4-H Motto
Learn to do by doing.

4-H Pledge
I pledge
My HEAD to clearer thinking
My HEART to greater loyalty
My HANDS to larger service
My HEALTH to better living
For my club, my community and my country.

4-H Quality Equation Principles

Quality People
Promote responsibility, respect, trust, honesty, fairness, sportsmanship, citizenship, teamwork and caring.

Quality Experiences
Provide members with personal development and skill development experiences.

Quality Projects
Promote and value quality effort.
Promote high quality, safe food production within industry standards.

Table of Contents

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Completion Requirements</td>
<td>4</td>
</tr>
<tr>
<td>Achievement Ideas</td>
<td>5</td>
</tr>
<tr>
<td>List of Activities</td>
<td>6</td>
</tr>
<tr>
<td>Project Evaluation</td>
<td>9</td>
</tr>
<tr>
<td>Nature’s Food Chains and Habitats</td>
<td>11</td>
</tr>
<tr>
<td>Everything Green</td>
<td>23</td>
</tr>
<tr>
<td>Eye on the Environment</td>
<td>35</td>
</tr>
<tr>
<td>Watching the Weather</td>
<td>53</td>
</tr>
<tr>
<td>Relating to Nature</td>
<td>59</td>
</tr>
<tr>
<td>Credits</td>
<td>66</td>
</tr>
</tbody>
</table>
THE OUTDOORS, RESPECT, RENEW, RELATE
PROJECT COMPLETION REQUIREMENTS

To complete a project year, 4-H members are required to:

- Spend a minimum of **12 hours** completing their chosen activities. Each activity is assigned an approximate time length to help plan and organize the activity.
- Complete any "requirement" activities before attempting the new activity. It is important to do the requirement activity first as it teaches skills needed to complete the more advanced activity. For example: “Building a Campfire” has to be completed before taking the “Fires for Outdoor Cooking” so that the basic fire building skills are learned before attempting to build fires for cooking.
- It is not necessary to take all of the activities in each theme or to take them in a specific order, unless the activity has a requirement activity.
- Guidelines are given for approximate age suitability for each activity. Keep in mind that these are only guidelines and may be adjusted according to individual skill levels. The **ACTIVITY**, suggested **AGE**, estimated **TIME** needed for the activity, **REQUIREMENTS** needed before beginning the activity, and the **LEARNING OUTCOME** will appear in a box like the one below. **Example**:

```
ACTIVITY: FIRE WITHOUT MATCHES
Age: 14+ Time: ½ hour for each method
Requirement: Complete activity "Building a Campfire" before starting this activity.
Learning Outcomes: To learn alternative ways of starting a fire when you have no matches.
```

**Note:** Some activities such as the “Hunter Safety Course” have age limits set out by governing organizations or specific laws.
At the end of each activity there are **Activity Talk** questions to help leaders and members to discuss what they learned from the activity.

Leaders and members are required to initial each completed activity in the space provided at the end of the activity which will appear in the box like the one below.

**Example:**

**Activity Talk:**
- Do you know how to use each of the items in the kit?
- Have you taken a first aid course?

"Make a First Aid Kit" activity has been completed.
- Member's Initials______ Leader's Initials______

Check off completed activities in the check box provided in the **Activity Listing** on Page 6/7.

Choose different project activities for each year the project is taken.

Complete the "**My 4-H Record**" (green sheet). Members are required to list the activities they completed in the "Project Meetings" section of **My 4-H Record**.

Participate in the project/club Achievement activities as decided upon by the project group. Ideas for Achievement are listed below.

**IDEAS FOR ACHIEVEMENT**

The project group can choose one of these ideas or come up with an idea of their own for Achievement, keeping in mind that the purpose of the "Achievement" is to celebrate what has been learned through the project. The celebration could include any of the following: items made, skills learned, a demonstration or presentation about your project or skills, or an outing where skills are actually put into practical use. The achievement could include community members, families, and friends.

- If part of a multipurpose club, where other projects will be displaying their achievements, the Respect, Renew, Relate Project could display items used or made in project work, set up a photo display, or give demonstrations.

- Achievement could be inviting the community or public to join you for a tree planting day and community picnic. Invite the media.

- Achievement could be a quiet hike with project members/family/friends to enjoy your favorite natural spots.
# LIST OF ACTIVITIES
## RESPECT RENEW RELATE

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>Age</th>
<th>Time</th>
<th>Page</th>
<th>Chosen Activities Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature’s Food Chains and Habitats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following the Food Chain</td>
<td>9+</td>
<td>20 min.</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Pesticides and the Food Chain</td>
<td>9+</td>
<td>1 hr. group</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Predator/Prey</td>
<td>9+</td>
<td>1 hr. group</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Who’s Living Here?</td>
<td>9+</td>
<td>1.5 hrs.</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Spying on an Anthill</td>
<td>9+</td>
<td>1 hr.</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Habitat Game</td>
<td>9+</td>
<td>.5 hr. group</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Polar Bears in the Zoo</td>
<td>11+</td>
<td>1 hr.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Developing a Wildlife Habitat</td>
<td>14+</td>
<td>12+ hr.</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Everything Green</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color Flowers by Numbers</td>
<td>9-10</td>
<td>.5 hr.</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Grow a Seedling Tree</td>
<td>9+</td>
<td>1 hr.</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Collecting and Preparing Wildflower Seeds</td>
<td>9+</td>
<td>1 hr.</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Wildflower Seed Planting</td>
<td>9+</td>
<td>40 min.</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Crafting with Wildflowers</td>
<td>9+</td>
<td>2.5 hr.</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Making Paper</td>
<td>11+</td>
<td>1.5 hr.</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Meet a Tree</td>
<td>9+</td>
<td>.5 hr. group</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Leaf Hunt</td>
<td>9+</td>
<td>.5 hr.</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Making Birch Bark Baskets/Canoe</td>
<td>11+</td>
<td>2 hr.</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>Age</td>
<td>Time</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td>---------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td><strong>Eye on the Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microtrek Scavenger Hunt</td>
<td>11+</td>
<td>2 hrs.</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Environmental Coat of Arms</td>
<td>11+</td>
<td>1 hr.</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Values</td>
<td>14+</td>
<td>1 hr. group</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Town Hall Meeting</td>
<td>14+</td>
<td>3 hrs group.</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Oil Spill</td>
<td>9+</td>
<td>1.5 hrs.</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Swamp Things</td>
<td>9+</td>
<td>2 - 3 hrs.</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Make a Water Scope</td>
<td>11+</td>
<td>2 hrs.</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>What Can I Do For The Wetlands?</td>
<td>9-10</td>
<td>1 hr.</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-13</td>
<td>1 hr.</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14+</td>
<td>5+ hrs.</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Water Count</td>
<td>9+</td>
<td>1 hr.</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Tracking Water Problems</td>
<td>11+</td>
<td>2 - 3 hrs.</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Worms and Soil</td>
<td>11+</td>
<td>3 hrs.</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td><strong>ACTIVITY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Watching the Weather</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What Does UV Do?</td>
<td>9+</td>
<td>2 hrs.</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Natural Weather Reports</td>
<td>9+</td>
<td>1 hr.</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Make Your Own Tornado</td>
<td>9+</td>
<td>30 min.</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Be a Weathernet Volunteer</td>
<td>14+</td>
<td>12 hrs.</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td><strong>ACTIVITY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Relating to Nature</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal Signs</td>
<td>11+</td>
<td>2 hrs.</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Senses Hike</td>
<td>9+</td>
<td>1.5 hrs.</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>What We All Need</td>
<td>11+</td>
<td>.5 hrs.</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Aboriginal Story Telling</td>
<td>9+</td>
<td>3 hrs.</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Tag Hunting Game</td>
<td>14+</td>
<td>.5 hrs. group</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>
PROJECT EVALUATION
RESPECT, RENEW, RELATE

Please help us to make sure the 4-H program provides quality projects. Fill out this form as you work through the book. Your answers will be used to improve the project. After you are done your project, mail this form to:

Provincial 4-H Office
Manitoba Agriculture and Food
1129 Queens Avenue
Brandon, MB. R7A 1L9

Who are you? _____ member _____ leader _____ parent

1. Why did you choose to take this project? ________________________________
   ___________________________________________________________________

2. What was the best part of this project? ________________________________
   ___________________________________________________________________

3. In this book, what things were too hard or didn’t work? _________________
   ___________________________________________________________________

4. What are some neat ideas that would make this book more exciting?
   ___________________________________________________________________
   ___________________________________________________________________

5. Anything else you would like to tell us? _________________________________
   ___________________________________________________________________

   In case we need to find out more, you may want to add your name:

   Name: ___________________ Phone #: ________ Email: ________________
THE FOOD CHAIN AND HABITATS

Nature’s Food Chain

The plant kingdom is the base upon which the animal kingdom depends. Animals are important to people. We enjoy animals, birds and other wildlife for their natural beauty, but we also use animals for food, and bi-products such as clothing. Some people make money by selling animals or their bi-products.

