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# TURTLE ISLAND CONSERVATION (TIC)

The Toronto Zoo's Ways of Knowing Partnership Turtle Island Conservation programme shares the hopes and goals of our First Nation partners in the commitment to preserve wild life and wild places for those yet to come. The TIC programme partners with Anishinaabe and Haudenosaunee First Nation communities in Ontario, to incorporate Traditional Knowledge into turtle and wetland conservation programming.

The intention of this partnership is to bring together Traditional Knowledge Keepers, Elders, First Nation community members, and TIC programme team members to support cultural and natural history priorities of the individual community, while building awareness with non-Aboriginals. The programme employs First Nations youth and is guided by a First Nation Advisory group.

All knowledge and teachings remain with the partner community, while awaiting their decisions on how the information is to be used.

## Mission

Turtle Island Conservation partners with First Nation Communities to preserve cultural and natural landscapes.

## Vision

Preservation of First Nation Ways of Knowing will be utilized to preserve Traditional Knowledge to guide communities for generations to come.

## Our Objectives are:

1. To foster respect for self, community, Mother earth and the Creator.
2. To recognize and record significant landscapes valued by First Nations communities.
3. To integrate traditional ways of knowing with western science to monitor, protect, respect and restore landscapes.
4. To integrate language, art, and crafts to sustain traditional ways of knowing and living.
5. To facilitate understanding of the diversity of First Nation culture and way of knowing among non-Aboriginals



For further information and companion resources available from this programme please visit:

[www.turtleislandconservation.com](http://www.turtleislandconservation.com)

[www.torontozoo.com/adoptapond/FrogWatchOntario.asp](http://www.torontozoo.com/adoptapond/FrogWatchOntario.asp)

[www.torontozoo.com/adoptapond/TurtleTally.asp](http://www.torontozoo.com/adoptapond/TurtleTally.asp)

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ways of knowing partnership  
**TURTLE ISLAND**  
conservation

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We respectfully acknowledge with infinite gratitude those who have contributed including all First Nation Elders; First Nation community members; Traditional Knowledge Keepers; First Nation Advisory group members; funding partners; First Nation authors; previous TIC programme coordinators Benny Michaud, Candace Maracle, and Barbara Fillion; Turtle Island summer students Andrea Harquail, Kaitlyn Watson, Skye Vandenburg, Marilyn Desani, Jocelyn Pelltier and Randy Pitawanakwat; Toronto Zoo staff; and the many children and youth who continue to inspire us for generations to come.

All my relations,  
*Misheeken n'dodem, Shkode Neegan Wawaskone,*  
*Shawanaga n'doonji Anishinaabe Kwe n'dow.*  
Turtle Clan, Kim Wheatley, Head of the Fire Flower,  
Shawanaga First Nation, Anishinaabe

# CURRICULUM-BASED ACTIVITIES

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# AS THE JOURNEY BEGINS

The Toronto Zoo's Turtle Island Conservation programme partners with Ontario's First Nation communities to bring together Keepers of Traditional Knowledge, Elders, and First Nation community members to establish conservation needs. With these partnerships, the value and awareness of Traditional Knowledge with Aboriginal and non-Aboriginal people is recognized and promoted.

At the request of our First Nation partners, this TIC Curriculum-based Activities document is a companion to the *Walking with Miskwaadesi* and *Walking with A'no:wara* books, developed as culturally appropriate, Aboriginal-focused education resources. These documents incorporate both western science and Traditional Knowledge of the Anishinaabe and Haudenosaunee peoples. This document was designed to complement the book, *The Ways of Knowing Guide Earth's Teachings*, and become a part of the education bundle from TIC. This guide is a detailed, cross-cultural tool for teachers and community members to aid in understanding some of the traditional practices and teachings of both Anishinaabe and Haudenosaunee peoples. Using these resources together provides an opportunity to engage First Nations and non-Native people to celebrate the relationships between people, land, and water.

Grounding oneself in the worldview, traditions, beliefs, and stories of the Anishinaabe and Haudenosaunee Nations gives participants the opportunity to engage with sustainable solutions for generations to come.

This includes the importance of species preservation and biodiversity. *The Ways of Knowing Guide Earth's Teachings* illustrates the importance of this worldview:

The First Nation worldview recognizes all that exists on Mother Earth reinforcing the significance of what has and will continue to sustain them. By continuing to practice the value of respect, relationship and responsibility Traditional Knowledge meaningfully contributes to the continued existence of all plants, animals, lands and waters for generations to come. (11-12)

Miskwaadesi, the Painted turtle, is the only Ontario turtle species which is not currently on the Species at Risk list. This turtle is utilized as one of the last turtles whose voice is still strong enough to communicate the difficulties faced by turtles in Ontario. Turtles play a critical role in the maintenance of healthy water and watersheds. They are also an important member of the wetland ecosystem. As turtle populations decrease, changes in wetland health are apparent, ultimately affecting larger bodies of water such as the Great Lakes.

The turtle is spiritually significant in First Nation cultures as a knowledge holder and teacher. Both Anishinaabe and Haudenosaunee Nations recognize the turtle as a crucial member of the Creation Story. The turtle is recognized as a continuous time keeper, using the scutes of its shell to record the thirteen moons of the year and the twenty-eight day lunar cycle.

This resource was created for students in grades four to six. However, teachers of other grades may wish to adapt exercises for their own grade and culturally appropriate activities. This resource is written from a First Nations perspective and is culturally infused with Traditional Knowledge and Teachings. This information is important in the educational development of First Nations youth, and is of equal importance for cultural awareness and sensitivity of all youth. This resource also promotes dialogue between Elders and youth, which is important in the transfer of Traditional Knowledge.

Each activity, within the thirteen chapters, begins with 'Teacher Background,' outlining important information about the activities and additional resources such as supplementary web links. The 'Materials' section outlines the tools needed to complete the activity, while the 'Steps' section gives a step-by-step breakdown of the activity. Worksheets needed for applicable activities are found at the end of the document in the 'Activity Worksheets' section.



## Suggested Toronto Zoo resource links to bookmark:

### Turtle Island Conservation

<http://www.torontozoo.com/adoptapond/tici.asp>

### Ways of Knowing Guide

[http://www.torontozoo.com/pdfs/Stewardship\\_Guide.pdf](http://www.torontozoo.com/pdfs/Stewardship_Guide.pdf)

### Native Language Frog call CD

<http://www.torontozoo.com/conservation/tic.asp?pg=cds>

### Adopt-A-Pond Turtle Curriculum

<http://www.torontozoo.com/adoptapond/turtleCurriculum.asp>

### Adopt-A-Pond

<http://www.torontozoo.com/adoptapond>

### Ontario Turtle Tally

<http://www.torontozoo.com/adoptapond/TurtleTally.asp>

### FrogWatch Ontario

<http://www.torontozoo.com/adoptapond/FrogwatchOntario.asp>

### English Turtle Identifier Guide

<http://www.torontozoo.com/adoptapond/turtles.asp>

### Ojibway Turtle Identifier Guide

<http://www.torontozoo.com/pdfs/tic/ojibway-turtle-new.pdf>

### Mohawk Turtle Identifier Guide

<http://www.torontozoo.com/pdfs/tic/mohawk-turtle.pdf>

### English Turtle Identifier Guide

<http://www.torontozoo.com/adoptapond/turtles.asp>

### English Frog Identifier Guide

<http://www.torontozoo.com/adoptapond/frogs.asp>

### Native language road signs

<http://www.torontozoo.com/conservation/tic.asp?pg=TurtleCrossing>

The thirteen chapters mind the thirteen moons, the thirteen moons on the turtle's back (scutes or sections of shell), and may be undertaken in whole or in part after reading the appropriate chapter of *Walking with Miskwaadesi* or *Walking with A'no:wara*.

This activity document outlines and promotes collaborative engagement with the interconnections which surround people on earth. It is important for young people to understand the connections within their culture and with the world around them.

In addition to the supplied resources in the Curriculum-based Activities document, the books *Walking with Miskwaadesi* or *Walking with A'no:wara* are available to help reinforce experiences from the activities. TIC also has many other resources available to address First Nation-focused education about Species at Risk including Species Identifier Cards, Frog calls CDs, and turtle crossing signs in both the Anishinaabe and Haudenosaunee languages.

# SACRED SPACES AND SPECIAL PLACES

## TEACHER BACKGROUND



Before 'Walking with Miskwaadesi' or 'Walking with A'nó:wara,' one must take time to appreciate Ontario's First Nation communities for the rich culture embedded within them. First Nation communities across Ontario have unique knowledge and histories, as well as interconnected relationships which form the basis for many historical practices. The activities outlined in this book ask students, teachers, and community members to explore these relationships and encourage a learning process fostered through dialogue between Elders and youth. Many teachings and practices regarding sacred spaces and places within communities involve animal life, plant growth, or changing seasons. This multi-layered dynamic reflects a web of information which is interconnected and wholistic.

There are special spaces and places located in all communities and it is crucial to learn where they are and the stories related to them. This knowledge is held by Traditional Knowledge Keepers. While knowledge may be known by some, information is slowly being lost as Elders pass on into the spirit world. Traditional Teachings and place names regarding topics such as medicine picking, hunting territories, and food harvesting preserve cultures which have existed for thousands of years.

Cultural preservation begins with the education of youth, while fostering dialogue between Elders and youth. With the creation of a secure online mapping

system, communities have the opportunity to record and archive the spaces and places which are important to the individual community. This allows information to become accessible to students and the entire community. A community cultural map identifies special places to increase awareness of local environment, spirit of place, to guide community planning, and help preserve Species at Risk. This map is a wholistic teaching tool and will continue on as a living document.

The online community cultural mapping initiative will provide a means of preserving and geo-referencing Traditional oral Knowledge in a form which is user-friendly while remaining private to the communities gathering this information. Geo-referencing is a way to visually connect Traditional Knowledge with the land and unite that knowledge with western science. This will be a means to record oral history, both cultural and natural. Collecting oral histories helps satisfy the struggle to find a balance of Indigenous identity in a modern Euro-Canadian world. Using an online Google Application Programmable Interface (API), pictures, video, and audio can also be geo-referenced. This adds another rich layer to the map, similar to the natural way of teaching or passing on Traditional Knowledge. All of the information collected is geo-referenced and then transferred to the Global Information System (GIS), while maintaining privacy for the community who holds the information.



## ACTIVITY

### SACRED SPACES AND SPECIAL PLACES: MAPPING OUR COMMUNITIES

Process: The first step in this journey is to acquire a map of the community which can be obtained from a variety of sources such as the internet. This will be the region that students explore culturally. Distribute one map to each student.

Places and activities to record include the locations of their own homes; the locations of traditional medicines and sacred rocks/spaces; where to receive or give teachings; where to have ceremonies; places to portage or observe animals; the location of camps, villages, and scenic areas; the band administration office; and important locations of traditional culture such as the location of the Pow Wow grounds and burial grounds. Other places to map include community buildings;

areas of economic development; hunting and fishing grounds; recreational areas; locations where Species at Risk are found; and transportation areas including the location of the ferry boat, marina, docks, roads, parking lots, and walking trails. Of course, other areas may be mapped as well.

Students should contact Elders in their local community which may include parents, grandparents, Aunties, Uncles, trappers, hunters, fishermen or friends. The student should ask an Elder if he or she will share known Traditional Knowledge of the area.

Once a meeting time has been established, students should bring a map of the community to share. The Elder

Here are some questions students may choose to ask, in addition to other questions they can create:

1. Do you remember any stories about the community from your youth?
2. Has the community changed since you were young? If so, in what ways?
3. Were there sacred spaces in the community? Are they still sacred today?
4. When did the events occur? (ie. month, season, year)

or community member may be able to locate on the map where and when stories come from.

Students should try to incorporate their Native language into the map they help create. If the Elder interviewed is a language speaker, or knows traditional and modern names, this information should also be included in the map.

When students bring their maps back to the classroom, the teacher should organize the information into 'topic

layers' which will make up the class map. Students should discuss the information collected.

Because individual areas are special to some people and not others, the map will never be complete. However, the map can become a living document where continuous information will be added.

The information from the class map can be started as a community resource that is then transferred to a band or library computer. The information should also be transferred to the Turtle Island Conservation online mapping system at [www.torontozoo.ca/tici](http://www.torontozoo.ca/tici).

### A) WHAT IS IN MY CLASSROOM?

#### Materials:

- Paper and writing tools
- Colour pencil crayons/crayons
- Ruler

#### Steps:

Introduce mapping as a concept to the class by drawing an outline of the classroom on the board or on a piece of chart paper.

With student assistance, map the classroom from a 'bug's eye view.' Draw in the locations of student desks, the teacher's desk, bookshelves, windows, doors, the 4 directions, carpets, etc.

Remind students about the importance of a legend. A legend is a set of symbols used on a map as a visual reminder of a special place or feature.

Create a legend for the class map and hang it in a visible area.

### B) MAPPING MY ROOM

#### Materials:

- Paper and writing tools
- Colour pencil crayons/crayons
- Ruler

#### Steps:

Provide each student with a letter size sheet of blank paper to map their bedroom from a 'bug's eye view.'

Have students show the location of their bed, closet, window, door, dresser, etc.

Students should create a legend on their map. Students will share their map with a friend.

# CURRICULUM ACTIVITY CHAPTER ONE

# MORNING PRAYER AND

# THANKSGIVING ADDRESS

## TEACHER BACKGROUND

It is important to show gratitude and give thanks for the gifts which have been given by the Creator. Humankind is the youngest member to join Creation and they depend upon all other parts of Creation for existence. Humans have the ability to choose their path in life because Given the gift of free will, , however, with this choice comes the responsibility to be grateful for what has been given and what is yet to come.

For example, humankind must be especially grateful to the turtle as it has been given special responsibilities by the Creator to share Turtle Teachings. The turtle carries the earth on its back — the origins of Turtle Island discuss the great kindness and love expressed by the turtle in agreeing to carry the soil, plants, animals, and humans on its back, as shared in the Creation Story.

The Morning Prayer and Thanksgiving Address included in this document outline many things which humans have to be thankful for. Although each Prayer or Address mentions various aspects of Creation, Morning Prayers and Thanksgiving Addresses can be different and include many things which one is grateful for.

### Additional Resources:

Anishinaabe Elder Lillian Pitawanakwat describes the medicine wheel teachings and discusses giving thanks to the Creator. To see this discussion please visit <http://www.fourdirectionsteachings.com/transcripts/ojibwe.html>



## ACTIVITY

### 1.1 MORNING PRAYER/THE WORDS THAT COME BEFORE ALL ELSE

This activity is meant to be a part of daily classroom routine, such as at the beginning of each school day. It also reinforces language use in the classroom.

#### Materials:

- *Walking with Miskwaadesi or Walking with A`nó:wara book*
- *Copy of the Anishinaabe Morning Prayer and the Haudenosaunee Thanksgiving Address (located in the Activity Worksheets section of document)*
- *Paper and writing tools*
- *Art supplies*

#### Steps:

Read chapter one of *Walking with Miskwaadesi* or *Walking with A`nó:wara* to the class.

Post the Anishinaabe Morning Prayer, or the Thanksgiving Address, and/or give copies to the students.

Read the Prayer or Address together every morning, allowing students to become familiar with the content and the language.

Discuss with students why it is important to show gratitude and thanks for the gifts that humankind is given. Remind students that humankind could not exist without the gifts of the Creator.

Ask students to visually illustrate their interpretation of the Prayer/Address with coloured pencil crayons or other art supplies. These images can be displayed around the posted copy of the Prayer/Address.



### 1.2 GRATITUDE AND GIVING THANKS

This activity is meant to reinforce the traditional understanding of giving thanks. Students should be reminded of their responsibility to give thanks.

#### Materials:

- Paper and writing tools

#### Steps:

Ask students to complete a 'Think, Pair, Share' in which they discuss with a partner what they are grateful for. These ideas should be transferred to a mind map with the topic "I AM GRATEFUL FOR..." with related words and images surround it.

After a brief discussion, have students individually reflect upon a specific part of his or her life and submit a one paragraph explanation. These explanations may include a special person which the student is grateful for such as grandparents, parents, siblings, friends, pets, etc. The response should begin with answers to the following the questions:

1. *What does the word gratitude mean to you?*
2. *Why do you think that it is important to showgratitude?*



# CURRICULUM ACTIVITY CHAPTER TWO

# TURTLE TEACHINGS

## TEACHER BACKGROUND

First Nation Creation Stories recognize the origins of human beings. This story is one of the first stories told. It is important to include the Creation Story in First Nations education because every nation has an origin story, and it is important for students to understand where they come from. In addition to understanding Creation, this story will help students understand the significance of the turtle to First Nation cultures.

The turtle is of special importance because of its role in Creation. The turtle gave humankind life by offering its shell, hence the reference to North America as Turtle Island. The cultural concept of human life on Turtle Island is also a metaphor for life on planet earth and of land in space, a fragile place where all life as we know it exists. Many Nations and cultures have a special relationship with the turtle and it is very important in First Nation Traditional Teachings. Anishinaabe and Haudenosaunee people look at the turtle's back as a calendar, with its pattern of thirteen large scutes, or sections of the shell, representing the thirteen moons of each year. The twenty-eight smaller scutes around the edge of the shell represent the twenty-eight days in each moon cycle. This teaching demonstrates that all things are connected.

First Nation communities traditionally lived according to the lunar calendar. With each passing moon, a new time of year and different seasonal activity was recognized. The traditional name for each moon described the activity or seasonal changes which took place during that moon cycle. For example, Tatgogmene Giizis in Anishinaabe describes blackberry moon, the time of year for harvesting blackberries in a particular area.

It is important for students to understand this Turtle Teaching as it is a key cultural understanding of the relationship between the turtle and lunar calendar. This allows students to explore their Native language, and it allows them to understand more deeply their own cultural traditions.

### Additional Resources:

**Adopt-A-Pond Turtle Curriculum website – Unit 4: Ethics and Culture, Section 2: Legends of the Fall**  
Activity 14: How Did You Get That Fabulous Hiding Spot?  
A re-telling of the Creation Story by Michael J. Caduto and Joseph Bruchac.  
[http://www.torontozoo.com/adoptapond/turtle\\_curriculum/unit4.pdf](http://www.torontozoo.com/adoptapond/turtle_curriculum/unit4.pdf)

**Haudenosaunee Creation Story by Tom Porter**  
<http://www.fourdirectionsteachings.com/transcripts/mohawk.html>



## ACTIVITY

### 2.1 CREATION STORIES

There is a teacher guide provided with the worksheet in the Activity Worksheets section.

Using the direct instruction learning strategy, story mapping, this activity reinforces an understanding of the Creation Story, the importance of turtles in First Nations culture, and the structure of stories in general.

### Materials:

- *Walking with Miskwaadesi or Walking with A'no:wara* storybook
- *Copy of the Creation story (in book)*
- *Copy of 'Shape Go! Map' for each student (located in the Activity Worksheets section of document)*
- *Writing tools*

### Steps:

Read chapter two of *Walking with Miskwaadesi or Walking with A'no:wara* to the class. This chapter includes a version of the Creation Story.

Distribute a blank 'Shape Go! Map' to each student.

Ask students, individually or as a class, to complete the 'Shape Go! Map.' Use the questions provided on the graphic organizer to help guide their understanding of the story.

The 'Shape Go! Maps' can be collected for assessment, or it may be helpful to have some students share their maps to expand the students' interpretations of the story.

### 2.2 A YEAR OF THE TURTLE-THIRTEEN MOONS

Using the arts-based strategy, sketching to learn, this activity reinforces cultural knowledge of the lunar calendar, the significance of the turtle in First Nation teachings, and the integration of Traditional Knowledge in everyday life.

### Materials:

- *Internet Access*
- *Computer with Projector*
- *Native Language Teacher/Community Language Speaker (if available)*
- *Native Language Calendars (located in the Activity Worksheets section of document)*
- *'Thirteen Moons on a Turtle's Back' Option 1 and 2 (located in the Activity Worksheets section of document)*
- *Art supplies*

### Steps:

Play the short video of Jan Longboat, an Elder from Six Nations, and her teaching of the lunar calendar [http://www.dodemkanonhsa.ca/videos/turtle\\_teaching.htm](http://www.dodemkanonhsa.ca/videos/turtle_teaching.htm)

Ask the Native Language teacher in the school, or a community language speaker, to help the class learn the community names for each moon. If there is no language teacher, have students learn the English names and consider why the moons have those particular names. Have students fill in the 'Thirteen Moons on a Turtle's Back' worksheet with the names in English and in the language if possible.

As a class, compare the community calendar with the calendar of another First Nations community from the chart provided which includes Haudenosaunee (from Six Nations) and Anishinaabe (from Wasauksing) moon names and descriptions. Have students use this to compare moon names. Ask the students:

1. *Are the names similar?*
2. *Why might some of the moons be called a different name?*

Have students individually illustrate their understanding of each moon name and cultural significance on a scute (section) of the turtle's shell on the other 'Thirteen Moons on a Turtle's Back' worksheet to make their own personal calendar.

# CURRICULUM ACTIVITY CHAPTER THREE

# ONTARIO'S TURTLE FAMILIES

# AND SPECIES AT RISK

## TEACHER BACKGROUND

There are eight turtle species in Ontario including the Blanding's, Midland and western painted, Northern map, Snapping, Spiny softshell, Spotted, Stinkpot, and Wood turtle. Of these eight species, seven are considered Species at Risk. In addition to the eight native species, there is the non-native Red-eared slider, an invasive species, which is present in Ontario. The following terms are associated with Species at Risk:

**Special Concern** - a wildlife species may become endangered or threatened because of a combination of factors, identified threats, and biological concerns.

**Endangered** - a wildlife species that is facing imminent extirpation or extinction.

**Species at Risk** - an extirpated, threatened, endangered species, or a species of special concern.

**Threatened** - a species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

**Extirpated** - a species that no longer exists in the wild in Ontario but may exist elsewhere in the wild.

**Extinct** - a wildlife species which no longer exists.

Seven of Ontario's eight turtle species can be found on the Species at Risk list (COSEWIC—Committee on the Status of Endangered Wildlife in Canada; OMNR—Ontario Ministry of Natural Resources)



Ontario turtles are at risk for many reasons. Over the last few centuries, more than seventy-five per cent of turtle wetland habitats have been drained for various reasons. Historically, early European settlers and First Nations people did not share the same understanding of wetlands. Europeans did not realize that wetlands purified water in the watersheds and served as a home for important wildlife. Today, human development continues and turtle habitats are depleted or polluted, making it difficult for survival. Turtles have the responsibility of keeping wetlands healthy and clean. They do this by making sure that any insects or small animals that die are eaten and the water is not contaminated. Although turtles are important, long-lived wetland inhabitants, they require protection from human interference.

### Red-eared Slider: The Space Invader

The Red-eared slider is the turtle commonly found in pet stores, but it is also an 'invasive' turtle species in Ontario. Many times, a turtle is purchased as a pet and is later released into a pond or wetland where it does not belong. This

'invader' competes for space, food, shelter, and water. Red-eared sliders are from the south-eastern United States and should never be released to the wild. They are not native to this part of Turtle Island and negatively affect other types of turtles.

### Turtle diet:

The eight different turtle species have varying diets but most turtles are omnivores. Many turtles eat algae, plant material, insects, and other water creatures. Snapping turtles may eat larger prey such as small fish, frogs, and ducklings. Wood turtles, as a terrestrial turtle, eat worms, berries and other land-based food. Although turtles may eat different types of food, they are important members of the wetland ecosystem.

### Conservation Note:

Often, Snapping turtles are unfairly persecuted. While they do eat water fowl and fish, most of these creatures are eaten by other predators such as large fish like bass or pike, owls, and mink! Snapping turtles are frequently caught with the ill or dead prey they are slowly consuming. Snapping turtles are also persecuted out of fear. These turtles 'snap' when on land because they cannot protect themselves by tucking their heads and legs into their shell. When frightened, they snap, just as other frightened animals do, like chipmunks. However, they swim away from danger when in the water and do not bite toes or fingers. We do not need to fear snapping turtles when in the water. It is important for students to learn about Species at Risk to ensure they understand issues related to habitats and communities; conservation efforts; cultural importance; and the importance of biodiversity, particularly in a wetland environment.

### Additional Resources:

Canadian Amphibian and Reptile Conservation Network  
[www.carcnet.ca/english/index.php](http://www.carcnet.ca/english/index.php)

Turtle SHELL: Safety Habitat Education Long Life  
[www.turtleshellorturtle.org/educational\\_material/index.html](http://www.turtleshellorturtle.org/educational_material/index.html)

Kawartha Turtle Trauma Centre  
[www.kawarthaturtle.org](http://www.kawarthaturtle.org)

Article about our endangered turtles in Southern Ontario (also located in Activity Worksheets section)  
[www.onnaturemagazine.com/field-trip-turtles.html](http://www.onnaturemagazine.com/field-trip-turtles.html)

Environment Canada's Species at Risk Public Registry website  
[www.sararegistry.gc.ca/default\\_e.cfm](http://www.sararegistry.gc.ca/default_e.cfm)

Hinterland Who's Who - Species at Risk in Canada  
<http://www.hww.ca/hww2.asp?cid=4&id=232>



## ACTIVITY

### 3.1 WHO ARE THE SPECIES AT RISK?

This activity is meant to reinforce an understanding of threats to species, particularly turtles, in a wetland habitat. Literacy and writing are incorporated into this science activity through the use of the activity-based learning strategy, retelling.

Grade four students completing this activity should emphasize habitats and communities, while grade six students should emphasize biodiversity.

### Materials:

- Who Are the Species at Risk? sheets (located in the Activity Worksheets section of document)
- Paper and writing tools

### Steps:

Use the turtle species handouts to introduce Ontario turtles, including the Red-eared slider, an invasive species. These can be printed for each student, or put onto an overhead for projection. Students may copy point form notes about the different species of turtles for future use.

Discuss the Species at Risk information included on the handouts and note that seven out of eight turtle species in Ontario are considered at risk. Ask students to think about why many turtle species are in this position. See Teacher Background for more information about Species at Risk. Split the class into eight groups and give the students time to develop a rap song, poem, short story, advertisement, or news report to describe a particular species of turtle (Blanding's, Map, Midland and Western painted, Snapping, Eastern spiny soft shell, Spotted, Stinkpot, and Wood turtle). The information included should answer the following questions:

1. Where does this turtle live in Ontario?
2. What is included in its diet? Who feeds on this turtle?
3. Why is this turtle a Species at Risk?
4. What can we do to help save this turtle species?

Students may present this to the class or hand in a hard copy for assessment.

### 3.2 FIELD TRIP: TURTLES

This activity is meant to reinforce the understanding of human impacts on turtle species and biodiversity in wetland habitats.

