Rivers West
Red River Corridor Inc.
Corridor Rivière Rouge inc.

About Rivers West

Rivers West is a not-for-profit organization. Its mandate is to develop and implement a long-term tourism and conservation strategy focusing on the development, promotion and management of the natural, tourism, cultural/heritage and recreational resources of the Red River from Emerson to Lake Winnipeg in Manitoba.

Rivers West is part of the international Greenway Program which aims to protect the environment and preserve cultural and historic areas. Rivers West is committed to help support or enhance:

➢ protection, promotion and management of the cultural/heritage resources
➢ rehabilitation of riparian zones along the river
➢ development of linkages among corridor communities, parks, festivals and events, attractions and other community assets
➢ opportunities to educate regarding the Red River and the importance of the greenways

Rivers West is committed to developing curriculum guides for and about the Red River Basin. Rivers West’s first guide Red River Basin: Water Systems was developed for the grade 8 curriculum. It promotes an understanding and appreciation for the Red River watershed. This, the second curriculum guide in the series, was developed for the Grade 4 curriculum. The Habitats Mean Home guide pairs the riverbottom forest with the Grade 4 Habitats and Communities unit. It hopes to instill an understanding and appreciation for riverbottom forests of the Red River Basin.

These guides are about Manitoba and made in Manitoba. To find out more about Rivers West, and the curriculum guides, visit its website at www.riverswest.ca.

Your comments or suggestions about this or the other curriculum guides are welcome. Please send them to Rivers West via the web address above.

Joshua Baran
Grade 4
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About the Guide

The Grade 4 science unit – Habitats and Communities – is the target curriculum to teach students about the riverbottom forests of the Red River Basin. Elements of habitat, animal and plant populations, adaptations, food webs, identification of plants and animals of the riverbottom forest are some of the outcomes or topics covered.

You will find in the guide a series of activities that build on each other to teach the curriculum unit. You need not do all the activities but some are essential. A key component to the guide is the field trip to your local riverbottom forest where the students will experience the habitat firsthand. There are organizations available to guide you on your field trips if you want assistance. The pre and post field trip activities cover much of the unit outcomes. Included with the guide are a CD of the PowerPoint presentations and a large map of Manitoba to illustrate the four general habitat types for one of the first activities. Copy pages for the various activities include cards, stories, activity sheets and two field guides for the students.

It is Rivers West’s intention to provide this and other curriculum guides in French as well. Please contact Rivers West for more information.

An article by Brian Evans in Legacy magazine has been reprinted under the field trips section. In his article Evans points out: “The average seven-year-old suburban child has been exposed to over 20,000 advertisements and can identify 200 corporate logos. Yet, he cannot identify the trees growing in his front yard.” We need to get students out into the riverbottom forest so they will develop an appreciation for that forest and all that it gives us. You cannot be a good steward of something you know or care little about.

The Habitat Means Home curriculum guide encourages you, the teacher, to take students out to their own neighbourhood to learn what is in their own backyard, to visit it often, to be comfortable with nature and to find solace in it.

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GRADE 4 – HABITAT MEANS HOME
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Sherry Dangerfield M.N.R.M.
S. Dangerfield Interpretive Planning, 2005
1.0 Introduction

1.1 Goals of the Guide

The Habitat Means Home curriculum guide is designed for teachers to instruct the Grade 4 Habitats and Communities science unit of the Manitoba curriculum. It uses the riverbottom forests of the Red River Valley as an example of a habitat. Through a series of classroom and field trip activities students will learn to appreciate a valuable and interesting habitat in their own backyard.

Ultimately the goals of the guide are:

- to teach the curriculum unit,
- to increase the awareness of a little understood or appreciated habitat on the Prairies,
- to encourage good stewardship of these thin strips of forest, and
- to encourage young people to return to the woods to explore and learn about nature.

1.2 Building Understanding

The Habitat Means Home curriculum guide is designed to build on the students’ understanding first of what habitat is and then the specific components of the riverbottom forest habitat. As you work your way through the guide you will address all the outcomes of the unit and move from a macro look at habitats to a closer inspection and understanding of the riverbottom forest habitat. The curriculum unit outcome number, e.g. 4-1-07, is included after the activity description, identifying which outcomes are covered by that activity.

1.2.1 Pre-Trip Activities

In the Pre-Trip Activities chapter a series of activities teach students about the four basic habitats of Manitoba and that the riverbottom forest is a special habitat within the grasslands. A large map of Manitoba and its habitats is found in the inside cover of the binder. This map along with copy cards forms the base of the activity that teaches students about regional and local habitats.

Perhaps the most innovative activities in this package are the small field guides the students create to help them learn about the plants and animals they will find in the riverbottom forest. The accompanying PowerPoint presentation helps you teach the students about the plants and animals that make this habitat home. (The CD on the inside cover contains the PowerPoint presentations.) There are several quick activities that are designed to help students remember the plants for the inventory they will do during the field trip.

Students should keep a Habitat Means Home science journal to put their activity sheets in and record their data.

Several games in the Pre-Trip Activities chapter help students learn about components of habitat, how animals need specific habitats to meet their needs, how
populations are affected by changes to habitat, plant and animal interactions, food chains and webs, and the roles of producers, consumers, predators and prey. The games are clearly laid out and copy cards are provided in the Copy Pages chapter.

Students will record, photograph, and/or draw their inventory, which will later be used in classroom activities. A number of possible locations for field trips are found in chapter eight. Staff of the Living Prairie Museum and Manitoba Forestry Association are available to assist in field trips; see chapter eight.

Students are encouraged to keep their field guides and use them to visit the riverbottom forest with their families throughout the year.

1.2.2 Field Trip Activities

The Field Trip Activities chapter provides the teacher with the materials needed to lead the students on a visit to the local riverbottom forest. On the Habitat Hunt field trip students can experience the forest first-hand. Working in small groups, they will use their field guides to identify and record plants and animals they find in small assigned plots.

A final activity in the Pre-Trip chapter is a story about Darth Invader. It helps children understand the problem of invasive species and how they impact on habitats. The concept of biodiversity is introduced as an important part of habitat.

Students will record, photograph, and/or draw their inventory, which will later be used in classroom activities. A number of possible locations for field trips are found in chapter eight. Staff of the Living Prairie Museum and Manitoba Forestry Association are available to assist in field trips; see chapter eight.

Students are encouraged to keep their field guides and use them to visit the riverbottom forest with their families throughout the year.

1.2.3 Post-Trip Activities

The Post-Trip Activities chapter puts the information gained on the field trip to work. They will graph their inventory results and determine which makes a better habitat – a mowed park or riverbottom forest. Working in their small groups the students will graph the number of plants and animals they found in their plot.

Together the class can create a mural of their riverbottom forest, with each small group providing information on their plot. They can use their list of plants and animals, drawings, photographs, graphed results or other means to show what makes the riverbottom forest home. The mural will cover a number of concepts of habitat. As an extension activity the finished mural can be used for presentations to the school or parents about their local riverbottom forest habitat.

Further activities include animal and plant adaptations to the forest, exploring how traditional knowledge contributes to our understanding of these plants and animals, and natural and human impacts on the riverbottom forest.

Through these three chapters of activities all the outcomes or topics of the unit are covered. The remainder of the curriculum guide includes definitions, copy pages, field trip locations, and teacher resources.

Like Rat, Mole and Toad in *The Wind in the Willows* we hope your visit to the woods is a wondrous adventure.
## 2.0 Pre-Trip Activities

### 2.1 The Wind in the Willows

Read in class *The Wind in the Willows* by Kenneth Grahame, 206 pages. While the story is set along the Thames in England, it could as easily be set along the Red River. The characters of Mole, Toad, Badger and the weasels are all species that live in our riverbottom forests. Water Rat could be a muskrat and stoats are a type of weasel. The story will help students understand that riverbottom forests are home to a variety of animals. (4-1-09, 4-1-17)

The Cambridge Guide to Literature in English describes the classic tale of *The Wind in the Willows*:

A novel for children by Kenneth Grahame, published in 1908. Set on the banks of the Thames, it chronicles the adventures of three bachelor animals living the easy lives of Edwardian landed gentry. The timid but friendly Mole moves in with his new acquaintance the Water Rat, a forceful character forever worrying about Toad, the owner of the local great house, Toad Hall. Given to sudden enthusiasms, Toad takes up motoring to such dangerous effect that he is finally sent to prison, at which point Toad Hall is invaded by the distinctly proletarian stoats and weasels who normally live in the Wild Wood beyond. Escaping from prison dressed as a washerwoman, Toad recaptures his ancestral home with his two friends and the curmudgeonly Badger. The book ends with Toad back in residence and promising to reform – a vain hope, according to a letter Grahame sent to a child admirer.

The strength of the book lies in its animal characterizations, but their adventures are interspersed with charming descriptions of the countryside and a meeting with the god Pan, here depicted as a friend to all dumb animals. Helped in its popularity by the illustrations of E. H. Shepard and then Arthur Rackham, *The Wind in the Willows* has enjoyed a second and equally enduring life on the stage, usually in Milne's adaptation as *Toad of Toad Hall* (1929).