Years ago, Native people depended totally on products of nature for food, clothing, and shelter. Today, we still use some products such as edible plants, meat and fish, furs and hides. Plants and animals are a renewable resource. This means that as long as we don’t take too many of one species, or destroy their habitat, they will be able to reproduce to replace what has been taken.

In a food chain we follow the links starting with a plant. We find out what eats the plant, then what eats the creature that eats the plants, and so on, following links until we come to a creature that is not eaten by another creature. The following diagram gives some examples of different food chains.

Sample Food Chains

<table>
<thead>
<tr>
<th>Trophic Level</th>
<th>Grassland Biome</th>
<th>Pond Biome</th>
<th>Ocean Biome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Producer</td>
<td>grass</td>
<td>algae</td>
<td>phytoplankton</td>
</tr>
<tr>
<td>Primary Consumer</td>
<td>grasshopper</td>
<td>mosquito larva</td>
<td>zooplankton</td>
</tr>
<tr>
<td>Secondary Consumer</td>
<td>rat</td>
<td>dragonfly larva</td>
<td>fish</td>
</tr>
<tr>
<td>Tertiary Consumer</td>
<td>snake</td>
<td>fish</td>
<td>seal</td>
</tr>
<tr>
<td>Quaternary Consumer</td>
<td>hawk</td>
<td>raccoon</td>
<td>white shark</td>
</tr>
</tbody>
</table>

Photo courtesy of Enchanted Learning
Habitat

A Habitat is an area, environment, or in simple terms - a home, where an organism such as a mammal, bird, insect, reptile or fish lives. The habitat supplies what the wildlife needs to live and reproduce. It is important that we disturb wildlife and their habitats as little as possible. We should never feed or touch a wild animal, and leave a comfortable distance between nests, nesting birds, mammals and their young.

The following is an example of a "Freshwater Marsh" Habitat. Many different kinds of animals live in this habitat.

Freshwater Marsh

Picture courtesy of Enchanted Learning
ACTIVITY: FOLLOWING THE FOOD CHAIN

Age: 9+  Time: 20 minutes
Learning Outcome: To learn more about the order of different food chains.

Draw arrows to show the order of these food chains.

Tundra
- wolf
- lemming
- moss

Desert
- rattlesnake
- lizard
- moth
- cactus

Rainforest
- grub (beetle larva)
- plant roots
- javelina
- jaguar

Swamp
- mosquito
- algae
- frog
- alligator

Sun

Check your chains by flipping the page upside down for the answers.
Plant, Grub, Javelina, Jaguar, Algae, Mosquito, Frog, Turtle, Alligator, Cactus, Moth, Lizard, Snake, Moss, Lemming, Fox, Wolf

Activity Talk:
Were there any answers that surprised you? Can you name another food chain in your local area?

“Following the Food Chain” has been completed.
Member’s Initials _______ Leader’s Initials _______
ACTIVITY: PESTICIDES AND THE FOOD CHAIN

Age: 9+  
Time: 1 hour, large group activity

Learning Outcome: To learn more about how pesticides are passed through the food chain.

- You will need 30 pipe cleaners per participant (2/3 white and 1/3 colored), and face paint.
- Explain that pesticides have been developed to control particular organisms. Sometimes the pesticides end up where they are not wanted. Because organisms in a food chain eat one another, a pesticide can move from one organism to another.
- Scatter the food (pipe cleaners) around the playing area.
- Divide the group into teams so there are three times as many shrews as hawks, three times as many grasshoppers as shrews. The creatures can be identified by different colored face paint.
- Each grasshopper receives a bag representing their stomach. They are released first, to hunt for food.
- After 30 seconds, the shrews are released to hunt the grasshoppers by tagging them and collecting their bag. When grasshoppers are tagged they will leave the play area.
- After one minute, the hawks are released to hunt the shrews in the same manner.
- Once all of the bags have been collected, the group will reunite.
- The players will empty their bags onto the ground. The hawks count their food pieces and separate them into white and colored.
- Explain that the colored pieces are covered in pesticides and that anyone that has come in contact with pesticides either by eating them or consuming an animal that has, could become sick.

Activity Talk:

Were you surprised at how many pesticides the hawks ended up eating? What have you learned from this activity?

"Pesticides and the Food Chain" has been completed.

Member’s Initials_______ Leader’s Initials_______
ACTIVITY: PREDATOR/PREY
Age: 9+  Time: 1 hour Group Activity
Learning Outcome: To gain a better understanding of the relationship between predator and prey.

- You will need 3 food tokens per member, face paint, and five hula hoops.
- Explain to the group that predators are animals that eat other animals. Prey is the animals that are eaten. Disease, pollution and starvation are some of the things that influence the lives of these animals.
- Identify members as predator or prey with different colored face paint (one predator: four prey).
- Mark one end of the field as the food source, and the other as shelter. Scatter the hula hoops around the field as extra shelter for prey.
- As the round begins, the prey will start from the shelter end and move to the food source. They will collect a token, then move back to the permanent shelter area and repeat this process.
- The predators will try to catch the prey and collect a food token by tagging them. Once tagged the prey is frozen.
- The prey must have three tokens and not be frozen at the end of the round (five to seven minutes).

Activity Talk:
What strategies did you use when you were the prey or the predator?
What role does this relationship serve in nature?

“Predator/Prey” has been completed.
Member’s Initials_______ Leader’s Initials_______
ACTIVITY: WHO’S LIVING HERE?

Age: 9+  Time: 1 ½ hours

Learning Outcome: To learn about habitats and how many different species share the same habitat.

- Find a natural area; a marsh area, a grass area or a wooded area are all good choices.
- Take a rope ten metres long and lay it on the ground in a square.
- Within this area, observe all the living things you can find. Remember to include plants, as well as mammals, bird, insects, and reptiles.
- Keep in mind that signs of animals such as tracks and droppings (manure) mean that even though you don’t actually see the animal, this area is part of its habitat.
- It might be helpful to write them all down. You could put them in their different categories; birds, insects, mammals, plants, reptiles.

Activity Talks:
How different species did you find in your area?
Could you identify any food chains within the area?

“Who’s Living Here? has been completed.
Member’s Initials_______ Leader’s Initials_______
ACTIVITY: SPYING ON AN ANTHILL

Age: 9+  Time: 1 hour
Learning Outcome: To observe an ant's habitat - the anthill.