#### Materials:

- *Field Trip: Turtles article and questions (located in the Activity Worksheets section of document)*

#### Steps:

Provide students with a copy of Field Trip: Turtles, or project a copy of the article and questions. Have students read the report and respond to the questions to complete the chart.

### 3.3 OH, TURTLE WHERE ARE YOU?

This activity reinforces an understanding of turtle needs for survival. Using both activity-based and arts-based learning strategies, artistic expression and a card game are used to illustrate turtle needs. This activity will also tap into various learning styles including kinesthetic, interpersonal, and visual/spatial.

#### Materials:

- *Set of 'Turtle Cards' for each group (located in the Activity Worksheets section of document; should laminate)*
- *Paper and art supplies*
- *Poster paper or sheet of Bristol board for each group to decorate to resemble a wetland (include a pond with basking sites such as logs, stones, and/or shoreline).*

#### Steps:

Divide the class into small groups (four students). Briefly discuss the needs of a turtle for survival, including sources of food, shelter, water, and space. Write a list on the board for students to refer to.

Provide each group with paper and art supplies to create a game board. Students must design a wetland with a pond in the middle and basking sites for turtles around the edge. Encourage each group to design and draw food, plant life, etc. for their wetland habitat.

Provide game cards for each group of students, preferably laminated.

Remove the food, habitat, and turtle helper cards from the deck.

#### Game Rules for Turtle version of 'Go Fish':

1. Each player has an area of the wetland on the game board with basking places including logs, stones, rocks, or shoreline. This area will be used to display turtle species triplets.
2. The dealer shuffles the cards and deals seven cards to each player. The remaining cards are placed face down in the middle of the wetland.
3. Each player clusters identical cards together in his/her hand.
4. Player one, sitting to the left of the dealer, asks any player for a particular turtle species card to match a card in his/her hand. If the player has the card, it must be given to player one. If the player does not have any of the requested cards, he/she says "O Turtle" and player one must draw a card from the deck in the middle of the wetland.
5. When a player gets three cards of the same species, the cards form a basking site. The cards are laid down face up in front of the player when he/she can identify the turtle species (Blanding's, Map, Midland and Western painted, Snapping, Spiny Softshell, Spotted, Stinkpot, and Wood turtle).
6. Any other player who has the fourth card of the species can lay it down in front of his/her part of the wetland at the next turn.
7. The game ends when one player runs out of cards, or when the pond is empty, and all the turtles are basking on logs and rocks.



# CURRICULUM ACTIVITY CHAPTER FOUR NEIGHBOURS AND FRIENDS

## TEACHER BACKGROUND

The activities included in this chapter incorporate traditional Anishinaabe and Haudenosaunee understandings with western science, crossing many academic subjects including visual art, drama, science, and language.

First Nations people recognize the importance of interconnections. Turtle Island Conservation's *The Ways of Knowing Guide Earth's Teachings* illustrates this:

A common teaching in the spiritual path is the understanding of interconnectedness: that all things are dependent on each other. Even though each individual and all things have their own special gifts and place in the world, all [are interdependent]. One's very existence depends on the web of interconnectedness between the self and the community and between the community and nature. (53-54)

Spiritual experiences can take place through dreams, which are valued by First Nations people. The creation of a dream catcher holds important cultural significance in relation to this belief. Regardless of the dream's content, all dreams are considered important. Dream catchers allow good dreams to pass through, while capturing bad dreams. One teaching shares that bad dreams are caught in the web, move down to the feathers, and burn off as dew in the early morning sun.

The activities included in this chapter are important for students as they incorporate the understanding of interconnectedness, in both science and in First Nations culture. Other important aspects of educational development are included in these activities including art, drama, and cooperative play.

#### Additional Resources:

**Adopt-A-Pond Turtle Curriculum**  
Unit 3 Section 2: Ecological Connections  
Activity 12- A Link in the Chain  
[http://www.torontozoo.com/AdoptAPond/turtle\\_curriculum/unit3.pdf](http://www.torontozoo.com/AdoptAPond/turtle_curriculum/unit3.pdf)

**Ducks Unlimited: Wetland and Environmental Education**  
Free Lesson Plans for Teachers  
[http://www.ducks.ca/resource/teachers/lesson\\_plans/index.html](http://www.ducks.ca/resource/teachers/lesson_plans/index.html)

**Hinterland Who's Who – Where They Live: Wetlands**  
Description of wetlands and of many animals and plants that can be found there  
<http://www.hww.ca/hww2.asp?pid=0&id=233&cid=2>

## ACTIVITY

### 4.1 WELCOME TO MY NEIGHBOURHOOD

Using an inquiry-based learning strategy through game play, students will use their oral communication and pragmatic skills, while developing an understanding of food chains and food webs in a wetland. This game is similar to 'Guess Who?'

#### Materials:

- *Double-sided 'Wetland Neighbours and Friends Cards' (located in Activity Worksheets section of document; should laminate)*





### Steps:

Tape a 'Wetland Neighbours and Friends Card' to each student's back without saying which animal or plant it is. Students should mingle near an imaginary pond or wetland in the classroom, trying to identify his/her identity based upon questions asked to and answered by other students.

As students guess their identities, they will proceed to the imaginary wetland or pond area and try to collect at least three other students who they depend upon, or who depend upon them for survival in the wetland, creating food webs and chains.

Each web or chain must be able to explain their membership to the class at the completion of the activity. The teacher can record the webs and chains which are made.

Collect 'Wetland Neighbours and Friends Cards' from students.

## 4.2 WE'RE ALL IN THIS TOGETHER

Using the activity-based learning strategy, simulation, and the inquiry-based learning strategy, problem solving, this activity utilizes students' oral communication skills while developing an understanding of food chains and webs in a wetland.

### Materials:

- Ball of string/yarn
- 'Wetland Neighbours and Friends Cards' (located in Activity Worksheets section of document; should laminate)

### Steps:

Have the students sit together in a circle. Deal a 'Wetland Neighbours and Friends Card' to each student. Students place the cards in front and face up so that they are visible to everyone.

Each student introduces him/herself according to the creature or element on the card. Students should also include who the feature in the card relies on and who

relies on it. When all students are introduced, the teacher takes a ball of string and passes it to a student. The student calls out the feature's name and calls out the name of another wetland inhabitant, briefly describing the relationship.

The ball of string is passed to the inhabitant identified. This person looks around the circle and identifies another feature which it is related to in the wetland community and the ball of string is passed to the new member. Eventually all students should be connected with the ball of string, illustrating the interconnections within a wetland. The teacher has the opportunity to discuss how interdependent everything and everyone is. The following "what would happen if..." questions can be used:

1. *What would happen if the minnows were all caught in minnow traps? (The student with the minnow card would be asked to gently tug on their string. Students who receive a tug could put up their hand to identify who is being affected.)*
2. *What would happen if the wetland is drained to create a new housing development?*
3. *What would happen if the plants purple loosestrife or phragmites filled the marsh and the cattails and bulrushes disappeared?*

Remind students to be careful when gathering the string. Collect all of the 'Wetland Neighbours and Friends Cards' from the students.

## 4.3 WETLAND WEB OF LIFE

This activity incorporates a culturally relevant teaching tool, artistic expression, and an understanding of wetland food chains and development into a food web.

### Materials:

- Paper plates (one for each student)
- Yarn/string
- Craft beads, feathers
- Markers/paint
- Scissors
- Hole punch

### Steps:

Have students decide as a class the bead colours to represent different wetland creatures (ie. yellow for the sun, green for the algae, brown for the fish, etc.).

Students cut out the centre of a paper plate, leaving a large rim with enough room to hole punch around the edge. Students hole punch around the edge of the plate, about five centimetres apart. Also, students need a two metre length of string/yarn to weave through the holes. Students should tie one end of the string through one of the holes to secure it.

Students then weave the string through the paper plate, creating their own pattern. Within the pattern, students should create food chains, using the coloured beads, to ultimately create a food web.

When students are finished threading through all of the holes, they must tie a knot at the end of the yarn with the last hole.

The students punch three more holes at the bottom of the plate to add three short pieces of string/yarn. The students can choose a food chain to add to the three yarn pieces, represented by beads, and then tie one feather to the end each of the hanging yarn pieces. Students can use markers or paint to decorate the edges of the paper plate.

Have students punch one more hole at the top of the paper plate dream catcher and tie a piece of string through it so it can hang.

## 4.4 A LIVING DIORAMA

This activity crosses multiple subjects including language, visual art, drama, and science with many opportunities for evaluation. Students completing this activity will demonstrate their knowledge about interactions in a wetland.

### Materials:

- Art supplies (poster paper, paint, markers)
- Paper and writing tools
- One Morning in Our Wetland story (located in Activity Worksheets section of document)

### Steps:

Read *One Morning in Our Wetland* aloud to the students, or give pairs copies to read to each other. Split students up into small groups. Give students the role of a creature or element from the 'Wetland Neighbours and Friends Cards' including the dragonfly nymph, leopard frog, black toad, tadpole, redwing blackbird, moose, blue jay, beaver, old turtle, black bear, barred owl, wolf, and red squirrel.

Have students work together to write a script for a drama presentation with a set number of lines or time amount. This should include the feeding habits of the animals, predator-prey relationships, what the animal looks like, how it sounds and moves, etc.

Once the script is written, students construct a background mural of a wetland showing trees, water, rocks, floating logs, and water plants. This will serve as the backdrop for the dramatic presentation. This can also be done as a class, with all groups using the same backdrop.

Ensure students have enough time to practice their roles and become comfortable performing. Have the students perform in front of the class or a larger audience to teach about different wetland relationships.



# CURRICULUM ACTIVITY CHAPTER FIVE

## HEALTHY HABITATS

### TEACHER BACKGROUND

The activities included in this chapter address the concept of habitat needs required by wetland species, particularly the turtle. This activity document outlines the importance of food, shelter, water, and space as the four main components of habitat. Traditional Knowledge of the lunar calendar and an understanding of an animal's habitat needs are also addressed.

Grade four classrooms will emphasize wetland habitats, the communities that depend on them, and the impact of habitat change and degradation on interconnectedness. Grade six classrooms will emphasize the importance of biodiversity in wetland habitats.

#### Additional Resources:

Adopt-A-Pond Turtle Curriculum website Unit 2: Turtle Biology, Section 4: What's For Dinner ?

**Activity 6:**  
Today's Picnic Special Are...

**Activity 7:**  
Turtle Appetites

[http://www.torontozoo.com/adoptapond/turtle\\_curriculum/unit2b.pdf](http://www.torontozoo.com/adoptapond/turtle_curriculum/unit2b.pdf)

## ACTIVITY

### 5.1 MISKWAADESI/ A'NÓ:WARA FINDS HABITAT

Using a direct instruction approach, this activity reinforces an understanding of turtle needs in a habitat and the need for biodiversity in a wetland.

#### Food, Shelter, Water, and Space Chart

#### Materials:

- *Walking with Miskwaadesi* or *Walking with A'nó:wara* storybook

#### Steps:

Read chapter five of *Walking with Miskwaadesi* or *Walking with A'nó:wara* to the students. Discuss with the class the needs of living things including food, shelter, water, and space.

Draw up a chart with columns titled food, shelter, water, and space. Using the following questions to stimulate discussion, fill in the columns with student responses.

1. What kinds of food might a turtle need?
2. Where might a turtle find shelter?
3. What kind of water does a turtle need?
4. What kind of living space does a turtle require?

Discuss with the class some of the issues that turtles face in relation to each of their habitat needs. Record these under the appropriate column as well.

#### Steps:

Take students outside to a field or to the gym. Divide the class in half and have students stand on opposite sides of the play area.

Place five objects (ie. beanbags) on the ground in a line on opposite sides of the play area. These represent the habitat needs of a turtle including food, shelter, space, and water, with one disguised bag representing pollution. The pollution bag must be discretely denoted as such (ie. sticky note on bottom, or chalk "x" etc.).

The objective of the game is to obtain the four desirable beanbags, representing the different aspects of healthy habitat, from the other side before the opposing team collects the beanbags from their opposing team.

Once a student picks up a beanbag from the other side, he/she must take it back to the team's safe zone without being tagged by the opposing team. If a student is tagged, they must give back the beanbag and go back to the other side and try again. If, or when, the pollution

bag is brought over to the team's safe zone, that player must join the other team. When a beanbag is successfully brought over to the safe zone, it cannot be removed by the other team.

The process of collecting beanbags from the other side continues until all of the healthy beanbags are collected.

### 5.2 HABITAT FOR A TURTLE

This activity reinforces Traditional Knowledge of the lunar calendar and an understanding of an animal's habitat needs through the use of an arts-based learning strategy, sketching to learn.

#### Materials:

- Paper and writing tools

# CURRICULUM ACTIVITY CHAPTER SIX

## TURTLE STORIES

### TEACHER BACKGROUND

Many teachings and stories are sacred to First Nation peoples. These stories have been handed down orally for hundreds of years to help children and youth learn teachings and traditions. Many First Nations stories share these characteristics:

- They often include four events because the number four is very important to First Nations people;
- The stories reflect life and/or nature and relationships with it;
- These teachings are based upon facts and truths, beginning in the past to explain an event;
- They are used to teach a lesson about how one should behave, involving changes of our inner spirit;
- Stories often involve a trickster-type of character who is part human, part spirit, and can turn him/herself into other shapes or forms. The trickster often makes mistakes as part of the lesson which is taught.

#### Talking Stick:

In traditional times, a storyteller would often have a talking stick or some other mnemonic device to help remember

#### Steps:

Have students draw the outline of a turtle's shell on a blank sheet of paper. Keep in mind the twenty-eight small scutes, thirteen large scutes, and their cultural significance.

Students fill in the thirteen scutes with a different aspect of habitat in each scute, as well as things turtles should avoid. These should relate to food, water, space, and shelter.

Students also answer these two questions under the shell:

1. What did you learn about turtle habitat needs?
2. What do you think is the most important component of habitat for Miskwaadesi or A'nó:wara and her turtle family members? Why?



a story. Talking sticks also are used in circles where only one person may speak at a time, while everyone else listens carefully. The speaker holds the talking stick and passes it along when he/she is finished.

Turtle Island Conservation's *The Ways of Knowing Guide Earth's Teachings* outlines the importance of storytelling:

Cultural stories not only direct personality, social order, action and ethics; they also set out the proper context for a person's life. Cultural stories and Traditional Teachings give life structure and meaning. They are the oral reference libraries that account for stories, legends, prophecies, ceremonies, songs, dances, language, and the philosophy of the people. (24)

#### Additional Resources:

**Nanabush: How the Turtle Got its Shell.** *Ways of Knowing Guide Earth's Teachings.* Joseph McLellan. Pemmican Publications. 1994 ISBN: 0921827407

**Keepers of the Earth.** Caduto, Michael and Joseph Bruchac. Fulcrum Inc Colorado. 1989 ISBN 1-55591-027-0

# ACTIVITY

## 6.1 TURTLE AND BEAR RACE STORYTELLING FESTIVAL

Using an arts-based learning strategy, this activity incorporates Traditional Teachings with literacy and performance.

### Materials:

- *Walking with Miskwaadesi* or *Walking with A'now:wara* book
- *Miskwaadesi Races with Makwa* story (located in Activity Worksheets section of document) or *Turtle Races with Beaver* (located in Chapter 6 of *Walking with A'now:ara*)
- Art supplies (paint, markers, modeling clay, variety of pieces of fabric, socks to make sock puppets, etc.)
- *Storytelling Festival Planning Guide* (located in Activity Worksheets section of document)

### Steps:

Gather a collection of teachings, legends, and stories for students to potentially read.

Read chapter six of *Walking with Miskwaadesi* or *Walking with A'now:wara* to the class.

After reading *Walking with Miskwaadesi*, read *Miskwaadesi Races with Makwa* to the class. The turtle story for Haudenosaunee students is found in chapter six of *Walking with A'now:ara*.

Ask students if they know any stories and teachings about animals from the wetlands and the water. Share what students already know. The names of stories can be written down so students can ask their parents, grandparents, or even Elders about these stories.

Have students work in pairs or small groups to choose a teaching to present to their class or to a primary class. Each student must present a portion of the story. Students will be given time to work on this in class.

Also, have students illustrate their story through the use of a story board, with puppets, shadow puppets, pictures, dioramas, plasticine figures, a PowerPoint presentation, or illustration software to help their audiences understand the story.

Students should create a talking stick to help remember important parts of the story. Provide students with a stick or small piece of wood to decorate. Students add symbols to help remember characters and elements of the story. Students can draw, paint, and decorate these symbols on the stick.

Once preparation for the festival is complete, students present in a storytelling circle. Remind students to use good voice techniques and pacing.

Have each group present their story or teaching to the audience. If possible, record the student presentations and display, or take pictures of the talking sticks to display for other classes to see.

## 6.2. TURTLE AND BEAR: THE GREAT CHASE/TURTLE AND BEAVER: THE GREAT CHASE (outdoor activity)

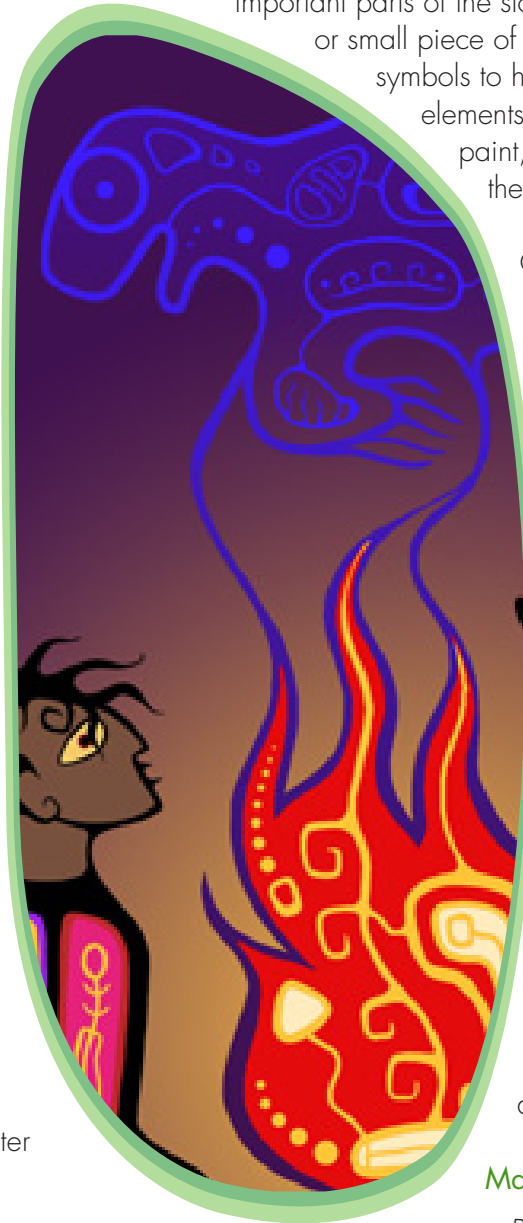
This activity incorporates physical activity while reinforcing a teaching from the story *Miskwaadesi Races with Makwa* and *Turtle Races with Beaver*.

### Materials:

- Play area

### Steps:

Take the class outdoors to play a version of Tag. Students become either bears and turtles or beavers and turtles, depending on the classes reading of *Walking with Miskwaadesi* or *Walking with A'now:ara*. The bears or beavers will chase the turtles. If a bear/beaver catches a turtle, the turtle is frozen and must wait until another turtle comes to touch it and release it.



# CURRICULUM ACTIVITY CHAPTER SEVEN

## TURTLES OF THE WORLD

### TEACHER BACKGROUND

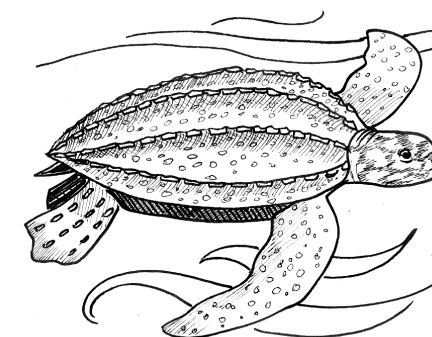
The activities in this chapter demonstrate the worldwide connection to turtles. The chapter outlines an understanding that turtles everywhere face dangers, and issues regarding Ontario turtle species apply to other turtles as well. It is suggested that the lessons focus on the leatherback, a species found off the Atlantic and Pacific Coasts of Turtle Island.

The activities incorporate experiential learning, map use, and artistic expression to educate students about the risks and threats to turtles around the world. It also identifies the importance of turtles to Aboriginal people worldwide.

## THE EIGHT SPECIES OF SEA TURTLES:

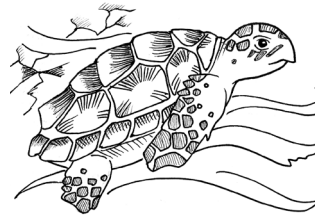
### The Leatherback (*Dermochelys coriacea*)

- Found in oceans off the coasts of Atlantic and Pacific Canada
- The largest sea turtle; grows up to 7 feet long and weighs at least 1200 pounds
- Has thin, tough, rubbery skin instead of a hard shell; 5 distinct ridges are formed by small bones buried in the skin
- Feed off Nova Scotia, but each fall travel to the Caribbean to nest
- Carapace is black with white spots; the plastron is whitish to black
- Can dive the deepest and travel the furthest of any other sea turtle
- Have powerful front flippers to aid in strong swimming
- Rarely seen, except on nesting beaches
- Jellyfish are the main component of their diet
- Exploited for eggs



### The Loggerhead (*Caretta caretta*)

- Has an anti-tropical distribution
- Found in Northern and Southern Indian Ocean, Australia, Japan, and the Southeastern US; also found in the Atlantic Ocean off eastern Canada
- The loggerhead can grow between 32-41 inches and can weigh up to 350 pounds
- Identified by its large head and reddish brown carapace (upper shell) and dull brown or yellow plastron
- Has powerful jaws for eating shellfish living on the bottom of the ocean
- Suffers from accidental capture



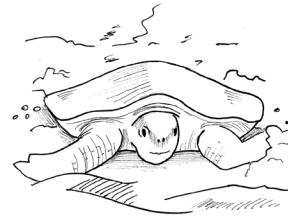
### The Black Turtle (*Chelonia agassazii*)

- Confined to the Eastern Pacific Ocean
- Protected in the Galapagos and nominally in Mexico; subject to illegal harvest elsewhere named for the black or gray color of its shell



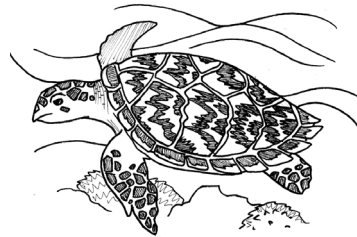
### The Flatback Turtle (*Natator depressus*)

- Confined to the Eastern Pacific Ocean
- Protected in the Galapagos and nominally in Mexico; subject to illegal harvest elsewhere
- Named for the black or gray color of its shell



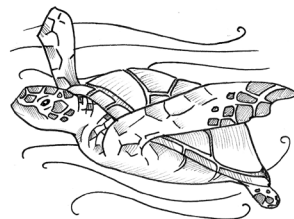
### The Hawksbill (*Eretmochelys imbricata*)

- Common in tropical reefs of the Caribbean islands and Australia
- One of the smaller sea turtle species; grows 30-36 inches and weighs 100-150 pounds
- Narrow head and beak make it look like a hawk; shell is reddish brown with yellow streaks
- Feeds on encrusting animals such as sponges, sea barnacles, and seaweed
- These turtles are subject to intense intentional trade; beautifully patterned shell is a source of tortoise shell used to make jewelry and combs



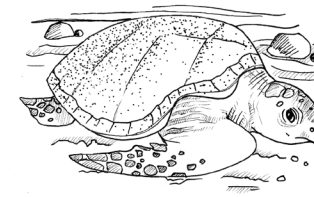
### The Green Turtle (*Chelonia mydas*)

- Circum-global species; nesting and feeding grounds are in the tropics
- Most common of the eight sea turtles
- One of the largest species of sea turtles; shells can be up to 3 feet long and weigh up to 300 pounds
- Named for the green color of the fat under the shell, not for the actual color of the shell, which can range from a greenish shade, to brown, black, or even gray
- Feed on sea grasses and seaweed
- Harvested for meat and eggs in Costa Rica, Caribbean, Indonesia, and Panama; cartilage is used in Asian countries for turtle soup



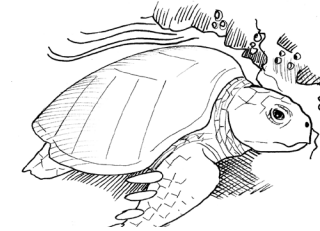
### The Olive Ridley (*Lepidochelys olivacea*)

- Nests mainly in the Pacific Ocean, around Costa Rica, Mexico and Nicaragua, as well as the Northern India Ocean
- One of the smallest, weighing less than 100 pounds
- Olive green in color, giving it its name
- Most abundant species of sea turtle



### The Kemp's Ridley (*Lepidochelys kemp*)

- Only nests on one beach in the world, in Rancho Nuevo, Mexico
- The smallest sea turtle; grows to be 24-28 inches and weighs 77-100 pounds
- Carapace is olive green, and its plastron is yellowish
- The rarest species of sea turtle as well as the most endangered



## TURTLES AROUND THE WORLD:

**1. North America:** North America: In many First Nation Creation Stories, the turtle has the responsibility of carrying the Earth on its back. The great turtle which holds up the earth is a symbol of wisdom and kindness. Turtle rattles are used in ceremonies.

**2. India:** The tortoise is supported by the elephant and the elephant holds up the world.

**3. China:** The turtle represents strength, endurance, slowness, long life, fertility, and it is shown on the imperial banner as an emblem of protection in war.

**4. Japan:** The sea turtle represents Kumpira, the protector of sailors.

**5. Africa:** Tortoise is an emblem of protection and is a masculine symbol of fertility.

**6. Greece:** In ancient times, turtles were emblems of Aphrodite because the turtle was associated with females and water.

**7. Mayans (ancient Mexico):** The turtle was associated with water, land, and thunder.

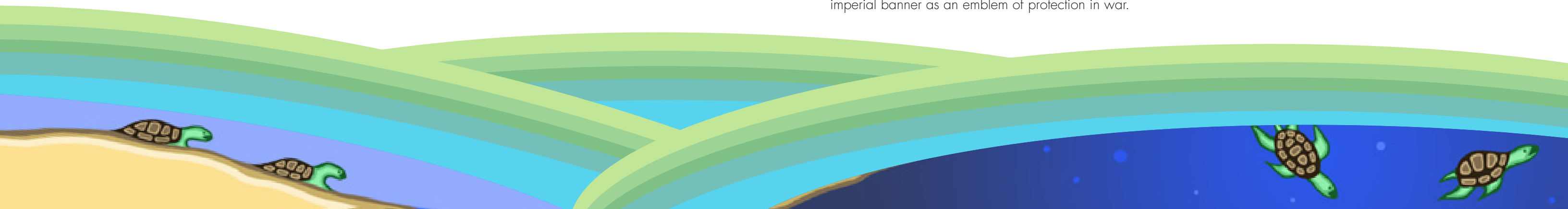
**8. Tonga:** Sea turtles are a special symbol of longevity, good fortune, and fertility.

