able to find the resource they are looking for, but as the number of perch increase so does the competition for resources. To begin the next round, ask all of the students to turn their backs to each other and choose another resource to either look for or to be. Then count to three again.
8. You can do as many or as few rounds as you like, after they have finished playing you can ask them about the interaction between the number of perch and the resources. As the number of fish goes up the number of resources go down but at a certain point when there are not enough resources the fish begin to die off and the resource rebound. If you like graphs you can also make a simple graph showing the interaction between the two.

This activity is modified from "Oh Deer" from *Project Wild (2017)*

Bonus activity: Guess who: Saskatchewan fish edition

Purpose: to get students familiarized with fish that live in Saskatchewan.

Materials:

- Print out images of fish living in Saskatchewan with their species name on it.
- Fish guide books, Saskatchewan Angler's guide, or posters for reference (optional)

Background: There are over 60 distinct fish species in Saskatchewan. All species have their own characteristics including colour, shape, mouth shape, fin shape etc. In this activity students will get the chance to get to know these characteristics and fish better.

Activity: Print off a picture of a fish from Saskatchewan for each student. To make this activity easier you can put the name of the fish on the picture too. Each student has a picture (that they haven't seen)

taped onto their back. It is okay if you want to stick to the main fish species and overlap having more than one student with the same fish. Once all of the students have their photo on their back they ask other students questions about the characteristics of their fish. These questions should be yes or no answer questions. Eg. Does my fish have a spiny dorsal fin? Is my fish green? Does my fish have teeth? Once the student thinks they have it they can guess what their fish is, if they are wrong they should take a break from asking questions and allow another student to ask them questions. The activity is over when everyone has guessed what their fish. Having resources around with pictures are useful especially if this is an introduction to the fish that live in the province.