**Extension:**
- students write a story about an adventure Mole, Toad, Rat and Badger go on when visiting the Red River

### 2.2 Habitat is Home

Habitat is Home will help students understand that Manitoba has four broad categories of habitat (or biomes) – tundra, boreal forest, parkland and grassland. Within the grassland habitat is a special habitat or microhabitat called riverbottom forest. The activity will help them understand what is different in each habitat and some of the plants and animals that make that habitat home. Allow 45 minutes to 1 hour for this activity. (4-1-02, 4-1-07, 4-1-14)

**Materials:**
- map of Manitoba with four general habitats – included in this binder's back pocket; you may want to laminate the map so the cards can be taped on and removed later for future use
- Manitoba Habitats cards – there are landscape cards and cards for species of each of the five habitats (four general plus the riverbottom forest); see copy pages, laminate the cards
- PowerPoint presentation – Habitat is Home – if you do not have access to a projector for the PowerPoint presentation you can use the card to show students the species and landscapes (you can enlarge them by printing from the PowerPoint presentation if you cannot use a projector)
- tape
- an easel or board to hold the map
Method:

• discuss how a habitat is a home for a plant or animal (use the Habitat is Home PowerPoint presentation if the equipment is available)

• different plants and animals are adapted to live in different habitats

• Manitoba has four general types of habitat – show the large map of Manitoba's habitats

• for each habitat type there are three landscape cards and about a dozen animal cards; it is easiest to show the cards with the PowerPoint presentation, but if you do not have access to a projector hold up the cards so the students can see them

• starting with tundra, describe the area while holding up the landscape cards (or show the slide)

• then when it comes to the animals that make that habitat home hold up the animal cards (or show the slide) and see if anyone can identify the animal – the student that guesses correctly can tape the card on the map in the appropriate habitat

• Tundra

  • found in northern Manitoba
  
  • the cold weather means that plants have little time to grow, so many are very short and are specially adapted to gather lots of sunlight; they hide under a blanket of snow for the winter
  
  • mostly treeless – there are few or no trees on the tundra, and those that grow tend to have branches only on the south side as the north side is blasted by cold northern winds and blowing snow
  
• it is sometimes called The Barrens but it is not barren – it is home to lots of different plants and animals

• some animals that make the tundra home are (hold up the card or show the slide for that animal and the student that can name the animal puts the card on the map) – polar bear, barren ground caribou, arctic fox, arctic loon, ptarmigan, arctic hare, snowy owl, snow geese, tundra swans and mosquitoes

• Boreal Forest

  • boreal means northern – so this is the northern forest of Manitoba – sandwiched between the treeless tundra and the deciduous forests of the parkland

  • the boreal forest sweeps from Newfoundland and Quebec, across Ontario and Manitoba, into northern Saskatchewan, Alberta, BC and the territories all the way to Alaska

  • there are lots of coniferous (trees with cones) or evergreen trees like pine, spruce, fir and tamarack

  • there are lots of rounded rock ridges that are part of the Precambrian Shield – some of the oldest rocks in the world – like you find in Whiteshell Provincial Park

  • in low areas there are bogs where water collects
• some animals that make the boreal forest home are (hold up the card or show the slide for that animal and the student that can name the animal puts the card on the map) – black bear, moose, woodland caribou, wolf, lynx, boreal owl, great grey owl, broad-winged hawk, blue-spotted salamander and mosquitoes

• Parkland
  • parkland habitat is between the boreal forest to the north and the grasslands to the south – so has a bit of both kinds of habitats
  • parkland habitat looks like a park – patches of trees and grass – but the grass isn't mowed
  • the trees are mostly deciduous – the kind that lose their leaves – like aspen (white poplar), oak, maple, birch, balsam poplar (black poplar)
  • the grassy meadows were once full of grasses called big bluestem, little bluestem, spear grass and June grass, with flowers like prairie crocus and prairie lily – but now most of the grassy areas have been ploughed for farm fields
  • some animals that make parklands their home are (hold up the card or show the slide for that animal and the student that can name the animal puts the card on the map) – deer, elk, red fox, coyote, bobcat, skunk, great horned owl, bald eagle, grey tree frogs and mosquitoes

• Grassland
  • the grasslands once covered all of central North America – across southern Manitoba all the way to the foothills of the Rocky Mountains of Alberta and as far south as Texas
  • further than the eye could see was a velvet carpet of grass and flowers gently waving in the wind
  • there were no trees, except along rivers and creeks, because great wildfires often burned the grasslands, keeping the trees out
  • the plants and animals of the grasslands were adapted to live with fire, which often benefited them by providing nutrients for the plants to grow strong and healthy
  • the grasslands had some of the best soil in the world for growing crops – today there is not much native grassland left because it was ploughed to grow crops or build cities
  • animals that make grasslands their home are often endangered because there isn't much habitat left for them; they are (hold up the card or show the slide for that animal and the student that can name the animal puts the card on the map) – plains grizzly bear (extinct), bison (extirpated\(^1\)), pronghorn (extirpated), coyote, jackrabbit, ground squirrel, burrowing owl (endangered), red-tailed hawk, meadowlark and mosquitoes

\(^{1}\) Extirpated Species: Any species once native to Manitoba that has disappeared through all of its Manitoba range.
• **Riverbottom Forest**

  - each of the big habitats have special habitats found in them, like the bog habitat found in the boreal forest
  - in the grasslands there is a special habitat called the riverbottom forest – this habitat is found along rivers and streams in the grasslands
  - riverbottom forests are thin strips of forest between the water of the river and the grassy uplands that is now mostly farm fields
  - the riverbottom forest is a very important habitat – it is one of the best homes for wildlife (most productive and diverse habitats) on the Prairies
  - many animals use the riverbottom forest as a temporary home when they are migrating (130 different species of birds use the riverbottom forest)
  - it is an important habitat because it is one of the few places left for wildlife to call home in southern Manitoba; even in our cities we can find a little riverbottom forest left for the wildlife
  - some animals that make riverbottom forest their home are (hold up the card or show the slide for that animal and the student that can name the animal puts the card on the map) – deer, elk (extirpated from riverbottom forests in the Red River Valley), raccoon, wood duck, wood and leopard frogs, toads, hairy woodpeckers, western plains garter snake, snapping turtle, tiger swallowtail caterpillar and butterfly, monarch caterpillar and butterfly, muskrat, badger, red squirrel, mole, millipede and mosquitoes

• **Review:**

  - what are the four general habitats of Manitoba, starting from the north – tundra, boreal forest, parkland and grassland
  - what is the special habitat found in the grasslands along rivers and streams – riverbottom forest

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### 2.3 Students’ Field Guides

Once you have done the Habitat is Home activity, students will understand that riverbottom forest is a special habitat found within the grasslands. Now they are ready to look at the riverbottom forest in more depth.

Two sets of field guides or identification guidebooks for the riverbottom forest have been developed – one for plants and a second for animals; see copy pages. They form the base of the field trip activities. The field guides help students learn how to identify the plants and animals they may find in the riverbottom forest. Teachers use the accompanying PowerPoint presentations, found on CD in this package, to help students colour their own field guides. This activity can take two hours or more depending on your interest. (4-1-07, 4-1-12)

**Materials:**

- copy pages of field guides Plants of the Riverbottom Forest and Animals of the Riverbottom Forest, one complete booklet for every student; see Copy Pages chapter
- CD of PowerPoint presentations – Plants of the Riverbottom Forest and Animals of the Riverbottom Forest
- colour pencils or crayons – whatever the students use to colour the guidebooks will need to withstand being outside in various weather conditions
- books that are good references are:
  - *Plants of the Western Boreal Forest and Aspen Parkland* by Johnson et al.
    provides interesting information and folklore about plants
  - *Grasslands: National Audubon Society Nature Guides* by Lauren Brown provides an overview of plants and animals of North American grasslands
  - *A Guide to Nature in Winter* by Donald W. Stokes tells you a bit about a variety of plants and animals found in winter including evidence of insects, winter birds, abandoned nests, tracks in the snow, animal behaviour in the winter and more
Method:

Plant Field Guide

- prepare copy pages for student field guides
- you may want to read 2.11 Darth Invader ahead of time if you are not familiar with the concept of invader species
- using the PowerPoint presentation on the CD, review the plants that can be found in the riverbottom forest
- as students are colouring each plant, point out distinct features they should remember to help them identify it in the field, e.g. “hawthorn has a tiny apple-shaped red berry called a ‘haw’ and a long pointy thorn”
- have students colour their field guide plants as you review them on PowerPoint – this is meant to be a relatively quick activity having students just colour one flower, leaf and berry as you progress through the booklet (approximately 50 plants); later they can return and finish colouring the picture
- this activity can be done over a period of time e.g. one day colour the flowers, next the vines, etc.
- an alternative is to choose just a few plants to focus on that are abundant in your local riverbottom forest
- in addition to the CD you might use books such as the Peterson or Golden field guides as another source
- once completed, staple the students’ field guides together in proper order

Animal Field Guide

- prepare copy pages for student field guides
- using the PowerPoint presentation on the CD, review the animals that can be found in the riverbottom forest
- students colour the animals as you go through the PowerPoint presentation

2 Pre-Trip Activities
• point out distinct features they should remember to help them identify the animal in the field, e.g. “the leopard frog is green with black leopard spots on its back”; see the descriptions in the field guide

• once completed, staple the students’ field guides together in proper order

Extension:
• you may want to take more time when preparing the field guides and look at a few plants or animals in more depth

• each student could choose one plant and animal to investigate further so they become the expert on those species; they could research and give a report to the class on those species

• after the field trip is completed, encourage the students to use the field guides to take their families for a visit to their local riverbottom forest to see how many plants and animals they can identify

• there is a Life List at the end of the field guide where students can continue to record which plants and animals they have found when visiting the forest

2.4 Match the Batch

Once students have completed their plant field guides, Match the Batch will help them remember the names of plants and which plants are flowers, vines, trees or shrubs and invaders. Helping the students recognize the plants and their categories will assist them with the inventory on the field trip. This activity also helps them learn to use the field guide. (4-1-07)

Materials:
• copy pages – Match the Batch
• pencils or pens

Method:
• copy the required number of copy pages – there are five different pages that can be used so students will learn different plants

• students draw a line connecting the picture and name of plant with its classification as a flower, vine, tree/shrub, or invader – they can use their field guides to check their answers

• note: there is more than one match of plant to the classification

Extension:
• students can colour their pages when completed and add this activity to their Habitat Means Home science journal

2.5 What’s That Vine?

Students match the picture of the vine with the name of the plant to help them recognize the different types of vines and remember the names for the field trip inventory. (4-1-07)

Materials:
• copy pages – What’s That Vine?
• pencils or pens

Method:
• copy the required number of copy pages

• students draw a line connecting the picture and name of plant – they can use their field guides to check their answers

Extension:
• students can colour their pages when completed and add this activity to their Habitat Means Home science journal
2.6  Tremendous Trees!

Students match the picture of the tree, with leaf and seed, to the name of the plant to help them recognize the different types of trees and remember the names for the field trip inventory. (4-1-07)

Materials:
- copy pages – Tremendous Trees!
- pencils or pens

Method:
- copy the required number of copy pages
- students draw a line connecting the picture and name of plant – they can use their field guides to check their answers

Extension:
- students can colour their pages when completed and add this activity to their Habitat Means Home science journal
- students can gather leaves for each tree they find on the field trip and do either a leaf rubbing or pressed leaf to add to their sheet (Caution – be careful when collecting leaves that students know what poison ivy and stinging nettles look like)

2.7  Racing Raccoons of the Riverbottom Forest

Racing Raccoon of the Riverbottom Forest is based on Oh Deer from Project Wild. (For more information on Project Wild see the Teacher Resources chapter.)