**9. Samoa:** Sea turtle is a graceful swimmer and also represents freedom.

**10. New Zealand:** The sea turtle is unique because it has flippers instead of feet but it must still leave its 'home' in the ocean to crawl ashore, dragging its great shell without complaining or hurrying to lay its eggs. Perseverance, patience, and virtue are also identified with sea turtles.

**Mating:** During the mating season, all species of marine turtles migrate from feeding areas to mating areas. After mating, the males return to foraging areas while females proceed to nesting beaches. Some turtles migrate more than 2600 kilometres, but most travel less than 1000 kilometres. Female turtles generally do not reproduce every year but males may breed every year. Mating can occur anywhere in the water, but it usually takes place at the surface.

**Nesting:** Most females lay over 100 eggs in several clutches, reducing the risk of potential hatchling loss. This can be done at 2 week intervals. Eggs hatch after



6 to 13 weeks of incubation, depending on the temperature. They generally hatch in the early evening. Hatchlings can tell whether it is evening or daytime based on the temperature of the sand. If eggs hatch during the day, they would have to face excessive heat and predation. Hatchlings wait until evening to break the sand's surface. If they start digging and the sand gets progressively warmer, they will wait until the sand cools.

**Navigation:** After hatching, sea turtles primarily use vision to find the sea, moving toward the brightest light, presumably the moon. They move away from elevated silhouettes, such as sand dunes and vegetation. Turtles also rely on wave cues to swim offshore, moving toward approaching waves. They sense the wave motion under water by monitoring the sequence of accelerations they experience in the water column. Turtles emerge from their nests without an established directional preference. The hatchlings also follow the intensity of the earth's magnetic field, not the poles.

**Conservation:** Sea turtles worldwide are being protected under the endangered species list in addition to federal agencies. Efforts are being made to educate local people about the importance of these marine reptiles, not only for future generations, but also for the health of the environment.

Unfortunately, sea turtles continue to be killed in drift nets; in feeding areas; when nearing the shore to nest; taken as eggs for alcoholic beverages; and are killed as

adults for souvenirs, food, and shell products. Worldwide, help is needed to save these remarkable, ancient, endangered animals. Currently, there are attempts being made to help protect these species and increase their populations. Fishermen help the Leatherback Working Group in Nova Scotia to release leatherbacks caught in nets. Shrimp trawling is another large problem for sea turtles as many are caught in the nets and drown. TEDs (Turtle Exclusion Devices) were developed to reduce the number of sea turtles caught in trawling nets. TED's are trap doors in nets which allow the sea turtles, but not the shrimp, to escape. Shrimp farms are also being established to limit the accidental capture of turtles and other marine animals. Turtle hatcheries help reduce the decline of sea turtle populations by removing the eggs from nests where they may be eaten by predators or removed by poachers. The eggs are taken to a hatchery where they are incubated and later released. In Atlantic Canada, scientists work with the fishermen to conserve leatherback and loggerhead sea turtles.

The Native American people of Hawaii have a special relationship with the sea turtles which make their home on the Hawaiian Islands. Students will find a story about a memorial that was installed to honour Kauila, a sea turtle in 1995 by going to the turtle website at: <http://www.turtles.org/monu.htm>

**Additional Resources:**  
Nova Scotia Leatherbacks  
[www.seaturtle.ca](http://www.seaturtle.ca)

**Hinterland Who's Who: Amphibian & Reptile Fact Sheet**  
Leatherback Seaturtle  
<http://www.hww.ca/hww2.asp?id=33>

**Sea Turtle Conservancy: Information About Sea Turtles, Their Habitats and Threats to Their Survival**  
<http://conserveturtles.org/seaturtleinformation.php>

**Sea Turtle Conservation Bonaire**  
<http://www.bonaireturtles.org>

**Sea World: Sea turtles**  
<http://www.seaworld.org/animal-info/info-books/sea-turtle/index.htm>  
Challenge Seven- Turtles of the World

## ACTIVITY

### 7.1 TURTLES OF THE WORLD

With the use of various learning strategies including guided exploration and map making, this activity incorporates map use and literacy, while demonstrating the importance of turtles to cultures all over the world.

#### Materials:

- *Turtles of the World information sheets (found in Teacher Background)*
- *Map of the world*
- *Atlases*

#### Steps:

Read the information from 'Turtles of the World,' found in the Teacher Background, to introduce students to Turtle Teachings from around the world. Make a chart identifying the characteristics that people identify with turtles globally.

Demonstrate or review how to use an atlas. This includes how to use the index.

Ask students to work in pairs or small groups with an atlas and the teacher

provided map. Students will find the thirteen countries that have a special relationship with turtles and label them on the world map.

Create a legend on the map to identify the various places and nations. Distinct symbols and colours can be used to express locations or themes. This makes the map easier to read, and will assist in understanding the map.

### 7.2 NETTING HEADACHES

This activity incorporates experiential learning related to biodiversity and sustainability through the use of an activity-based learning strategy, simulation.

#### Materials:

- *Small paper cups (2 per each group)*
- *Large spoons*
- *Large bag of coloured candies (Smarties, Skittles, etc.)*
- *Two or three boxes of pop rocks*
- *Netting Headaches Chart (located in Activity Worksheets section of document)*

#### Steps:

Premix the two types of candies (Pop Rocks and larger candies) in a large bowl.

Divide the class into small groups. Give each group a spoon (trawling net), an empty cup (boat), and a tally chart. As a class, review the colours for the captured sea creatures. The coloured candies represent different ocean species that are accidentally caught in traps. The Pop Rocks represent shrimp (Note: these candies are smaller and more difficult to catch and represent what happens as the trawl nets try to trap the small shrimp).

Provide each group with half a cup of the mixed candy. Group members each take a spoonful of candies from their cup and place the candies into the empty boat, recording the number of each colour of candy they catch in the chart.

Each group member 'goes fishing' and compiles the results. Subtract the total number of shrimp caught from the overall total in order to see the amount of by catch that results in shrimp harvesting.

Discuss the findings and the overall costs of trawling and net fishing to the marine environment. Discuss why this is decreasing sea turtle populations, and what can be done to prevent this (type of nets, etc.). Extension: This activity could also be used to demonstrate how to create a pie chart.

### 7.3 SEA TURTLE AWARENESS POSTER

This activity incorporates artistic expression with knowledge related to biodiversity and conservation.

#### Materials:

- *Paper and writing tools*
- *Art supplies (markers, crayons, etc.)*

#### Steps:

Have students individually create an awareness poster for Canada's leatherback sea turtles. The poster should include an explanation of why there are problems for sea turtles, what would happen if sea turtles no longer existed, and how each student can make a difference. The poster should also include artistic elements.





# CURRICULUM ACTIVITY CHAPTER EIGHT

# IMPORTANCE OF WATER

## TEACHER BACKGROUND

Many traditional First Nation activities related to water are still practiced today. Communities depend upon water to heal illness, maintain health, and nourish plants used as medicines. Women carry the responsibility of being water keepers. Water was given as a gift in Creation and should be shown gratitude for its continuing effort to carry on its responsibilities.

Many First Nation communities are located on waterways. Traditionally, waterways were the main mode of transportation. Mostly travelling by birch bark canoe, the First Nations people of Ontario explored the Great Lakes watershed. Trade routes were established early between different nations, and later, between the First Nation communities and European settlers.

Today, the water is becoming tired, discouraged, and unable to complete its responsibilities. In 2003, Josephine Mandamin, an Anishinaabe Kwe grandmother from Wikwemikong, had a dream about water. She dreamt that if she walked around Lake Superior carrying a bucket of water while praying to the water Spirit to let it know that she cared, the water would respond and begin healing. Josephine and her water walker friends began a journey which took them around each of the Great Lakes, one year at a time. This walk took place from the St. Lawrence River to the Atlantic Ocean. As Josephine completed her water journey, she challenged all women on Turtle Island to carry a bucket of water in their own communities and walk with it

around their watershed. She urged people to pray for the water and challenged them to thank the water for its gifts.

### National Film Board of Canada:

In this short documentary from conservationist Bill Mason, he illustrates that although the Great Lakes have had their ups and downs, nothing has been harder to take than what humans have done to them lately. In the film, a lone canoeist lives through the changes of geological history, through Ice Age and flood, only to find himself in the end, trapped in a sea of scum.

The activities in this chapter extend Josephine's invitation to the students to make a difference in their community.

### Additional Resources:

**Mother Earth Water Walkers**  
<http://motherearthwaterwalk.com>

**5 minute interview and video of Josephine from Indian Country News regarding her reasons for walking for the water**  
<http://www.youtube.com/watch?v=Gn5eEWWEc30>

**10 minute video of interview with Josephine regarding her walk**  
<http://www.youtube.com/watch?v=wPega7E8lhg&feature=related>

**Paddle to the Sea**  
Available to teachers through an agreement with the National Film Board (as of April 2010). The movie is about 30 minutes long and is downloadable from the NFB website or viewable at this website.  
[http://www.nfb.ca/film/paddle\\_to\\_the\\_sea#](http://www.nfb.ca/film/paddle_to_the_sea#)

## ACTIVITY

### 8.1 THE RISE AND FALL OF THE GREAT LAKES

Using media in the classroom, this activity uses a graphic organizer to analyze a global issue. There is a Teacher Copy of the graphic organizer with prompts for answers in the Activity Worksheets section.

### Materials:

- Computer with internet access and projector (or order film on DVD/VHS)

- *Rise and Fall of the Great Lakes Through History Venn diagram (located in Activity Worksheets section of document)*

### Steps:

Distribute the Venn diagram worksheet to each student to be filled out while watching the short film.

Show the film, *The Rise and Fall of the Great Lakes*. This is available on the National Film Board website:  
[http://www.nfb.ca/playlists/bill-mason-beyond-wild-beyond-paddle/viewing/rise\\_and\\_fall\\_of\\_the\\_great\\_lakes](http://www.nfb.ca/playlists/bill-mason-beyond-wild-beyond-paddle/viewing/rise_and_fall_of_the_great_lakes)

Give students time to finish their worksheets.

Draw a large Venn diagram on the board to fill in with student answers. Discuss as a class the similarities and differences between the Great Lakes, or other lakes, in the past and present using the film and their own experiences.

**Extension:** It would be especially beneficial to have a Knowledge Keeper come in to speak about the local water ways.

### 8.2 WATER WALK

This activity includes Native language use, as well as artistic expression.

### A) Planning

#### Materials:

- Paper and art supplies
- Map of community wetland (teacher must print one off of Google maps as each community differs)

### Steps:

Help students decide where and when the Water Walk will take place. Considerations include the time of year, construction, other field trips, etc.

Have students individually, or in pairs, make a poster for the Water Walk which advertises and invites community members to participate. Encourage community members to meet at the school on the day of the walk. The poster should answer the 'who, what, where, when, and why' about the Water Walk. If available, get a map of the community wetland from the Band Office or other source so students can recopy this map for their poster.

The poster should contain some of the fundamental visual art concepts such as shape and form, space, colour,

texture, contrast, emphasis, proportion, balance, unity and harmony, and movement.

Have students post the posters around the school and community.

### B) The Water Song

This activity incorporates Native language with musical expression.

#### Materials:

- Native Language Teacher
- Paper and writing tools

### Steps:

Bring examples of Aboriginal music into the classroom for students to listen to. Students can bring in their own as well.

Have students brainstorm key words that should be included in the song with the help of a language speaker or Native Language teacher.

In pairs, give the students a word from the list to write a line for the song about. When all students are done writing their part, collect the lines to create the song.

Practice the song in class and give copies to the students to take home.

### C) Walking

This activity incorporates physical activity with conservation and positive action.

#### Materials:

- Appropriate attire for walking outdoors
- Signed permission forms
- Map of the community wetland
- Water Walk Reflection Chart (located in the Activity Worksheets section of document)

### Steps:

Distribute and collect permission forms for the Water Walk. Ensure parents are aware of the clothing requirements for the day. Remind students to be respectful of their surroundings, not disturb the wildlife, and to pick up any litter they see on the walk.

On the day of the walk, give students a map of the wetland and the 'Water Walk Reflection Chart.' Take the students outside to meet with community members and Elders joining the walk.

At the water, have students record interesting things on their 'Water Walk Reflection Chart' including sights, sounds, feelings, and smells. Also, have the students record their journey around the wetland, recording important or significant locations.

If Elders join the walk, ask them to share their knowledge of the water and any stories. Have students sing their water song as they walk. Bring some tobacco to place by the water at the beginning of the walk.

After the walk, have the class send a message to Josephine to explain the students' Water Walk. Josephine can be reached at [www.motherearthwaterwalk.com](http://www.motherearthwaterwalk.com)

# CURRICULUM ACTIVITY CHAPTER NINE

## WATER: OUR BUSINESS

### TEACHER BACKGROUND

There are many benefits to conserving water. Conservation limits the amount of water taken from the earth and the amount which is used, polluted, and sent back to Mother Earth. First Nations people recognize the importance of maintaining a healthy relationship with water and use only what is necessary.

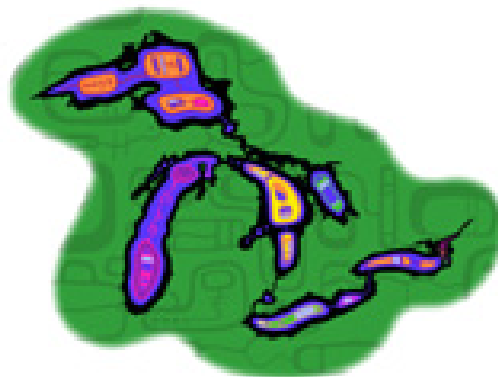
#### Ways students can limit their water use:

- Avoid buying bottled water
- Turn off water when brushing teeth
- Take shorter showers; use less bath water
- Use rain water to water plants or garden
- Be aware of leaky faucets

The Great Lakes Watershed has been home to the Anishinaabe and Haudenosaunee people for hundreds of years. The lakes were not always referred to by their English names and have traditional names as well. It is important to recognize not only the name, but the meaning behind the names which hold significance to the surrounding area.

#### Great Lakes Anishinaabe Names:

- Lake Superior **Otchipewagami**
- Lake Huron **Odawgami**
- Lake Ontario **Mississaguagami**
- Lake Erie **Waabishkiigoo kichgami**
- Lake Michigan **Meeshigun**
- Lake Simcoe **Zhoonyagami**
- Georgian Bay **Waasayagami**



#### Commitment String:

A commitment string is a mnemonic reminder of one's commitment. Similar to a commitment string, wampum belts were made as a means of making an agreement, treaty, or promise. The wampum strings help people to remember the promise. Stringing wampum is very spiritual and special to First Nations people.

#### Additional Resources:

Environment Canada- Publications and Activities  
<http://www.ec.gc.ca/eau-water/default.asp?lang=En&n=65EAA3F5-1>

United Nations: International Decade for Action Water For Life 2005-2015  
<http://www.un.org/waterforlifedecade/quality.shtml>

Natural Resources Canada- Freshwater  
<http://atlas.nrcan.gc.ca/site/english/maps/freshwater>

## ACTIVITY

### 9.1 MY WATERMARK

Using the thinking skills learning strategy, graphing, this activity incorporates mathematics, personal experience, and conservation potential.

#### Materials:

- *Walking with Miskwaadesi or Walking with A'nó:wara story*

- *'My Own Personal Water Audit' sheet for each student (located in Activity Worksheets section of document)*
- *Writing Tools*
- *Five minutes per day for a week to complete survey chart*

#### Steps:

Read chapter nine of *Walking with Miskwaadesi* or *Walking with A'nó:wara* to the class.

Discuss with the class the importance of maintaining clean water. Ask students the following questions:

1. What can we do to keep the waterways clean?
2. What difficulties would we face if we did not have enough clean water?

Over one week, have students complete 'My Own Personal Water Audit.' Individual students keep track of personal water use for one week and tally up the totals at the end of the week.

Combine all of the student tally results to demonstrate the process of creating a bar graph. Emphasize the quantity of water used by the class as a whole. Have students create individual bar graphs to represent water use.

#### Discussion questions:

1. What items use the most water in your house?
2. What can we do to decrease the amount of water we are using for some of the categories?
3. Where could you reduce the amount of water you use without compromising your health?
4. Which day of the week was the most water used? Why?
5. Which day of the week was the least amount of water used? Why?

### 9.2 TURTLE ISLAND WATERSHEDS

This activity incorporates social studies, including map use, with literacy and writing.

#### Materials:

- *Map of Canada*
- *'My Great Lakes Watershed' (located in Activity Worksheets section of document) for each student*
- *Atlases*
- *Paper and writing tools*

#### Steps:

Discuss the meaning of 'watershed' with the class. A watershed is the area of land where surface water from rain, melting snow, or ice converges to a single point.

Provide students with the 'My Great Lakes Watershed' map to label each Great Lake and the students' local community. The traditional names of the Great Lakes should be included as well. Ask students to label and identify other places of interest that they are familiar with on their own map and create a legend.

After creating the map, have students write a story about a drop of water in the Great Lakes Watershed. Remind students that it takes about 350 years for a drop of water to flow from the top of Lake Superior to the Atlantic Ocean. Also remind them that when the water drop first entered Lake Superior, Turtle Island was a very different place.

### 9.3 WATER IN THE WORLD

Using the activity-based learning strategy, simulation, this activity includes the use of maps, scientific experiment, and experiential learning to understand water availability around the world.

#### Materials:

- *'Amount of Freshwater Resources in the World' handout (located in Activity Worksheets section of document)*
- *Map of the World*
- *3 Litres of water or juice to share with students*
- *Measuring cup/granulated cylinder*
- *Cup for each student*

#### Steps:

Use a world map to review the location of the seven continental areas and possible climatic conditions using deductive reasoning.



Share the information from the first table. Discuss with students the differing amounts of water available around the world and ask students if they think there will be enough for everyone on each continent to share equitably.

Divide the classroom into six areas, not continents, including Turtle Island (North and Central America), South America, Europe, Asia, Africa, Australia and the South Pacific. Label each area.

To divide students into six population groups, multiply the number of students in the class by the percentage of the population in the world from the right side of the first table.

From the second table, provide each continental area with the appropriate liquid amounts, measured out using a measuring cup or granulated cylinder. Students at each continent must equally share the amount of liquid that is provided to them by filling up each individual's cup.

Ask each group of students if the proportion of freshwater available seemed sufficient for daily life. Have each group reflect on the unequal distribution of water in the world and answer the following questions:

1. What kinds of changes would people have to make in their lives if they had to live with less water?
2. How might their lives be different?
3. How would they treat fresh water if there was not very much to share?

#### 9.4 COMMITMENT STRING

This activity incorporates Traditional Knowledge, artistic expression, and conservation potential.

#### Materials:

- Coloured beads (including blue and green)
- String or yarn
- Cut of leather (felt, cloth, cardboard etc. could be used as well)

#### Steps:

Prior to the activity, cut out leather shapes (two sets of a circle and one set of water droplets for the class). One set of circles needs an X through the middle, with permanent marker, separating the circle into four quadrants.

Explain to the class the importance of a commitment string (information provided in Teacher Background). Also, explain the importance of the circle leather shape with an X through the middle. This circle reminds humankind about the importance of living a balanced life—physical, spiritual, mental, and emotional.

As a class, discuss the ecological and cultural importance of water preservation. Make a list of a few actions that can be taken to help preserve water and improve the health of the environment. Students individually make a list of ten to fifteen actions that they can take to improve these areas.

From the list, students assign various colours and colour combinations to represent their positive actions.

Distribute thirty centimetres of yarn or string, enough beads to thread a commitment string, and the various leather shapes to each student.

Students begin the commitment string by tying a knot at the end of their string, leaving about three centimetres

hanging down so that it will fray—representing each student's ancestors.

Have students thread the round disk of leather to represent the earth and then choose beads to represent their personal commitment to improve the earth's health.

Students add the piece of leather cut into a water drop shape. Above the water drop, students add beads to represent their personal commitment to improve the water's health.

Next, students add the piece of leather cut into a circle with an X drawn across it. Students choose a special bead that will represent them individually. Students tie a knot into the top of the string to hold everything together.

When students are finished, they each share their commitment string with the class. The strings can be gathered together and tied to hang in the classroom and then to be displayed at the Celebration (Chapter Thirteen).



## CURRICULUM ACTIVITY CHAPTER TEN

# FROG FRIENDS

### TEACHER BACKGROUND



While many animals are difficult to see in wetlands, frogs can be heard and identified by their calls. One of the first birds to return to the wetland in the spring is the Red-winged Blackbird. The male Blackbirds arrive when there is still ice on the water. Some say it is the Blackbirds' calling that wakes up the Spring Peepers and encourages them to start climbing out of their mud beds to join the new season. Another teaching says that the tiny little Spring Peeper was given the great responsibility to wake up his frog and toad relations with his beautiful voice. Just as the maple tree is the leader of the trees, and indicates when the seasons are changing, it is the humble Spring Peeper who welcomes the spring and wakes up the water world. Some people say that the song of the Spring Peeper guides the early insect-eating birds, like the Snipe, Woodcock, and Nighthawks, back to the meadows and edges of the waterways.

Another First Nations teaching says that when the Spring Peepers start to call, it is time to take the spiles out of the maple trees because sap season is coming to an end. Scientists agree with this teaching. When the temperature warms up enough, the sap in the maple trees gets cloudy and the sweetness fades from the sap.

#### Amphibians:

The word "amphibian" is derived from the Greek words "amphi" and "bios" which mean two lives, referring to the aquatic tadpole and the terrestrial adult stages of all salamanders, newts, frogs, and toads. Amphibians all lay eggs and are characterized by their smooth, moist skin. Amphibians do not drink because they absorb water and much of the oxygen they need through their skin. Some species are active at night and avoid the drying effects of the sun, while others shelter in moist habitats under logs, rocks, leaves, mosses, and ferns. Amphibians shed their skin about once a week. Amphibians are highly advanced animals that are superbly adaptable to their environments. Information about amphibians can be found at <http://www.torontozoo.com/AdoptAPond/AmphibianResources.asp>

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Teachers can obtain an English Frog Calls CD from the Toronto Zoo’s Adopt-A-Pond programme by sending an email request to <aap@torontozoo.com>, or an Ojibway or Mohawk language Frog Calls CD from the Turtle Island Conservation programme by sending an email request to <turtleisland@torontozoo.ca>

Frogs, toads and salamanders are three types of amphibians that share habitats with turtles. Because amphibians live both on land and in water, they are unique to the water world. They must have clean fresh water to thrive and survive, much like turtles.

Scientists have expressed concern for the worldwide decline in amphibian populations and this decline



seems to be parallel to the decline in turtles. Since both groups of wetland wildlife depend on the water, it is thought that water issues have caused the decline in both species.

### Wetland Report Card Information:

Oxygenated water is important for wetland species. The different levels of oxygen in water signify the potential health of the water.

### Dissolved Oxygen (DO):

There are several ways in which oxygen becomes dissolved into water. This includes diffusion from the atmosphere, aeration of water through movement, and the by-product of photosynthesis. Lower DO levels in water may signify that molecules of warm water move more quickly. This results in oxygen molecules being pushed out of the spaces between moving water molecules. Another signifier of low DO levels includes high levels of bacteria or decaying algae as the excess amount of biological oxygen demand uses up DO. A last reason for decreased DO includes fertilizer runoff from farm fields and lawns.

### Additional Resources:

#### Frog Watch website by Adopt-A-Pond

<http://www.torontozoo.com/adoptapond/FrogwatchOntario.asp>

## ACTIVITY

### 10.1 A VISIT TO THE POND

Activities A and B require visits to a wetland. Teachers can choose to do both activities in one wetland visit, or designate two visits to spend more time at the wetland and complete both activities.

#### A) Frog Watch

##### Materials:

- *Frog Calls CD (from the Toronto Zoo)*
- *‘Frog Calls in My Wetland’ worksheet (located in Activity Worksheets section of document)*
- *Camera (one per teacher; optional)*
- *Writing tools*

##### Steps:

Distribute and collect permission forms for the Frog Walk. Ensure parents are aware of the clothing requirements for the day. Remind students to be respectful of their surroundings, not disturb the wildlife, and to pick up any litter they see on the walk.

Before the walk, listen to the Frog Calls CD to allow students to become familiar with the different frog calls. Assign one or two students to learn one call that they will represent. Before the walk, have them imitate the calls for the class (using the suggested ways to imitate calls). It is not expected for students to memorize all calls, but familiarity will stimulate learning in the wetland.

Split the students up into small groups for the walk and distribute the ‘Frog Calls in My Wetland’ worksheet. When at the water, give students time to use their senses to observe the wetland area. They should look, listen, and smell without speaking loudly. To help hear the sounds in the wetland, students should cup their hands behind their ears (“make animal ears”) and quietly turn their faces to scan the wetland area.

Sit quietly and listen for the frogs to call. If any frogs are seen, record them on the ‘Frog Calls in my Wetland’ sheet and submit the sighting to FrogWatch-Ontario.

Ask students to look around and to think of ways in which the animals and plants in this wetland community depend

upon one another. Remind students to look for evidence of biodiversity.

When students are finished listening to frog calls, ensure each student has made notes on their worksheet. Make sure students leave the wetland with all of their supplies. Back in the classroom, use the students’ sightings to create a class bar graph or pictograph of all the frogs in the wetland. Students should create an individual bar graph of their sightings to be evaluated.

Note: Teachers may play the Frog Calls CD to the class over a month-long period. Have students report the sightings and calls they hear at night, on the way home from school, or over the weekends. Over the course of the month (April/May/ June), record these statistics on a bar graph to show the students the diversity of frog populations and frog populated areas.

#### B) Wetland Report Card

After students have recorded the frogs calls identified, they can take part in the Wetland Report Card activity. If there is limited time, this can become a second activity.

##### Materials:

- *Thermometer*
- *Basin (for each group of students)*
- *Net (for each group of students)*
- *Pond identification book (for each group of students; optional)*
- *Magnifying glass (for each group of students)*
- *‘Wetland Report Card – Identification’ (located in Activity Worksheets section of document)*



### Steps:

Split the students into small groups of three or four students. Distribute the thermometers, basins, nets, identification books, magnifying glasses, and 'Wetland Report Card'.