- You will need a clear plastic 2L pop bottle, scissors, a rectangular shaped rock smaller than the bottle, plastic wrap, tape, tray, trowel, plastic bag, pail, piece of paper, small piece of wet sponge, food crumbs, cotton ball, small piece of fine fabric, elastic band, and an old towel.
- Cut the bottom off of the pop bottle.
- Turn the bottle topside down and put the rock inside the bottle. The rock should fill the centre of the bottle and force the ants to construct their nests and tunnels against the walls of the bottle.
- Stretch the plastic wrap over the bottom opening and tape it to make a seal so that the ants cannot escape.
- Put the tray on the bottle; turn it over so the bottle is standing on the tray.
- Find an anthill. Using the trowel, dig into the anthill. Put all your diggings into the plastic bag. Try to get the following: ants carrying cocoons (cocoons look like a piece of rice), and a queen ant (larger than other ants). Once you have at least 20 ants, tie the bag shut. Put some of the dirt from the hill into the pail.
- Make a funnel with the piece of paper and pour the dirt into the bottle.
- Next, put the wet sponge in the bottle. Sprinkle some food crumbs on top of this.
- Pour in the ants and quickly close the bottle with the cotton ball.
- Cover the top of the bottle with the piece of fabric - hold it in place with an elastic band.
- Drape the whole bottle with the towel to mimic darkness for the ants.
- Everyday, add a few drops of water and some food crumbs. Watch to see if the ants have started construction.
- Once you are finished with the ants, make sure to return them to their natural environment.
- You could do a variation of this activity by using worms instead of ants. Worms need water and plant leaves for food.

Activity Talk:
Did the ants help each other? How? Are humans like ants in any way?
“Spying on an Anthill” has been completed.
Member's Initials______ Leader's Initials______
A habitat includes food, water, shelter and space. If any of these are missing, the habitat is no longer suitable.

- Members will number off one to four, and go into one of the four corners of the playing field.
- Assign group one as food, group two as water, group three as shelter, and group four as space.
- Make a circle alternating members from groups one through four until everyone is in the circle.
- Have members take one step in and turn to their right, resulting in a tight circle with each member facing the back of the member in front of them.
- Instruct the members to put their hands on the shoulders of the person in front of them, and on the count of three have everyone crouch and sit on the knees of the person behind them.
- Use different examples such as drought, city construction, pollution, and disease and remove one group from the circle that would be affected by this problem.
- Have the group repeat the task of sitting on the knees of the person behind them. They will not be able to complete the task with a group missing. Remind them that a habitat must have all of the necessary elements for life.

Activity Talk:
What happens to a habitat if one or more components are lost?

"Habitat Game" has been completed.

Member's Initials______ Leader's Initials______
ACTIVITY: POLAR BEARS IN THE ZOO

Age: 11+  
Time: 1 hour  
Learning Outcome: To research the habitat of an animal and how to supply suitable accommodations for it at a zoo.

- You will need popsicle sticks, toothpicks, glue, tape, cardboard, and markers. Many animals live in the zoo their whole lives. Zoo keepers work hard to be sure their environment is like their wild habitat. Take the polar bear for example. They live on the ice 90% of the time, and on the land 10% of the time. They get most of their food from the sea. During the short summer in the artic they do look for food on the tundra. A polar bear weighs 300-400 kg when fully grown and can jump up to four metres. Their enclosure needs everything the bear needs to survive: a sleeping place, hiding place or den, pool, source of drinking water, food, and space for exercise.
- Research the habitat of your favorite wild animal.
- Design and build a zoo enclosure for your animal incorporating all aspects of their habitat.
- Display your model zoo habitat.

Activity Talk:
Display your enclosure. What do you like or dislike about zoos?
"Polar Bears in the Zoo" has been completed.
Member's Initials_______ Leader's Initials_______
This activity will depend, in part, on the availability of a suitable area on which the work can be done. This activity could be carried out over a period of several years.

Each species or kind of wildlife has certain requirements for it to live and reproduce successfully. These requirements differ with each kind of animal depending on its specializations or adaptations. In general, animals with similar needs tend to live in similar areas or habitats. The animals and plants that live together in these areas are considered a wildlife community.

- Obtain the permission of the land owner to implement certain wildlife practices that would improve the land as a wildlife habitat. The area might be a farm, or other tract of land suitable for management.
- Map the chosen area, showing the habitat that already exists including types of animals found there.
- Decide what kinds of management practices might improve the area for wildlife. These might include such things as:
  - Fencing livestock out of woodlands and wetlands.
  - Planting suitable trees/shrubs/plants for protection, food, and shelter.
  - Putting up bird houses and nesting structures for different species of birds.
  - Building brush shelters.
- Have work days to implement the program.

Activity Talk:
What kind of wildlife is best suited to the habitat you have chosen? What improvements would you like to make?

"Developing a Wildlife Habitat" has been completed.
Member's Initials______ Leader's Initials______
EVERYTHING GREEN

Activity                                    Page
Color Flowers by Number                    25
Grow a Seedling Tree                       26
Collecting and Preparing Wildflower Seeds  27
Wildflower Seed Planting                   28
Crafting with Wildflowers                  29
Making Paper                               30
Meet a Tree                                31
Leaf Hunt                                  32
Making Birch Bark Baskets/Canoe            33
THE LIFE CYCLE OF A PLANT

THE SEED

FLOWERS ARE POLLINATED BY THINGS LIKE INSECTS AND WIND AND PRODUCES SEEDS

THE SEED GERMINATES WITH THE HELP OF THE RAIN, SUN AND SOIL.

MANY PLANTS PRODUCE FLOWERS

STEMS REACH FOR THE SUN
ROOTS HOLD THE PLANT UP
AND REACH DOWN FOR WATER AND MINERALS

PHOTOSYNTHESIS IS A PROCESS THAT USES CHLOROPHYLL (GREEN IN PLANTS) WITH CARBON DIOXIDE AND WATER TO MAKE FEED FOR THE PLANTS AND OXYGEN FOR OTHER FORMS OF LIFE INCLUDING HUMANS.
ACTIVITY: COLOR FLOWERS BY NUMBER

Age: 9-10  Time: ½ hour
Learning Outcome: To have fun coloring and finding out what the flowers end up looking like.

Use the following guide to color the flower picture:
1 - light green  2 - dark green  3 - red  4 - pink  5 - orange
6 - yellow  7 - purple  8 - brown  9 - white  10 - light blue

Activity courtesy of Enchanted Learning

Activity Talk:
Do you know the names of any of the flowers in the picture?
“Color Flowers by Number” has been completed.
Member's Initials______ Leader's Initials______
ACTIVITY: GROW A SEEDLING TREE

Age: 9+ Time: 1 hour

Learning Outcome: Learn how to find seeds on trees, and how to plant them.

- You will need a 2 litre plastic pop bottle, potting soil, clear tape, and a few tree seeds.
- Look for seeds on trees. Maple trees often have a lot of seeds hanging. They look like half a butterfly wing. Pine and spruce trees have cones. When you open the cone, the seeds fall out. See picture.
- Cut the pop bottle in half.
- Fill the bottom half with potting soil.
- Plant your seedling in the soil.
- Tape the pop bottle back together.
- Water lightly, and then seal the top with tape.

PLANTING YOUR SEEDLING

- When your seedling is about 10 cm tall and has needles or leaves on it you can plant it outside.
- Dig a hole big enough for all of the roots.
- Place the roots in the hole. Point the roots down in the hole.
- Keep the roots from drying out in the air.
- Make sure the roots are not tangled, turned up or crowded.
- Fill in the hole.
- Crumble the soil around the roots.
- Make sure the trunk is at ground level.
- Fill the hole level with the ground around it, and pack the soil around the seedling.
- Remember to water the seedling and to protect it from animals that eat seedlings.

Activity Talk:

How long did it take your seedling to come out of the ground?

“Grow a Seedling Tree” has been completed.

Member’s Initials______ Leader’s Initials______
ACTIVITY: COLLECTING AND PREPARING WILDFLOWER SEEDS

Age: 9+  Time: 1 hour

Learning Outcome: Learn when and how to collect wildflower seeds, and how to prepare and store them.

- A book for identifying wildflowers would be useful for this activity.
- Find a location with a variety of wildflowers.
- Look for plants that have gone to seed. This means the plants have finished flowering and are ripening their seeds for the following year.
- Collect a variety of plants; put them in containers. Label with names if possible. Make sure you do not collect all of the plants in the area as you want to leave seeds in the natural environment for next year's growth.
- Most seeds need to dry out and freeze before they will start to grow in the springtime. You will have to create a winter experience for them.
- Place each type of seed on a separate piece of newspaper to dry out in the sun or indoors.
- Once the seeds have dried, store each type of seed in a container until late August or September.
- Place each seed type in a container or jar and cover with slightly damp peat moss. Close the containers to be airtight.
- Place the containers somewhere cool and out of the way. The seeds will hibernate and be ready to plant in the spring.