This activity will help students understand that in any habitat an animal needs four things to be present in their home to survive – food, water, shelter and space. Without all four parts animals will have to move or die. Racing Raccoons is best played outside in a grassy field. Allow 45 minutes for this activity. (4-1-02, 4-1-03, 4-1-14)

Materials:
- flagging tape, flour or traffic cones to mark two parallel lines on the ground 15 to 20 metres apart
- a graph (on flipchart paper) for the number or population of raccoons after each round that represents a year – “number of raccoons” on X axis and “year” (round) on Y axis
- a felt marker
- a few parents standing at the habitat end to help keep the students honest

Method:
- explain to students that in any habitat an animal needs four things to live in their home – food, water, shelter and space
- explain the four components using raccoons in a riverbottom forest as an example
  - food – crayfish, berries, wild grapes, frogs, mice, grasshoppers, crickets
  - water – from the river/stream
  - shelter – a hollow in an elm, maple or basswood tree about 3m up, for sleeping, raising young and hiding from predators
    - shelters may include other areas in the riverbottom forest like a thick patch of plants or a hollow log where it can hide
  - space – a large enough patch of riverbottom forest to go exploring, escape from a predator, find enough food for the family, or find a mate
- People need food, water, shelter and space too. We would not live long without food and water. What if we had no shelter from wind and rain, or snow? Space is important too. What if all the students in the school had to be crammed into one classroom – could you get much work done?
• explain how to play Racing Raccoons and play five to 10 rounds
• mark two parallel lines on the ground about 20 metres apart (parents can act as markers with students lined up between them, or use flagging tape, flour or cones)
• choose a quarter of the students to be raccoons for the first round
• all the raccoons go behind one line and the rest of the students go behind the other line
• the raccoons are looking for habitat – food, water, shelter and space – so they can survive
• the other students are one of the four components of habitat
• show all the students the symbols
  • food – both hands on stomach
  • water – both hands on mouth
  • shelter – hands come to point over head like a roof
  • space – hands stretched out sideways from shoulders
• at the start of each round, raccoons stand at one line with their backs to the habitat students and choose which component of habitat they want to find for this round and make that sign
• the habitat students stand at the other line with their backs to the raccoons; for each round they are one component of habitat – food, water, shelter or space – and make the appropriate symbol
• at the start of each round students have their backs to each other and choose which symbol to make – no peeking!
• when the teacher gives the word students turn and face each other – neither raccoons nor habitats can change what their symbol is once they see the other side (this is where the parents often have to keep the students honest)
• holding their symbol in place each raccoon races over to a matching symbol and brings back the piece of habitat matching their symbol – that habitat then becomes a raccoon
• if there is no matching habitat the raccoon dies and becomes part of the habitat, joining the other side
• have a parent graph the number of raccoons after each round – “number of raccoons” on X axis and “year” on Y axis
• play five to 10 rounds or until there is a “population crash”
• you may also want to try manipulating the habitat on a couple of rounds
  • have habitats all be water – there is a flood so no food, shelter or space for raccoons
  • have habitats all be space – a drought caused a forest fire so there is no water and raccoons lost their food and shelter in the fire
• Discuss game
  • having played enough rounds, sit students on the grass in front of the graph
  • ask students what they have learned
  • what happens when there are more raccoons than habitat – population crash
• what happens when there are few raccoons – lots of habitat components so raccoons reproduce and population steadily climbs until they eat themselves out of house and home and population declines or sometimes crashes
• animal populations are never constantly the same; to be “in balance” they are constantly fluctuating given the habitat conditions
• what happens when there is a natural disaster like a flood or fire
• if a population is endangered it often can not survive a natural disaster that temporarily takes away part of their habitat
• if we removed all the riverbottom forests there would be no habitat for the raccoons in the Red River Valley
• Review:
  • populations go up and down based on having enough food, water, shelter and space in their habitat – animals need all four components or that habitat is not going to be a good home
2.8 Interacting in Habitat

Interacting in Habitat helps students understand that within the riverbottom forest animals and plants interact to help meet each other’s needs. Allow 30 minutes for this activity. (4-1-09, 4-1-10)

Materials:
- copy cards for Interacting Habitat
- blindfolds for student
- gym or large grassy area with even surface

Method:
- discuss how plants and animals interact in their habitat home
- a plant like a vine needs another plant to climb up to reach the sun
- a plant like a burdock needs a mammal to spread its seeds
- a plant like a nannyberry wants a bird to eat its berries to spread its seeds
- a bird like a woodpecker makes homes for other animals
- one animal is food for another animal
- a butterfly needs a certain plant to lay its eggs on so when they hatch the caterpillars can eat the leaves
- what is at the centre of this – the sun – without the sun there would be no plants and therefore no animals
- hand out cards – each student is given a card with the name of either a plant or animal on it; while blindfolded they have to find food or a home but avoid a predator
- have students read what plant or animal they are, what they are looking for and what they are trying to avoid
- some are looking for food or a home
- some are also trying to avoid something like a predator that can harm them
once students know what they are and what they are looking for and trying to avoid, form them into a large circle and blindfold them

one student is to be the sun; once the students are blindfolded, stand the sun in the middle of the circle where she or he calls out “I am the sun”

once blindfolded, students continually call out their name while walking with hands stretched out trying to find the food they are looking for; at the same time they are trying to avoiding what might want to make them food by going away from the person calling out that name

when they find their food they stay together by linking arms and continue to call out their names and together move towards another link if they need to the game is over when most students have found their food

Review

• seat students in circle and discuss
  • what was the most important component of the habitat – the sun, without it none of the plants or animals could exist, energy from the sun is transferred first to plant then to animals
  • what happens to those that do not find their piece of habitat to interact with – they will die
  • were there any animals that many were looking for and why – mosquitoes; insects are very plentiful because they are food for lots of animals, the higher you go on the food chain (up to mammals) the fewer animals are needed to hold the chain together
  • what are ways animals interact with plants
  • how do plants interact with animals
  • observations, questions

Extension:

• ask students to draw a picture of their habitat – include what animal they were, what they were looking for and who were they trying to avoid

2.9 Who’s Eating Whom

Students will learn which riverbottom forest animals are herbivores, omnivores, carnivores and scavengers and what they eat. They will understand the importance of each group in the food chain and how the loss of one will impact on the others. Allow 30 minutes for this activity. (4-1-11, 4-1-13)

Materials:

• large sheet of paper and markers, or blackboard
• copies of Who’s Eating Whom cards

Method:

• brainstorm a list of animals that live in the riverbottom forest (ask students to remember the map of Manitoba Habitats)
• beside name of each animal identify if it is (explain meaning)
  • H - herbivore (an animal that eats only plants – like a vegetarian)
  • O - omnivore (an animal that eats both plants and animals – like many people)
  • C - carnivore (an animal that mostly eats meat/other animals – like dogs or wolves)
  • S - scavenger (an animal that eats dead plants and animals killed by something else)
• hand out cards one to each student – go around the circle and have student identify what animal they are and if they are a herbivore, omnivore, carnivore or scavenger and what they might eat, e.g. what plants or animals
• play a couple of rounds of Habitat Lap Sit
• students form a circle shoulder to shoulder
• then everyone turns to their right so they are looking at the back of the head of the student in front of them, take a few small sidesteps into the centre of circle so they are very close together
• when circle is very tight and students have their knees together, have students carefully lean forward with their hands on the shoulders of the person in front of them and sit on the lap of the person behind them
• have students hold it for a minute – this is a habitat working together with all the necessary animals – herbivore, omnivore, carnivore, scavenger
• now ask the scavengers to step out of the circle – as it collapses explain that the habitat needs all types of wildlife to work – what would happen if there were no scavengers
• play a few more rounds removing carnivores or herbivores

Review:
• carnivore and scavenger need herbivores which convert plants into food they can eat
• scavengers need omnivores and carnivores to kill the food they eat
• if there were no scavengers what would happen (lots of dead plants and animals in the forest)
• whether you are a herbivore, omnivore, carnivore or scavenger you have an important role to play in your habitat – if one is removed the others suffer

Extension:
• have students create a food chain or web for the riverbottom forest using all groups – herbivore, omnivore, carnivore and scavengers; when complete add to their Habitat Means Home science journal
• have students make up a rhyme or song to help them remember H.O.C.S. (hawks)

2.10 Frogs & Snakes: A Predator-Prey Game

This game will help students understand the relationship between predator and prey by becoming snakes and frogs. Allow 45 minutes for this activity. (4-1-11)

Materials:
• pieces of coloured paper to act as “food” or create some cutouts of insects to be the frog food
• flagging tape or other means (flour) of marking square playing area (10m x 15m)
• 3 or 4 hula hoops
• 4 gym or safety vests to designate predators

Method:
• Discuss with students
  • A predator is a carnivore or omnivore that needs to eat another animal to survive. The animal that is eaten is called the prey animal. In the riverbottom forest there are many prey animals and a few predators. There is always more prey than predators to make a habitat work (unless the habitat is out of balance). Examples of a predator-prey relationship are raccoon and crayfish, fox and mouse, toad and mosquito, mole and earthworm or snake and frog. In many cases predators can only catch their prey one in 10 times, allowing the prey to get away successfully. This game will help students understand the relationship between predator and prey by becoming snakes and frogs.

  Explain Frogs & Snakes game
  • this is a game of tag where predators (snakes) try to catch prey (frogs) as they leave their shelter to find food
  • choose 4 students to be predators/ snakes – wearing vests – ratio of predator to prey should be about 1 to 5
  • the rest of the students become the prey – frogs
• mark off a rectangular playing field where food tokens are at one end and a shelter safe zone is at the other end
• snakes have to stay within the rectangle but cannot go into the quick shelter hula hoops
• the quick shelters (representing a bit of cover in the habitat) are safe places for the frogs but they cannot stay in there more than one minute; frogs are safe as long as one foot is in the shelter
• frogs can also freeze anytime a snake is near them – but they have to remain perfectly still with no sound – as soon as they move the snake can capture them
• the frogs are safe at either end in their shelter or the food area but cannot go out of bounds
• the frogs have to collect 3 food items but can only collect one at a time so have to make 3 trips from their shelter and back
• there are different strategies the frogs can use to be successful
  • a mass rush of all frogs at once and hope you are not the one caught
  • move from shelter to shelter
  • outrun the snake
  • work with another frog to confuse the snake so it does not know which to chase
  • freeze anytime a snake is near and hope they do not sit and wait you out
• once a frog is caught the snake takes it to the sidelines where a teacher keeps them until the next round or the game is over (with the snake busy 'digesting food' more frogs can make it safely home)
• at the end of the round any snake that has not captured a frog dies
• play a couple of rounds (10 - 15 minutes each), changing the snakes, so students will have an opportunity to try different strategies as both predator and prey
• if a student calls foul try to find a way to show how what happened would have happened in nature between a predator and prey in some way

• Review:
  • when the game is over seat the students and discuss the results
    • how many frogs were successful in getting 3 pieces of food
    • how many snakes were successful in capturing a frog
    • what did you learn from this game
    • ask frogs that were successful what their strategy was
    • ask frogs that died why they think that was and what they would do differently next time
    • ask predators that were successful what strategy they used to get their frog
    • is there any one strategy that works all the time

2.11 Darth Invader

The Darth Invader activity teaches students about invader plants, which often damage and sometimes destroy habitats, be it riverbottom forest, wetlands or prairie grasslands. Invader populations can outcompete native species, severely reducing the biodiversity and therefore the quality of the habitat. Biodiversity is very important. It is the variety of plant and animal life in a habitat. The greater the biodiversity the better the habitat. (4-1-14, 4-1-15)

Materials:
• copy page of Darth Invader story and questions; see Copy Pages chapter

Method:
• Discuss with students how invasive species can be plants, animals, and other organisms (e.g., microbes). Invasive species are alien – coming from another ecosystem far away. Examples of alien plants are thistle, burdock and purple loosestrife. An example of an alien animal is the zebra mussel that has invaded the Great Lakes.