At the water, have students take the air temperature in their groups. The teacher should take the temperature of the water. Record these on the 'Wetland Report Card' sheet. Have each group of students set up their basin in a safe and secure area near the water. Students fill the basin halfway with water from the wetland. Each student should take a turn dipping their net into the water. Students should try to scoop along the bottom where many of the insects live. Students carefully empty the contents of the net into the basin and should use the 'Wetland Report Card-

Identification' to identify the insects that are collected. Students should circle the insects found in each category to interpret the health of the water.

From the samples, students can determine the water's health, based on the amount of dissolved oxygen. Wetlands are split into categories A, B, and C. An A on the 'Wetland Report Card' reveals that the water has high levels of oxygen, B reveals a good supply of oxygen, and C reveals low levels of oxygen. A lack of oxygen may reveal that the water is stagnant, or that there is some kind of pollutant in the water which uses up the available oxygen.

Ensure that students do not keep the insects out of the water environment for long. Some insects can crawl out of the basin. Return all water and living critters to the water when everyone in the group has had an opportunity to view the life in the water.

Students should understand the importance of scooping carefully with their nets to minimize damage to the life in the water. They are asked to show respect to the small macroinvertebrates that they see in the basins and buckets.

When students are done examining the water quality ensure all materials are packed up. Back in the classroom, students share the health of the water they interpreted with the class. Answer the following questions:

1. Did all areas of the wetland have the same grade on the 'Wetland Report Card'?
2. What factors in the wetland could change the results of the report card?
3. Why is it important that there be enough oxygen in the water?



# CURRICULUM ACTIVITY CHAPTER ELEVEN

## TURTLE TALLY

### TEACHER BACKGROUND

Most turtles are found in and around water, taking part in different types of behaviour. This includes swimming, basking, and eating. Turtles typically bask on logs, rocks, and other surfaces exposed to the sun around the wetland. The Wood turtle is the only terrestrial turtle in Ontario.

Most Ontario turtles nest in late May and early June. Female turtles lay their eggs in nests in well drained soils which consequently absorb water through incubation. However, eggs within drier soils typically lose water. Moist, well-drained, loose material makes digging easier, promotes air circulation, provides moisture, and is less likely to harden. Turtles may choose sites with different material depending on climatic conditions of the year.

The availability of water during incubation influences incubation time, hatchling size, locomotion speed, and body composition. Incubation temperature also affects hatchling size, growth rate, and other characteristics. The sex of many turtles is determined by incubation temperature. Eggs incubated at higher temperatures produce females, while eggs incubated at lower temperatures produce males.

Typically, nests are found in predominantly open, exposed sites with minimal vegetative cover. These exposed sites have increased nest

success compared to those with more cover. However, nearby grasses and ground cover increase the probability of hatchling survival.

#### How to complete Turtle Tally:

Turtle Tally submissions are made at the Adopt-A-Pond website: <http://www.torontozoo.com/adoptapond/TurtleTally.asp?t=form>

To complete a Turtle Tally, the following information is required:

- Observation date and time
- Species observed and number of turtles observed
- Observation/location description (an accurate account of the sighting including place name or Postal Code)
- Latitude and Longitude
- Habitat type (lake, pond, river, fen, bog, marsh, shoreline, forest, etc.)
- Turtle behaviour (basking, swimming, walking, nesting, crossing road, dead on road, etc.)
- Personal information (name, address, phone, email)

## ACTIVITY

### 11.1 TURTLE TALLY

Using the activity-based learning strategy, surveying, and the thinking skills strategy, graphing, this activity incorporates physical



activity, mathematics, science, and conservation awareness.

#### Materials:

- Laminated Turtle Identifiers from the Toronto Zoo
- Turtle Tally sheet (located in Activity Worksheets section of document)Flagging Tape
- Binoculars (optional)

#### Steps:

Distribute and collect permission forms for the Turtle Walk. Ensure parents are aware of the clothing requirements for the day. Remind students to be respectful of their surroundings, not disturb the wildlife, and to pick up any litter they see on the walk.

Before the walk, review the different turtle species from the Turtle Identifier

guides and the Adopt-A-Pond website. Predict what turtles you will find and think about where good nesting sites might be.

Pair students for the walk and distribute Turtle Tally sheets and Identifier guides.

Ensure students move quietly in the wetland. Have students make note of any turtle sighting, along with possible turtle nesting sites and turtle crossing areas.

If possible, use flagging tape or sticks to mark nest sites. Have students fill out their Turtle Tally sheets appropriately.

Back in the classroom, tally all of the students' results and draw a bar graph as a class. Have students individually graph their tallies for evaluation.

Note: Students may provide weekly observation of turtles from their first basking in April/May to egg laying in late May and early June. This is a good end of year activity to wrap up the Turtle Tally.

## CURRICULUM ACTIVITY CHAPTER TWELVE WHAT ELSE CAN WE DO? TEACHER BACKGROUND



The activities included in this chapter allow students to use information acquired throughout the activities to write and report on turtles and Species at Risk. Media literacy is also included in these activities which can be used in the public realm, such as a local newspaper. This gives the opportunity for other community members to learn about turtles, their importance both ecologically and culturally, and the important work young people are completing in the community.

### ACTIVITY

#### 12.1- WRITING FOR TURTLES

This activity incorporates writing with knowledge that has been acquired about turtles. In addition, this activity will work well for students with interpersonal, verbal/linguistic, and visual/spatial learning styles.

##### Materials:

- Paper and Writing tools
- *Thirteen Moons illustrations completed in Activity 3.1*

##### Steps:

Review the writing process, beginning with developing ideas through to producing finished works.

Share a variety of picture books and review the Thirteen Moons on a Turtle's Back teaching.

Have students brainstorm within small groups to create a picture book storyline for younger students. The illustrations for the storybook will include the Thirteen Moons illustrations created in Activity 3.1; ensure students are creating a storyline that is applicable to those images. Students can

determine which images they will use for each moon, and will display a combination of all artists' work. Completed books will be shared during Chapter Thirteen – CELEBRATION.

#### 12.2- WRITE A REPORT

Addressing the technology/media-based applications for learning strategies, students will engage with media production to demonstrate learning acquired about turtle species and conservation efforts.

##### Materials:

- Paper and writing tools
- Example of a newspaper article
- 'Inverted Pyramid Format' sheet (located in Activity Worksheets section of document)

##### Steps:

Hold up a sample front page from a selected newspaper. Ask students what they notice about the format that is different from other texts they read (ie. black and white ink, graphics, headline, column format).

Have students brainstorm as a class what goes into a community newspaper article (who, what, when, where, why). Please see the 'Inverted Pyramid Format' sheet.

Each student individually prepares an article for Turtle Tally News based on their own experience with the challenges and information they have collected. This process begins with brainstorming and developing ideas, ending with producing a finished work.

Have students illustrate an image, or find an image online that is relevant to the information in their article.



# CURRICULUM ACTIVITY CHAPTER THIRTEEN CELEBRATION

## TEACHER BACKGROUND

Elders are a very important component of this chapter. Their presence at the feast reinforces the importance of Traditional Knowledge and fosters Elder and youth dialogue. This type of dialogue is essential for the transfer and sharing of Traditional Knowledge for the future.

This is another opportunity for students to show their understanding of gratitude and the importance of giving thanks. Students should understand the importance of recognizing the turtle as a significant traditional leader and an appreciation for the Traditional Knowledge which Elders keep.

### Additional Resources:

**Ganondagan website home page**  
traditional Haudenosaunee recipes  
<http://www.ganondagan.org/recipes.html>

**Ononda – how to make hominy**  
a traditional Seneca recipe  
<http://www.youtube.com/watch?v=KSIVg5tG300>

**How to make corn soup**  
Seneca language instruction (3:45 min)  
[http://www.youtube.com/user/yoenzade#p/a/u/0/CIAdXIP\\_csU](http://www.youtube.com/user/yoenzade#p/a/u/0/CIAdXIP_csU)

**Helen Roy, Ojibway Language teacher**  
makes frybread, speaking in both Ojibway and English (9:42min)  
<http://www.youtube.com/watch?v=NNn0Hjv-jEU>

**Helen Roy, Ojibway language teacher**  
makes corn soup, speaking in both Ojibway and English (9:44 min)  
<http://www.youtube.com/watch?v=J5f8GqWjw6Q>

**Helen Roy, Ojibway**  
<http://www.youtube.com/watch?v=aFG8gwmFT2M>



## ACTIVITY

### 13.1- PREPARATION/PLAN

Through the use of the cooperative learning strategy, community links, this activity incorporates artistic expression, event planning, and organization.

#### Materials:

- Paper and writing tools
- Craft supplies

#### Steps:

As a class, have students discuss the five W's of the feast. The following questions should be answered:

1. Who will be invited? Who will we ask to help us prepare the feast food? Who will be our master of ceremonies?
2. When will the feast happen?
3. Where will the feast happen?
4. What food will we eat? What decorations or displays will be included?

Once plans have been made, pairs of students will display this information on posters. The posters should fill a letter-sized sheet of paper and include both text and images. The posters should be hung around the school and at the Band Office.

Students will also create decorative wall hangings and table centrepieces in preparation for the feast per the instructions of their teacher or an attending Elder.

Students should make invitations for special guests that are invited to the feast.

### 13.2- THE FEAST

#### Materials:

- Decorations created by the class
- Prepared food
- Plates, cups, napkins, utensils, etc.
- Special gifts for attending Elders

#### Steps:

Have students help prepare the area for the feast. Tables should be decorated, decorative posters should be hung on the walls, food and utensils should be laid out, and Elder gifts ready to be given.

The master of ceremonies should have an itinerary of the feast to help move the day along.

Once guests have arrived, an attending Elder should say a prayer for the food and attending guests. Students can also lead their own prayer from what they have learned and practiced in class. Then, the feast can begin. Elders should be served first.

After everyone has eaten, ensure that the space is cleaned appropriately.

At this point, students can present any activities they have completed. This is also an opportunity for the Thirteen Moons Calendar to be unveiled to the students, staff, and other guests. The calendar can be erected in a central space in the school, and used for years to come.

Once all the presentations are completed, students can enjoy mingling with Elders and discuss the successes of their efforts.

### 13.3- SAYING MIIGWETCH

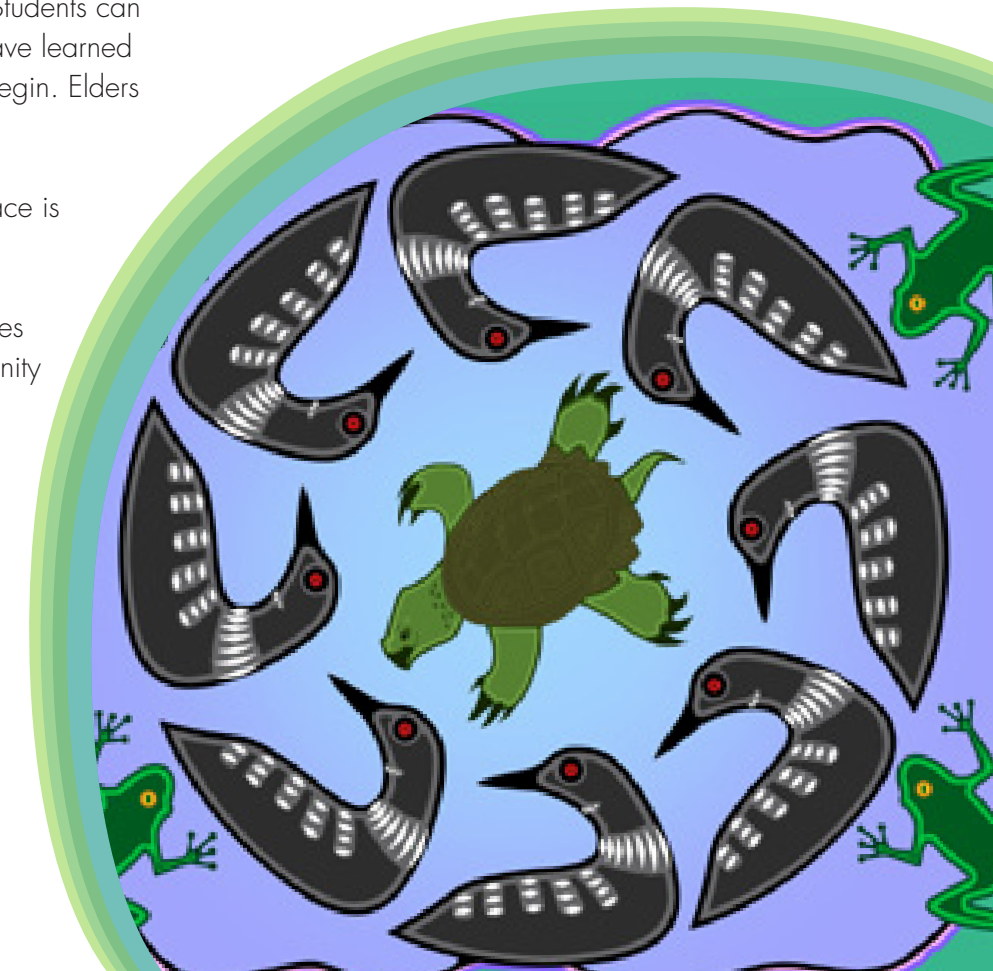
This activity incorporates artistic expression with a real-life application.

#### Materials:

- Paper and writing tools
- Art supplies
- Names and addresses of thank you card recipients
- Envelopes and Stamps

#### Steps:

Students should help make a list of people and organizations to send Thank you cards to. Students can work in pairs to create cards decorated with turtles for people whose attendance they appreciated. Assist students in sending the cards to those organizations and people identified.







# KANIAN'KEHAKA (MOHAWK) THANKSGIVING ADDRESS



## STUDENT WORKSHEET / ACTIVITY 2.1 SHAPE GO! MAP

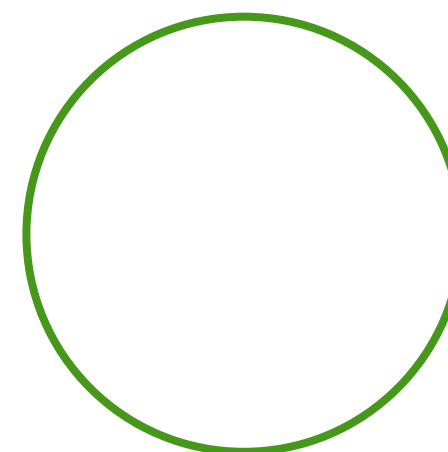
The **triangle** represents the three parts of a story which the reader should learn about at the beginning including the *setting*, the *characters*, and the *problem* or *goals*.

The **rectangle** represents the middle of the story where the main events take place to help the characters solve the problem. Students should identify *four main events*.



The **circle** represents the *end of the story* where the characters *solve the problem*.

The **heart** represents a *personal connection* to the story.



Ohenton kariwatehkwen  
`words before all else`  
Kentsyokwa sewatahonsiyohst ken'nikarihwehsha. Onen kati  
nonwa ne teyethinohweraton tsi nahoten wahshonkwawi  
attention you all listen for a short while. So then now we will all  
give thanks for what he had given us  
ne Shonkwaya'tison.  
The creator.  
Teyethinohweratons ne onkweshon'a  
we all give thanks to the people  
Teyethinohweratons ne yethinihstenha tsi yohwentsyake  
we all give thanks to our mother the earth  
teyethinohweratons ne kahnekaronnyon  
we all give thanks to the water of the world  
teyethinohweratons ne kentsyonshon'a  
we all give thanks to the fish life  
teyethinohweratons ne ohenteshon'a  
we all give thanks to the grasses  
teyethinohweratons ne ononhkwashon'a  
we all give thanks to the medicine  
teyethinohweratons ne otsinonwashon'a  
we all give thanks to the insect life  
teyethinohweratons ne kahikshon'a  
we all give thanks to the fruits

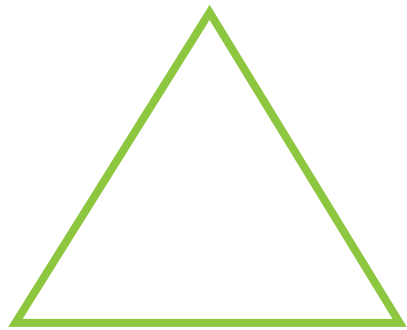
teyethinohweratons ne tyonnhehkwen  
we all give thanks to our sustenance (foods)  
teyethinohweratons ne kontiriyo  
we all give thanks to the animals  
teyethinohweratons ne karontashon'a tahnnon okwireshon'a  
we all give thanks to the trees and bushes  
teyethinohweraton ne otsi'ten'okon'a  
we all give thanks to the birds  
teyethinohweratons ne kayeri nikawerake  
we all give thanks to the four winds  
teyethinohweratons ne yethisothokon ratiwerahs  
we all give thanks to our grandfather thunders  
tethsitewanonhweratons ne etsitewatsi'a tyohkenekha karahkwa  
we all give him thanks, our eldest brother the day sun  
teyethinohweratons ne yethiso'tha ahsontennekha karahkwa  
we all give thanks to our grandmother the night sun  
teyethinohweratons ne yotsistokwaronnyon tsi tkaronhyake  
we all give thanks to the stars in the sky  
tethsitewanonhweratons ne shonkwaya'tison  
we all give him thanks our creator  
tho kati nenyotonhake ne onkwa'nikonra  
that is the way it will be in our minds  
thok nikawennake  
that is all the words

NAME: \_\_\_\_\_ STORY: \_\_\_\_\_

From *The Power of Retelling: Developmental Steps for Building Comprehension* by Vicki Benson and Carrice Cummins

STUDENT WORKSHEET / ACTIVITY 2.1  
SHAPE GO! MAP

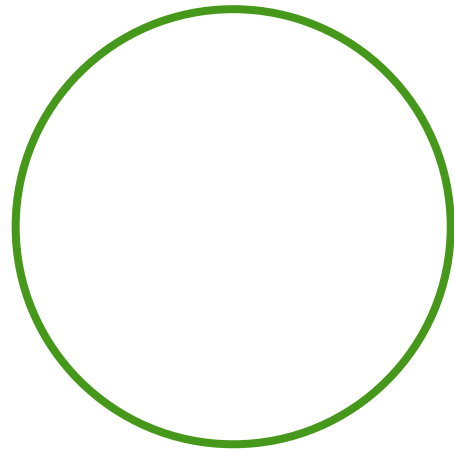
Setting, characters, problem



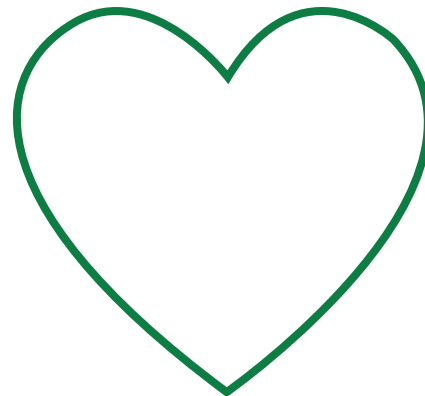
Four main events



End of the story



My Personal Connection



NAME: \_\_\_\_\_ STORY: \_\_\_\_\_

From *The Power of Retelling: Developmental Steps for Building Comprehension* by Vicki Benson and Carrice Cummins

STUDENT WORKSHEET / ACTIVITY 2.1  
SHAPE GO! MAP

Setting (what, when, where):

Beginning of Turtle Island, during Creation...

Characters (who):

Sky woman, turtle, muskrat, beaver...

Problem (why, how):

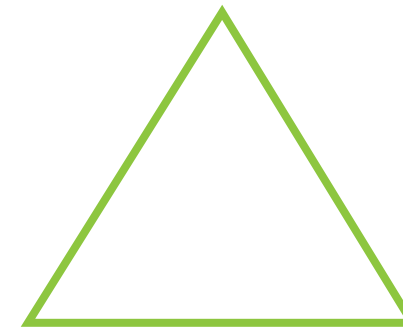
Sky woman needs somewhere to live...

Event One:

Event Two:

Event Three:

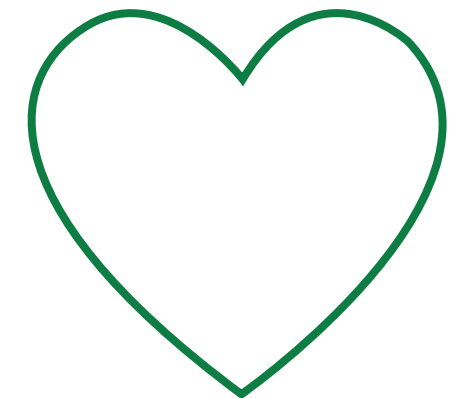
Event Four:



Conclusion:

Sky woman now has a place to live with Creation on Turtle Island

My personal connection:

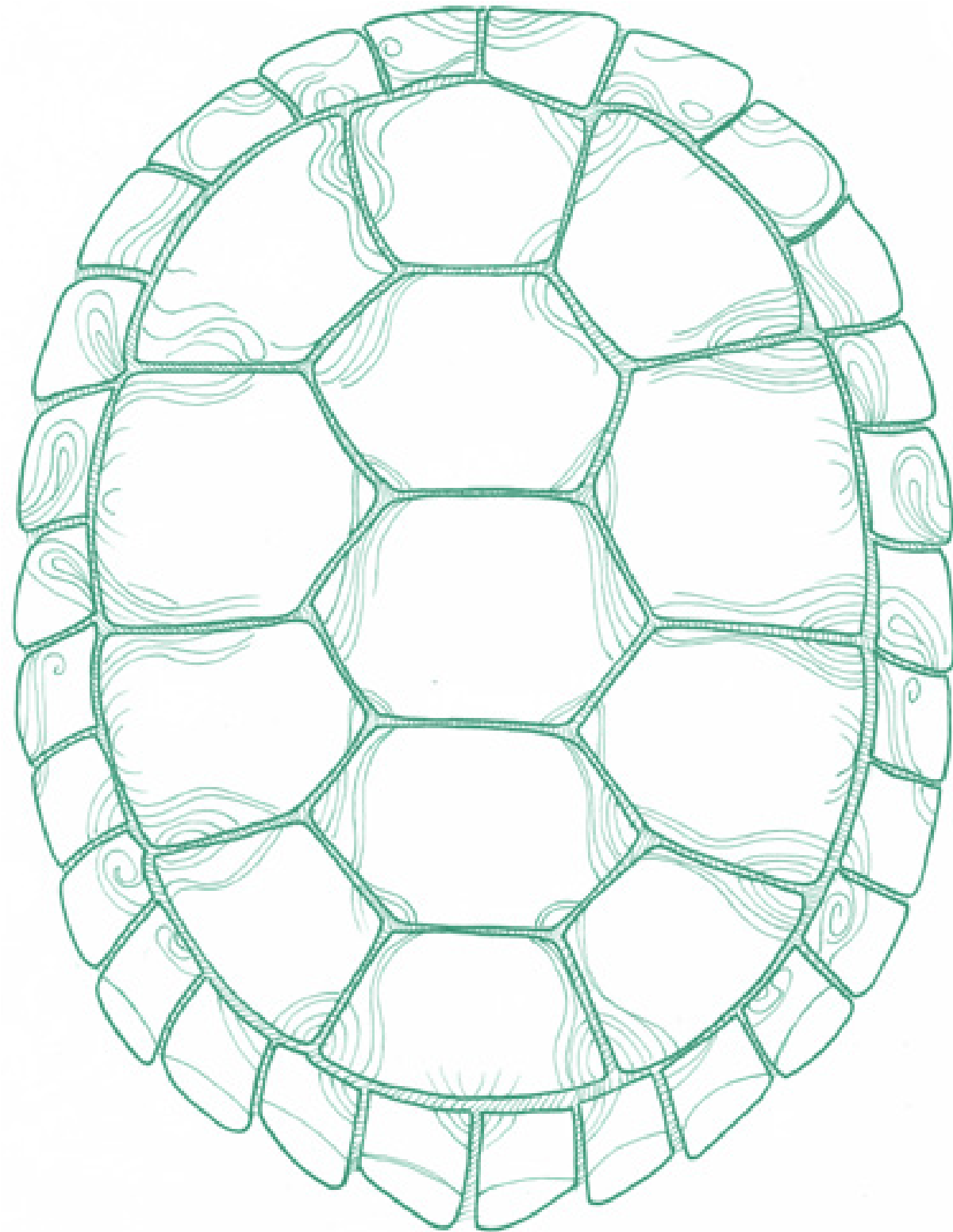


NAME: \_\_\_\_\_ Teacher Copy \_\_\_\_\_ STORY: \_\_\_\_\_ Creation Story Guide \_\_\_\_\_

From *The Power of Retelling: Developmental Steps for Building Comprehension* by Vicki Benson and Carrice Cummins

# STUDENT WORKSHEET / ACTIVITY 2.2

## 13 MOONS ON A TURTLE'S BACK



NAME: \_\_\_\_\_ STORY: \_\_\_\_\_

### NATIVE LANGUAGE CALENDARS

ENGLISH	ANISHINAABE	MEANING	SEASON/TIME	HAUDENOSAUNEE	MEANING	SEASON
January	Dejebeboon Giizis	New Winter Moon	Jan 15-30	Tehyakohúhtyaks		Kohsla:ke Winter
February	Onaabonii Giizis	New Moon of Hard Crusted Snow	Feb 14-28	Tsyatekóhselha		
March	Ziisbaakodike Giizis	Sugar Making Moon	Mar 15-30 Mnookmik Spring	Tew^hnislyaks		
April	Nmebin Giizis	Sucker Moon	Apr 14-28	Wahsakay^:tés		Kukwi:te Spring
May	Waabgonii Gizzis	Blossom Moon	May 14-27	Latiy^thos		
June	Ode'min Giizis	Strawberry Moon	June 12-26 Niibinniing Summer	Aw^hité		
July	Tatgogmene Giizis	Blackberry Moon	July 11-26	Ohyotsheli		Ohyotsheli Summer
August	Miine Giizis	Blueberry Moon	Aug 10-24	On^s ta se'		
September	Mdaaminke Giizis	Corn Picking Moon	Sept 8-23	Yey^thókwás		
October	Zehgaaknege Giizis	Gathering Moon	Oct 7-23 Dwaagik Autumn	Yutekhway^he		Kananá:ke Fall
November	Nemegseh Giizis	Trout Fishing Moon	Nov 6-21	Wahsú:tehs		
December	Kiioseh Giizis	Hunting Moon	Dec 5-21 Biboong Winter			
Blue Moon	Oniige Gizzis	Trapping Moon				



## WHO ARE THE SPECIES AT RISK? 1/4

## PAINTED TURTLE

*(Chrysemys picta)*

Painted turtles are adaptable and can live wherever aquatic plants, insects, snails or tadpoles are abundant and logs or rocks are available for basking. Though they are by far the most common turtles in the province and can live for more than 40 years, losses of painted turtle nests and young are high. Mortality on roads and habitat degradation have caused the disappearance of these turtles in many areas.