Activity:

What varieties of seeds did you find? Why is it important to help protect local wildflowers?

“Collecting and Preparing Wildflower Seeds” has been completed.

Member’s Initials______ Leader’s Initials______
ACTIVITY: WILDFLOWER SEED PLANTING

Age: 9+  Time: 40 minutes
Requirement: Complete the activity “Collecting and Preparing Wildflower Seeds” or buy wildflower seed before beginning this activity.
Learning Outcome: Learn methods for planting wildflowers.

- You will need eggshells, an egg carton, soil or peat moss, wildflower seeds and a permanent marker.
- Collect and rinse eggshells.
- Label top of the half eggshells with the type of seeds you are going to plant in the shell.
- Place the half shells in the egg carton.
- Fill the shells with soil or peat moss.
- Sprinkle some seed in each shell.
- Moisten the soil with water.
- Soon the seeds in the shells will sprout.
- When you are ready to plant the wildflowers outside, plant the entire eggshell in the ground. The eggshell will provide minerals for the soil when it decays.
Variation: If you weren’t able to collect your own seeds, wildflower seeds can be purchased at your local garden centre.

Activity:
Do you think it’s important to learn about plant life? Why?
“Wildflower Seed Planting” has been completed.
Member’s Initials______ Leader’s Initials______
ACTIVITY: CRAFTING WITH WILDFLOWERS

Age: 9+  
Time: 2 1/2 hours  

Learning Outcome: To handle wildflowers without disturbing the roots, and to be creative with wildflowers.

- You will need blotting paper (soft absorbent paper), heavy books. A field guide to wildflowers would be useful.
- Find a location where there is a variety of wildflowers or other plants.
- Be sure that there are plenty of the varieties you want to use. Pick only three or four flowers or leaves to use for the project. Be careful not to pull the plant out by the root.
- Place the pickings on some blotting paper.
- Place the blotting paper with plants between the pages of a heavy book. When the plants are pressed, they will retain their shape exactly as you placed them.
- Allow to dry for one week.
- When the plants are ready, use them to decorate a greeting card, bookmark or writing paper. Be creative!

Activity Talk:

Why is it important to know about the local plants and flowers? What is the difference between wildflowers and the flowers we buy at the store?

“Crafting with Wildflowers” has been completed.
Member’s Initials______ Leader’s Initials______
ACTIVITY: MAKING PAPER

Age: 11+ Time: 1 ½ hours
Learning Outcome: To understand the process of recycling paper. To be creative with the finished product.

You will need a blender, 500 ml warm water, 10 grams of cornstarch (about one large spoonful) rolling pin, large pan to catch water, 2 squares of white felt cloth, a piece of screen (an old window screen works well), several sheets of newspaper or letter paper, old bills, flyers, etc.

The following symbols help us to identify items that are recyclable or environmentally friendly.

This is the symbol found on products that are safer for the environment.

This is the recycling symbol. You can find it on paper products, aluminum cans, glass bottles, and many other items. It means that the item can be recycled.

Activity courtesy of the Alberta Junior Forest Warden Association

- Place a half sheet of newspaper, torn into 1-inch strips, the cornstarch and water in a blender and mix until a soupy mixture is achieved.
- Hold the screen over a large pan.
- Pour the mixture evenly over the screen. Allow water to drain.
- Place one piece of felt on top of the paper “mush” and press down.
- Flip over and carefully remove screen.
- Cover with felt and roll with rolling pin to remove excess water.
- Let the paper dry for a few days or iron on low with your paper placed between two dish towels.
- Use your finished paper for a letter, card etc.

Activity Talk:
How does recycling save resources and energy? Why should we buy recycled paper?

“Making Paper” has been completed.

Member's Initials______ Leader's Initials______
ACTIVITY: MEET A TREE

Age: 9+ Time: ½ hour group activity

Learning Outcome: Learning the different characteristics of trees. Identifying tree species.

- You will need a blindfold for each person.
- Divide the group into pairs. Each pair should get a blindfold.
- Once one of the pair is blindfolded, their partner will lead them through the forest to a tree of their choice.
- Be sure that the partner guides their blind partner carefully, so they don’t injure themselves.
- The blindfolded member will explore this tree and discover its unique characteristics. Once the person feels like they “know” their tree, they should be led back to where they started by taking a different route.
- Remove the blindfold and let them discover, once again, their tree.
- Partners can then switch roles.
- Ask pairs to identify the tree species using a field guide of trees.

Activity Talk:
How did you tell your tree apart from the others?

“Meet a Tree” has been completed.

Member’s Initials______ Leader’s Initials_______
This activity is most suited to fall, when the leaves are naturally falling to the ground. A field guide of different kinds of trees would be useful.

- On this leaf scavenger hunt, find as many different leaves as possible.
- Look for leaves with a smooth edge, wider at the top than bottom, a smooth texture, that is not green etc. See how many different leaves you can find.
- If you are removing a leaf from the tree be careful not to break the branches.
- Make a leaf rubbing by putting the leaf between light tissue paper. Use a crayon to rub over the tissue paper bringing out the shape and texture of the leaf.
- Use your leaf rubbings to decorate a card, bookmark or writing. Try to identify what type of tree the leaf came from.

**Activity Talk:**

How many different kinds of leaves did you find?

Were you able to identify some or all of them?

“Leaf Hunt” has been completed.

Member's Initials_______ Leader's Initials_______
The Paper Birch is a deciduous tree that grows 30 to 40 metres tall. The bark is reddish to coppery-brown when young and turns white and peels with age. The Paper Birch grows in all forested regions of Canada and can be found on forest edges, lakeshores, and roadsides.

- You will need birch bark, an upholstery needle, cord, rulers, pencils, strong reeds, willow shoots, dogwood or other material to make a hoop for the rim of the basket, and sharp knives.
- Find an area where there are many Paper Birch trees.
- Find a piece of birch bark that is 25 cm x 25 cm.
- Do not take bark from a live tree - bark from a dead tree will work just as well.
- Decide how tall you want the walls of your basket to be, (4 cm will work) then measure that distance in from each edge of the bark. Measure in several places on each side to keep it even. Use the pencil to mark the distance along each edge. These lines show where your walls will fold up from the basket’s bottom.
- Cut in from each of the corners to the intersections of the pencil lines.
- One corner at a time, fold the walls up so the corners overlap. If you have used very thick bark, you may need to score it with the tip of your knife along your pencil lines to get the sides to fold up. Be careful not to cut all the way through.
- Sew the walls together. Be very gentle when pushing your needle through, so you don’t tear the bark. Don’t make a needle hole closer than 1.5 cm from the edge.
- Make a hoop as close in size as possible to the rim of your basket. Lay the hoop on top of the basket and stitch it tightly onto the rim.
BIRCH BARK CANOE:
- Soak a piece of birch bark in some water.
- Draw the pattern on your birch bark. Make a pattern that looks like the one below, only make it larger.
- Be very careful when using the sewing needles and knives.
- Cut out the pattern, and then carefully cut slits as shown.
- Bend in half (lengthwise) so that the woody side faces out.
- Pinch one end and fold up the small tab.
- Repeat with the other end.
- Stitch it up and then down the seam at each end.
- Stitch a small basket splint around the canoe rim using a bendable branch.
- Spread the centre of the canoe to a 2.5 cm diameter.

Activity Talk:
What are some things you learned about the birch tree? What other uses does birch bark have?