• Human actions are the primary way invasive species are introduced. With world trade invasive species are easily introduced to new environments. We often bring invasive species in as plants for gardens and agriculture. Many of our invasive plants today were introduced with the pioneers. They can also be introduced by accident, such as insects brought in accidentally in shipping containers from other countries.

• Aggressive invasive species can choke out native plants (or animals) robbing them of nutrients and sunlight, often reducing the biodiversity of a habitat. Purple loosestrife is a beautiful purple flower but it invades wetlands, choking out the many native plants, reducing the biodiversity and making it a poor habitat for animals.

• Invaders thrive in a disturbed habitat, so if an area of the forest has been cleared these invasive species tend to quickly take over (dominate) the disturbed ground and spread from that area throughout the forest. This invasion, together with habitat destruction, has been a cause of native species extinction throughout the world in the past few hundred years. Humans usually bring invasive species into the habitat as they spread from gardens, fields, or on their clothing like the burs from burdock.

• Invader plant species are adapted to spread very successfully and often in several ways. Burdock has a very deep taproot that is hard to remove – if you break off the top it will grow again from the root. One burdock plant can produce as many as 18,000 seeds. Burdock can reproduce from the taproot or seeds. Canada Thistle, which despite its name is not originally from Canada, spreads from bits of roots or stems. Even if you pull up the plant it can grow again from just
Once completed, review the answers with the students, providing correct answers and explanations where necessary.

**Extension:**

- Adopt-a-Plot: have students develop a plan to remove invader species from a section of natural riverbottom forest in their neighbourhood
- Bring in a guest speaker to talk to the students about how they might remove invader species from grasslands or riverbottom forests
- City of Winnipeg, Naturalist Services for locations inside Winnipeg (986-7233), outside Winnipeg contact Manitoba Forestry Association (204 453-3182)
- Have students write a story about Bully Burdock or Thistle Thug

a little thread of a root. Small root pieces only 2cm long can produce clones across a 2.8m area in one year. Plants that develop from the root of a parent plant are called clones. Thistle also spreads from seeds spread by the wind.

- Invader plants are very difficult to eradicate from a natural habitat. If students were to try to clear invaders from an area they would have to be vigilant – returning for several years to pull up as many plants as possible in the spring before they went to flower and the roots spread too much. Prevention is the best method – remove invaders from the area as soon as they are found.

- Have students read the story and answer the questions; see copy pages
Darth Invader and the Disturbance in the Forest

Not so long ago in a habitat not so far away was found an Invader – Darth Invader. Invader was the curse of the habitat, master of the non-native species. Fearsome and aggressive, Invader was choking the life out of all that lived in the grasslands and forests.

Darth was not always this way. He began in his own world, in balance with his own habitat, living in peace and harmony with those around him. But the world was changing. People could travel across many habitats in the blink of an eye. People’s ignorance and sometimes arrogance encouraged them to change habitats, bringing in non-native species that did not belong, ignoring the code.

Whether by accident or on purpose, Darth was taken out of his own habitat and into a new habitat far, far away. There, he did not behave in accordance with the laws of nature – the code that kept harmony and biodiversity in the habitat. He would not listen to the old teachings to share the earth, water and sunlight. He wanted it all for his own.

There were no others stronger than him to control his spread like there had been in his home world. No natural checks and balances in the force of nature. No small insect or fungus to keep him humble. He felt the power of his domination. He planned to choke the life out of the princesses of the habitat, the once strong and beautiful flowers. He planned to use his new powers to take over all habitats, most important among them the riverbottom forest that was the last refuge or safe haven of the force of nature.

Habitat after habitat fell to the evil Invader. He bent the habitats to his will, ignoring the force and its code of harmony and biodiversity. He sunk deep roots into the earth, which the force could not fight. He made clone troopers to spread across the earth; seeds by the thousands to invade new habitats. He cut a path of death and destruction across the land, coming closer and closer to the last refuge of the force – the riverbottom forest.

In an epic battle, Invader’s teacher and one-time friend Evitan Tatibah tried to destroy Invader. Using her saber Tatibah cut off Invader’s legs to the roots, then set him on fire. She blacked out the sun so no sunlight could nourish Invader. Tatibah thought she had won and left Invader in ruin. But Invader was not easily killed. In time Invader rose from his roots and began again to spread across the land, fighting against the force of nature and its code of harmony and biodiversity.

Tatibah and the force fought back but their numbers were dwindling. It seemed Invader would win. Wherever there was a disturbance in the forest Invader took over. His clones marched across the land. Bully Burdock and Thistle Thug were chief among his storm troopers. They marched towards the last refuge – the riverbottom forest.

There was one ray of hope left – the Tneduts. The Tneduts were small but they had studied the code and brought strength to the force. Their numbers were few at first, but they met in classrooms and woods and grasslands to spread the word about the force and its code. In small groups they did battle with Invader and his troops, uprooting them where they could and stopping their advance to the last refuge.
The Tneduts reclaimed habitat after habitat, winning back the land from Invader. They told others about the code and how they must protect native species. Their numbers grew and grew as the word was spread about the force and its code. With sabre and the strength of the force behind them the Tneduts banished Invader back to his own world where he was kept in balance by the force. Harmony and biodiversity were restored to the land and the riverbottom forest was safe again.

But the Tneduts must forever be on guard. The Invader may rise again to test the force of nature and its code of harmony and biodiversity.

Questions:
1. What kept Invader humble and from taking over in his own world?
2. Invader was not evil until he was taken out of his own habitat. Who took Invader out of his own habitat to a new habitat?
3. What three things did Invader take from the native species?
4. What are the two important parts of the force of nature's code?
5. Biodiversity is the variety of native plants and animals that live in a habitat. How did Invader hurt the biodiversity of the habitats?
6. What three things did Invader do to take over the habitats?
7. Is Invader easy to kill?
8. Where was the last refuge or safe place for the force?
9. What are the ways Tatibah tried to destroy Invader?
10. How did the Tneduts fight the Invader?
11. Why must the Tneduts be forever on guard?
12. To find out who the Tneduts are, spell their name backwards.
Teacher’s Key – answers to the story’s questions:

1. What kept Invader humble in his own world? (the checks and balances of nature like an insect or fungus)

2. Invader was not evil until he was taken out of his own habitat. Who took Invader out of his own habitat to a new habitat? (people)

3. What three things did Invader take from the native species? (earth, water, sun)

4. What are the two important parts of the force of nature’s code? (harmony and biodiversity)

5. Biodiversity is the variety of native plants and animals that live in a habitat. How did Invader hurt the biodiversity of the habitats? (by spreading and choking them out – by taking all the earth or nutrients, water and sunshine for himself so the natives could not live)

6. What three things did Invader do to take over the habitats? (sunk deep roots into the earth, made clone troopers, sent seeds out by the thousands)

7. Is Invader easy to kill? (no)

8. Where was the last refuge or safe place for the force? (riverbottom forest)

9. What are the ways Tatibah tried to destroy Invader? (With her sabre by cutting him out at the roots or uprooting him, with fire, by plunging him into darkness so no sunlight could nourish him. If students say bury him that is incorrect as many plants will grow from the roots and stems so burying it would be like planting it. To plunge it into darkness the plant would need to be covered with a blanket or black garbage bag.)

10. How did the Tneduts fight the Invader? (uprooted him and cut him with their sabres)

11. Why must the Tneduts be forever on guard? (Invader may rise again)

12. To find out who the Tneduts are spell their name backwards.
3.0 Field Trip Activities

A field trip to the riverbottom forest in your area will give students the opportunity to experience and explore the habitat firsthand. Because of settlement patterns on the Prairies, most communities are located along a watercourse. In the riverbottom forest students can observe and identify the plants and animals.

Several field trips over the course of the year will help students understand the seasonal changes in the habitat and the adaptations by plants and animals. A field trip in fall, winter and spring will provide students with a better understanding and appreciation of the riverbottom forest and the plants and animals that call it home. Or you may wish to plan for one spring field trip – May/June is a good time to visit the riverbottom forest as many of the plants and animals will be evident.

In preparation for your field trip you may want to set down some ground rules and review some necessary information:

- identify areas out of bounds, not allowing them near the water
- stay in your group
- any safety concerns
- be sure they know what poison ivy and stinging nettles look like
- respect for the plants and animals
- it is best not to collect live plants or animals, but if you do so make it temporary and be sure they will be properly cared for and returned to the same location; do not collect rare animals or plants, such as orchids
- be careful not to harm any plants or animals; students can be afraid of insects or animals they are not familiar with – take the opportunity to look closely at the species, to draw it and write a description of what it is doing
- hold a contest for the first one to find a wood tick to win a prize – once one is found they have to identify if it is male (two light coloured stripes or suspenders on its back) or female (light coloured necklace on its back) and show their classmates
- there are areas in Winnipeg, particularly the trails in Assiniboine Park, where the city is attempting to re-naturalize the riverbottom forest – be careful not to intrude in these fragile locations

Things to bring along on your field trip:

- first aid kit
- students’ field guides with clipboard and pencils; see 3.3 for list of materials
- supplemental field guides such as the Peterson, Golden or Audubon series
- mosquito repellent
- binoculars
- magnifying glass
- cameras

Students should wear appropriate clothing for the season but should include long-sleeved pants and shirts, runners or rubber boots and hats to keep the sun and bugs off. Refer to your school division fieldtrip guidelines and see www.youthsafeoutdoors.ca for a checklist and forms.
3.1 **Review the Plants and Animals**

The morning of your field trip to the riverbottom forest, using the students’ field guide booklets and/or the PowerPoint presentations, review the plants, animals and signs the students will be looking for in the riverbottom forest.