## DESCRIPTION

Olive, black or brown shell with pale yellow lines and red dabs on edge; dark grey skin with red and yellow streaks on head, neck and legs; yellow lower shell with dark centre blotch

## SHELL LENGTH

10-25 cm

## RANGE

Southern Ontario to about Temagami and Wawa. Western painted turtle subspecies from around White River to Lake of the Woods and Red Lake

## STATUS

Secure provincially and nationally. Western painted turtle considered uncommon provincially



## BLANDING'S TURTLE

*(Emydoidea blanding)*

The high-domed Blanding's turtle can live for more than seven decades – females do not even start breeding until they are between 20 and 25 years old. This species is usually the last turtle to finish nesting, in late June or early July, often moving far from water to find soft sand beneath a log or sparse vegetation for their clutches of 6 to 11 eggs.

## DESCRIPTION

Black or dark brown shell with faint yellow or tan specks; dark brown or blue-grey head and legs; deep yellow throat and chin; yellow lower shell with black splotches

## SHELL LENGTH

15-25 cm

## RANGE

Discontinuous populations scattered throughout southern Ontario to about North Bay, Sudbury and Manitoulin Island

## STATUS

Threatened provincially and nationally



## WHO ARE THE SPECIES AT RISK? 2/4

## SPINY SOFTSHELL TURTLE

*(Apalone spiniferus)*

Almost completely aquatic, spiny softshells probe beneath rocks, logs and roots for snails, crayfish and aquatic insect larvae or bury themselves in the silt and await their prey. The historic range of this species is the most limited of any Ontario turtle and, unfortunately, corresponds with the most heavily populated parts of the province. Softshell turtles have disappeared from most of the Ottawa Valley, around Lake Ontario and in the upper Thames River watershed.

## DESCRIPTION

Flat, grey-brown shell with black-bordered spots (faint on females); grey or brown skin, with a dark-edged light stripe on each side of the head; very long, narrow snout; webbed feet; yellow lower shell

## SHELL LENGTH

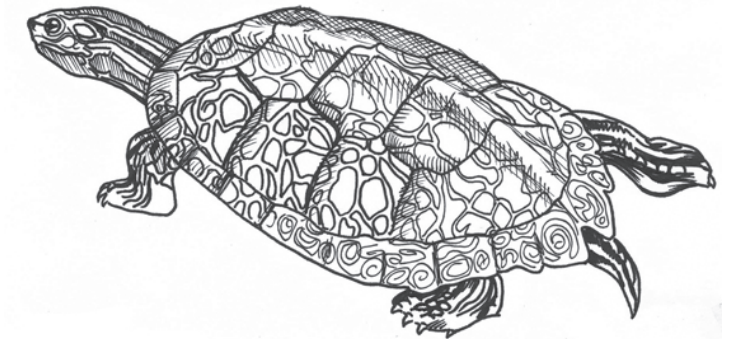
17-45 cm

## RANGE

Far Southern Ontario to about Hamilton and The Pinery Provincial Park; Thames River Long Point on Lake Erie; an isolated population near Pembroke

## STATUS

Threatened provincially and nationally



## MAP TURTLE

*(Graptemys geographical)*

Map turtles congregate in clear, mud-bottomed sections of large rivers and bays and are often mutilated by powerboats. Five to ten percent of several hundred marked turtles in a St. Lawrence River study bore propeller wounds. Many more probably died as a result of such wounds. Along with painted and snapping turtles, map turtles frequently drown in commercial fishing traps. Poor water quality renders them susceptible to shell rot, resulting in soft red lesions on the upper shell. Map turtles are the least studied turtle in the province, and the extent of the dangers they face remains unclear.

## DESCRIPTION

Olive brown to greenish shell with yellowish irregular concentric markings like a contour map (faint on females); dark green skin with wavy yellow lines on head, neck and legs; yellow lower shell

## SHELL LENGTH

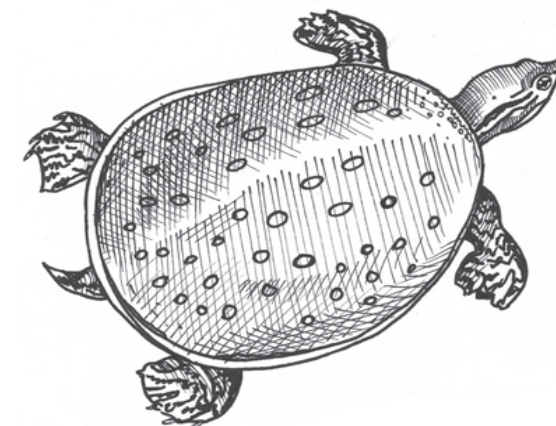
10-27 cm

## RANGE

Discontinuous populations along the Great Lakes and some larger rivers North to Pembroke and the French River

## STATUS

Species of special concern provincially and nationally



## WHO ARE THE SPECIES AT RISK? 3/4

## SPOTTED TURTLE

*(Clemmys guttata)*

Poaching by turtle collectors, habitat loss, and mortality on roads have combined to extirpate 40 percent of Ontario's known populations of the diminutive spotted turtle. Generally, it is the first turtle species to emerge in April, migrating to shallow pools in sphagnum swamps, grass marshes, and fens to bask and breed. In early autumn, spotted turtles gather in mossy pockets beneath submerged tree roots or rock shelves to spend the winter. Lying low for so much of the year may contribute to their impressive longevity, estimated to be up to at least 60 years.

## DESCRIPTION

Black with yellow spots on shell, legs and head; lower shell mostly black or yellow with black blotches

## SHELL LENGTH

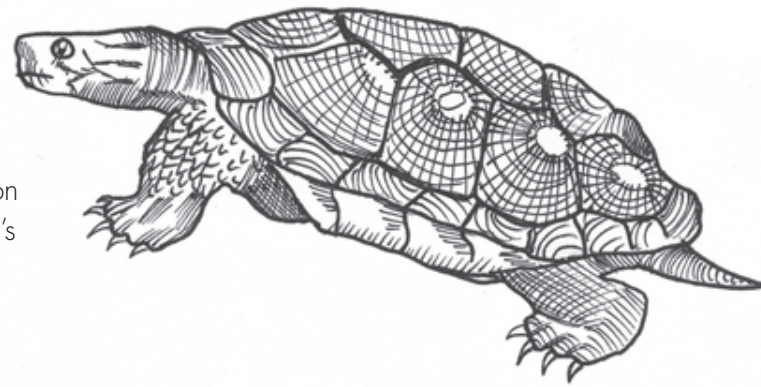
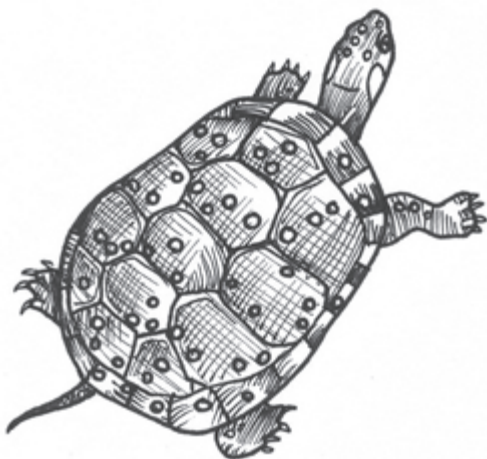
8-12 cm

## RANGE

Thinly distributed around Georgian Bay, Southwestern and Eastern Ontario

## STATUS

Endangered provincially and nationally



## WOOD TURTLE

*(Glyptemys insculpta)*

In addition to encountering the dangers all turtles do, the Wood turtle, Ontario's most terrestrial turtle species, is also threatened by the illegal pet trade. In 1994, a Wood turtle population of some 400 in Southwestern Ontario suddenly declined by at least half, almost certainly due to poaching. Although these turtles likely lived throughout most of Southern and Central Ontario, it is estimated that only 1000 to 1600 adults are left in widely separated, genetically isolated populations.

## DESCRIPTION

Ridged, bumpy brown shell; brown skin with a reddish or orange tinge on neck and legs; yellow lower shell with black patches

## SHELL LENGTH

13-20 cm

## RANGE

Sparsely scattered between northern Huron County, Midland and the Niagara Peninsula; separate populations in Algonquin Provincial Park and from Sault Ste. Marie to Sudbury

## STATUS

Endangered provincially, species of special concern nationally

## WHO ARE THE SPECIES AT RISK? 4/4

## STINKPOT TURTLE

*(Sternotherus odoratus)*

Crawling at the bottom of deep, thick weed beds in muddy bays, slow streams and marshes, stinkpots are seldom seen, coming to the shallows at dusk to catch crayfish, tadpoles, snails and aquatic insects. Also known as musk turtles, they are named for a smelly yellowish liquid they release from glands at the edge of their upper shell if threatened. Stinkpots are known to live up to 55 years but, due to the destruction of wetlands, these turtles have disappeared from most of southern Ontario.

## DESCRIPTION

Brown or grey shell with black flecks, often green with algae; dark skin, with two light lines on sides of head; black and yellow lower shell

## SHELL LENGTH

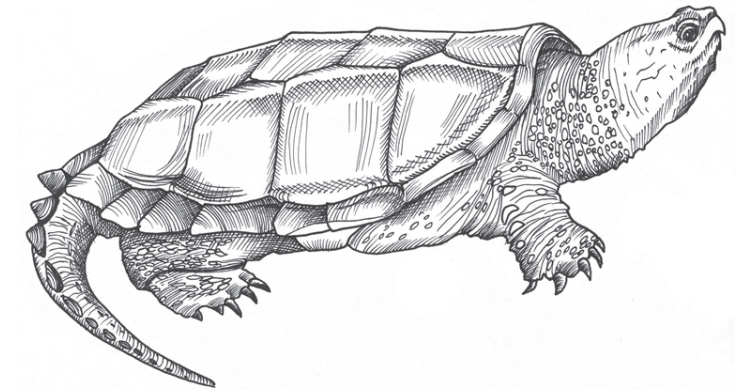
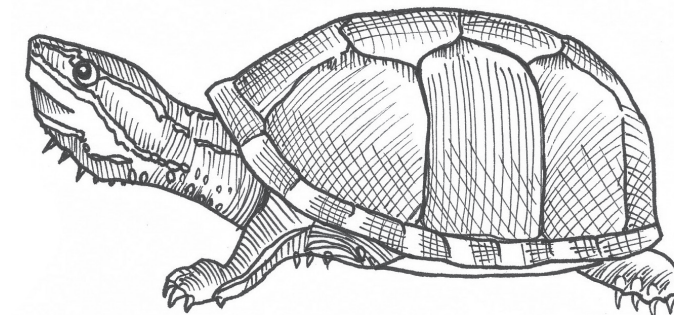
8-13 cm

## RANGE

Parry Sound to Severn River; Pembroke to Prince Edward County; a few locations on Lake Erie and the Detroit River

## STATUS

Threatened provincially and nationally



## SNAPPING TURTLE

*(Chelydra serpentina)*

Snapping turtles are far more widespread than most other turtle species. Their numbers are falling, however, and researchers argue that this species should be designated as at risk. Egg failure and deformities are common in snapping turtle populations where high levels of PCBs, dioxins, furans and other contaminants are found in southern Ontario's water bodies. Even in Algonquin Provincial Park, a long-studied snapping turtle population has fallen by at least 50 percent.

## DESCRIPTION

Black, brown or olive shell; dark grey or brown skin; dull yellow or tan lower shell; long, jagged-ridged tail

## SHELL LENGTH

20-50 cm

## RANGE

Southern Ontario North to about Temagami and Elliot Lake; scattered populations around Chapleau and Lake Superior West to Red Lake

## STATUS

Declining and now at risk

FIELD TRIP: TURTLES 1/2

By Tim Tiner

Reprinted from Ontario Nature

<http://onnaturemagazine.com/field-trip-turtles.html/2>

In the mid-1990s, Ministry of Natural Resources (MNR) biologist Tim Haxton made a disturbing discovery while doing a survey of snapping turtles in the Haliburton area. Nearly one-third of the 279 turtle sightings he tallied were roadkills. He also encountered hostility toward the ponderous reptile. "It is a big issue up there. A lot of people like to swerve off the road and run them over," recalls Haxton.

While turtles may not account for a large proportion of animal fatalities on Ontario's roads, their biology is such that these mortality rates have a huge impact on a population's long-term survival. Already six of Ontario's eight hard-shelled turtle species are designated as at risk and rarely seen by most residents. No other single order of animals in the province, and probably in the world, is so imperilled. After 250 million years of soldiering through mass extinctions that felled, among many other species, the dinosaurs, turtles are now facing a similar fate. Most Ontario turtles range little beyond the southern edge of the Canadian Shield, making their home in the most intensely developed region in Canada where only some 30 percent of the original wetlands remains. Agricultural pesticides and industrial pollutants contaminate what's left of viable, albeit fragmented, turtle habitat. Body counts along the 3.6-kilometre causeway at the base of Long Point, on Lake Erie, have turned up 160 to 200 squashed turtles annually, including threatened and endangered species.

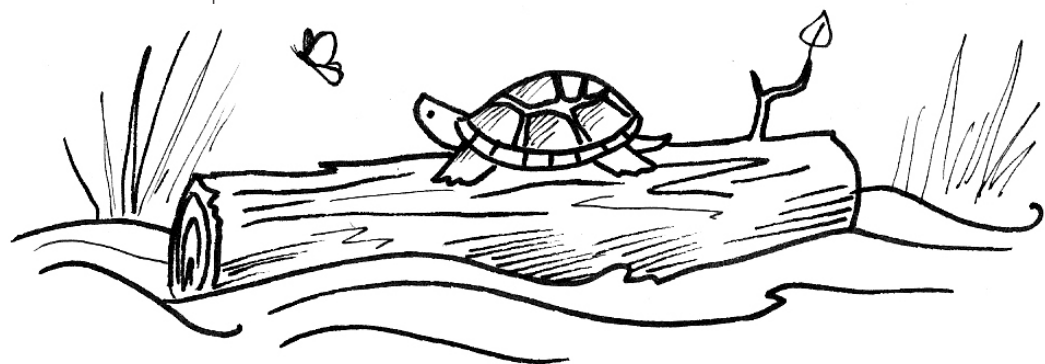
Turtles cannot spring back from heavy losses. The annual rate of reproductive success for these animals is



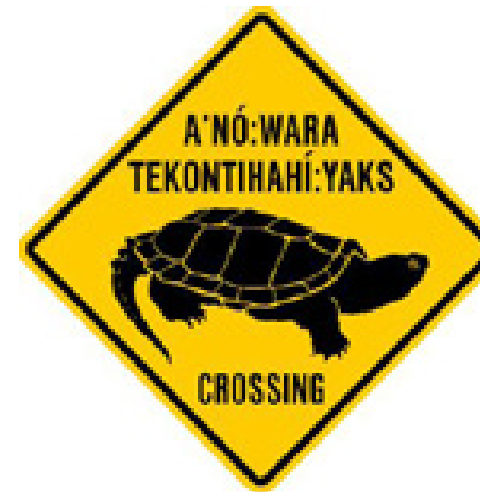
extremely low, as a long list of predators raid nests and prey on hatchlings.

On the other hand, a turtle's lifespan is long. Studies suggest that snapping turtles can live for more than a century. Many Ontario turtles first lay eggs when in their teens, and continue breeding for the rest of their lengthy lives, evening the odds that eventually some offspring will survive. Conversely, an additional annual loss of even 1 percent to 2 percent of adult females can have catastrophic consequences for the whole population. "Turtles seem like they'll last forever," says Bob Johnson, curator of reptiles and amphibians at the Toronto Zoo. "But [the dynamics] are in place that could see this blip of extinction, which could have been addressed if we saw what was happening."

Johnson is part of a team of leading turtle biologists who have drafted the Ontario Multi-Species Turtles at Risk Recovery Strategy that is being used to guide funding for ongoing research - as well as nest habitat creation and protection - by conservation authorities, universities, parks staff and the Toronto Zoo.

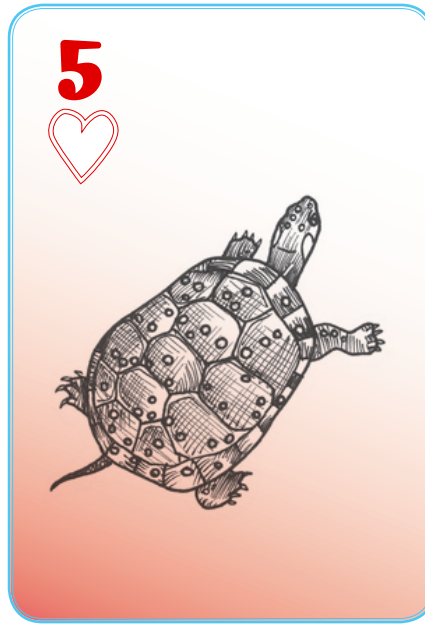
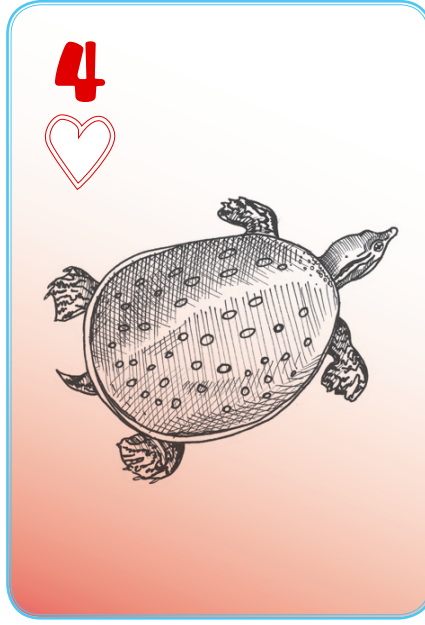
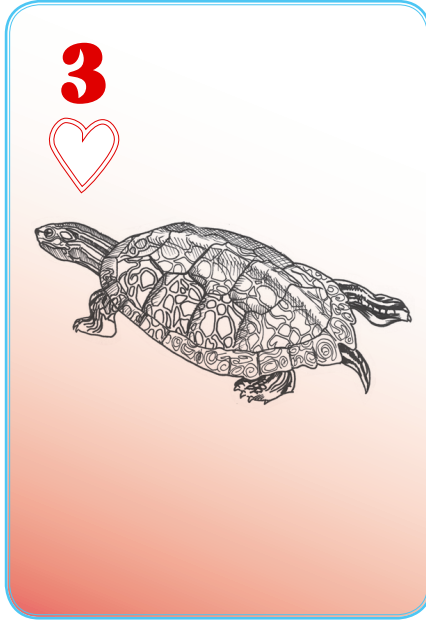
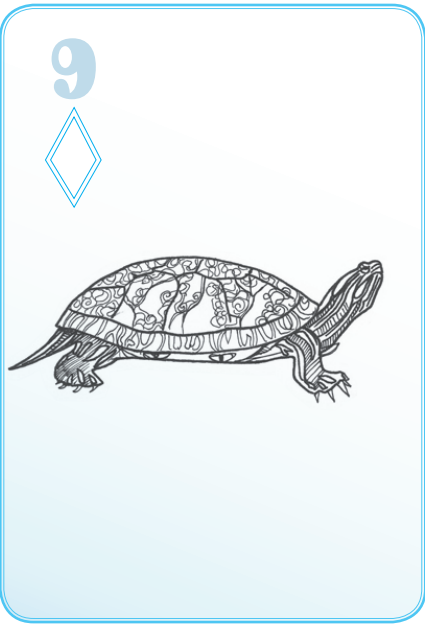
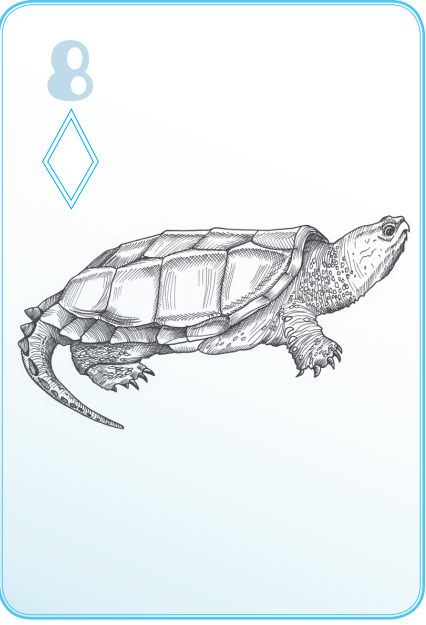
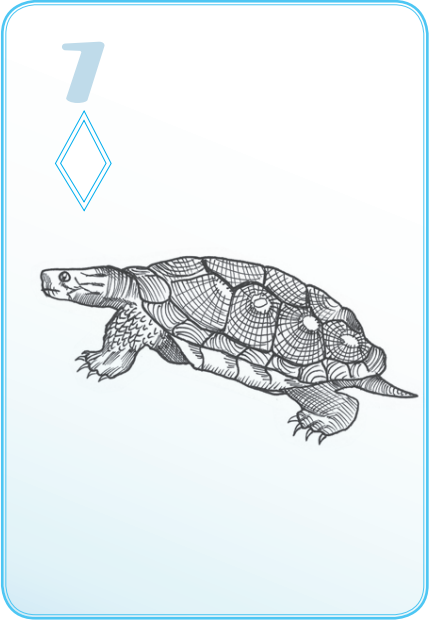
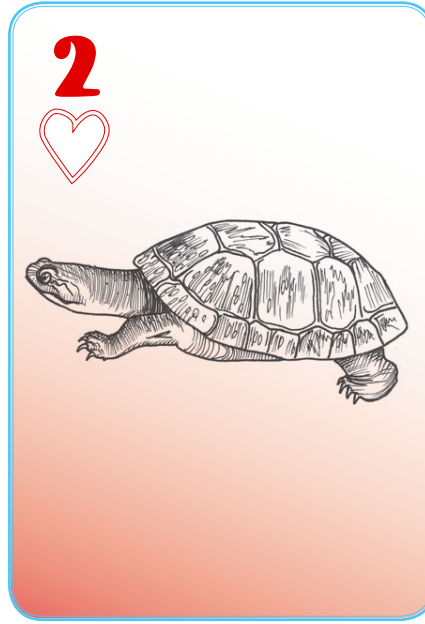
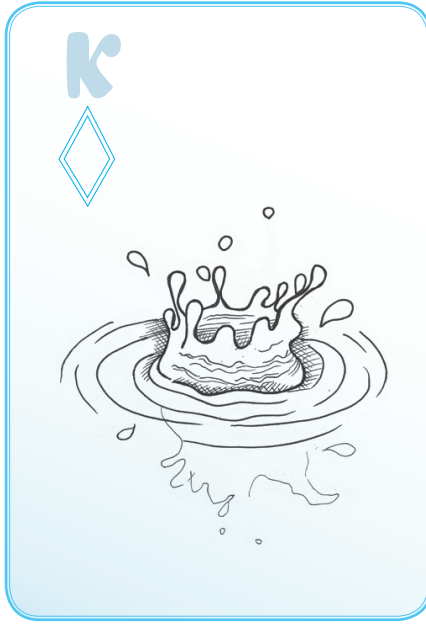
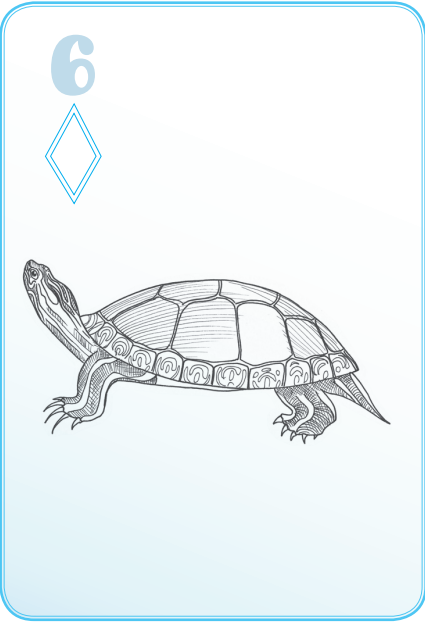
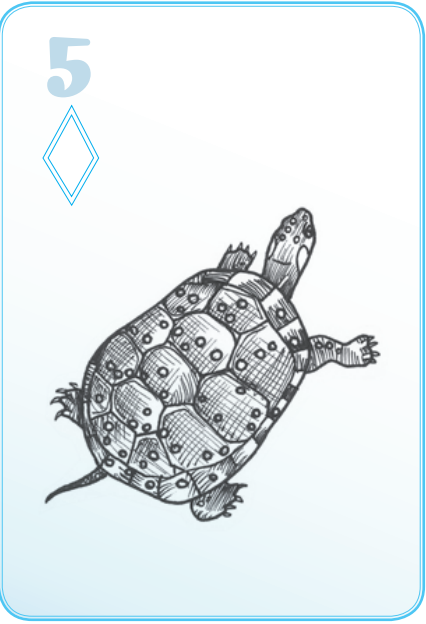
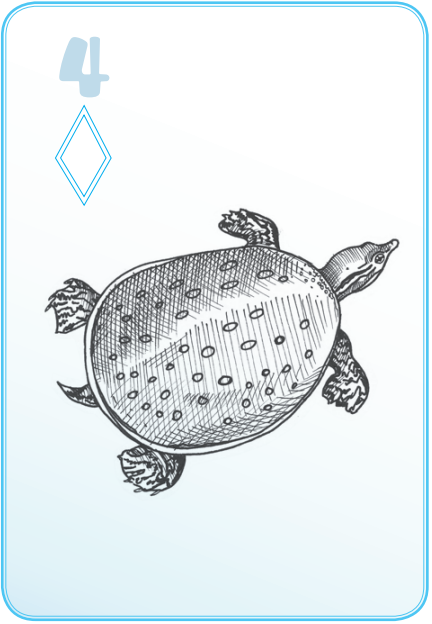
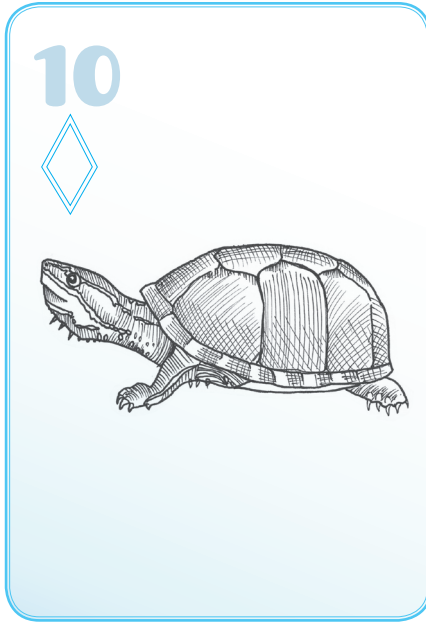
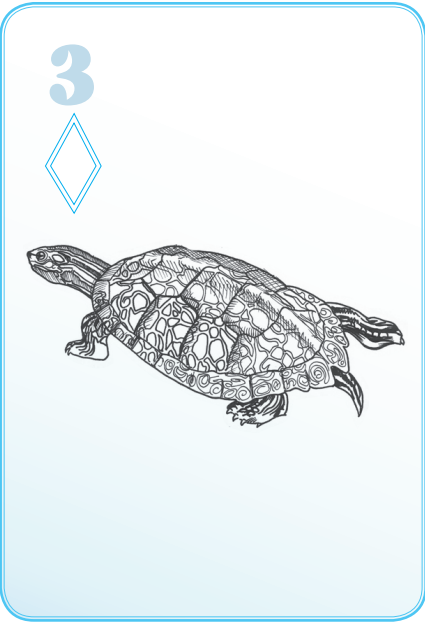
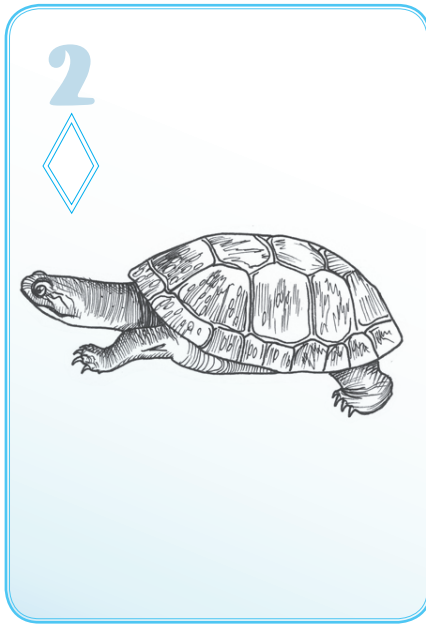