"Making Birch Bark Baskets or Canoe" has been completed.
Member's Initials _______ Leader's Initials _______
EYE ON THE ENVIRONMENT

<table>
<thead>
<tr>
<th>Activity</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microtrek Scavenger Hunt</td>
<td>36</td>
</tr>
<tr>
<td>Environmental Coat of Arms</td>
<td>36</td>
</tr>
<tr>
<td>Values</td>
<td>38</td>
</tr>
<tr>
<td>Town Hall Meeting</td>
<td>41</td>
</tr>
<tr>
<td>Oil Spill</td>
<td>45</td>
</tr>
<tr>
<td>Swamp Things</td>
<td>46</td>
</tr>
<tr>
<td>Make a Water Scope</td>
<td>48</td>
</tr>
<tr>
<td>What Can I Do For The Wetlands?</td>
<td>49</td>
</tr>
<tr>
<td>Water Count</td>
<td>50</td>
</tr>
<tr>
<td>Tracking Water Problems</td>
<td>51</td>
</tr>
<tr>
<td>Worms and Soil</td>
<td>52</td>
</tr>
</tbody>
</table>
ACTIVITY: MICROTREK SCAVENGER HUNT

Age: 11+ Time: 2 hours
Learning Outcome: To gain a better understanding of how humans share the environment with wildlife.

- You will need a magnifying lens, a digging tool, pencil and paper.
- Being careful not to damage any wildlife, try to find evidence of the following conditions. Descriptions can be written or drawn.
  - Humans and wildlife share environments.
  - Humans and wildlife must adjust to their environment, move to a more suitable environment or perish.
  - Wildlife is all around us, even if we can’t see or hear it.
  - Wildlife ranges from large to small.
  - People and wildlife experience some of the same problems.
  - People and wildlife both need a place to live.

Activity Talk:
Present your findings to your leader and/or share them with the group.

“Microtrek Scavenger Hunt” has been completed.
Member’s Initials_______ Leader’s Initials_______

ACTIVITY: ENVIRONMENTAL COAT OF ARMS

Age: 11+ Time: 1 hour
Learning Outcome: To raise awareness of local environmental issues and personal values and beliefs about those issues.

- You can use the following page, or make a larger one on poster paper.
- Draw an area of the environment that is important to your community.
- Draw an area of the environment that is at risk in your community.
- Draw a solution that you can be a part of.
- Draw a solution that your community can be a part of.
- Write why this area of the environment is important to your community and write what would be lost if the area is not managed better.
- Write what you would like to leave for future generations and write advice you have on environmental management for future generations.
Activity Talk:
Explain your Environmental Coat of Arms with your leader or group.
“Environmental Coat of Arms” has been completed.
Member’s Initials______ Leader’s Initials______
The intent of the activity is not to prescribe right and wrong answers. The purpose is to provide members an opportunity to come to their own judgments about what they think are the most responsible and appropriate actions to take in situations affecting wildlife and the environment.

- Copy and cut the dilemma cards. Other dilemma cards can be made to suit your specific area. Dilemmas can be left entirely open-ended, with no options suggested for consideration.
- The first member draws a card from the top of the stack. The member studies the situation and decides what he or she would do.
- When the member is ready, the member reads the dilemma aloud to the rest of the group. The member gives the decision he or she has chosen, and briefly describes the reason why. In turn, each of the other members of the group is invited to comment on the dilemma and what he or she would do in the situation.
- The card is returned to the bottom of the stack and another round begins with a new member choosing a dilemma card.
- If there are several members, you could put them in teams and have them discuss the dilemmas and come up with a team answer to share with the other teams.

Activity Talk:
What were some of the hardest issues for you to decide on?
Were you able to learn from other people’s perspectives?
Do you feel you have a good understanding of your own environmental values?

"Values" has been completed.
Member’s Initials_______ Leader’s Initials_______
Dilemma Cards

You are a farmer. You have recently studied some different farming practices than what you currently do on your farm. One of these practices is to leave the edge of your farming area for wildlife and organic pest control. Although this technique may improve your long-term benefits, it may reduce your short-term profits. You are struggling to pay your taxes and to keep up with your expenses.

Should you:
- Sell your farm.
- Continue to study farming practices but make changes for now.
- Try a few methods on some of your land and compare the results with other similar areas on your land.
- Other ideas?

You are a member of a country club that has recently voted to build a pheasant reserve for members to hunt on. You are not a hunter, you think that hunting is only okay to do in the wild, and you are opposed to this initiative.

Should you:
- Maintain your membership and choose not to voice your concern.
- Maintain your membership and speak out against the pheasant reserve.
- End your membership.
- Other ideas?

You are fishing in a secluded lake and have caught five fish during your first day on the lake. On the second day, you caught seven fish, all of which were bigger than the ones you caught on the first day. The law allows you to have 12 fish in your possession.

Should you:
- Continue to fish and keep them all.
- Throw the smaller fish you caught the day before back into the lake.
- Have some of the fish for lunch.
- Stop fishing for the day.
- Other ideas?

You are the President of a large corporation. You are interested in pollution control and have had a team of staff members evaluating the pollution your plant is creating. The team reports to you that the plant is barely within the legal requirements and that the plant is polluting the community. To add the equipment to reduce pollution would result in firing 50 employees.

Should you:
- Add the equipment and fire the employees.
- Not add the equipment.
- Wait a few years to see if the cost of the equipment will decrease.
- Hire an engineering firm to provide further recommendations.
- Other ideas?
You are the head of a team of people who are in charge of selecting the best course of action to preserve the buffalo. Some of the team members would like you to authorize the capturing of buffalo. The buffalo would then be sent to zoos to mate in captivity.

Should you:
- Leave the buffalo in their natural environment?
- Capture the buffalo and send them to zoos?
- Launch an education campaign about endangered species?
- Other ideas?

You are on a hike with one of your friends and you spot a bald eagle perched high on a tree. Before you know, your friend shoots the Eagle. One hour later, a park ranger approaches you about an eagle that has been shot illegally and asks you if you know anything about it.

Should you:
- Deny that you know anything about it?
- Tell the ranger that your friend was the one who shot the eagle?
- Say nothing at the time, but make an anonymous phone call later reporting your friend?
- Other ideas?

You are having a picnic with your family. You see another family leaving from their own picnic. This family has left garbage all over the park.

Should you:
- Ask the family to pick up their garbage?
- Wait for the family to leave and pick up their garbage yourself?
- Leave the garbage where it is?
- Other ideas?

You are a judge. You are hearing a case where a man has been charged for shooting a deer out of hunting season. He has been unemployed for a year and is using the meat to feed his family.

Should you:
- Punish him for his crime?
- Give him a small fine?
- Release him with a warning?
- Other ideas?
You will need a group of at least 10 people for this activity. Perhaps members in a smaller project could invite friends or classmates for this activity.

Land use decisions affecting wildlife are a common issue when highway developments are being proposed. The following is an imaginary conflict that corresponds to real life dilemmas:

Happy Valley is a grain farming community in the middle of the Canadian prairies with a small town of 5000 as the trade centre of the area. A new highway is proposed to connect two major urban centres to the east and west of the valley. It will provide 200 new jobs during the period of construction. However, the highway route is proposed to cross a large marsh. The marsh is to be drained and the unused portion of the marsh will be converted into pasture for landowners.

The marsh provides hunting for local residents and tourists. It is also the spawning area for pickerel and other fish living in Happy River. In the spring and fall, the area is used by migratory waterfowl with many other species of birds sighted in the area, including the endangered whooping crane. Two trappers obtain their winter livelihood from the marsh, which also provides the secondary sewage treatment for the town and, acts as a reservoir for underground water flow to many landowners' well.

Based on the concern of citizens, the Town Council is holding a meeting to determine the points of view of local residents. Experts will be allowed to present information, and local residents will vote on one of three options:

- To proceed with the marsh drainage.
- To compromise by allowing the highway to be built as long as the marsh is retained.
- To refuse the highway development.
There are twelve roles on the description cards. Members will choose a role. If there are more members than roles, extras can take the role of news reporters, outside experts, concerned citizens etc. These members may ask questions of people at the hearing. They could also be required to write letters to the editor or one of the councilors, in support of a particular point of view, or write an article for the local paper.

- To set the stage for the town hall meeting, have each of the members read their role description card.
- Members should then take time to prepare their presentations. Members should be encouraged to be creative when developing their presentations and questions.
- The day of the meeting, the Town Councilor is to run the meeting. It is up to him or her to maintain order. All members must be recognized by this person before they speak. All members should have the opportunity to present and be questioned. After all of the testimonies, questions and statements are made, the local residents will vote.