3.2 **Pop Pop Populations**

Before heading out on your field trip, discuss with students how to measure populations and biodiversity by doing an inventory of the habitat. Just like a store manager takes stock of how many and what kind of products she has on her shelves, scientists take inventory of how many and what kind of plants and animals are in a habitat. Allow 30 minutes for this activity. (4-1-08)

**Materials:**
- examples of inventory materials – hula hoops or frames, field guides, Habitat Hunt worksheets

**Method:**
- read 3.3 Habitat Hunt activity
- discuss the importance of biodiversity in a habitat – without a variety of plants and animals in a habitat some of the important elements (food, water, shelter, space) of that habitat may not be present for some species
- the greater the biodiversity the better; that is why invader plants are bad for a habitat – they reduce the biodiversity so make a poor habitat
- one of the ways scientists measure biodiversity is by counting the number and different kinds of plants or animals in a habitat
scientists can look at the population of one kind of plant or animal – the total number of that species in a particular area

or scientists can look at how many different plants or animals are in an area

it would be too hard to count all the plants or animals in a riverbottom forest or grassland so the scientist marks off a square or circle or line and just counts how many are found in or along that square or line – that gives the scientist a sample of the population or diversity in that habitat

discuss with students how working in groups of three they will do an inventory of the plants and animals of the riverbottom forest on the field trip

stress that it is important to respect the plants and animals they find by not harming them, unless they are invader species you want to eradicate

Animals – they should record any animals they see, hear or find evidence of on their Habitat Hunt worksheets – this can be as simple as writing “a black bird” or drawing a spider they see, or they might also use digital cameras to record evidence of animals such as tracks or scat

their animal field guides should help them identify some species and tracks

things to look for on the field trip are:

- birds – listen for bird calls; if they see a bird they can identify which kind it is or just note it was small brown bird; look for nests and draw a picture of it (possibly identifying it later with the help of a guidebook or internet search);
- winter is a great time to find bird nests, look for holes in trees made by woodpeckers; look for feathers on the ground – can you use that to identify a bird
- mammals – more likely they will just see tracks or signs of mammals but there is a possibility if they approach the forest quietly they will see deer or other mammal when they first arrive; signs to look for are tracks, scat or droppings, holes into burrows, muskrat pushup or beaver lodge, bedding area where an animal has been sleeping and flattened the grass or snow, a place where an animal has been eating and left shells from nuts
- insects – look for spider webs and if the spider is home draw a picture of it to identify later; listen for any insects flying by and record; if they find a plant that has been eaten by an insect check the plant to see if it is still there – draw a picture of it; plant galls – you may want to collect one on the field trip to bring back to the classroom and observe what emerges from it in spring; brush away the leaf litter on the forest floor and see what insects you find; look under a rotting log and see what is making its home there – be sure to put the log back; can they find any cocoons or wasp nests or anthills; when they leave the forest check to see if they are bringing any insects with them on their clothes
- note: with insects it is important to stress to the children that they too have an important part to play in the habitat so we don't want to harm them unnecessarily
- amphibians and reptiles – listen for frogs particularly in April and May when they are calling (go to the Frog Watch website to learn how to identify frog calls in Manitoba); you can often see turtles sunning themselves along the banks of the river on a warm day; watch for garter snakes hunting frogs and rodents in the grass
- Plants – plant inventory is done by sampling either a square, circle or line
- use a square frame measuring 1m square, or a hula hoop or a line of flagging tape 1m long, to mark your sample inventory plot; each group of three students will have their own plot
- students use their plant field guides to identify as many plants as they can in the plot or along the tape
• if they cannot identify a plant they could draw it or take a picture to identify later
• they should count how many of each plant there is in their plot, e.g. 10 dandelions, 1 oak tree, 2 poison ivy plants, 1 anemone, 3 unknown flowers
• they should also record any animals or animal signs they find in their plot
• a forest is like a multi-storey house – look for plants and animals on all the levels, the top storey, the main level and the basement

Extension:
• invite a biologist or naturalist to the classroom to talk about how they do inventory work and study plant and animal populations, then to join you on your field trip (see resources section)

3.3 Habitat Hunt

Students will go on a field trip Habitat Hunt to the riverbottom forest. The objective of this activity is to do an inventory of plants and animals in a natural habitat. To show the difference in biodiversity between a park and a natural area you can do a quick inventory in a mowed area of a park where there will be very few species. Then move on to where there is a better example of a natural riverbottom forest. Many parks are located beside creeks or rivers so will have a mowed park-like area as well as some natural area. Or you can just do the inventory in a natural area of the riverbottom forest.

You may want to invite a naturalist or interpreter who is familiar with riverbottom forest to join you to help identify plants and animals (see Field Trips chapter for resource people). Allow 2 hours to do this activity. (4-1-07, 4-1-08, 4-1-12)
Materials:
- student field guides created in class
- copies of Habitat Hunt worksheets
- pencils and clipboards
- plot frames or hula hoops or 1m pieces of flagging tape
- cameras (optional)
- other field guides (optional) e.g. Peterson, Golden or Audubon series on birds, wildflowers, mammal, tracks and signs, insects etc., or Stokes guide to Nature in Winter
- it is advisable that students wear runners or boots if it is wet, long pants and long sleeves
- mosquito spray
- garbage bags (optional)

Method:
- explain the nature walk field trip
- going to see how many plants and animals make the riverbottom forest home – how many do you think you will be able to find
- will record plants and animals that we find
- rules of walk – define space to use, stay in groups, work quietly so not to scare wildlife away, watch for poison ivy, etc.
- you may want to encourage students to pick up any litter they find – assign one parent helper to carry the garbage bags (remember the focus is not a cleanup – that can be done another day)
- take students to a park area close to a river that has a natural forest with undergrowth like flowers and other small plants (see field trip sections for possible locations if there are none close to your school)
- students work in groups of three
- students carry their worksheets, field guides, pencils and clipboards
- use a frame, hula hoop, or 1m pieces of flagging tape mark one plot for each group of three students
- vary the area in the forests that the students work, to get a range of species
- use flagging tape in heavily treed areas – tie either end of it to a tree or shrub
- count all plants/animals along the tape or inside the frame or hula hoop

- station student groups around forest – each with their own plot to inventory
- appoint a parent helper to keep students away from the river edge
- using their field guides students try to identify all the plants within their plot
- record findings on worksheet; if they do not know the name then draw or take a picture
- count the number of each plant they can identify, e.g. 2 buttercups, 4 columbine, 1 elm tree
- record any signs, sounds, sightings of animals
include any general observations, written or drawn

• teachers and parents can bring guidebooks such as the Peterson's series on birds, wildflowers, mammal, etc. to help identify species

• Review:
  • review results with students – what did they find, how many plants did they identify, did they find any sightings/sounds/signs of animals
  • results will be taken back to classroom to be charted (see 4.1)
  • create a mural of your riverbottom forest and what was found there using drawings or photographs (see 4.2)
  • discuss populations and diversity – natural riverbottom forests have more plant species and a greater diversity so are a better habitat/home for animals than a park where grass is mowed, so few places for shelter and less variety of plant species

• habitat = food, water, shelter and space – riverbottom forest is better habitat than our yards or a park that has been mowed

Extension:
• repeat your field trip fall, winter and spring to see how the forest changes (4-1-04)
• Adopt-a-Plot – have students adopt a section of riverbottom forest to care for by removing human litter (leave dead plants and trees as these are habitat too) and invader species (see 2.11 Darth Invader) (4-1-15)
• on successive visits watch how plants and animals adapt to the seasons (4-1-04)
• winter is an excellent time to look for tracks and signs of wildlife
4.0 Post-Trip Activities

4.1 Graphic Inventory Results

After the field trip students can graph their inventory data to see what the results will show them. (4-1-08)

4.1.1 What Makes a Better Habitat?

Biodiversity – Mowed vs Natural Habitat

Students compare the number of plant and animal species found in the mowed area to the number found in the natural riverbottom forest. This activity will help them understand how to graph the data so they can do their own graph in the next activity.

Materials:
- Habitat Hunt worksheets
- two large graph sheets, one for plants and another for animals

Method:
- have students count the number of species of plants their group found in their mowed area plot and the natural area plot
- for the plants create two graphs on one sheet using the students’ data; see below

![Graph of Mowed Area](image1)

<table>
<thead>
<tr>
<th>Number of Plant Species</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Number</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
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![Graph of Natural Area](image2)

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Miranda Nolette
Grade 4
Ecole St. Adolphe School
• discuss with students
• where were the greatest number or diversity of plants found
• which area has more biodiversity so better habitat
• have students count the number of animal species or signs their group found in their mowed area plot and the natural area plot

• create two graphs for the animals on one sheet using the students’ data; see below
• discuss with students
• where were the greatest number of animal species found
• which area has more biodiversity and better habitat

**Mowed Area**

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**Natural Area**

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**Brooke Stollard**

**Grade 4**

**Ecole St. Adolphe School**
**4.1.2 Whose Home: Natural Habitat Inventory**

Now that students understand how to graph their data, each group graphs the number of types of plant (flowers, vines, trees and shrubs, invaders) and animals found in the natural riverbottom forest.