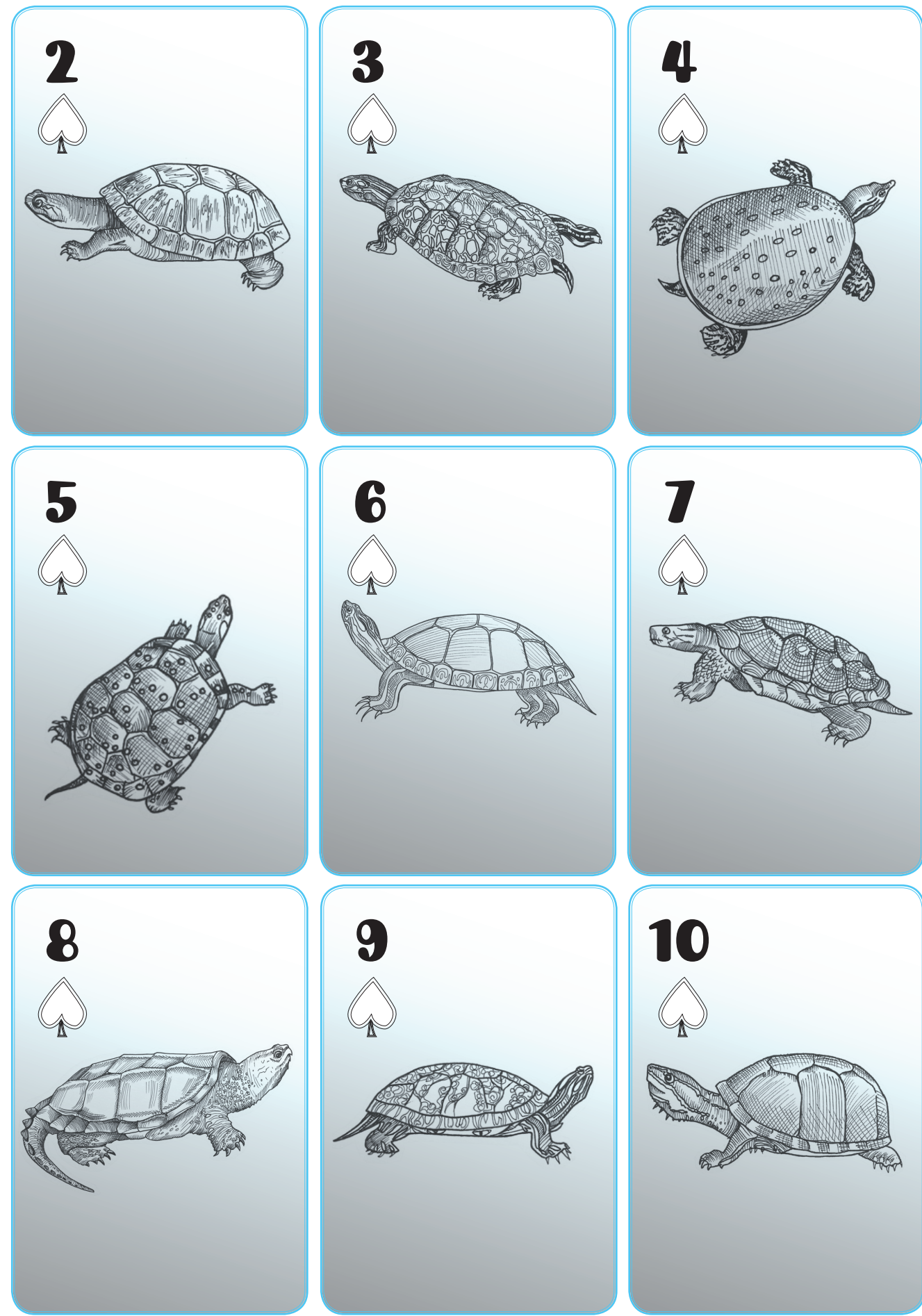
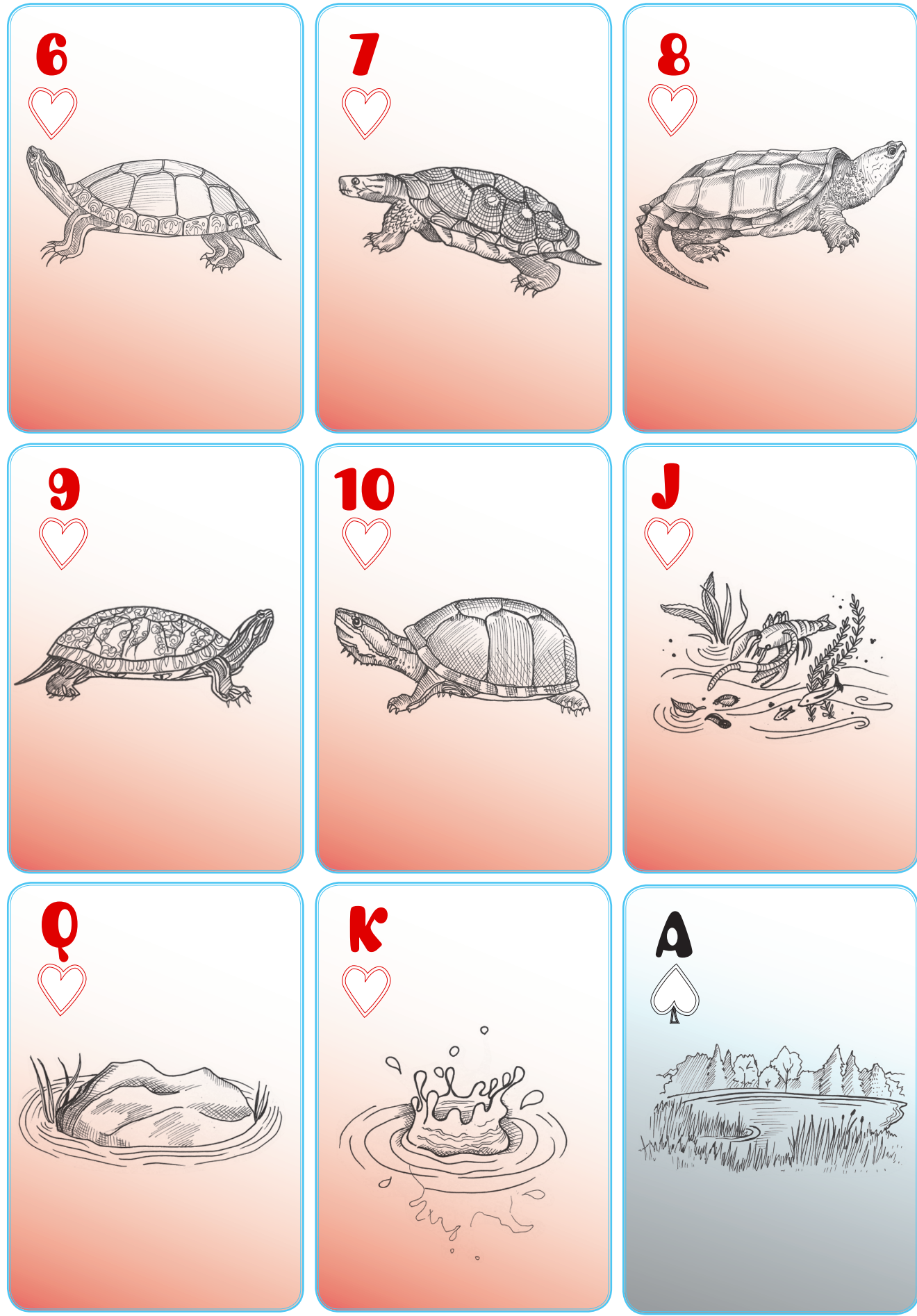
FIELD TRIP: TURTLES 2/2



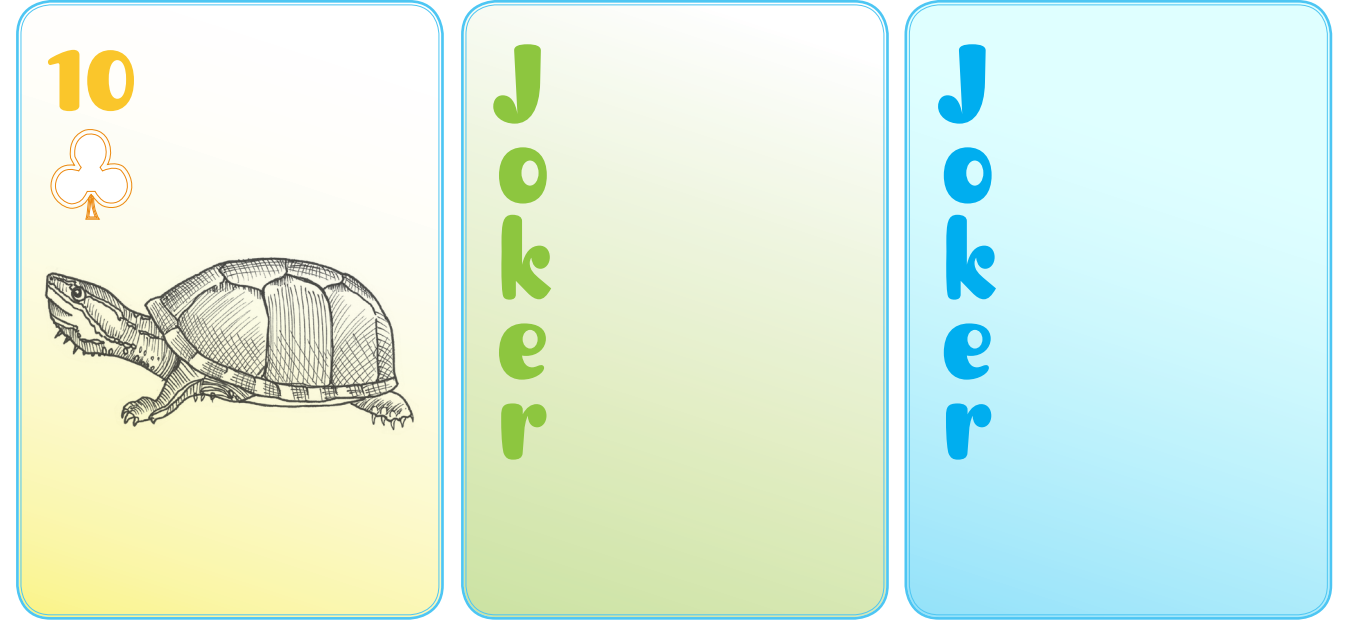
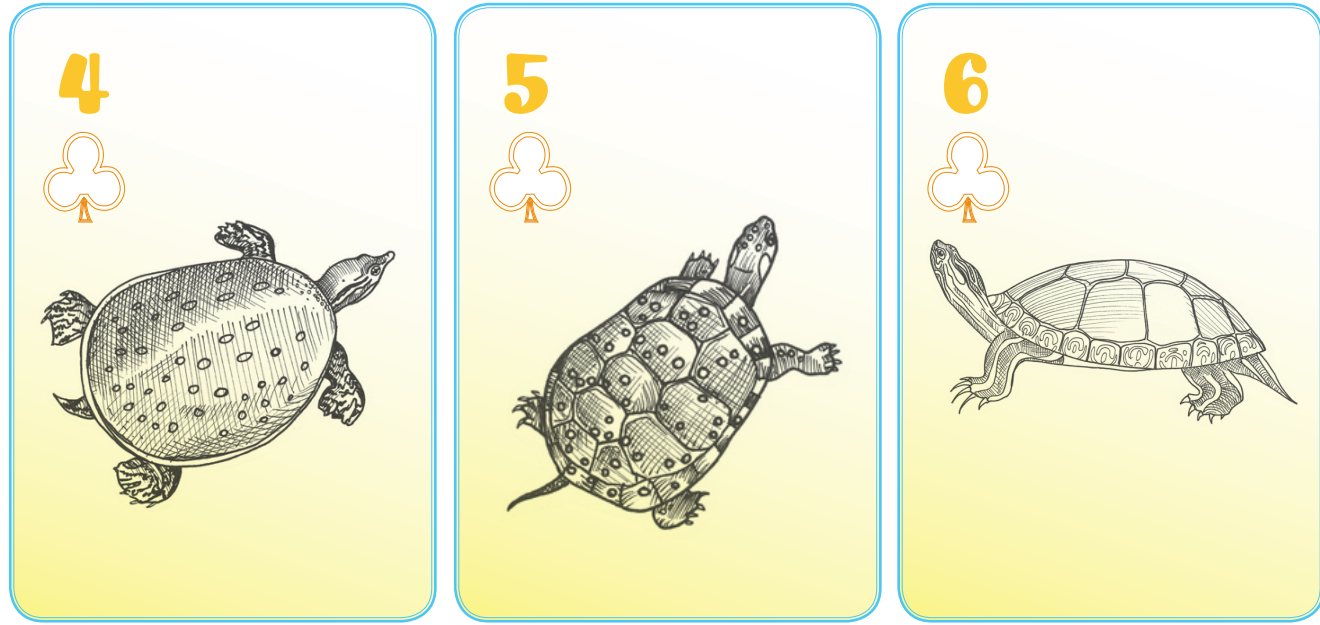
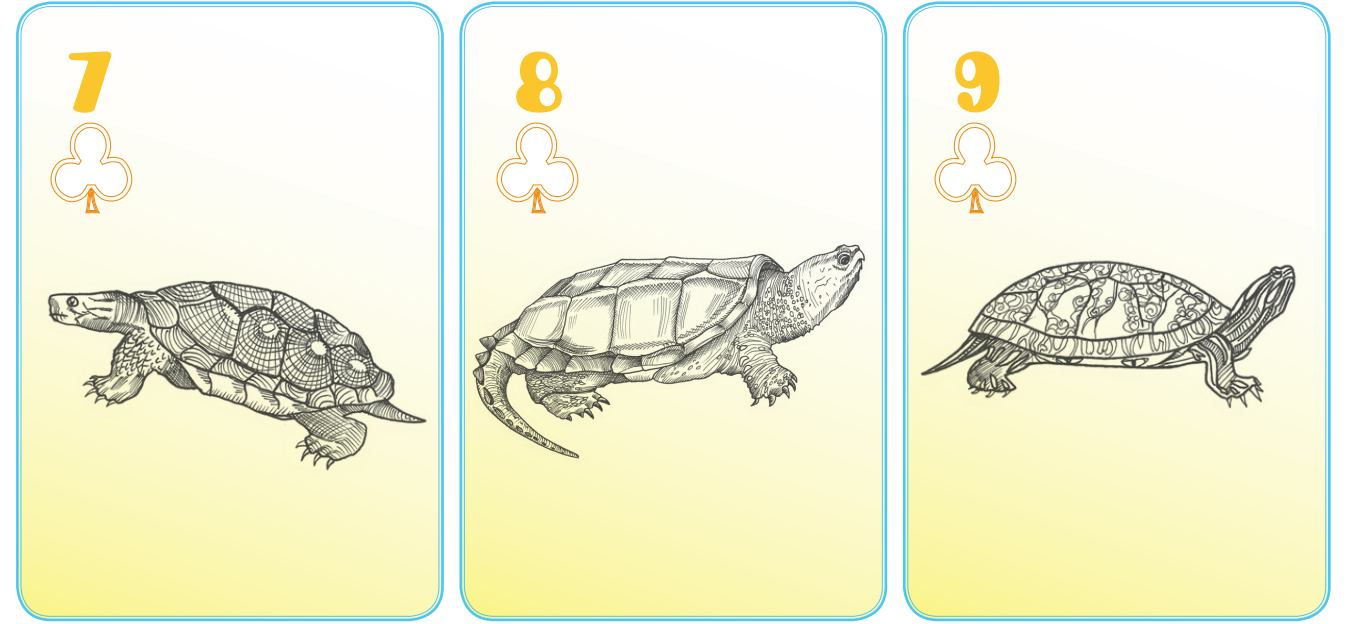
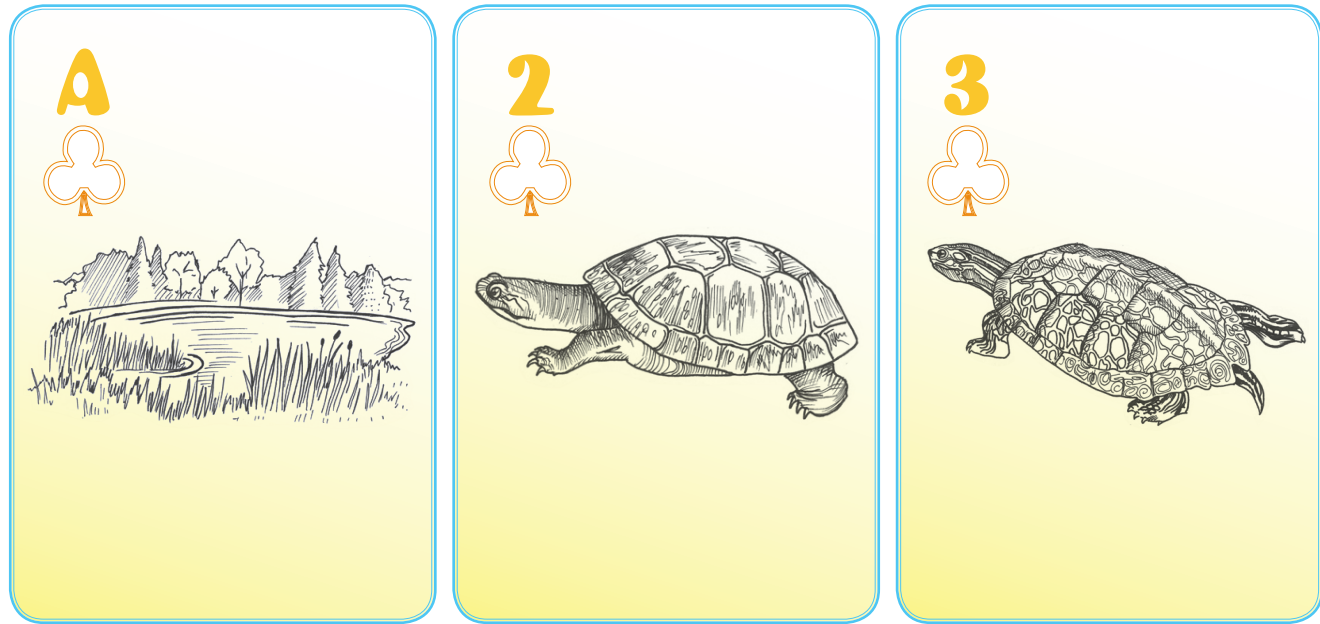
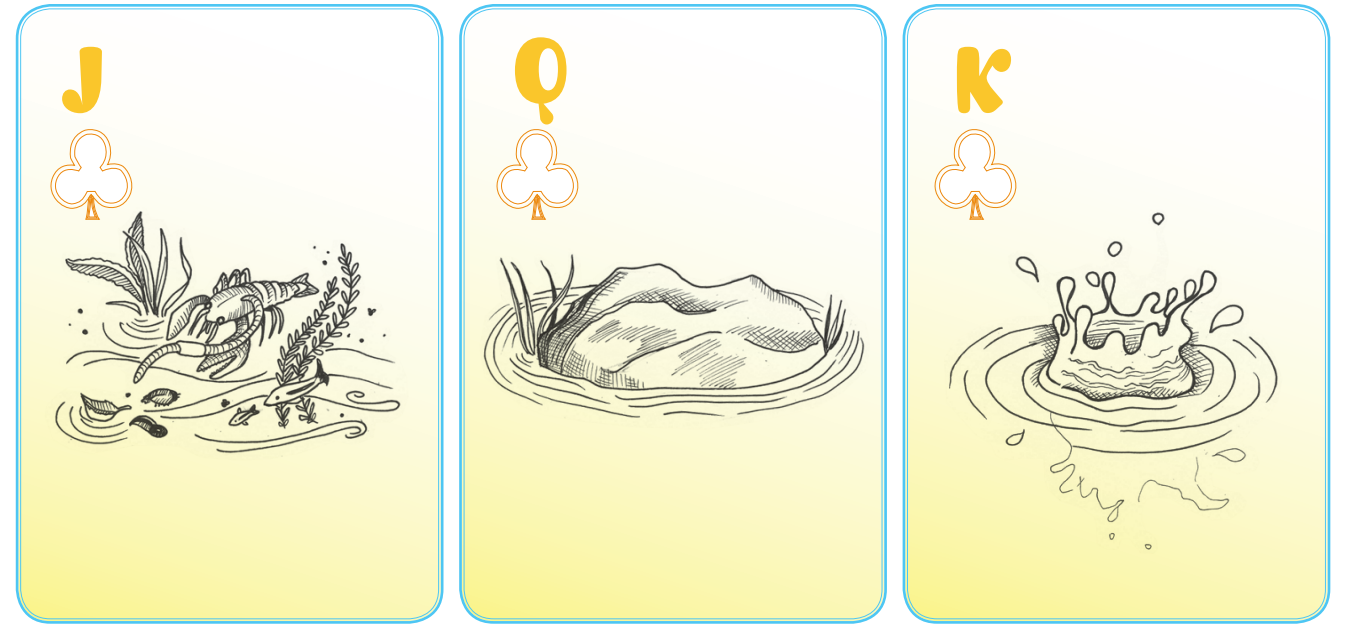
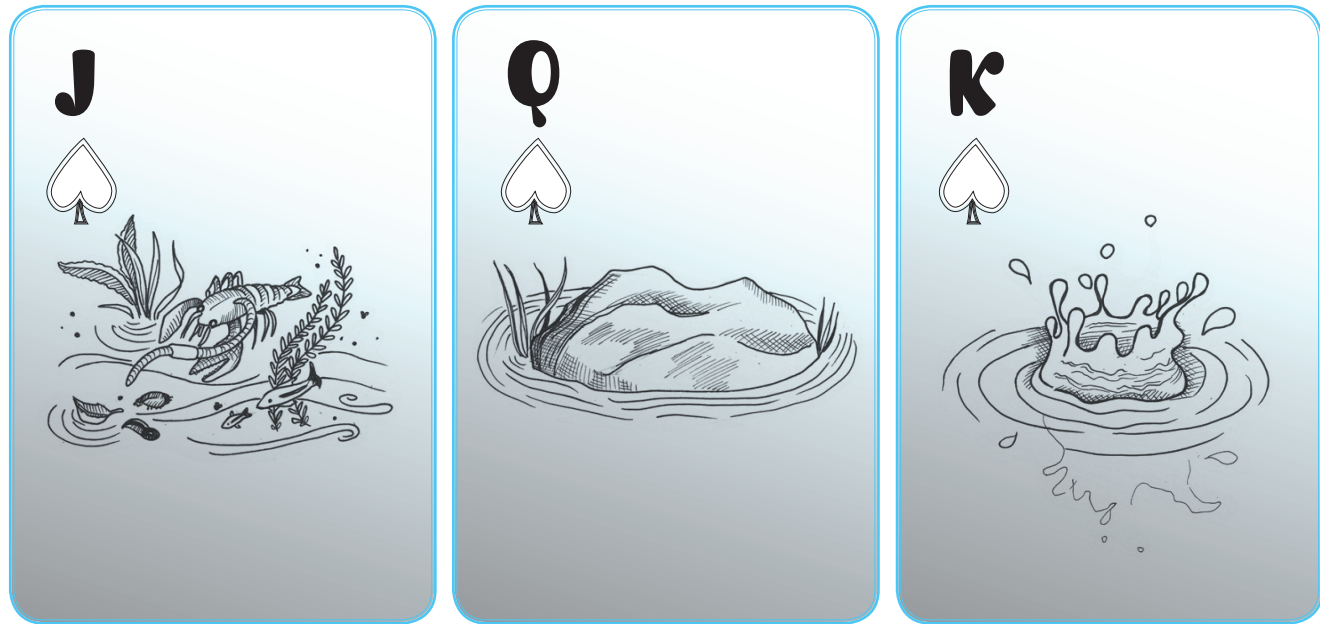
1. Read the article. While you read it, circle 5 new words or phrases.
2. Use a dictionary to find the meaning of the words you circled. Write down the words and their meaning. Use each word in a sentence to practice.
3. Look at the last paragraph again - what does the last sentence mean to you? Think of some changes that humans can make and list them.
4. Complete the chart below to summarize the article.