**Activity Talk:**

- What are some things we have learned about land-use decision-making?
- What factors influence land-use decision-making and planning?
- What differences and similarities were there between how decisions were made in this activity and how they happen in our community? Other areas? Other parts of the world?
- What responsibilities do we as citizens have, in helping to make land-use decisions?
- Why are land-use decisions and land-use planning important for people, wildlife, and the environment?

"Town Hall Meeting" has been completed.

Member's Initials_______ Leader's Initials_______
<table>
<thead>
<tr>
<th>Role Descriptions</th>
</tr>
</thead>
</table>
| **Highway Engineer**  
You have worked in highway construction for the past 40 years and you do not understand the new concern for environmental issues. Your approach is to build straight, safe roads with as little cost to the taxpayer as possible. |
| **President of the Chamber of Commerce**  
This is your tenth year as president. You own a grocery store in Happy Valley. Your biggest concern is the weak business climate in the community. The Chamber recently hired Brown & Brown, a business consulting firm, to evaluate the retail potential of Happy Valley. Their findings indicate that the business community has overbuilt. Your profits and those of your fellow merchants have been declining. You see this new road and the tourists it would attract, as a blessing for your business. |
| **Local merchant and Duck Hunter**  
You are a 50 year old person and you own a furniture store. You are also a duck hunter. You recognize the increase in business to the town with the new highway, but you know you will lose your duck hunting opportunities. You would have to drive another 50 km to a different duck hunting area. |
| **Local President of the Naturalist Society**  
You represent over 200 active Naturalist Society members, and you are the Director of the annual bird count competition. You have a list of 15 rare bird species found in the Happy Valley. You are 40 years old and work in construction. You may be able to profit in the highway construction. |
| **Local Councilor**  
You are the third generation to run the family ranch and you are proud to tell people that your grandfather was one of the first to settle in this area. You resent the increase in population and although you are involved in community affairs, you resent individuals who do not share your values. Last fall, you had hunters trespassing onto your property. You enjoy having the waterfowl in the spring and fall. |
| **Hunter**  
You are a 55 year old person and you love to hunt and fish. You have four sons and hunting has always been an important family activity. You are an influential member of “Ducks Unlimited.” The proposed marsh for drainage contains one of the best duck hunting areas close to Happy Valley that was enhanced by Ducks Unlimited ten years ago. |
<table>
<thead>
<tr>
<th><strong>Landowner</strong></th>
<th><strong>Biologist</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>You are a 60 year old retired business person. You want to sell your land, move to Victoria, B.C. and live happily ever after. You want cash, but your asking price is very reasonable. You own 50 hectares of prime marsh to be drained.</td>
<td>You are 25, a new biologist in the area and unaware of the extent of your responsibility to prevent habitat destruction. You passionately oppose the drainage of the marsh and point out the values of wildlife to the community. There has not been an adequate fish survey conducted on the marsh and river, but you know the declining fish population in the river is due to a lack of spawning sites.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Chief Engineer</strong></th>
<th><strong>President of the Local Fishing and Hunting Association</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>You are 50 years old and an avid supporter of the highway proposal, including the marsh drainage. You are not an outdoor enthusiast, but your spouse is active in bird watching. While your training in water management is very limited, you are personally concerned about the lowering of the water table in the community and recognize that drainage may be the key factor.</td>
<td>You are 30 years old and have just been elected President of the Association. You feel you have to defend wildlife interests. The cost of gas is high and the Association doesn’t want to have a long distance to travel for hunting. You would like to open a sporting store.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Local Trappers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>You are both in your 60’s. You both own small farms near the marsh and make a portion of your income from trapping on the marsh during the winter season. You provide a free service to other landowners by trapping nuisance animals.</td>
<td></td>
</tr>
</tbody>
</table>
You will need cooking oil, shallow container, eye dropper, magnifying lens, natural feather, liquid detergent, hard boiled eggs.

- Add water to a shallow pan.
- Add a dropper full of oil into the water and observe the interaction between the water and the oil.
- Place 3 boiled eggs into a container of oil, peel one after five minutes, 15 minutes, and 30 minutes - what are the differences?
- Observe the feather through the magnifier and sketch what you see.
- Soak the feather in oil for five minutes and then wash with liquid detergent.
- Look through the magnifier again and compare it to your original sketch.

Activity Talk:
What happened when you added the oil to the water? What happened to the eggs? How was the feather changed by the oil? How would that affect the birds?

“Oil Spill” has been completed.
Member’s Initials_______ Leader’s Initials_______
WHAT ARE WETLANDS - WHY ARE THEY IMPORTANT?

Wetlands come in several different names such as marsh, slough, and swamp. They are important to our ecosystem for many different reasons.

- Wetlands act like a sponge. They help to keep river levels normal. They help prevent flooding when the water level is high and slowly release water when the levels are low.
- Wetlands release vegetative matter into rivers, which helps feed fish.
- Many animals that live in other habitats use wetlands for migration or reproduction. For example, herons nest in large old trees, but need shallow areas in order to wade for fish and aquatic life.
- Unlike most other habitats, wetlands directly improve other ecosystems. They recycle nutrients, and filter and purify the surface water. Human kidneys clean and help control the water flow. Wetlands are the kidneys of the outdoor world.

ACTIVITY: SWAMP THINGS

Age: 9+ Time: 2-3 hours
Learning Outcome: To learn more about a swamp habitat and the life it supports.

- You will need a pail or a small plastic container, a large glass jar, a swampy area and the “swamp things” identification page.
- Stand at the edge of the swamp and dip your plastic container into the water and pour it into the pail.
- When the pail is full pour as much as you can into the jar.
- Put the jar in a shady place.
- Observe the jar each day. Add a little fresh swamp water each day.
- Identify as many of the swamp creatures as you can. (see following page)
- After a few days, return the swamp water back to the swamp.
- Do not collect larger swamp things like turtles, salamanders, or frogs. They do not live well in jars and may be injured.

Activity Talk:
Did any swamp things hatch, grow or eat one another?

“Swamp Things” has been completed.

Member’s Initials_______ Leader’s Initials_______
Swamp Things

WATER STRIDER
- lives on the surface of the swamp;
- never sinks.

WATER TIGER

GIANT WATER BUG

WATER MITE
- tiny and red.

BACKSWIMMER
- the bubble at the end of its body is a reserve tank for use until it can get back to the surface.

DRAGONFLY NYMPH
- moves by squirting water out of its behind.

MOSQUITO LARVAE

PHANTOM HIDGE LARVAE
- the body is see-through;
- most active at night.
ACTIVITY: MAKE A WATER SCOPE

Age: 11+  Time: 2 hours

Learning Outcome: To learn how swamp creatures act and move in their underwater habitat.

- You will need a large plastic container (yoghurt, honey, etc), rubber boots, clear plastic wrap, strong elastic band, and marsh area.
- Cut the bottom out of the container.
- Stretch plastic wrap over the hole and secure it with an elastic band.
- Lower the plastic covered end into the water to get a clear view of what is beneath the water surface.
- Slowly move around while looking through your water scope.

Activity Talk:
Did you see anything that you did not know lived in the marsh?
Could you identify any of the swamp creatures?

“Make a Water Scope” has been completed.
Member’s Initials______ Leader’s Initials______
Create a “Save the Wetlands” Poster
Make a poster that shows the need to protect and save our wetland areas. Display it somewhere in your community. (school, band office, library)

Write a “Wetland’s Story” for the local paper.
Identify an animal that lives in a wetland. Write a short story about that animal titled “A Day in the Life of a ……………”.

Organize a “Cleanup the Wetlands” project.
If you have a wetlands area that has been neglected or mistreated, plan and organize a cleanup campaign. Make a presentation to local community groups in order to generate interest and backing for the project.

Activity Talk:
Do you think you have helped to create more awareness about the importance of wetlands? Explain.

“What can I do for the Wetlands?” has been completed.
Member’s Initials_______ Leader’s Initials_______
WHAT IS A WATERSHED - WHY IS IT IMPORTANT?