**Materials:**
- Habitat Hunt worksheets
- graph sheets for each student group, one for plants and another for animals (see copy pages)

**Method:**
- have students count the number of type of plants their group found in their plot, i.e. the number of flowers, vines, trees and shrubs, invaders, unknown plants they found
- graph the number of each type of plant
- have students count the number of type of animals their group found signs of on the field trip – birds, insects, frogs/snakes, mammals, other
- graph the number of each type of animal
- discuss
  - what did they find in their plot – why do you think those plants or animals were there
  - different plants and animals live in different parts of the riverbottom forest
    - some plants like to be closer to the water (cottonwood, purple loosestrife) while others like to be higher up near the drier grassland (oak, rose)
    - some plants like to be under the shade of trees (lily-of-the-valley) while others like an open sunny spot (milkweed)
    - some animals (raccoon, deer, fox, woodpecker) roam the whole forest looking for food, water, shelter and space, while others (spider, mole, millipede) just stay in a small area – did you find any animals like that
    - some birds like to feed up in the trees (chickadee) while others search for food on the forest floor (flicker)
• some animals sit in the trees searching for prey then swoop down to the forest floor to catch their prey (great horned owl/mouse, kingfisher/fish)
• some animals spend most of their lives up in the trees (squirrels) while others are on the forest floor (hare) and still other live mostly underground (mole)
• would different plants and animals be found there during different seasons
• did one part have more invader plants than another – predict how that might change next year or the year after that

• can you identify interactions between plants and animals in your plot, and in the riverbottom forest (spider uses plants to hold up its web to catch a variety of insects)
• can you identify one or more food chains in your plot, and in the riverbottom forest
• put graphs in their science journal

Extension:
• if you found invader species in your riverbottom forest design a plan to help eliminate them (hand pulling and removal, cutting down before flower); bring in an expert to help you design your plan, e.g. Nature Conservancy Canada, City of Winnipeg Naturalists
4.2  Home is Our Riverbottom Forest

Together students create a mural that represents their riverbottom forest. This activity reinforces many of the outcomes and concepts covered in this unit.
(4-1-02, 4-1-03, 4-1-07, 4-1-09, 4-1-11, 4-1-12, 4-1-14, 4-1-15)

Materials:
• large mural paper, approximately 3m long or as long as you have space for
• painting or drawing materials, photographs from field trip, inventory graphs, cutout pictures from magazines and glue

Method:
• On one end of the mural draw the river, on the other end draw either the grassland, farm field or urban area – this defines your strip of riverbottom forest.

There should be a slight incline from the water to the uplands; you could draw it as a profile that shows the earth with roots and burrows underground
• within the strip of riverbottom forest draw a large circle – one for each group of students that had an inventory plot on the field trip – and if possible match the circle with the approximate location of the group’s plot in relation to the water and the uplands
• within the circle assigned to each group, have students show what plants and animals they found in their plot – they can draw them, make a list, use their graphs, paste on photographs they took or pictures from magazines

Joshua Kosman
Grade 5
Ecole St. Adolphe School
• the rest of the mural should show the riverbottom forest with all the animals and plants found; be sure to show
  • food chains or webs at work
  • interactions between plants and animals, predators and prey
  • animals using food, water, shelter and space
  • how humans can cause changes to the habitat and what effect they have
  • how their actions can help the plants and animals of the riverbottom forest

Extension:
• using the mural, have students do a presentation to the school (parents, science fair) about their riverbottom forest – the things they found there and why they think it is important to protect the plants and animals that live there

4.3  Adapt to That Habitat
The activity will help students identify physical and behavioural adaptations of animals and plants and how those adaptations help species survive in the riverbottom forest. Allow 20 minutes for this activity. (4-1-04)

Materials:
• none required

Method:
• discuss how physical adaptations are the physical characteristics of a plant or animal that enable it to survive in the environment in which it lives, e.g. a fish has gills so it can survive in water
• a behavioural adaptation is the way an animal acts or behaves in order to survive, e.g. a goose flies south for the winter because there is no food for it here in the winter
• in the riverbottom forest plants and animals have some special adaptations to live in this habitat; for example
  • plants that live here are often flooded so they have adapted to frequent flooding – if all flooding stopped, some of them could not reproduce and survive
  • plants that live closer to the water like their feet/roots wet – like the willow and cottonwood
  • plants that live in the uplands like it drier – like the oak
  • ask the students what is the adaptation for the following examples

  • plants
    • The oak lives on the upland, the edge of the forest furthest from the water; this was an area once burned frequently by grass fires. The oak has a thick corky bark that helps it survive what? (grass fires)
    • Vines are adapted to grow in forests with thick canopies because they can do what to get the sunlight they need to survive? (climb up other plants)
    • Plants like poison ivy and stinging nettles have defenses that stop us from picking them – do you know what they are? (rash and sting)
    • The burdock has burs that stick to your clothes and animals’ fur – the bur contains the seeds – how does this help the burdock? (animals and people help spread the seeds around – Did you know the shape of the hooks on the bur was copied to design Velcro)
• Elm trees make seeds that birds and squirrels like to eat in the early spring – how could this help the elm tree? (spring seed dispersal so the seed gets an early start)

• Animals – you might also ask the students if it is a behavioural or physical adaptation

• Monarch caterpillars are adapted to eat the poisonous leaves of the milkweed plant – how would this help the caterpillar and butterfly survive? (they carry the poison too so birds and other predators do not want to eat them)

• Wood ducks raise their young in a protective hole in a tree in the riverbottom forest, and later the mother duck takes them to the river. How does this help the wood duck survive? (the cavity in the tree protects the eggs and young until they are old enough to survive on the river where there are more predators)

• Why do wood ducks have sharp claws on their webbed feet? (so they can sit in trees and swim in water, wood ducks nest and roost in trees, the young use their sharp claws to climb out of the nest in the tree cavity)

• Why are ladybugs bright red? (to warn predators not to eat them because they are poisonous)

• White-tailed deer use the riverbottom forest more in the winter – why? (the forest is more sheltered from the cold than the open fields and grasslands)

• The millipede has more legs than a centipede but the millipede moves slower – why? (centipedes are hunters, carnivores; millipedes are scavengers so don’t have to be fast to catch prey)

• Why do insects like the spotted-winged fly lay their eggs in plant stems like a goldenrod, which forms a gall around the insect? (protecting the insect for the winter)
• Why do turtles and snakes sunbathe? (they are cold-blooded animals so need to regulate their body temperature to survive)
• Why do tree frogs have small sticky pads on their toes? (so they can climb trees and shrubs)
• Spiders use empty galls to keep their egg case safe over winter. How does this help the spider? (predators cannot eat the eggs as easily)
• Why does the tiger swallowtail caterpillar have markings that make it look like a snake? (to help it survive by making predators think twice about trying to eat it)
• Why does the chickadee's brain grow larger in the winter? (to help it remember where it has stashed seeds it needs to survive over winter)
• Why do beavers store a pile of food – branches of trees – underwater in the fall? (food for the winter so they do not have to go out onto the ice and snow to get it; beaver are active year-round and are vulnerable to predators when out of the water)
• Why does snowshoe hare's fur turn white in winter? (to help it survive by being better camouflaged from predators)
• Why do snowshoe hares and cottontail rabbits feed a night? (to help them hide from predators)
• Why do white-tailed deer, normally solitary animals, gather in herds in winter and stay in one area called a “deer yard” where they make paths through the snow? (this helps them survive the winter because it is hard for deer to travel in deep snow, just like people, so they conserve energy by using trails)
• Why do female mosquitoes buzz? (to call the male mosquito to come and mate with her)
• Why are there so many mosquitoes? (they are food for a great many other animals so there has to be a lot of them to survive)
• Review
  • Plants and animals have a variety of adaptations to help them live in a specific habitat. Animals can have both physical and behavioural adaptations.

4.4 How the Leopard Frog Got Its Spots

Using the Keepers series – *Keepers of the Animals, Keepers of Life, Keepers of the Night, Keepers of the Earth*, by Caduto and Bruchac – students learn First Nation stories about animals and plants. Allow 1 hour for this activity. (4-1-05, 4-1-17)

**Materials:**
• *Keepers of the Animals, Keepers of Life, or Keepers of the Earth*, by Caduto and Bruchac, or other books that provide a traditional perspective on plant or animal adaptations such as *How the Turtle Got its Shell* by Joe McLellan and Martine McLellan, Nanabosho series, Pemmican Publications Inc.
• student journals

**Method:**
• read a story or two from one of the Keepers books that explains how a particular animal or plant received a trait or characteristic
• discuss with students how that plant or animal was given the trait and why
• are there other meanings of the story
• have students write their own story about why the leopard frog got its spots
• you can assign alternative species for stories to different students; other topics might be:
  • why the oak tree has black knobby bark
  • how the buttercup got its name
  • why the columbine hangs its head
  • why the lily-of-the-valley smells so nice
  • why the stinging nettle prickers us
  • how the Virginia creeper learned to climb

Rikki Meilleur
Grade 5
Ecole St. Adolphe School
• why the cottonwood tree became the giant of the riverbottom forest
• how the skunk got its stripes
• why the raccoon wears a mask
• how the male wood duck got its beautiful colours
• what the lines on the shell of the painted turtle mean
• how the mosquito got its buzz

• have them relate the trait to an adaptation of that species – have them think about why nature would give that species a particular colouring or other feature

Extension:
• bring in a First Nations storyteller as a guest speaker to do some storytelling; see Teacher Resources chapter
• review Plants of the Western Boreal Forest and Aspen Parkland by Johnson et al. that provides folklore about plants – use some of this information to develop a class story about one or more plants you found in the riverbottom forest

4.5 Impact on Habitat

Impact on Habitat will help students understand some of the factors that affect the riverbottom forest and other habitats, and the resulting impact on plant and animal populations. They are encouraged to find ways to help conserve the plants and animals. Allow 30 minutes for this activity.

(4-1-13, 4-1-14, 4-1-15)

Materials:
• students’ science journals

Method:
• discuss with students that there are natural and human-caused changes to habitats
• some natural changes are part of the cycle of a habitat, for example flooding in the riverbottom forest is an important part of that habitat as the plants and animals that live there require periodic flooding
• sometimes the changes affect plant and animal populations in a negative way
• many human-caused changes have a negative impact whereas the natural changes tend to be part of the natural cycles in a habitat (flood, fire, drought)
provide a few examples, then have students write in their science journals other natural and human-caused changes to habitats

some examples include:

natural causes of changes to habitat
- fire
- drought
- flood
- insect explosion
- beaver dams

human causes of change to habitat
- bringing in non-native invasive species of plants or animals to the country
  - Dutch elm disease killing elm trees (brought from Europe by furniture makers importing wood)
  - planting non-native species in gardens and yards (purple loosestrife taking over wetlands)
  - smooth brome brought to Canada for grazing instead of native grass
- tree harvest without regeneration/planting
- litter and garbage
- industrial and municipal waste in river and on land
- mowing uplands
- cutting down forest to the edge of river
- erosion from lack of native vegetation along rivers
- straightening waterways
- filling in creeks and streams to build houses and cities
- polluting water and land
- manipulating water levels artificially to prevent natural cycles of high water on floodplain
- overhunting or trapping
- fogging to kill mosquitoes
- use of pesticides like herbicide, insecticide, fungicide
- draining wetlands
- chemical spills

for each example the students have of the human-caused changes, have them identify how that might impact on the plant or animal populations

have them describe what they might do to help conserve plant and animal populations in their riverbottom forest

Review:
- have students present some of their examples to the class

Extension:
- develop a Jeopardy game using the information in this activity
5.0 Additional Activities

**Social Studies:**
- explore how First Nations and Métis people, and later pioneers, used the riverbottom forests to help them survive
- explore why the first towns and villages developed along rivers and creeks

**Health:**
- use the internet or field guides to find out about some of the traditional medicinal uses of plants of the riverbottom forests

**Art:**
- River of Words – have students create pictures of the riverbottom forest using a variety of mediums and enter the River of Words art contest (www.riverofwords.org)
- drawing birds, flowers, etc.
- rubbings – leaves, bark
- collages – found items in the riverbottom forest, not picked, careful not to collect poison ivy or stinging nettles

**Language Arts:**
- River of Words – write poems about riverbottom forests and enter the River of Words contest

**Other:**
- Frog Watch – class project to monitor frog calls in your area in spring
- Collect and raise plant galls
  - galls are deformations found on plants such as willow or goldenrod
  - over 1,500 different types of insects use them for food and protection while developing
  - collect galls over the winter and see what emerges in spring
  - be sure to use a different container for each type of gall and keep it in a cool place
6.0 Definitions

**Behavioural adaptation:** the way an animal acts or behaves that helps it survive

**Biodiversity:** the variety of plants or animals in a habitat; biodiversity is important – the more diverse the better

**Carnivore:** meat eater

**Community:** the living organisms in a habitat

**Conservation:** careful use of a natural resource; protecting or restoring a habitat

**Consumer:** animals that cannot convert the sun’s energy into food so they have to eat producers or other animals that eat producers (herbivore, carnivore, omnivore, scavenger)

**Endangered:** in danger of becoming extinct

**Extirpated:** a species that is no longer living in an area it once occupied, gone from that area

**Extinct:** a species that is no longer living

**Food chain:** a series of plants and animals that each depend on the next as a source of food

**Food web:** a more complex (and accurate) understanding of how different plants and animals depend on each other for food

**Habitat:** where a plant or animal lives, its home; components of habitat are food, water, shelter and space

**Herbivore:** plant eater

**Invader:** plant or animal species that is not native to an area and aggressively takes over a habitat because natural checks and balances are not in place to control it

**Omnivore:** eats both plants and animals

**Organism:** a life form; from plant to animal, single-celled to elephant

**Physical adaptation:** the physical characteristics or traits an animal or plant has that helps it survive in its habitat (monarch caterpillar can eat the poisonous leaves of the milkweed plant, cottonwood trees like to have wet roots)

**Population:** all the inhabitants of a place, plant or animal

**Predator:** a carnivore or omnivore that hunts for meat

**Prey:** animals that are eaten by other animals

**Producer:** plant that converts energy from the sun into food

**Scavenger:** animal that does not kill but eats dead things

**Traditional knowledge:** the experience and understanding of ecosystems that a First Nations or aboriginal community has accumulated over hundreds of generations, giving them great skills in and knowledge of the natural world

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Brittany Hancox
Grade 5
Ecole St. Adolphe School

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Page 41
GRADE 4 – HABITAT MEANS HOME

6 Definitions

Samantha
Grade 5
Ecole St. Adolphe School
## Manitoba Habitat – landscapes

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### Manitoba Habitat – Tundra species

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Manitoba Habitat – Boreal Forest species

- Black Bear
- Moose
- Woodland Caribou
- Wolf
- Lynx
- Boreal Owl
- Great Grey Owl
- Broad-winged Hawk
- Blue-spotted Salamander
Manitoba Habitat – Parkland species

- Deer
- Elk
- Red Fox
- Coyote
- Bobcat
- Skunk
- Great Horned Owl
- Bald Eagle
- Grey Tree Frog
Manitoba Habitat – Grassland species

- Plains Grizzly Bear (extinct)
- Bison (extirpated)
- Pronghorn (extirpated)
- Coyote
- Jackrabbit
- Ground Squirrel
- Burrowing Owl (endangered)
- Red-tailed Hawk
- Meadowlark
## Manitoba Habitat – Riverbottom Forest species

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<td>Tiger Swallowtail Butterfly</td>
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Jordan Weir
Grade 4
Ecole St. Adolphe School

Miranda
Grade 5
Ecole St. Adolphe School
Field Guide to the Plants of the Riverbottom Forest
HABITAT MEANS HOME
FIELD GUIDE TO THE PLANTS OF THE RIVERBOTTOM FOREST

NAME: ____________________________

SCHOOL: __________________________

DATE: ____________________________
The riverbottom forests of the Canadian Prairies are wonderful habitats to explore. This is one of the few places you would have found trees back in the pioneer time when the Prairies were still mostly grasslands.

Riverbottom forests were thin strips of thick forest running like ribbons along creeks and rivers. They were sandwiched between grasslands full of wildflowers on one side and the water of the river on the otherside. Today the grasslands are mostly farm fields growing crops like wheat. But in most places the riverbottom forest can still be found running along the river edges, especially along the Red and Assiniboine rivers.

Have fun exploring the forest and finding out about the plants and animals that call the riverbottom forest their home or habitat. Use this guide to help you name the many plants you will find in the forest. Take notes of when you saw them and where. There is a Life List at the back to record which plants you have found and the dates - see how long it takes you to find every species. Draw your own picture of the plants and animals. Keep this guide so you can explore the forest in the different seasons and over time to see what changes.

The thin strip of riverbottom forest has three levels. The upper level called the terrace is furthest from the river. The plants on the terrace are usually grasses, flowers and oak trees. This is the outside edge of the forest where it meets the grasslands. Today the terrace cannot always be seen because it may have been cut down for a field or a yard.

As you walk from the terrace down to the river you go through the floodplain then the channel shelf levels. The plants are thick here. On the floodplain you find trees like basswood, elm, maple, and ash. On the channel shelf you have some of those trees but also the giant cottonwoods and bending willow. Look for vines climbing up the trees to find sunshine.

In the riverbottom forest you can find plants that flower, vines, trees and shrubs, and invaders. Remember – Don’t pick the flowers – leave them to make seeds so they will be there next year when you visit.

Note: scientific names are included for plants as common names often vary to make it hard to find in other guide books.
ASTER (Aster)
Look for asters in late summer and fall – they tell us it is time to go back to school. Asters can be purple or white. They have many small (1-2cm) flowers together on a stem. The flowers have lots of little petals like a daisy. The purple aster likes to be flooded sometimes.

BEDSTRAW: sweet-scented & northern (Galium)
Bedstraw flowers are tiny (3mm) and white, you will see them in summer. They have thin leaves in a whorl like a star around the stem. People used to pick this plant to put in their beds to make them smell nice.
**Buttercups** (Ranunculus)

There are lots of different buttercup plants but seaside buttercup can be found in riverbottom forest because it likes a wet home. It has a few yellow flowers (6-8mm) on each plant.

**Canada Anemone** (Anemone canadensis)

A white flower 2.5-3cm across grows from a long stem and blooms June to July. Leaves and stems feel hairy. It likes a damp home and grows 20-60cm tall.
COLUMBINE (Aquilengia canadensis)
The columbine’s red flower droops down - be sure to gently lift its head and look closely at its honeycomb inside. The plant grows 30-80cm tall and flowers in June-July.

FALSE SOLOMON’S SEAL (Smilacina stellata)
Small (6mm) white flowers grow on the end of the stalk of leaves about 20cm long. Flowers begin in May. It likes a moist forest to call its home.
FRINGED LOOSESTRIFE (Lysimachia ciliata)
This is the good loosestrife not like the purple loosestrife, which is bad and an aggressive invader. Fringed loosestrife flowers are bright yellow, 2-2.5cm across, and grow in groups of two or three. Flowers come out in July. It likes a wet forest like the riverbottom forest.

GOLDEN ROD (Solidago canadensis)
Like asters, the goldenrod tells us fall is coming and it is time to go back to school. The goldenrod flowers are deep yellow with many tiny flowers on stems that make it look like a golden pyramid.
**INDIAN HEMP** (Apocynum cannabinum)
Lots of little white flowers in cluster on stems, bloom in July. Stems, filled with milky sap, turn red when older. The flower turns into a skinny purple seedpod in fall.

**JACK-IN-THE-PULPIT** (Arisaema triphyllum)
This flower gets its funny name because someone thought it looked like a preacher standing at his pulpit with a canopy overhead. It likes wet woods to call home and habitat. The flower starts green then turns a purple-brown colour. The berries also start green then turn bright orange. The leaves look like poison ivy. These are exciting to find because they are rare plants.
**LILY-OF-THE-VALLEY (Maianthemum canadense)**
Clusters of tiny (6mm) white flowers stretch out on a stem from the centre of broad leaves. Flowers are found in May and June. Be sure to bend down to these short plants and smell the flowers.

**MARSH HEDGE NETTLE (Stachys palustris)**
Flowers are pale purple with dark purple spots. Little flowers form a spike at top of stem in July and August. To tell if stems are square and hairy roll them between your fingers.
MEADOW RUE (Thalictrum)
Meadow rue flowers are greenish white with yellow stamen (thread in centre of flower that holds pollen). They bloom June and July. The leaves are bluish green on tall stems 15-90cm. They live in moist forests on the Prairies.

MILKWEED (Asclepias syriaca)
Milkweed is the plant caterpillar uses for food and the monarch butterfly lays its eggs. The milkweed flower is pinky purple. The flower turns into a cool seedpod tightly packed with seeds on silky parachutes.
**POISON IVY** (Rhus radicans)
Stay away from this plant – it has oil that makes you itch. Leaves of Three – Let it Be! The poison ivy leaves can turn reddish orange in fall when little white berries form. It has a hard woody stem like a twig of a tree.

**SARSAPARILLA** (Aralia nudicaulis)
Tiny greenish flowers form three round balls that will later become purple berries. Sometimes you have to look under the leaves to see the flowers. The leaves look like the three leaves of poison ivy but the stem is not woody like poison ivy.
STINGING NETTLE (Urtica dioica)
Watch out for this plant – it stings! Look closely at its leaves with teeth and the tall shape of the plant – you don’t want to bump into it. The plant is covered with sharp tiny hairs that inject formic acid into your skin if you brush against it. It grows very tall over the summer and can reach above your head.

WILD ROSE (Rosa acicularis)
Delicate pink flowers that bloom in June and July, stems have short prickly thorns. Colour of flowers vary from dark to light. Rose hips are the fruit of the flower and make good tea with lots of vitamin C.
WOOD NETTLE (Laportea canadensis)
Wood nettles love the moist forest floor and can cover it like a carpet. Unlike the stinging nettles, wood nettles don’t grow much above your knees. They have long stringy flowers where the leaves join the stem, just like their cousin stinging nettle.

WOOD SORREL (Oxalis)
The yellow flower of the wood sorrel has five petals and blooms in August. The leaves look like three hearts joined at the points.
**YELLOW TALL CONEFLOWER** *(Rudbeckia laciniata)*

These tall flowers grow way over your head. The yellow flowers appear July to September. One of the few places you will see it is the riverbottom forest.

**YELLOW VIOLET** *(Viola)*

Yellow violets grow in moist woods and bloom from April to June. They have round heart-shaped leaves.
BINDWEED (Convolvulus sepium)
This vine likes river valleys where it climbs over other plants to hold up its weak stem. It has pale green, spear-shaped leaves. The flower is pale pink, looks like a funnel and blooms June to August.

CARRION FLOWER (Smilax herbacea)
This vine gets its name from the stinky smell of its flower. The flowers smell like carrion—dead animals. The flowers are greenish white and form a ball. Look at the leaves to identify it—they are rounded with little points at the tip and veins that form lines. The single stem climbs up 1-2m.
**GRAPE** (*Vitis riparia*)

Wild grapes love riverbottom forest – this is one of the few places to find them. If you are going to pick the grapes make sure you don’t confuse them with Virginia creeper – another vine of the forest with purple berries.

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**HOG PEANUT** (*Amphicarpa bracteata*)

A delicate vine with pointed leaves, in groups of three. Clusters of lilac or white coloured flowers form bean pods in fall containing one seed.
HOPS (Humulus lupulus)
Hop vines are woody like a stick and can grow to 6m. Flowers are greenish white and the fruit is used to make beer. The leaves look like a maple leaf.

MOONSEED (Menispermum canadense)
The moonseed has a woody vine like a stick and large leaves 10 to 25cm. The cluster of small flowers develop into purple berries - but don’t eat them.
**VIRGINIA CREEPER** *(Parthenocissus quinquefolia)*

Lots of people have Virginia creeper climbing up their houses or fences. The leaves are made up of 5 or 6 leaflets that turn purple and red in fall. The purple berries are poisonous to people but good for birds to eat and the nectar from the flowers is good for hummingbirds.

**WILD CUCUMBER** *(Echinocystis lobata)*

This vine does not look like the cucumber you eat. Greenish white flowers turn into a round and prickly seedpod called a pepo. The stem climbs over other plants and can be 3-6m long.
**BASSWOOD** *(Tilia americana)*

The basswood tree, also called a linden tree, is mostly found in riverbottom forest. They have big (12-15cm) rounded leaves with saw tooth edges that turn yellow in fall. Bark is grey and can be smooth or rough with ridges. Sometimes there are many trunks together.

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**CHOKE CHERRY** *(Prunus virginiana)*

Choke cherry is a shrub – like a small tree. It has a cluster of white flowers like a hotdog on a stick. The flowers turn into grape-like clusters of cherries in the late summer. Leaves are thin and 2-10cm long. The bark is reddish brown to grey-brown.
COTTONWOOD (Populus deltoides)
A giant among trees, the cottonwood is found close to water. The leaves, 7-17cm long, are heart shaped with saw toothed edges. The bark is grey and smooth when young and with deep ridges when older. Join hands with classmates and see how many of you it takes to circle the giant.

ELM (Ulmus americana)
The elm tree was the most common tree in riverbottom forest but many trees are dying from Dutch Elm Disease. The leaves are 10cm long and have saw tooth edges. The bark is dark grey with wide, deep ridges. They have big trunks that may take two people to stretch their arms around.
**GREEN ASH** (*Fraxinus pennsylvanica*)

The green ash tree is replacing the elm tree in riverbottom forests as they die from Dutch Elm Disease. Soon it will be the most common tree in the forest. Its leaves are made up of 5, 7 or 9 leaflets that are 7-12cm long with pointed tips. Bark is grey-brown with ridges that can sometimes have a diamond-shaped pattern.

**HAWTHORN** (*Crataegus chrysocarpa*)

Watch out for this shrub – it has long thorns that are very sharp. The thorns are the best way to identify hawthorn and its name reminds you to look for the thorn. The other part of its name is “haw” which are the little red fruits that look like tiny apples.
**MANITOBA MAPLE** (Acer negundo)
Our maple tree is small for a tree, about 12m tall, with wide spreading branches and sometimes several trunks. Leaves are made of 3-5 leaflets with deep teeth. They turn bright yellow in fall. Bark is brown and deep grooves form as it gets older. The winged seeds make great helicopters in fall.

**NANNYBERRY** (Viburnum lentago)
This tall shrub grows to 6m. Leaves are 5-10cm long with fine teeth along the edge and tiny dark spots underneath. White flowers in spring are clustered together. The flowers become a blue-black berry in fall – they are good to eat but only try them if an adult tells you it is ok. They like to grow on the edge of streams and where there are maple trees.
OAK \textit{(Quercus macrocarpa)}

The oak trees grow on the terrace or upper edge of the riverbottom forest, furthest from the water. The oak does not mind being flooded. They have thick grey to black bark that protects them from fire, branches are gnarly like a witch’s finger. The oak leaf is lobed - rounded bumpy edges. The leaf is green on top and grey-white and fuzzy underneath. This is the tree that makes acorns so look for them on the ground around the tree or on the branches.

RED OSIER DOGWOOD \textit{(Cornus stolonifera)}

This shrub grows 1-3m. Its stems are bright red when young. Leaves are egg-shaped, 2-8cm long with points at the tip. Small white to green flowers form a cluster at branch tips. Fruits are a white berry – but never eat white berries – most are poisonous. Sometimes these white berries are called doll’s eyes.
BLACK MEDICK (Medicago lupulina)
Small (6mm) yellow flowers bloom in summer. This plant looks like a clover. It came from Europe with pioneers so is an invader.

BURDOCK (Arctium minus)
Burdock is a bully – it pushes its way into the forest and takes over. Its giant leaves (30cm long) shade other plants so they cannot grow. It looks like a rhubarb plant when young but by mid summer the stems grow tall with purple flowers at the end. The flowers turn into burrs that stick to your clothes and are full of hundreds of seeds. This invader came to Manitoba 100 years ago and has spread through the riverbottom forest.
Field Guide to the Animals of the Riverbottom Forest
HABITAT MEANS HOME
FIELD GUIDE TO THE ANIMALS OF THE RIVERBOTTOM FOREST

NAME:..............................................................................................................

SCHOOL:...........................................................................................................

DATE:...............................................................................................................
The riverbottom forest of the Canadian Prairies is a fun habitat to explore. In the pioneer days, when the Prairies were still mostly grasslands, this was one of the few places you could find trees.

Riverbottom forests are thin strips of thick forest running beside creeks and rivers. They are sandwiched between the grasslands full of wildflowers on one side and the water of the river on the other side. Today the grasslands are mostly farm fields growing crops like wheat, or urban landscapes of towns and cities. But in most places the riverbottom forest can still be found along the river edges, especially along the Red and Assiniboine rivers.

Have fun exploring the forest and finding out about the plants and animals that call the riverbottom forest their home.

Lots of different animals make the riverbottom forest their home. Some live here year-round while others live here while they migrate in spring and fall. Seventy-five different kinds of birds use this forest during migration. In the winter the forest provides many animals shelter from the cold. This is important habitat because it is one of the few natural areas left for wildlife in southern Manitoba. Riverbottom forest gives animals food, water, shelter and space – the four parts of habitat.

You can find animals throughout the forest. Look for them in the air, up in trees, down on the ground, hidden under the leaves, sitting on plants, poking out of holes, sunning on logs, sucking nectar from flowers – wildlife is everywhere. When you first get to the forest sit quietly for a few minutes – just look and listen. Watch for movement. If you are quiet the animals will start to move around again. Never go near a wild animal – you may scare it into hurting you.

Use this guide to help you name some of the animals you find in the forest. The field guide has four sections – mammals, birds, amphibians and reptiles, and insects. Take notes on the back of the pages about the animals you saw and draw your own pictures. Keep this guide so you can explore the forest in the different seasons and see what changes. At the back is a Life List where you can check off if you find one of the animals listed – see how many you can find.

Remember to be respectful of the animals of the riverbottom forest – you are a guest in their home.
BADGER
The badger has a white and brown face with a white stripe between its eyes. It is a short, squat and powerful animal. It likes to live in the woods near rivers. Badgers are good diggers and live in underground dens. They have great long claws so look for tracks in the mud. A badger can take on a bear so stay back if you see one. It is a carnivore, eating rabbits, moles, snakes, mice, insects, eggs and snails.

CHIPMUNK
The little chipmunk is a friendly animal. It is smaller than a squirrel with a stripe on either side of its back. You can see them darting through the forest with their cheek pouches full of seeds or nuts. Chipmunks are herbivores. They live in burrows underground. Chipmunks hop so look for their tracks as four small prints close together.
COYOTE
Coyotes are about the size of a German shepherd dog, a grey-brown colour with a bushy tail. You may not see a coyote but listen for their yipping and barking at night to know if they are in your area. Coyotes are carnivores that eat mice, voles, frogs, birds and even grasshoppers. Look for dog-like tracks.

FOX
The red fox is common in the riverbottom forest. It is part of the dog family but smaller than a coyote. Foxes are most often red with a white tip on the tail and black socks. They can also be black or grey. The fox is an omnivore - 75% of its food is plants. It also eats mice, birds and rabbits. Its tracks look like a medium-size dog's.
**JACKRABBIT**
The jackrabbit is a fast runner. Its long feet help it run fast especially in snow. It turns white in the winter. If you see a rabbit that is brown in the winter it is probably a cottontail bunny. It feeds on bark, twigs and other plants.

**MOLE**
The star-nosed mole is not easy to find because it lives underground most of the time. Look for little piles of earth where it has been digging burrows. If you do see one look for the funny star-shaped nose. This furry little creature eats worms and insects.
MOUSE
A deer mouse is very small – when born it weighs less than a penny. It mostly comes out at night. During the day it hides in other animals’ burrows or logs or in old buildings. Deer mice are brown with a white belly. The tail is 5cm long. They eat seeds and plants.

MUSKRAT
Muskrats are mostly found in the water, especially where there are lots of cattails – which they use to build their house. A muskrat is brown and smaller than a beaver with a skinny tail. Muskrats are omnivores. They eat water plants, snails and small fish. Look for a V-shape on the water when the muskrat is swimming.