DANGERS TO TURTLES (describe each briefly)	TURTLE HELPERS AND PROGRAMS (describe each briefly)





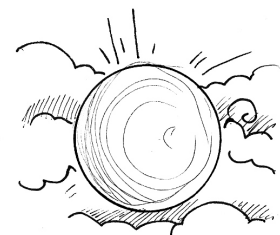




# STUDENT WORKSHEET / ACTIVITY 4.1

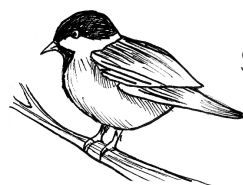
## WETLAND NEIGHBOURS AND FRIENDS CARDS

BACK OF CARDS



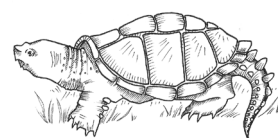
**SUN**

Source of energy and light; connected to all living things



**BLACK CAPPED CHICKADEE**

Small seed-eater; nests in shrubs near water; eggs eaten by raccoon, blue-jay



**SNAPPING TURTLE**

Communicates with all animals and plants in the wetland; eats minnows, crayfish, dragonflies, carrion



**WHITE BIRCH TREE**

Grows along shore; roots hold soil; medicine tree; bark used for mukuks, canoes, wigwam; sacred tree



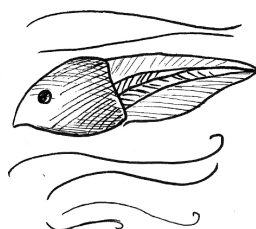
**DRAGONFLY NYMPH**

Large insect found on bottom of pond; likes clean water; eats many other bugs in the pond



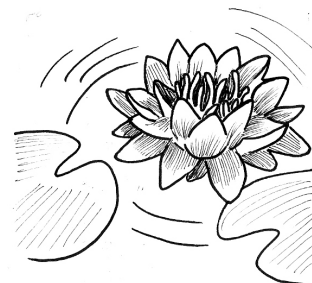
**LEOPARD FROG**

Spotted yellow and green; eats mosquitos, blackflies; eaten by fox, raccoon, otter



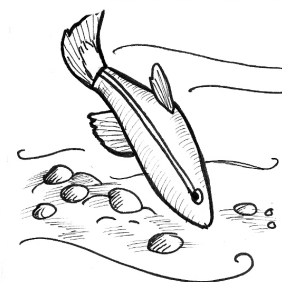
**TOAD TADPOLE**

Black; grow quickly as water warms up; eat algae; eaten by fish, turtles



**WATER LILY**

Fragrant flower; eaten by moose; medicine plant (root); nectar for bee



**MINNOW**

Likes clean water; eats water plants; eaten by turtle, raccoon, otter



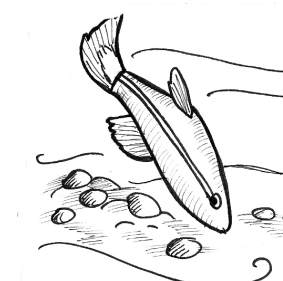
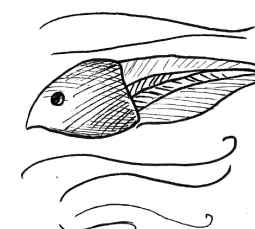
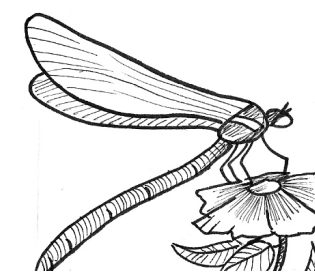
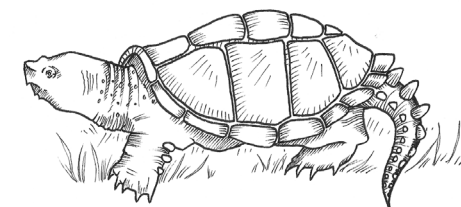
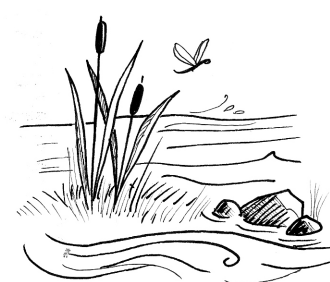
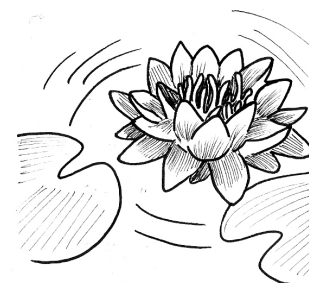
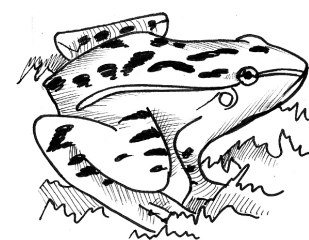
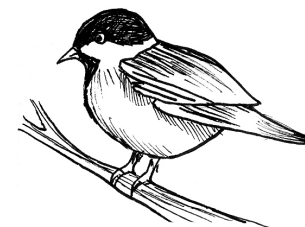
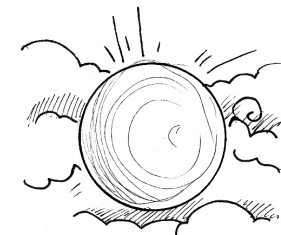
**CATTAIL**

Grows along edge of water; food for birds and beetles; home for blackbird and marsh wren

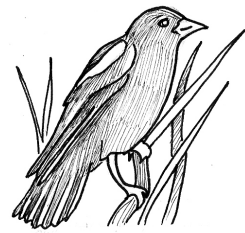
# STUDENT WORKSHEET / ACTIVITY 4.1

## WETLAND NEIGHBOURS AND FRIENDS CARDS

FRONT OF CARDS



STUDENT WORKSHEET / ACTIVITY 4.1  
**WETLAND NEIGHBOURS AND FRIENDS CARDS**  
 BACK OF CARDS



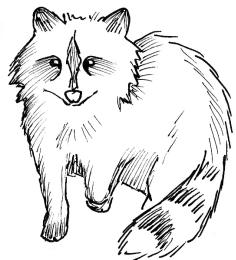
**RED-WINGED BLACKBIRD**

First bird of the spring;  
 eats flying insects and seeds;  
 lives in cattail marsh;  
 home for many animals



**BLUE-JAY**

Alerts all animals to  
 presence of danger;  
 eats seeds,  
 bugs and baby birds;  
 eaten by fox; raccoon



**RACCOON**

Nocturnal hunter;  
 eats clams; crayfish;  
 bird eggs;  
 needs clean water  
 to wash food



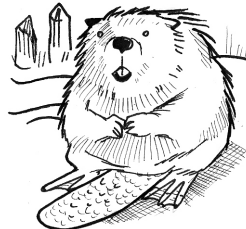
**MINK**

Small and quick;  
 eats frogs, snails, minnows,  
 berries; eaten by wolf, otter



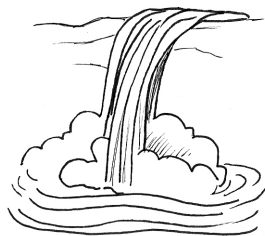
**MOOSE**

Largest mammal in wetland;  
 eats water plants and  
 lily roots; eaten by  
 man and wolf



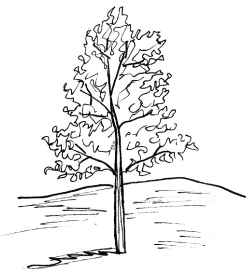
**BEAVER**

Builds dams; eats poplar,  
 birch; eaten by wolf;  
 teaches us to be  
 good parent



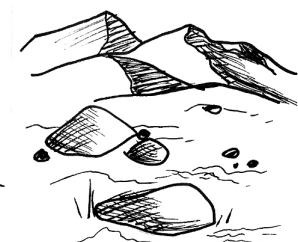
**WATER**

Must be clean and  
 flow slowly;  
 source of life for all  
 animals and plants



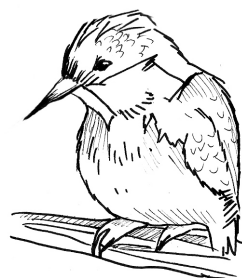
**BALSAM POPLAR**

Grows along waterways;  
 medicine (buds and bark);  
 eaten by beaver;  
 shades water



**ROCKS AND SOIL**

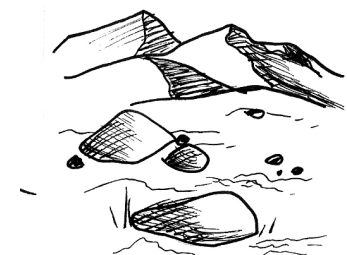
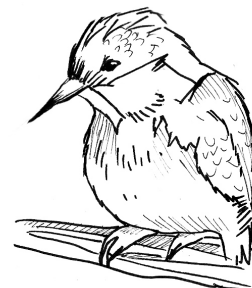
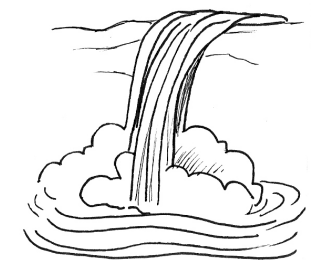
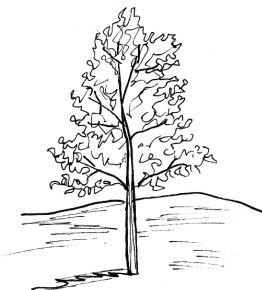
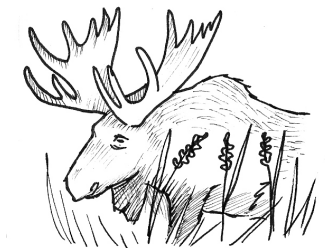
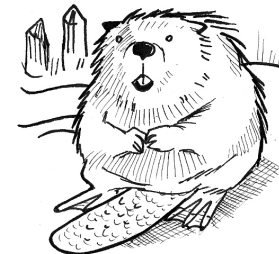
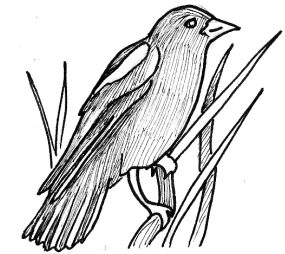
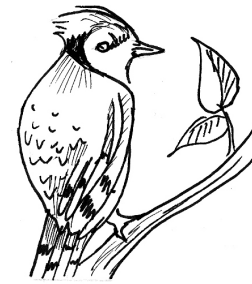
Surround wetland;  
 nourish plants; home for  
 small bugs; basking site  
 for turtle, frog



**MARSH WREN**

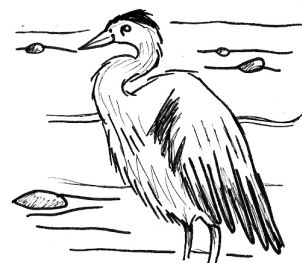
Small bird; nests in  
 cattails; eats flying insects  
 and beetles; migrates  
 in fall; alerts animals  
 to danger

STUDENT WORKSHEET / ACTIVITY 4.1  
**WETLAND NEIGHBOURS AND FRIENDS CARDS**  
 FRONT OF CARDS



# STUDENT WORKSHEET / ACTIVITY 4.1 WETLAND NEIGHBOURS AND FRIENDS CARDS

BACK OF CARDS



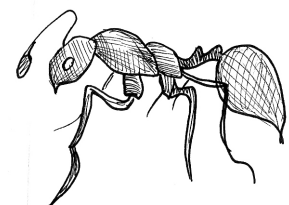
## GREAT BLUE HERON

Tallest bird in wetland;  
nests in dead trees;  
eats frogs, minnows;  
good hunter



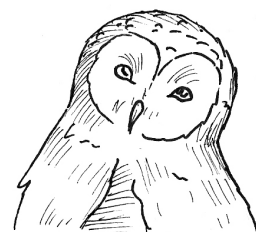
## BLACK BEAR

Knows all medicine plants  
in wetland; eats ants,  
grubs, berries



## BLACK ANT

Lives in soil around wetland;  
eats fruits, plants; stores food  
for winter; hard worker;  
teaches cooperation



## BARRED OWL

Lives in pines near  
wetland; hunts at night;  
eats mice, voles, rabbits,  
young birds



## WIND

Brings fresh air to wetland  
plants and animals;  
helps move water;  
carries seeds and insects in air



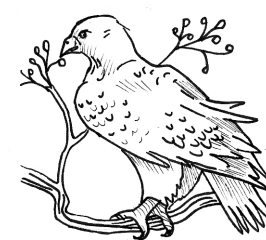
## GRAY WOLF

Large hunter that eats  
small 4-legged animals,  
frogs, clams, snakes;  
needs clean water



## RED SQUIRREL

Chatty and quick; eats seeds,  
mushrooms, plants;  
stores food for winter;  
eaten by owl, fox, wolf



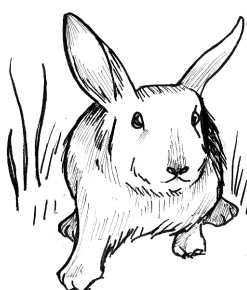
## BALD EAGLE

Messenger to all plants  
and animals; eats dead fish  
and cleans shore;  
lives in dead trees



## SPICE BUSH

Shrub grows around wetland;  
berries eaten by mice,  
moose, squirrels, birds;  
medicine plant

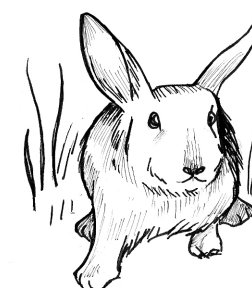
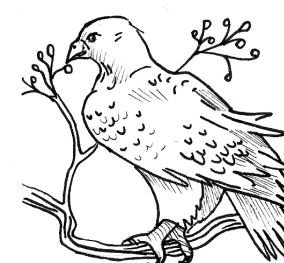
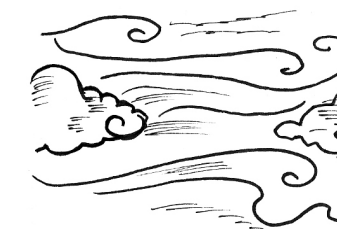
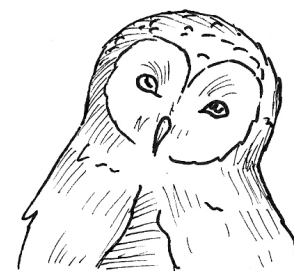
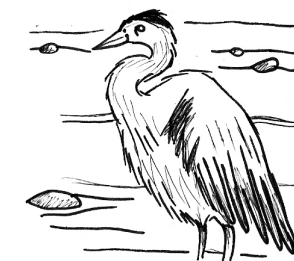


## COTTONTAIL RABBIT

In meadows around  
wetlands; eats spice bush,  
blueberry, plants;  
eaten by fox, wolf, hawk;  
alert to danger

# STUDENT WORKSHEET / ACTIVITY 4.1 WETLAND NEIGHBOURS AND FRIENDS CARDS

FRONT OF CARDS



STUDENT WORKSHEET / ACTIVITY 4.1  
**WETLAND NEIGHBOURS AND FRIENDS CARDS**  
 BACK OF CARDS



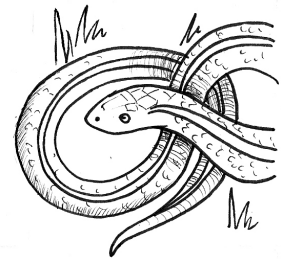
**SWEET FLAG**

Grows along shoreline; medicine (rat root); eaten by moose, muskrat; needs clean water to grow



**RED MAPLE**

First tree to wake up in spring; seeds eaten by squirrel, mice, birds; gives sap for maple syrup and medicine



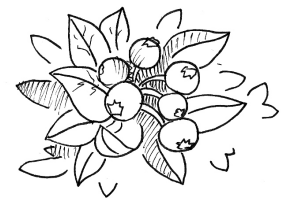
**GARTER SNAKE**

In meadows around wetlands; eats mice, frogs, beetles; eaten by fox, wolf, mink



**BUNCHBERRY**

Grows around the wetland; small white flower and red berry; eaten by birds, mice; medicine (root)



**BLUEBERRY**

Bushes grow around wetlands; berries eaten by many creatures; leaves and twigs are medicine



**POND SNAIL**

In water; eats algae and dead plants; eaten by raccoon, mink, otter, fish; cleans the water



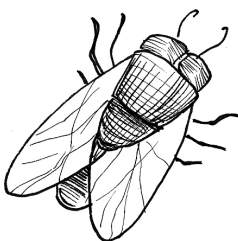
**OTTER**

Eats crayfish, snails, minnows, tadpoles; teaches us to play and be joyful



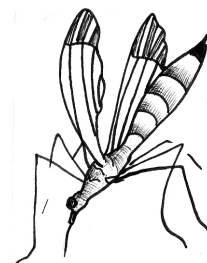
**FINGERNAIL CLAM**

Filters and cleans water in wetlands; eaten by raccoon, mink, turtle



**BLACKFLY**

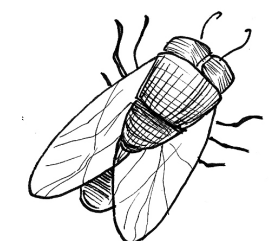
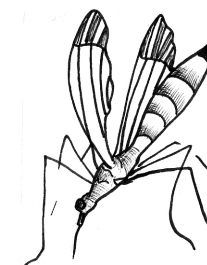
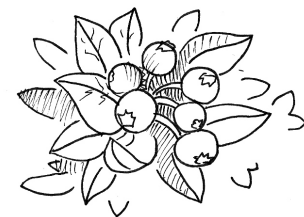
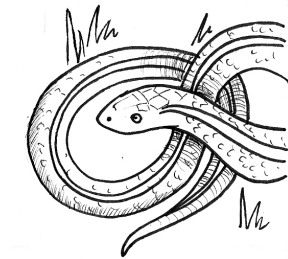
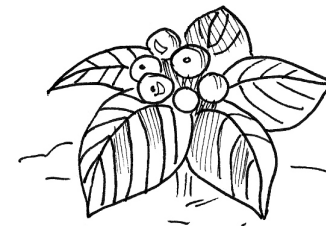
Lays eggs in moving water; pollinates blueberries and other flowering plants; eaten by birds, frogs, turtles



**MOSQUITO LARVA**

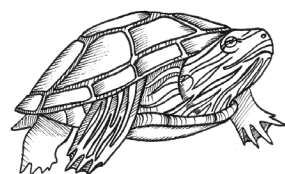
Live in calm water; food for fish, frogs, dragonfly nymphs, ducks; eat algae;

STUDENT WORKSHEET / ACTIVITY 4.1  
**WETLAND NEIGHBOURS AND FRIENDS CARDS**  
 FRONT OF CARDS



STUDENT WORKSHEET / ACTIVITY 4.1  
**WETLAND NEIGHBOURS AND FRIENDS CARDS**  
 BACK OF CARDS

STUDENT WORKSHEET / ACTIVITY 4.1  
**WETLAND NEIGHBOURS AND FRIENDS CARDS**  
 FRONT OF CARDS



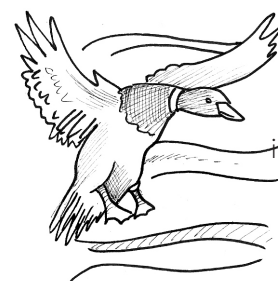
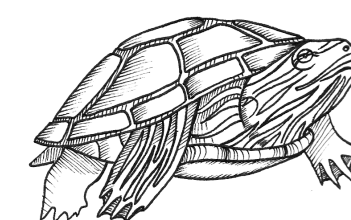
**PAINTED TURTLE**

Eats bugs, tadpoles, mosquito larvae; basks on logs and rocks; needs clean water to live; lays eggs in gravel, sand



**BUMBLEBEE**

Lives underground in meadow near wetland; pollinates flowers; makes honey; eaten by birds



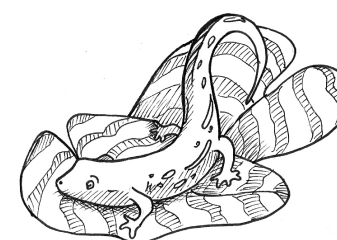
**WOOD DUCK**

Nests in hollow trees in wetland; eats water bugs, plants, tadpoles; ducklings eaten by pike, mink, fox



**YELLOW-SPOTTED SALAMANDER**

Lives under logs and rocks near edge of wetland; eats worms, small insects; eaten by mink, fox, otter; rarely seen



**CRAYFISH**

Lives in water around rocks; eats minnows, mosquito larvae, bugs; eaten by birds, raccoons, mink, otter



**PORCUPINE**

Lives in forest near wetlands; eats bark; eaten by fisher; teaches us patience and kindness



**BLACK ASH**

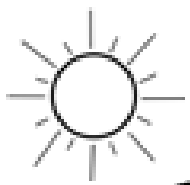
Prefers wet places; grows slow; seeds eaten by squirrels, birds; used for baskets; branches for nesting



**RED FOX**

Makes den and raises young near wetland; eats rabbits, mice, crayfish, clams, frogs; needs clean water





# STUDENT WORKSHEET / ACTIVITY 4.4 ONE MORNING IN OUR WETLAND

A LIVING DIORAMA 1/2



The sky in the east was beginning to lighten as beedabahn, the morning star guided the sun into the sky.

The world of the marsh was about to awake as each member of Creation joined together to greet the new day and to give thanks and gratefulness.

As the sun's early morning rays peaked over the horizon they touched the bark of a birch tree that grew along the shore of the marsh. The birch tree's bark glowed in the early morning light as the tree's cells stretched and warmed to the energy from the sun. The tree gently started to sway as a tiny breeze began to dance across the water surface of the marsh.

The water rippled as the breeze caressed it. The ripples seemed to wake up some of the water creatures who lived within the wetland.

A dragonfly nymph scurried along the bottom of the pond, looking for some shelter from the light. A school of minnows scooted along the sunken log searching for bits of breakfast. The little black toad tadpoles wriggled in the shallows near the edge of the pond. A leopard frog peeked out from under a lily pad. It quietly hopped up onto the lily pad, and began to sing a morning song.

From the cattail plants the male red-winged blackbirds opened their eyes and began to stir. They perched on the stems of the cattails and began to sing their welcoming song of thanksgiving.

A chickadee called a good morning to all of Creation from the upper branches of the birch tree as it searched for seeds in the peeled bark.

The raccoon had been out hunting all night long and it was getting tired.

As the early morning sun touched the fur on its back, the raccoon turned to face the sun, blinked its eyes, and



walked into the denser trees around the wetland, looking for a hollow tree to sleep within.

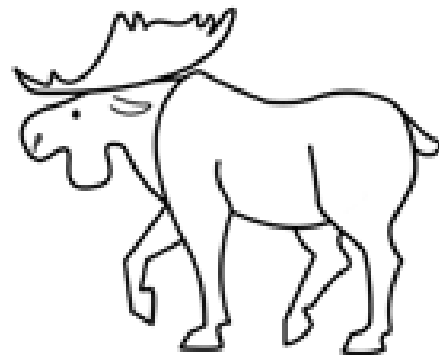
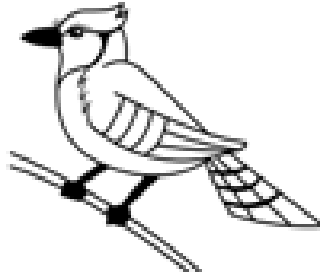
A large moose carefully walked down from the forest to the edge of the wetland, looking for a morning drink. As the sun's rays touched its head, the moose called out a greeting to the sun and to all other creatures in the neighbourhood. Then the moose put its nose deep into the clean cool water of the pond and began to quench its thirst.

The noisy bluejays awoke and flew over the water and the trees, calling out to everything in their loud voices as they showed their gratitude for another day. They landed near the moose and watched as it stood in the shallow edge of the pond.

The sound of the moose having a drink raised the curiosity of the little mink that lived under the tree roots near the edge of the pond. The mink slipped out of its den and began to journey around its territory, sniffing and watching for signs of breakfast. It looked up at the morning light and gave a quiet cry of thanks.

Deeper in the pond the beaver family had just finished their work on a poplar tree and as the early morning sun shone its rays onto the pond surface, the beavers swam back to their lodge to sleep, eat and clean their fur. The young kits mewed a hello to the sun before they disappeared under the water, smacking their tails to all.

As the rays of the rising sun reached the old tree trunk that had fallen into the pond, an old snapping turtle climbed

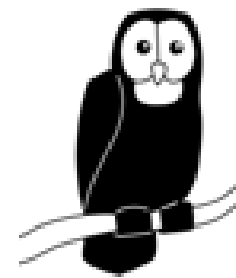


up onto the trunk to bask in the sun. Old turtle turned its head towards the rising sun and seemed to smile in gratitude for the return of the warmth the sun provided so the turtle would be able to move around quickly enough to catch its morning food.

In the thicket by the edge of the pond, the little warblers and wrens stirred from their nests. Each one raised its voice in a chorus of song as it flew up into the morning sky, dancing in the tiny breeze.

From the top of the dead elm tree the heron stretched its long neck and legs. It soared out over the pond squawking a hello to everything in the wetland and then landed in the shallows, looking for some minnows for its breakfast.

Mukwa, the black bear ambled down from the forest to drink at the pond, growling and grunting a morning greeting before turning over the large stones and rocks searching for ants and grubs.



At the far edge of the pond the ghostly shape of a barred owl could be seen as it climbed close to the trunk of the cedar tree. With a who-who-who-who the owl cuddled up to the trunk of the tree along a wide branch, preparing for a long sleep while the sun walked across the sky.

From behind the cedar tree, a grey and brown shape appeared as if by magic as the wolf padded on silent feet. It sat down under the tree and peered down at the pond. Then it raised its voice in a single howl in honour of the new day, and it was gone, disappearing into the shadows behind the cedars.

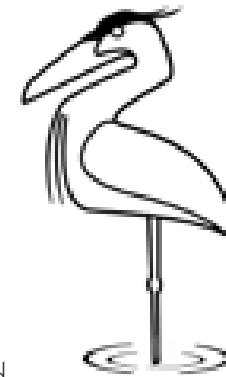
# STUDENT WORKSHEET / ACTIVITY 4.4 ONE MORNING IN OUR WETLAND

A LIVING DIORAMA 2/2

The little red squirrel ran here and there through the branches of the shrubs and trees along the edge of the wetland, chattering to one and all as it searched for seeds and nuts.

The front door opened on the little house that sat just up in the woods above the pond and the wetland. From the house came the woman and the man and their two children. They carried tobacco with them and their smudge bowl. When they arrived at the edge of the water, their voices and thoughts joined with those of the plants and animals as everything and everyone spoke the words of greeting and gratefulness for a new day and a new beginning.

The sun seemed to shine a little brighter. High up in the sky, an eagle soared - watching, listening, and remembering. The eagle circled higher and higher, called out once, and disappeared into the bright blue sky as it took its message to the Creator - another beautiful day on Turtle Island had begun.



# STUDENT WORKSHEET / ACTIVITY 6.1

## MISKWAADESI RACES WITH MAKWA

TURTLE RACES WITH BEAR 1/3



Long ago when the earth was new, Makwa (Bear) did not sleep all through the winter time. He looked for food all winter long, but food was hard to find. Makwa was always hungry. He grumbled as he went walking through the forest. Makwa's stomach was rumbling all the time, and so he was not in a good mood.

One early winter morning, when the ice had just frozen on the ponds, Makwa went down to the pond to look for some roots or frosted berries that were left over from summer.

The bushes were covered in frost. The ground was hard. He could not find anything to eat. Instead, Makwa saw old Miskwaadesi (painted turtle) peaking her head out from a hole in the ice of the pond.