A Watershed is an area of land from which all the water runs from smaller streams, wetlands, marshes and creeks into a larger body of water such as a river, lake or ocean. Run-off from rain and snow is part of this water system. Whatever the water carries with it will end up moving through the water system. The water transports silt, debris and pollutants that it picks up along the way. Our rivers, lakes, and oceans supply water for animals, industry, recreation, household use, irrigation, electricity, and drinking water, just to name a few. Anything that affects our water quality affects us.

ACTIVITY: WATER COUNT

Age: 9+  Time: 1 hour
Learning Outcome: To become more aware of how much water you use each day.

- As soon as you get up in the morning, put a little notebook or paper and a pencil in your pocket.
- All day long, make a note every time you use some water. At the end of the day, see how long your list is.
- Can you estimate how many litres of water you used during the day? For example, flushing the toilet could take as much as 30 litres of water.

Activity Talk:
Can you think of ways that you can reduce the amount of water you use?

“Water Count” has been completed.
Member’s Initials______ Leader’s Initials______
ACTIVITY: TRACKING WATER PROBLEMS

Age: 11+  Time: 2-3 hours

Learning Outcome: To become more aware of water problems such as erosion and pollution that affects a watershed.

- Take a hike along a local stream or river.
- As you walk write down what you observe.
- What color is the water - is it clear or murky?
- Is there debris such as trees and garbage in the water?
- If there is fast moving water - do you see any white foam that might be an indication of phosphate in the water?
- Is there a smell to the water?
- Are there any signs of sewage, oil or chemical waste?
- Do you see any wildlife, on, in or near the water?
- Do you see any soil or silt piles that have been deposited by the water?
- Do you see any erosion either on the sides of the waterway or where water has run in from another source? Erosion occurs when water comes too quickly or when the banks of a waterway are not stabilized by plant life.
- If you can get access to a map of the area try to determine what smaller waterways run into the waterway you were following. Where does the water come from? What is the land in the area used for - is there agriculture, industry, towns or cities, grassland or forests?
- How do people use the water in this waterway?

Activity Talk:

Did you see signs of pollution in the waterway? Do you have any suggestions for improving the waterway?

“Tracking Water Problems” has been completed.

Member’s Initials_______ Leader’s Initials_______
ACTIVITY: WORMS AND SOIL

Age: 11+  Time: 3 hours

Learning Outcome: To learn the value of vegetable matter to productive soil. To learn the role of the earthworm.

- You will need enough soil from the same location to fill three boxes, earthworms, and kitchen scraps (orange peels, egg shells etc.)
- Observe the soil. Pour water through the soil – does the soil soak up the water – look for signs of life, insects, and pieces of plants such as leaves.
- Divide the soil into three containers:
  - The first will be the control sample.
  - Add kitchen scraps to the second sample.
  - Add kitchen scraps and earthworms to the third sample.
- Once a week (for six weeks), repeat the process of adding kitchen scraps to the two samples.
- Add water to the second and third samples once a week.
- Every week, record the changes that are occurring in the boxes and discuss them at the end of the six week period.

Activity Talk:
What changes have taken place in each of the three boxes?
What is the value of having vegetable matter in the soil?
What role do the earthworms play? How can we all help to make sure our soils are healthy?

“Worms and Soil” have been completed.
Member’s Initials______ Leader’s Initials______
WATCHING WEATHER

Activity | Page
---|---
What Does UV Do? | 54
Natural Weather Reports | 55
Make Your Own Tornado | 56
Be a Weathernet Volunteer | 57
WEATHER

Weather is talked about by more people every day than any other topic. The weather affects what we do, where we live, our work and play, and our economy. Our weather is constantly changing, and we hear more and more about global warming, UV Rays, changing weather patterns, natural disasters, and how the planet will be affected in the long term.

Over many years, pollution has contributed to damaging the ozone layer of our atmosphere. With more holes in the ozone, more UV (ultraviolet rays) are hitting the earth. UV rays are beneficial in that they provide us with Vitamin D. However, too much UV can damage our eyes and skin, causing health problems. A UV index has been developed to let us know how strong the harmful UV rays will be each day. The following activity will give you an idea of how UV rays work.

**ACTIVITY: WHAT DOES UV DO?**

**Age:** 9+  
**Time:** 2 hours

**Learning Outcome:** To better understand how ultra violet rays affect our bodies.

- You will need newspaper, book, clear glass bowl, and a piece of plastic such as a pair of glasses.
- On a sunny day in May or June go outside and spread a newspaper out on a flat surface before 10.00 am. Place a book on the left side of the paper and put the bowl upside down on the right side. Place the plastic in the middle of the paper. Make sure the paper stays out of the shade.
- Leave the paper exposed, untouched for at least four hours.
- After 2:00 pm, remove the objects from the newspaper and note any differences in color.
- The exposed portion of the newspaper should have yellowed. The part of the paper that was under the book should still be white; the part under the plastic should have colored slightly; and the part under the glass bowl should have yellowed even more, but not as much as the totally exposed portion.
- UV rays affect the color of newspaper. Plastic blocks more UV rays than glass, but the book offered the most protection.

**Activity Talks:**

How can we protect our skin from UV rays? When are we most exposed to UV rays?

“**What Does UV Do?**”

Member’s Initials_______ Leader’s Initials_______
Before we had scientific instruments people relied on the instincts and actions of birds, animals, plants and the sky to help them forecast the weather. Look for the following signs and ask an elder or someone who spends a lot of time outside if they know of other signs you might look for. Add their suggestions to the list.

The weather will be fair if:
- Geese and crows fly high.
- Fishing is poor.
- Ants scurry.
- Pine cones, dandelions and marigolds open.

The weather will be foul if:
- Birds fly low and line up on power lines.
- Fish and flies bite.
- Ants travel in lines.
- Pinecones, dandelions, and milkweed pods close.

Add other weather predictors:
- 
- 
- 
- 
- 

Activity Talk:
Have you noticed any of these natural signs when you are outside? Did they predict the weather correctly?

“Natural Weather Reports” has been completed.
Member’s Initials Leader’s Initials
ACTIVITY: MAKE YOUR OWN TORNADO
Age: 9+  Time: 30 minutes
Learning Outcome: To better understand the action of tornadoes.

- You will need two 2-litre clear plastic soft drink bottles, water, food coloring, duct tape, scissors, pencil, and ruler.
- Fill one of the bottles with water until it is half full. Add a few drops of food coloring to make the water more visible.
- Cut a piece of duct tape which is five cm long, and cover the mouth of the bottle which contains the water.
- With the pencil, make a hole in the centre of the duct tape. Make sure that the hole is a little bigger than the pencil.
- Take the second bottle and turn it upside down on top of the bottle containing the water, so that the mouths of the bottles line up. With the cloth or paper towel, wipe any moisture from the necks of the two bottles.
- Cut more duct tape and wrap it around the necks of the bottles so they are firmly attached.
- Hold the two bottles by the neck; invert them so that the bottle containing the water is on top, and immediately start spinning them in circles.
- Put the bottles on the table, with the empty one on the bottom.
- Watch what happens.

Activity Talk:
Have you ever seen a real tornado? Why is it important to study tornados?

“Make Your Own Tornado” has been completed.
Member’s Initials______ Leader’s Initials______
**ACTIVITY: BE A WEATHERNET VOLUNTEER**

Age: 14+ | Time: 12 hours
---
Requirement: You will need a rain gauge.
Learning Outcome: To learn about recording rainfall as part of a weather network.

This activity will require a few minutes recording rain each time it falls and about 10 minutes each Thursday to report your findings.

- Record rainfall.
- Report weekly rainfall either by email or toll-free phone number.
- Contact the weathernet at [weather@fbcpublishing.com](mailto:weather@fbcpublishing.com) or call them toll-free and 1-866-946-2700 for more information. They will need to know:
  - Your mailing address
  - Your phone number
  - The closest town or place name that you refer to
  - The latitude and longitude of your rain gauge. (They will help you figure this out.)

---

**Activity Talk:**

What was the total rainfall at your location? Did you learn new skills about keeping accurate records?

“Be a Weathernet Volunteer” has been completed.
Member's Initials______ Leader's Initials______
RELATING TO NATURE

Activity:   Page:
Animals Signs   60
Senses Hike   61
What We All Need   62
Aboriginal Story Telling   63
Tag Hunting Fame   65
The Aboriginal people of Canada placed great importance upon animals and even believed that they had supernatural power. They believed that all animals possessed a human form, had souls and were reborn after death. For example; the eagle was called the “Principle Messenger of the Creator” because of its ability to fly very high and see into the soul.

- You will need chalk and chalkboard OR markers and paper, maps, atlases, magazines, encyclopedias, internet (optional), scissors, index cards, tape, pencils, crayons, and animal photos if available.
- Create a list of the many ways that people use animal images as signs and symbols.
- Discuss the qualities that people typically assign to certain animals. Come up with five to ten examples.
- Using available resources (maps, atlases, magazines, field guides, encyclopedias, internet), research examples of how cultures, nations, sports teams, advertisers, and individuals use animals and animal images. For example, someone could conduct a survey of local advertising that uses animals in their pictures or written message. Be original and creative and look for an example that might not be well known.
- Make up five “animal sign” cards. Choose five animal images you discovered as a result of your research. On one side of the card, draw or tape a picture of the animal. The flip side will list the animal’s name, where and how its symbol is being used, and your thoughts about what qualities the animal represents for the person or people who are using it - the qualities that those people seem to value.

Activity Talk:
Why do you think the person or group of people has chosen this particular animal as a symbol? What needs does this animal fulfill?

“Animal Signs” has been completed.
Member’s Initials_______  Leader’s Initials_______
ACTIVITY: SENSES HIKE

Age: 9+   Time: 1 ½ hours
Learning Outcomes: To fine tune the senses, and discover that when we remove one sense, the others become sharper.

- You will need blindfolds, pencil and paper.
- Take a short hike.
- Find a comfortable area to sit down. (watch for ant hills and thistles)
- Put on a blindfold.
- Sit quietly for two or more minutes listening carefully to your surroundings.
- You can also feel the area around where you are sitting. If someone is there to guide you, you can move around a little more.
- Take off your blindfold, and write down everything that you heard or felt.
- Put your blindfold back on and try it again.
- Record what you heard and felt.

Activity Talk:
Did you hear or feel more the first time or the second time?
Did you feel or hear anything that you did not see on the hike?
“Senses Hike” has been completed.
Member's Initials_______ Leader's Initials_______
ACTIVITY: WHAT WE ALL NEED

Age: 11+  Time: ½ hour
Learning Outcome: To understand that all living things need some of the same things to survive.

- You will need a flip chart or chalk board.
- Have the leader or senior member make three columns on the chart.
- Label the columns people, pets, and wildlife.
- Ask the group what people need to live, and write it in the people column.
- Repeat this process of pets and wildlife.
- Group “like ideas” from the three columns. This should narrow the list to major ideas including food, water, shelter, space, etc.
- Find or think of real examples from your local area.
- Look for the basic needs in an urban environment and a rural environment.
- Compare animal needs and human needs. How does each meet those needs?
- Look around the community. Are there people that do not have all of the basic needs met each day? Why?
- Are there wildlife in your community who do not have the basic needs met? Why?

Activity Talk:
Can you think of some ways where people can improve the quality of life for both animals and people?

“What We All Need” has been completed.
Member’s Initials_______ Leader’s Initials_______
Aboriginal stories were passed down from generation to generation orally. It is only in recent times that some of these stories have been written down. Many of the stories tell of experiences and events that involved Native people, wild animals, and the outdoor world around them.

➢ Invite an elder to tell a story that has been passed down through the years.
➢ Ask permission to record or write down the story.
➢ Add pictures, drawings etc. to help bring the story to life.
➢ Share the story with other members, family, children at school, Head Start or daycare.
➢ OR Make up a story of your own.
➢ If you decide to do more than one story you might want to start a book.

The following story as told by Marie L McLaughlin is a good example of an old Aboriginal story:

**The Rabbit and The Bear with the Flint Body**

The rabbit and his grandmother were in dire straits, because the rabbit was out of arrows. The fall hunt would soon be on and his quiver was all but empty. Arrow sticks he could cut in plenty, but he had nothing with which to make arrowheads.

“You must make some flint arrowheads” said his grandmother. “Then you will be able to kill game.”

“Where shall I get the flint?” asked the rabbit.

“From the old bear chief”, said his old grandmother. For at that time all the flint in the world was in the bear’s body.

So the rabbit set out for the Village of the Bears. It was winter time and the lodges of the bears were set under the shelter of a hill where the cold wind would not blow on them and where they had shelter among the trees and bushes. He came at one end of the village to a hut where an old woman lived. He pushed open the door and entered. Everybody who came for flint always stopped there because it was the first lodge on the edge of the village.
therefore not unusual in the old woman's hut, and she welcomed the rabbit. She gave him a seat and at night he lay with his feet to the fire.

The next morning the rabbit went to the lodge of the bear chief. They sat together awhile and smoked. At last the bear chief spoke.

"What do you want, my grandson?"

"I have come for some flint to make arrows," answered the rabbit.

The bear chief grunted, and laid aside his pipe. Leaning back he pulled off his robe and, sure enough, one half of his body was flesh and the other half, hard flint.

"Bring a stone hammer and give it to our guest," he bade his wife. Then as the rabbit took the hammer he said: "Do not strike too hard."

"Grandfather, I shall be careful," said the rabbit. With a stroke he struck off a little flake of flint from the bear's body.

"Ni-sko-ke-cha? So big?" he asked.

"Harder, grandson; strike off bigger pieces," said the bear.

The rabbit struck a little harder.

"Ni-sko-ke-cha? So big", he asked.

The bear grew impatient. "No, no, strike off bigger pieces. I can't be here all day. Tanka kaksa wo! Break off a big piece."

The rabbit struck again - hard! "Ni-sko-cha?" he cried, as the hammer fell. But even as he spoke the bear's body broke in two, the flesh part fell away and only the flint part remained. Like a flash the rabbit darted out of the hut.

There was a great outcry in the village. Open-mouthed, all the bears gave chase. But as he ran the rabbit cried: "Wa-hin-han-yo (snow, snow) Ota-po, Ota-po—lots more, lots more," and a great storm of snow swept down from the sky.

The rabbit, light of foot, bounded over the top of the snow. The bears sunk in and floundered about helpless. Seeing this, the rabbit turned back and killed them one by one with his club. That is why we now have so few bears.

---

Activity Talk:
Originally, aboriginal stories were not written down. Do you think you could memorize one?

"Aboriginal Story Telling" has been completed.

Member's Initials_______ Leader's Initials_______
In Aboriginal cultures, many tag games simulated hunting activities. These games often included wolf, moose or caribou, and hunters.

- Choose a person to be the wolf by drawing sticks. You will need enough sticks for everyone who is playing, and one should be shorter than all the other sticks.
- Cover the bottom portion of the sticks so no one can tell which one is the shortest.
- The person who draws the shortest stick is the wolf. Everyone else is a caribou.
- The wolf has to tag the caribou. When tagged the caribou falls to the ground. The fallen caribou is then reborn and becomes a wolf that joins the wolf pack and hunts down the other caribou.
- The wolves tag caribou until everyone is a wolf.
- Everyone draws sticks again. The short stick is a hunter and everyone else is a wolf.
- As wolves are tagged they fall to the ground and are reborn into hunters, who help to hunt down the rest of the wolves.

Activity Talk:
What was more fun - being the hunted or the hunter?
"Tag Hunting Game" has been completed.
Member's Initials _______ Leader's Initials _______
CREDITS

Thank-you to the following for sharing their resources.

Alberta Junior Forest Warden Association
Enchanted Learning.com
Manitoba Agriculture, Food and Rural Initiatives
Canadian 4-H Council
Marie L. McLaughlin
US Lacrosse Sports Science and Safety Committee