"What are you staring at, old slow-one? Go back under the water, scaly-neck?"

Makwa was very rude to Miskwaadesi.

Now, Miskwaadesi had very good hearing, but she only nodded at bear and did not speak.

Bear's hunger made him grouchier. He kept on calling Miskwaadesi names. "Ah ho slow one. You are the slowest of all the animals. You are so slow Miskwaadesi that by the time you realize it is winter, the winter will be over. Your back is hard as a rock, and not beautiful and

shiny as mine. Go back down to the bottom of the pond and lay in the mud, you slow, ugly shell of an animal."

"I may be slow, but I can beat you in a race!" called Miskwaadesi from the pond.

"Ah ho slow one. A race you say? To race you have to run. You have a hard time walking. You do not know how to race. You are no match for me!" laughed Makwa.

"Stop teasing me Makwa. I am tired of your mean words. Let's have a race. This will show who is the fastest, me, Miskwaadesi or you, Makwa."

Well, Makwa and Miskwaadesi decided that they would race once around the pond. Makwa would run along the shore. Miskwaadesi would swim along the edge

# STUDENT WORKSHEET / ACTIVITY 6.1

## MISKWAADESI RACES WITH MAKWA

TURTLE RACES WITH BEAR 2/3

under the ice. Miskwaadesi would make holes in the ice at several places and she would swim under the water and stick her head out of each hole. The race would begin just before the sun reached the highest place in the sky. Makwa went to warm up his muscles for the race. Miskwaadesi went to make the holes in the ice.

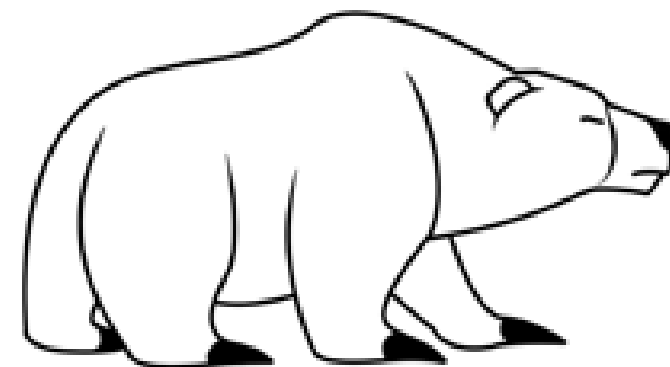
The other animals of the forest gathered to watch the race.

Mooz (Moose) Maiingan (Wolf), Waagosh (Fox), and Manidoo-waaboos (Rabbit) came to cheer for Makwa. Gijigijigaaneshinh (Chickadee), Diindiisi (Blue Jay), Waawaashkeshi (Deer), and Gaag (Porcupine) cheered for Miskwaadesi.

Just before the sun reached the high place in the sky the race was ready to begin. Makwa stretched his strong long legs. Miskwaadesi stretched her long thick neck. Makwa roared and snorted to clear his lungs. Miskwaadesi sang a little song of courage. Makwa started at the hollow log along the edge of the pond. Miskwaadesi's head peeked up through the first hole in the ice beside the log. When the animals called "Izhaal (Go)" the race was on.

Makwa ran as fast as he could. He came to the first corner of the pond, laughing to himself. "That old slow one will never be able to keep up to me" he thought. Just then he heard a voice singing from the pond.

"Here I am Makwa. Hurry up if you want to catch me!" The voice belonged to Miskwaadesi who was calling



from a hole in the ice just ahead of Bear. How could this be?

Makwa ran faster. His heart beat like a drum inside his chest. His breath made clouds of frost in the air. Soon Makwa came to the half-way mark in the race. He was sure Miskwaadesi must be far behind. But when Makwa turned to look at the ice on the pond, he saw that Miskwaadesi was even further ahead, her head poking through the ice around the corner. Makwa could not believe his eyes! He must be seeing things!

"Hurry up Makwa. You need to run faster!" sang Miskwaadesi from the pond. Makwa could not believe his ears!

Makwa ran harder and faster than he had ever run before. He was going as fast as he could. Makwa ran around the last little bay of the pond. Soon the finish line would be in sight. Makwa was getting tired. His heart was beating so fast! His breath was making big clouds of frost in the early winter air. Where was Miskwaadesi? She must be far behind. There was so much frost that Bear could hardly see... Then he heard the singing voice of Miskwaadesi calling to him from far up ahead. Miskwaadesi was almost at the finish line!

Makwa took a deep breath and ran on; big clouds of frost and steam were all around him.

Makwa's feet were so sore from running on the hard ground. His legs were tired and shaky. He began to slow down. Just as Makwa was four steps away from the finish line, the animals started to cheer. Miskwaadesi's head peaked out from the hole in the ice at the finish line. "What took you so long, Mawka?" called Miskwaadesi and she sang a song of thanks.



# STUDENT WORKSHEET / ACTIVITY 6.1 MISKWAADESI RACES WITH MAKWA

TURTLE RACES WITH BEAR 3/3

Miskwaadesi had won the great race! Gijigijigaaneshinh, Diindiisi, Gaag, and Waawaashkeshi were dancing for joy. Even Mooz, Maiingan, Waagosh, and Manidoo-waaboos were smiling and happy to see that Makwa had been beaten in a race. Makwa was always bragging and often grumpy and bad tempered. It was fun to see Makwa lose to Miskwaadesi.

Makwa could not believe it- imagine, Miskwaadesi, the slowest animal in the forest, had beaten the big and strong Makwa in a race!

Makwa was so tired from the race that he crawled away from the pond and crept into his den where he went to sleep. He slept through the winter and did not wake until Spring returned to the forest. All of Makwa's cousins have been doing that ever since. You will not see Makwa's tracks in the snow in the middle of winter.

The other animals left the pond. Miskwaadesi tapped on the ice with her front claws. A dozen green-striped turtle heads popped up - one from each hole along the edge of the pond. It was Old Miskwaadesi's family, all of whom looked just like her!

"Chi-miigwetch my relatives," Miskwaadesi called out. "Today we have shown Makwa that it does not pay to call other people names. We have taught him a good lesson. The animals of the forest now know that Miskwaadesi, Miikinak (snapping turtle) and all of their cousins are not the slowest of all living things. Turtles are fast when it comes to thinking and using our brains!" There are many ways to win a race!

Retold by Wahgeh-giizhigo-migizi-kwe



# STUDENT WORKSHEET/ACTIVITY 6.1 STORYTELLING FESTIVAL PLANNING GUIDE

## STEP 1

1. What stories do I know about animals and the wetland?

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2. Who can I ask?

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3. What did they say?

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## STEP 2

1. My partner is...

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2. Our story is...

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3. We will illustrate using...

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4. Our plan is to...

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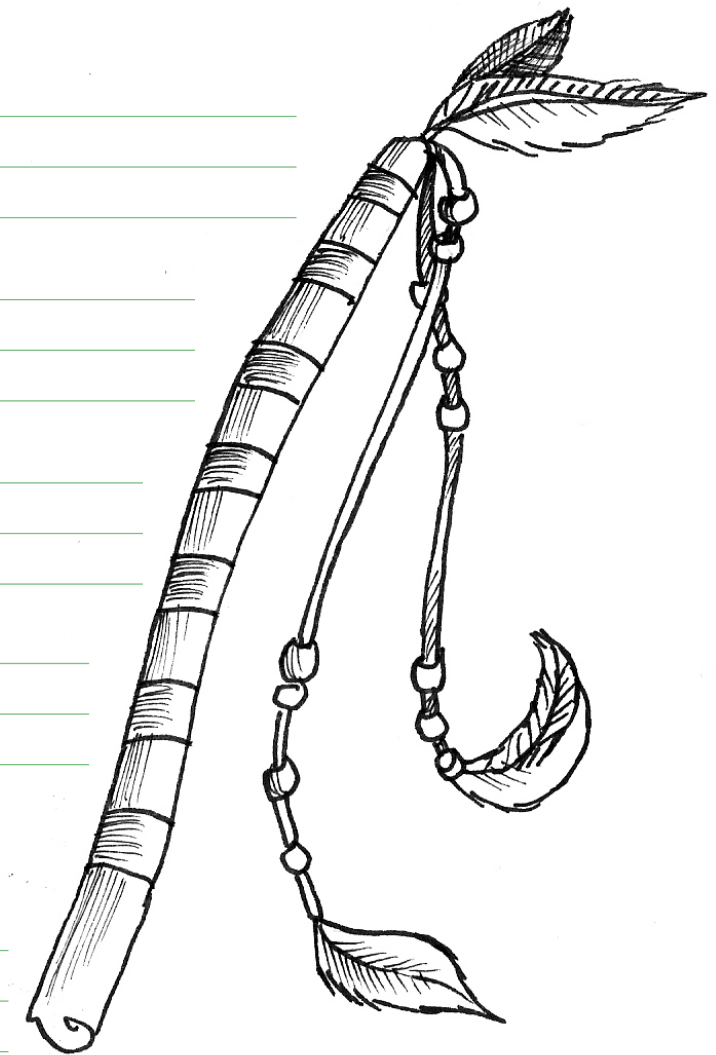
## STEP 3

1. What I will put on my talking stick...

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## STUDENT WORKSHEET / ACTIVITY 7.2 NETTING HEADACHES

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

Colour/Species	Fisher 1	Fisher 2	Fisher 3	Total	Class Total
Purple/ Leatherback					
Green/Olive Ridley					
Red/Dolphin					
Blue/Tuna					
Yellow/Halibut					
Orange/ Loggerhead					
Poprocks/Shrimp					
Bycatch					

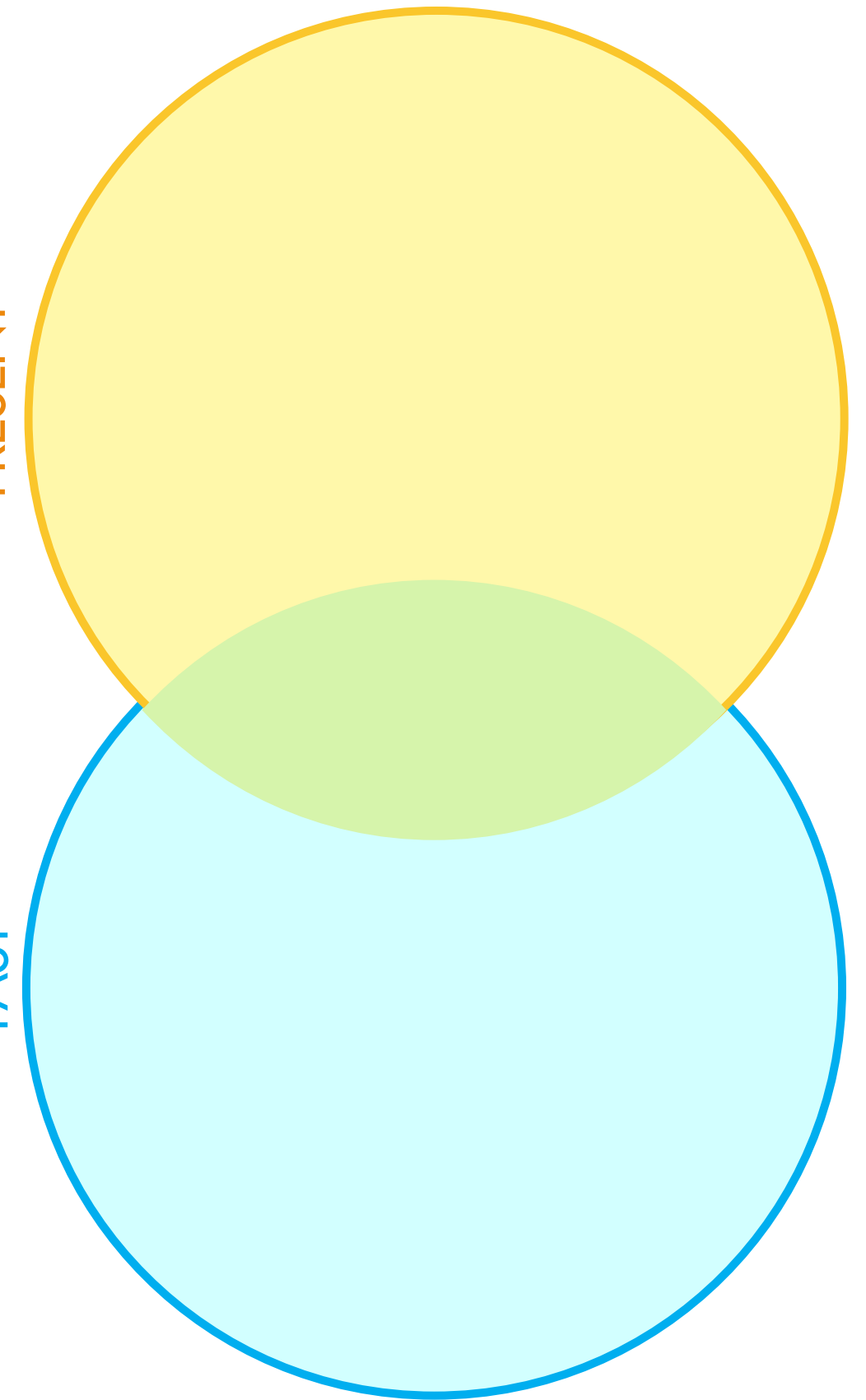
## STUDENT WORKSHEET / ACTIVITY 8.1 THE RISE AND FALL OF THE GREAT LAKES THROUGH HISTORY

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

PAST

PRESENT



STUDENT WORKSHEET / ACTIVITY 8.1  
**THE RISE AND FALL OF THE GREAT LAKES  
 THROUGH HISTORY**

NAME: \_\_\_\_\_ TEACHER GUIDE

DATE: \_\_\_\_\_

**PAST**

- Changes caused by glacier growth and melting over the land of Turtle Island (weight of ice caused a depression and when the ice melted, it left the hole filled with water)
- Lakes haven't always existed
- Ice covered the land several times (ice ages)
- Water used to flow north, now flows south (weight of the glacier moved away and the land sprung up, cutting off flow of water to the north and sent it south)

**PRESENT**

- Pollution by industry
- Changes made by humans (blasting rock, building of dams, construction)
- Wasteful use of water
- Less natural change (by glaciers), more human interference
- Pollution so great that water cannot clean itself
- Creatures living in and around the water are becoming affected by the poor health of the water

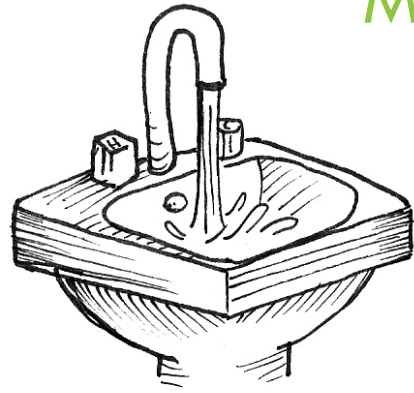
- Lakes are always changing
- Part of natural cycles (when not cause by humans)
- Need for water will always exist

STUDENT WORKSHEET / ACTIVITY 8.2C  
**WATER WALK REFLECTION CHART**

Record the sights, sounds, feelings, and smells you observe on your Water Walk. Include locations and stories that people point out on the walk.

<b>SIGHTS</b>	
<b>SOUNDS</b>	
<b>FEELINGS</b>	
<b>SMELLS</b>	
<b>SIGNIFICANT LOCATIONS AND STORIES</b>	

# STUDENT WORKSHEET / ACTIVITY 9.1 MY OWN PERSONAL WATER AUDIT



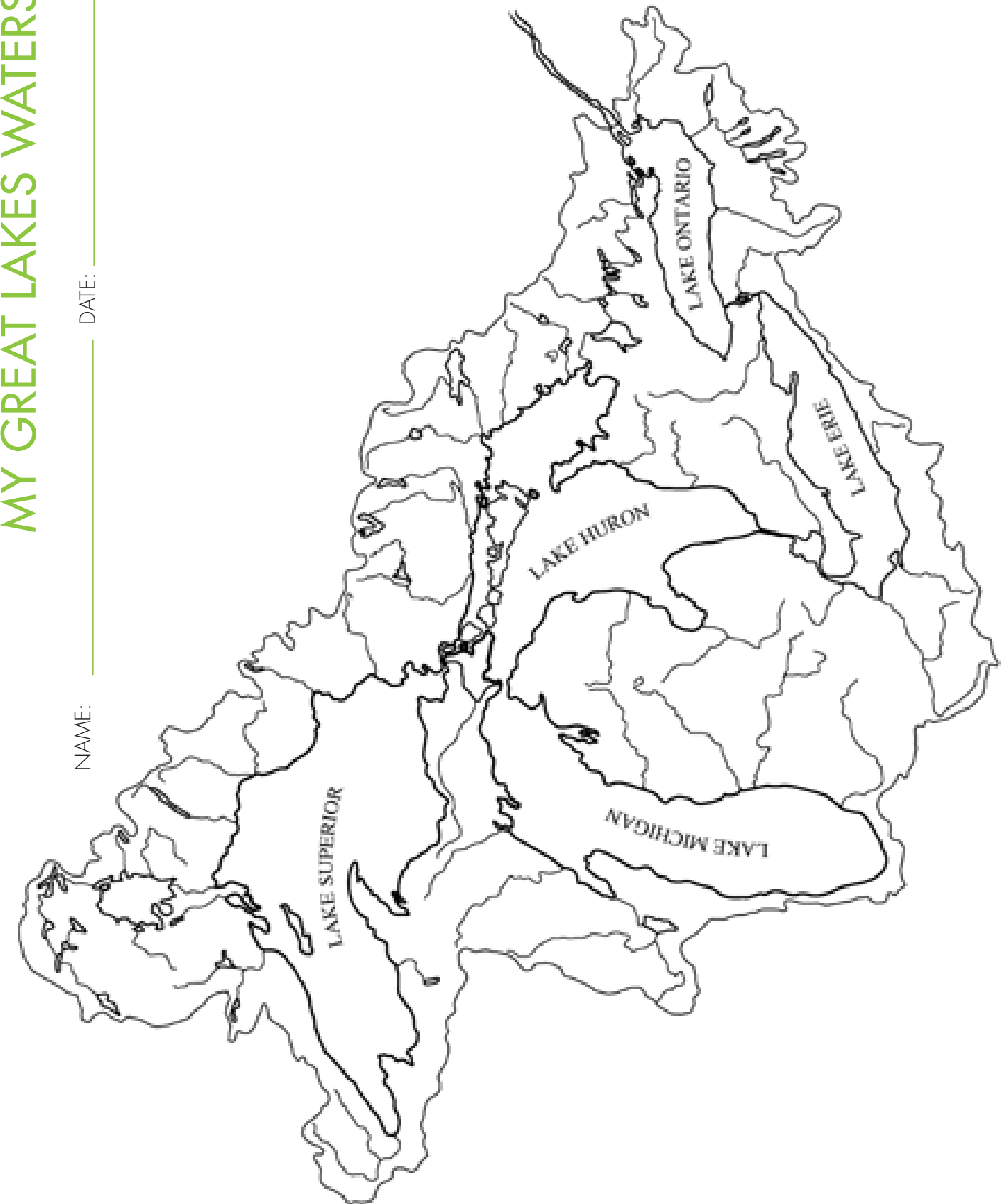
ACTIVITY	CND. AVG	MON	TUES	WED	THURS	FRI	SAT	SUN	TOTAL
Bath	60L								L
Shower	100L/ 10 min								L
Toilet	6-20 L								L
Wash Face & Hands	8L w/ Tap on								L
Brush Teeth	10L w/ Tap on								L
Drink	.3 L								L
Cook	10L								L
Dishes (Hand)	35L								L
Dishes (Washer)	40L								L
Wash Clothes	225L								L
Wash Car	16L/min								L
Water Lawn (min)	16L/min								L
TOTAL									L

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

# STUDENT WORKSHEET / ACTIVITY 9.2 MY GREAT LAKES WATERSHED

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_



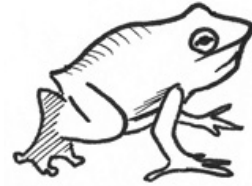
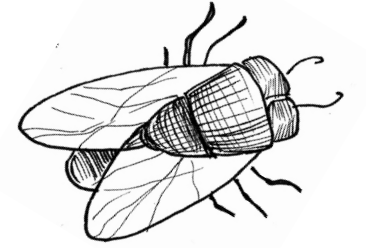
## STUDENT WORKSHEET / ACTIVITY 9.3 AMOUNT OF FRESHWATER RESOURCES IN THE WORLD

CONTINENT	AVAILABLE FRESH WATER RESOURCES	POPULATION OF WORLD
Turtle Island (North and South America)	15%	8%
South America	26%	6%
Europe	8%	13%
Africa	11%	13%
Asia	36%	60%
Australia and the South Pacific	5%	<1%

CONTINENT	AMOUNT OF JUICE/WATER
Turtle Island (North and Central America)	300 mL for group
South America	520mL for group
Europe	160mL for group
Africa	210 mL for group
Asia	720 mL for group
Australia and the South Pacific	100 mL for group

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

## STUDENT WORKSHEET / ACTIVITY 10.1A FROG CALLS IN MY WETLAND



1. What frogs did you hear calling?

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2. Could you hear better with your hands over your ears?

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3. Could you hear more when you were sitting down quietly?

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4. Write down your reflections here...

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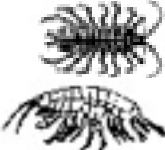











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NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

# STUDENT WORKSHEET / ACTIVITY 10.1B WETLAND REPORT CARD - IDENTIFICATION

A+	B	C
Mayfly nymph 	Crayfish 	
Caddisfly larva 	Clams 	Leeches 
Water penny larva 	Crane fly larva 	Midge larvae 
Snail 	Sowbug and Scuds 	Aquatic Worm 
Dobsonfly larva 	Beetle larvae 	Pouch Snail 
Stonefly nymph 	Damselfly larvae 	Blackfly larva 
Riffle Beetle 	Dragonfly larvae 	

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

## STUDENT WORKSHEET / ACTIVITY 11.1 TURTLE TALLY FINDINGS

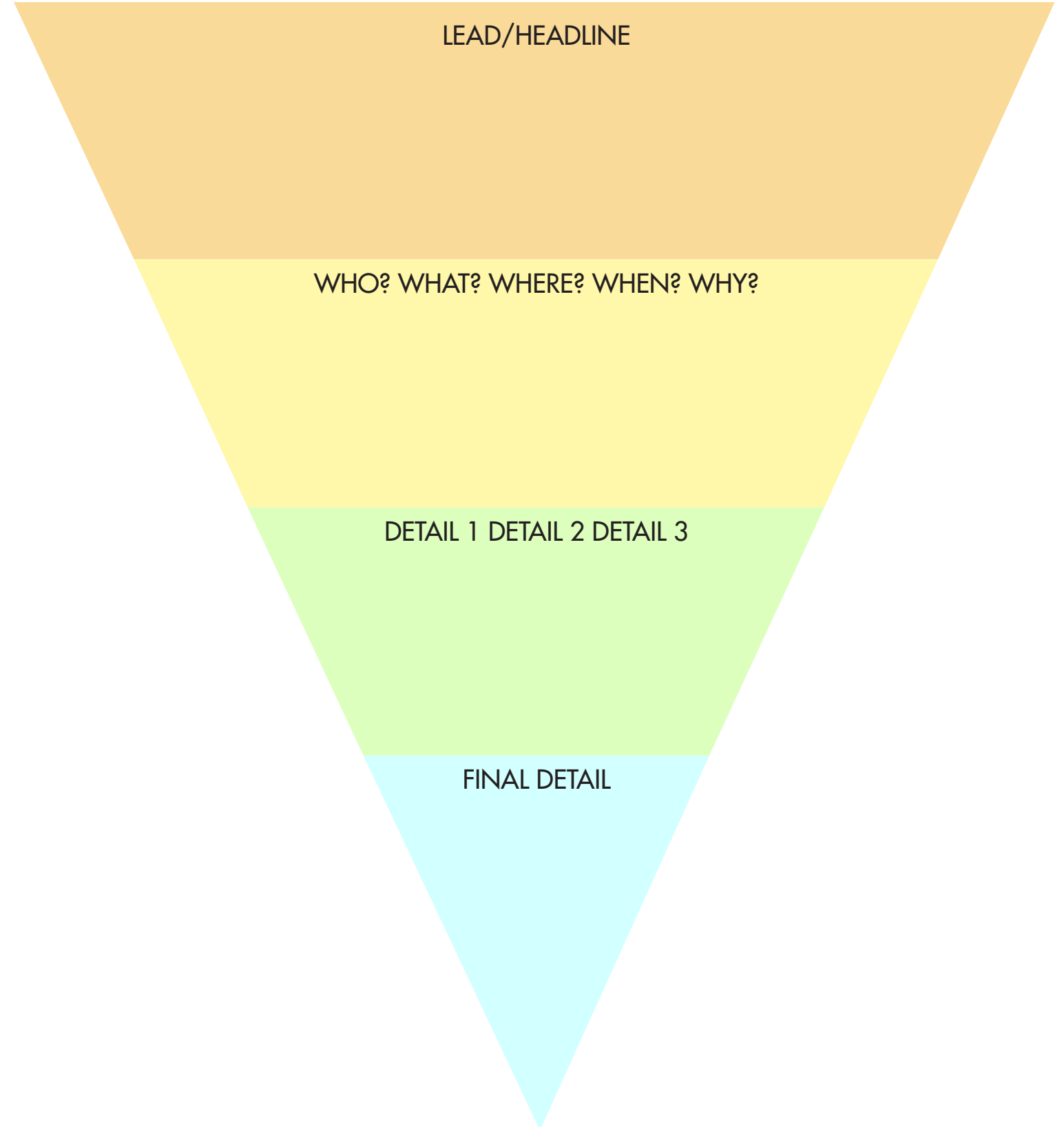
NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

SPECIES	OBSERVATION DATE	TIME	NUMBER OF INDIVIDUALS	OBSERVATION DESCRIPTION
BLANDING'S TURTLE				
COMMON SNAPPING TURTLE				
MIDLAND PAINTED TURTLE				
WESTERN PAINTED TURTLE				
NORTHERN MAP TURTLE				
SPINY SOFTSHELL TURTLE				
SPOTTED TURTLE				
STINKPOT TURTLE				
WOOD TURTLE				
RED EARED SLIDER				
UNKNOWN				

STUDENT WORKSHEET / ACTIVITY 11.1  
TURTLE TALLY FINDINGS

STUDENT WORKSHEET/ACTIVITY 12.2  
INVERTED PYRAMID FORMAT

Newspaper articles are written using an “inverted pyramid format” as shown below. The most important information is at the top (beginning of article) and the least important information is at the bottom (end of article).



MY JOURNAL

CHALLENGE:





