

# **LET'S TALK TURTLES!**



**TURTLE S.H.E.L.L. / TORTUE S.H.E.L.L.**

**SAFETY - HABITAT - EDUCATION - LONG LIFE**



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## Foreword

This education booklet is intended to provide basic information for educators, administrators and other concerned members of the public about turtles and the dangers they face on our highways. It is based on the questions most frequently asked by the general public on these subjects. The booklet is a group effort by volunteers of TURTLE S.H.E.L.L, a non-profit organization incorporated at the federal level with the purpose of providing safety, habitat, education and long life for freshwater and land turtles found in Canada. As such, the creators of the booklet do not intend it to be a scientific document.

Do not hesitate to contact TURTLE S.H.E.L.L. with any questions you may have - we'll get back to you although it may take a few days during the busy season (May - July). If you have access to the Internet you are welcome to e-mail us:

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TURTLE S.H.E.L.L. (safety, habitat, education, long life of turtles)  
TORTUE S.H.E.L.L. (sécurité, habitat, éducation, longévité de la tortue)

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Sign designed by Western Sign and Line Painting, Carlsbad Springs, Ontario and by Douglas St. Cyr & Michèle André-St. Cyr

This standard fluorescent highway sign warns motorists to watch for turtles on the roads and road shoulders. It uses a pictograph (a general turtle shape not specific to any country or species). The tire marks across the turtle's shell emphasize the danger posed by vehicles to turtles as they migrate from habitat to habitat. This is normally from the beginning of May to the end of September.



# LET'S TALK TURTLES

## INTRODUCTION

### ***What is a turtle?***

Turtles are reptiles, which are cold-blooded vertebrate animals with both a scaly skin and a bony shell covered with scales or skin. They lay hard-shelled eggs on land. Turtles have four limbs, a toothless beak and a one-piece skull. The top shell is called a carapace and the bottom one is called the plastron; both consist of a material called scutes, which are like the layers of a fingernail.

### ***Why should we care about turtles?***

All native animals are a necessary and useful part of the fauna (the wild animals found in a particular habitat or territory). Turtles help control plant life by incorporating it as part of their food source. They eat invertebrate and vertebrate animals and are themselves food for fish, snakes, birds and mammals. (Invertebrates are animals without backbones while vertebrates are those with backbones. Invertebrates may be soft, such as earthworms, or hard, such as crayfish, both of which turtles eat.) Turtles also help clean lakes and rivers and play an important role in creating balance within the ecosystem.

### ***Where do turtles live?***

Turtles live wherever they can find the temperature, food and shelter they need in wetlands such as bogs, fens, marshes, and swamps. Painted turtles, for example, like shallow, weedy bays in lakes and slow-moving rivers. There they find water plants and small soft-bodied animals to eat, and they find basking sites or dense plant growth in which they can hide from predators. Wood turtles like sandy, small rivers or ponds near fields and open woods where they forage for berries, plants and invertebrates such as snails and worms. Eastern Spiny Softshell turtles stick to open rivers and lakes with shallow areas where they can hunt fish, crayfish and other aquatic food.

### ***What is a bog?***

A **bog** is a lake or pond that is filled with living and dead vegetation (peat) but doesn't have significant current running through it. There may be little or no open water but if one depresses the plants, the water is found just below the surface of the vegetation.

### ***What is a fen?***

A **fen**, on the other hand, is a bog with some current running slowly through. The water in a fen is usually cleaner and clearer.

### ***What is a marsh?***

A **marsh** is a permanent wetland with standing or slow-moving water and emergent plant cover over more than 25% of the surface but no standing trees. Water levels may vary seasonally.

### ***What is a swamp?***

A **swamp** is essentially a marsh but with living or dead trees standing in it. Often marshes and swamps have somewhat different life forms living in them.

### ***How many species of turtles are found in Canada?***

There are eight species of freshwater or land-dwelling turtles in Canada: the Common Snapping Turtle, Common Map Turtle, Blanding's Turtle, Common Musk Turtle, Wood Turtle, Spotted Turtle, Painted Turtle (2), and the Eastern Spiny Softshell Turtle (*see next page for pictures*). Formerly there may have been populations of the Eastern Box Turtle and the Western Pond Turtle in Canada but these species now appear to be extirpated. *Extirpation* occurs when an animal is completely wiped out in one part of its territory, such as Canada, but still exists elsewhere, such as in the USA. If it is wiped out everywhere, it is *extinct*.

### ***Where in Canada are these species found?***

Ontario has all eight species, Québec has seven, Nova Scotia four, New Brunswick three, Manitoba and Saskatchewan two each and British Columbia and Alberta one species each. There are no native turtles on Prince Edward Island or Newfoundland.

### ***How are species at risk defined?***

In Canada, there are two committees that assess the status of Ontario species, the *national* Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the *provincial* Committee on the Status of Species at Risk in Ontario (COSSARO).

COSEWIC is made up of species experts from across Canada that identifies candidate species, review species' status reports and recommends national status designations for those species.

At the provincial level, COSSARO members review the COSEWIC status reports and assessments for those species that occur in Ontario. COSSARO then makes recommendations to the Ministry of Natural Resources (MNR) on the appropriate provincial status of the species. Provincial status designations are then identified on the MNR's Species at Risk in Ontario (SARO) List.

#### **MNR      Definition**

**EXT      Extinct.** Any species that no longer exists anywhere.

**EXP      Extirpated.** Any native species no longer existing in the wild in Ontario, but existing elsewhere in the wild.

**END      Endangered.** Any native species that, on the basis of the best available scientific evidence, is at risk of extinction or extirpation throughout all or a significant portion of its Ontario range if the limiting factors are not reversed. Endangered species are protected under the province's Endangered Species Act.

**THR      Threatened.** Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a significant portion of its Ontario range if the limiting factors are not reversed.

**SC      Special Concern.** Any native species that, on the basis of the best available scientific evidence, is a species of special concern in Ontario, but is not a threatened or endangered species.

### ***Which turtles are on the species at risk list?***

All but one Ontario's species of turtles are on the list of species of risk. This makes turtles one of the most endangered groups of species in the province and in all of Canada. In most cases, the national (COSEWIC) status and the provincial (COSSARO) status are the same. For turtles, the status only differs for the Wood Turtle. It is considered Endangered in Ontario because of its limited distribution and significant decline at some locations. The Wood Turtle is not considered Endangered nationally, because of its wide distribution in eastern Canada.

Common Name	COSEWIC Status	COSSARO status
Blanding's Turtle	THR	THR
Common Musk Turtle (Stinkpot)	THR	THR
Northern Map Turtle	SC	SC
Snapping Turtle	SC	SC
Spiny Softshell	THR	THR
Spotted Turtle	END	END
Wood Turtle	THR	END

**Which turtles are specially protected reptiles?**

The Eastern Spiny Softshell, the Blanding's, the Map, the Eastern Painted, the Musk, the Spotted, the Western Painted, and the Wood turtle, indeed all species of turtle are all specially protected by laws prohibiting the hunting and fishing of them, except for the Snapping turtle.

**Which Canadian freshwater turtle species is the largest?**

The Common Snapping Turtle can reach carapace (top shell) lengths of 470 mm (18.5 in.), much larger than any other Canadian species. The average adult is probably closer to 300 - 400 mm (12 - 15 in.) in carapace length. Canadian snappers can weigh as much as 27 Kg (60 lb.).

## **TURTLE ABILITIES**

**Do turtles have a good sense of smell?**

Yes they do; they use their sense of smell to find and identify food, mates, territory etc. On land turtles smell things the way we do but under water many have special little bumps or barbells on their chins that contain olfactory (sense of smell) nerve endings to help them find food in dark or muddy water. Tiny Painted Turtles, for example, are born knowing that the smell of a Snapping Turtle means danger and they react to fast movement by diving for cover.

**Do turtles see well?**

Yes, most species see very well. They even have colour vision, particularly at the red end of the light spectrum. They have the ability to detect small differences in pattern and shape. This is very important for animals that live at the water's surface where it is possible to see for long distances. Their ability to detect pattern and scent enables them to recognize their own species and avoid enemies. Turtles only have binocular vision, meaning they only see what is in front of them.

**Do turtles hear well?**

No, turtles lack a tympanum (ear drum) although they do have some of the internal ear bones that other animals have. They can detect low frequency sounds and pick up vibrations when on land or in the water, but turtles do not depend upon hearing to any great extent.

**Can a turtle crawl out of its shell?**

No, the top shell (carapace) is formed of the flattened ribs fastened to the vertebral column to form a thin sheet of bone. The lower shell (plastron) consists of bony plates sutured together and joined at the bony bridge to the carapace. Thus, the turtle cannot crawl out of its shell any more than we can crawl out of our skeletons.

**Do wild turtles make good pets?**

It is illegal to keep a wild turtle as a pet. If you want a pet, buy a captive-bred one that will be much better suited to your home. Remember that turtles can live for many years, even decades, so buying a turtle is a long term commitment.



## Freshwater and Land Turtles Found in Canada

Blanding Turtle  
*Emydoidea blandingii*



Midland Painted Turtle  
*Chrysemys picta marginata*



Musk Turtle/Stinkpot  
*Sternotherus odoratus*



Snapping Turtle  
*Chelydra serpentina*



Spotted Turtle  
*Clemmys guttata*



Spiny Softshell  
*Apalone spinifera*



Wood Turtle  
*Glyptemys insculpta*



Northern Map Turtle  
*Graptemys geographica*





# TURTLE BEHAVIOUR

## ***What do turtles eat?***

It depends on the species. Painted Turtles eat aquatic invertebrates such as water snails, leeches, crayfish, also any freshly dead fish or tadpoles. As they age, they eat more water plants, and full-grown adults are mainly plant eaters. Map Turtles, on the other hand, eat small water animals (invertebrates), fish, clams, etc. all their lives. Wood Turtles spend about half their time on land where they find wild fruit, green plants, land snails and carrion but they also eat whatever invertebrates they can catch when in the water. Generally, turtles seem to eat whatever is most readily available at any particular place and season.

## ***Is it true that turtles carry Salmonella?***

Many animals, humans included, can carry *Salmonella* bacteria. Wild turtles can carry the disease and also suffer from it. Perhaps ten percent in most areas are carriers, higher in highly polluted waters. People should wash their hands thoroughly after touching any animal. Very small children (five years old or less) and the very old should not touch turtles. There are many diseases that can be transmitted from animals to humans (and the other way, too!). Thorough washing with soap and water is the best protection (20 seconds).

## ***At what age can a turtle reproduce?***

Again, it depends upon the species, the sex and where the turtle lives. Normally, male turtles reproduce younger than females and often at a smaller size.... but not always! Male and female Spotted Turtles reproduce once they reach about 90 mm. (3.2 in.) carapace (top shell) length, generally at seven to ten years of age. Wood Turtles mature from fourteen to eighteen years: females at 158 mm (6.25 in.) to 185 mm (7.25 in.) and males at 192 mm (7.6) to 200 mm (7.9 in.). In many species, size and weight matter more than age in this regard.

## ***When do turtles breed?***

Turtles breed at varying times according to species. Some, like the Wood Turtle, can mate throughout the active season (May- Sept.) but do so mainly in the fall. In other species such as the Painted Turtle, mating occurs both in the fall and the following spring but not during the summer. Nesting (egg laying) on the other hand, takes place only in early summer months so that the eggs will have enough of the sun's heat to incubate and hatch before winter.

## ***Where are they laying their eggs?***

All turtles have to lay their eggs on land or else the eggs would drown. Canadian species nest in May, June and sometimes early July, primarily in south-facing slopes with soft or sandy soil and sparse vegetation (so the female can manage to dig the nest). The turtle searches for a site with the proper soil moisture (so the eggs will neither dry out nor flood), soil scent and lots of exposure to the sun's rays. The site may be within 20 m of the female's home or as much as 4 km away!

## ***How many eggs does a turtle lay?***

The number differs with size, age, species and condition. A small species such as a Spotted Turtle in Canada may lay one to twelve eggs with the normal clutch, or grouping of eggs, being around four. An adult Snapping Turtle may lay anywhere from 20 to over 60 eggs a clutch. Many species may divide the total number into two clutches laid a few weeks apart, probably to outwit predators or take advantage of the weather. For the most part, the eggs produced are the same size throughout the reproductive life of the female, but will differ in number with the age and size of the turtle, and the available food supply.

## ***How long is the incubation period for the eggs?***

Incubation time varies greatly from a minimum of 55 days to over 120 days. Warm summers with adequate rainfall will allow rapid development of the embryos while cool or dry summers will delay hatching. Development time also varies between species. Near the northern territory limit of a species, eggs may hatch only in years of average or above average temperatures.

***If a turtle lays twenty eggs at one time, how many will survive?***

The success rate is low; maybe only forty percent or eight eggs out of twenty will produce live hatchlings. Predators like raccoons, foxes, crows, domestic dogs, gulls, and ants may eat others. In many areas, predation rates are as high as 90 to 99 %. Other eggs may be infertile and some die from fungus infection or desiccation. In a cool summer, eggs laid at the end of the nesting season may not hatch or the hatchlings may freeze in the nest over the winter.

***Of the surviving hatchlings, how many will live to reproduce as adults?***

Food, disease, predators or just plain luck affects survival. Often three out of the eight hatchlings will survive but sometimes only one percent of the young will live long enough to breed. The survival rate varies tremendously. Some years many hatchlings are produced, other years all hatchlings may be lost due to predators and/or drought.

***If a turtle survives to maturity, how long can its lifespan be?***

Depending on the species, the location and luck...anywhere from twenty to fifty or sixty years, perhaps even more in a few cases. Most Painted Turtles can expect a lifespan of twenty-five to thirty-five years at best. Small numbers may live a very long time. Spotted turtles may make it well into their thirties, Blanding's Turtle to over 75 and at least one Common Musk exceeded 90 years (partly in captivity).

## **TURTLES IN SUMMER AND WINTER**

***Why do turtles bask in summer time?***

Turtles bask or lay in the sun because they are reptiles and cannot make their own heat. The sun's warmth helps raise their body temperatures up to between 16° C and 35° C so they can better digest their food. Also, their muscles work better if they are warm.

***Where do turtles go in the winter?***

Canadian turtles hibernate for over five months. Some (Painted, Snapping Turtles) hibernate on the bottom of quiet backwaters, nestled up to sunken logs or under stream or lakeside banks. Others (Spotted Turtle) hibernate in the fens or flooded fields in which they live during the summertime. They choose sites where the water does not freeze right to the bottom or become too low in dissolved oxygen.

***Why do they hibernate?***

Turtles in our cold, harsh climate must hibernate for two main reasons. Firstly, there is little or no food to be had in the winter and secondly, even if food were to be found, they could not digest it. Turtle digestive enzymes are the same as ours. Their body temperature must be at or above 16° C (65° F) or else the food will rot and poison them before it is digested. This means that our turtles must obtain and digest their entire year's food supply in only four and a half months of summer weather. If they did not lie quietly in hibernation they would starve to death.

***What happens during hibernation?***

Hibernation is stressful for a turtle but enables it to survive the long Canadian winter. The heart beats only five to eight times a minute, the bodily functions are more or less suspended and the body temperature may be only a couple of degrees above freezing. At this level of metabolic activity the turtle can absorb enough oxygen directly through the skin so it can remain submerged without drowning.

# TURTLE DANGERS

## ***What animals eat turtles?***

Hatchlings and young juveniles are preyed on by anything that is carnivorous and bigger than they are: herons, crows, hawks, raccoons, foxes, coyotes, bullfrogs, large fish, domestic dogs, even some larger turtles (although the incidence of this is likely quite small). Adults are also eaten by many of the larger predators listed above.

## ***What else threatens the turtles?***

Humans pose the biggest threat to turtles by destroying turtle habitats, accidentally or purposely, with pesticides, pollution, and wetland drainage for development. Vehicles including automobiles, mowing machines, weed cutters, boat propellers and bicycles are a major threat to many species and are responsible for the deaths of a high percentage of adult females.

## ***Is it true that the Snapping Turtle is dangerous?***

No. Snappers are only aggressive when approached on land or grasped in the water. They will strike hard to defend themselves when they feel they are in danger, but they do not chase people. They are eager feeders so if carelessly fed they can bite a hand.

## ***Is it true that the turtle's shell is hard enough to withstand being run over by a vehicle?***

No, the carapace (shell) is quite thin and easily crushed. Turtles usually suffer fatal internal injuries when run over. *Snapping turtles often look perfectly normal after being hit by a car yet have actually received fatal internal damage.*

## ***Will throwing rocks at a turtle harm it?***

Besides being cruel, throwing rocks at a turtle will certainly injure the turtle and possibly kill it.

***What does a turtle do when faced with danger?*** A turtle protects itself in one of two ways. Either it will pull its head and feet in and wait, or if there is cover nearby, it will make a dash for it.

## ***If a turtle is turned on its back, can it turn over?***

A turtle is sometimes able to turn itself right side up, but on a flat and relatively smooth surface a turtle cannot get a grip with its claws so it is trapped.

## ***Is it dangerous for a turtle to remain on its back?***

Yes. In this position, especially on a road in summertime, a turtle will quickly overheat, dehydrate and die.

## ***Why do turtles cross roads and highways?***

Turtles of all ages will wander away from their home water bodies occasionally, but mainly it is the adult females that must struggle overland in the nesting season to find a suitable warm, sunny place to bury their eggs. Roads border many of our rivers, ponds and lakes where turtles live, so vehicles take a terrible annual toll on breeding females. Since turtles need a specific combination of conditions to lay their eggs -- southern exposure with its more direct sun, soft soil, the appropriate soil humidity, and little or no plant cover -- they often have no choice but to go far from the water in which they live. Female turtles may have used many of these sites for generations.

## ***Do turtles cross the highway at any time of the day?***

Turtles are mainly diurnal (daytime) creatures; they are likely to be seen traveling any time between sunrise and sunset to and from nesting sites. They may avoid moving on very hot days as they could become overheated and they avoid night travel when predators may be about. Generally, turtles may be found on the roads between May and the end of September, sometimes later.

### ***What can we do to help reduce the turtle mortality rate on our highways?***

First, drivers and cyclists must be alert. Turtles do not understand vehicles and the danger they present. They have only limited binocular vision, meaning that from the side they cannot tell how fast a car is moving or even precisely how close it is. If drivers and cyclists are actively looking for turtles as they drive through likely crossing spots, they may see the female waiting at the edge of the road or even right out in the middle. Most crossings occur where creeks or wet ditches run along the highway. *If a quick shoulder-check shows the road behind you is clear* it may be possible to stop along the shoulder, put on the four-way flashers or alter direction to avoid the unwary turtle. Nesting season for most turtle species runs from mid-May to the end of June or early July, depending upon the weather. Some turtles cross roads in September and October to reach a suitable hibernation spot, so we should look out for them at that time too.

When using hay cutters, lawn mowers, weed cutters or earth-moving equipment, walk through and look over the area to be cleared first, to see if turtles are hiding there. There are few adult breeding females in any turtle population so reducing the unnatural loss of the normally long-lived adults on the roads is crucial to saving turtles for the future. In some areas vehicles have seriously altered the normal 1:1 ratio of females to males.

### ***What do you do if you spot a turtle heading across the road?***

If you believe it is in immediate danger and wish to help, make a safe stop. Help it across the road in the direction in which it was heading; if it appears to be advancing toward more danger, take it to a nearby suitable environment. A swampy area with a sandy bank behind it would be ideal. If the turtle is obviously headed away from the water body, do not take it back to the water. It will only retrace its steps to get to the nesting area.

Smaller species (Painted Turtles or Blanding's Turtles) can be carried by hand or in a bucket or box. Be aware that they have claws and do not put your fingers near their beaks -- they are frightened and might bite. Large Snapping Turtles are likely to bite and scratch so they should be handled carefully and by adults or older children only. You could try grasping the snapper at the *base* of the tail, lift it gently and point the beak away from your body. (See *diagram 1 on page 15*). Carry it to the edge of the road to release it. If this method does not appeal to you, try grabbing the tail and sliding the turtle onto a large flat shovel or piece of cardboard and dragging it to a safe release spot. (See *diagram 2 on page 13*.)

Important: On larger Snapping Turtles (over 30 cm/one foot in carapace length), the weight may be sufficient to break the tail if the animal is carried vertically. Use a shovel, plywood or cardboard and drag the animal. In all cases be aware that the turtle's claws are strong and the beak is sharp. They can reach you if you are careless. Be prepared for frequent powerful lunges of the head.

### ***If I find an injured turtle, can I help?***

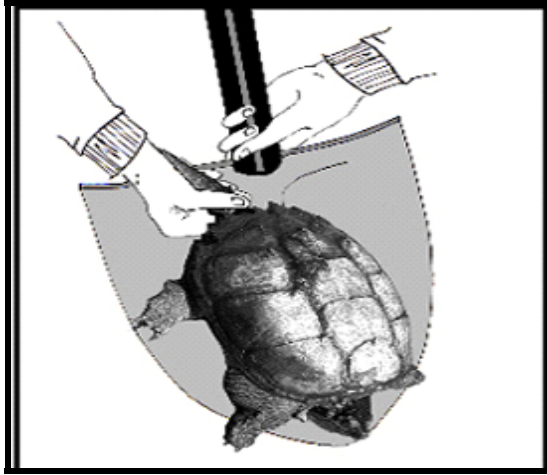
Yes, lift it gently into a box or other suitable container and take it to a veterinarian. Many will treat an injured wild animal for free (but you should ask first) and if they are unable to do that they will either give you advice on how to treat the animal yourself (often not that difficult) or give you a much-reduced price. If you live in a larger center there may be a Humane Society or animal rescue agency that can help. Check your Yellow Pages before you need to know. Please note that wild turtles do not make good pets.

### ***How else can I help save our turtles?***

Why not join **TURTLE S.H.E.L.L. / TORTUE S.H.E.L.L.** and help with our turtle conservation efforts? You might want to carry a rescue kit in your car in case you encounter an injured animal (shovel, cardboard or plastic box, rubber gloves, paper towels). Find out if there is an animal rescue organization in your area or check local veterinarians to see if any are interested in helping turtles and perhaps having you as a volunteer. Talk to your community leaders and ask if they are doing anything to help turtles. Most of all become informed about turtles. Study up on these fascinating and ancient creatures by reading some of the books we have listed on the next page or check your local library or bookstore.

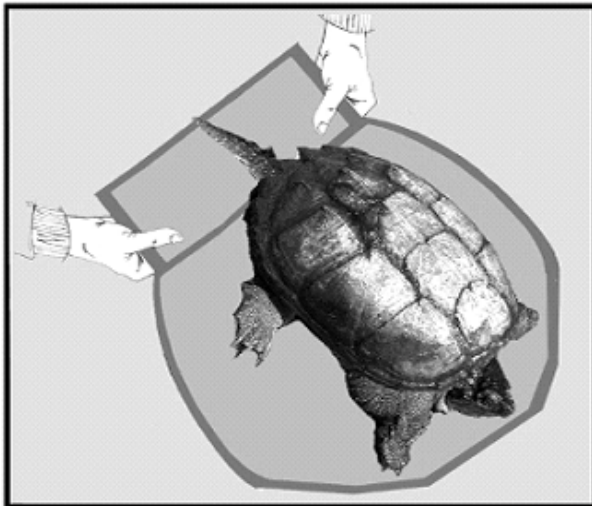
## HOW TO MOVE A TURTLE SAFELY - 1

### *USING A SHOVEL*



While standing behind the turtle, gently slide a shovel, piece of cardboard or car mat under it. Once it is positioned on the surface, move it to the shoulder of the road or gently towards the ditch in the direction it was facing. You can either push it or carefully lift it a few inches off the ground. If at all possible, DO NOT USE A RED SHOVEL, as it may frighten the turtle

### *USING A CAR MAT*

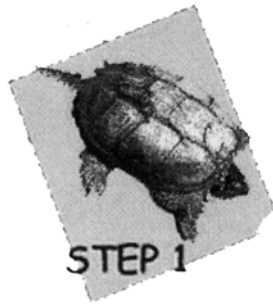


Artwork : Tamara Annis

## HOW TO MOVE A TURTLE SAFELY - 2

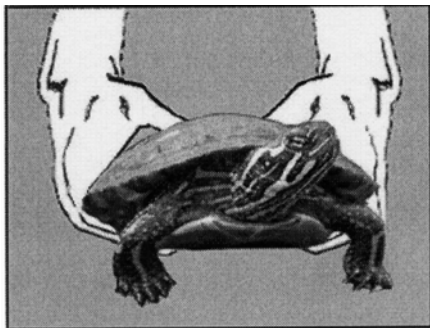
### *USING A BLANKET*

*Step 1* - After spreading the blanket on the ground, place turtle on blanket with its head facing away from you. For larger turtles, use the shovel method to move the animal to the blanket.

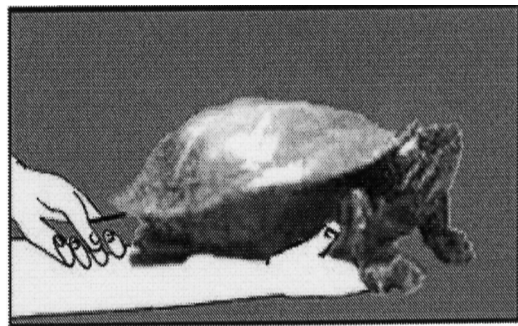


*Step 2* - Once you have safely positioned the turtle on the blanket, gather corners above the turtle to lift it securely. Now you can safely lift the turtle to the side of the road. Stand behind the turtle, open the blanket. Always make sure you are moving the turtle in the direction it was originally headed. This will ensure its safety.

***LIFTING 1*** Grip with your hands on either side of the turtle's shell, positioned towards the back of the shell.



***LIFTING 2*** Keep one hand around the base of the tail and the other under the plastron



Artwork: Tamara Annis

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### ***Some useful websites***

1. Canadian Amphibian and Reptile Conservation Network (CARNET):  
This website has an amphibian and reptile tour of Canada with excellent colour photographs, range maps, life histories and more. Fully bilingual.  
<http://www.carcnet.ca/>

2. For range maps, pictures  
<http://nhic.mnr.gov.on.ca/MNR/nhic/herps/ohs.html>

3. Ontario Reptile and Amphibian Atlas  
[http://www.ontarionature.org/protect/species/herpetofaunal\\_atlas.php](http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php)

4. TURTLE S.H.E.L.L.  
[www.turtleshelltortue.org](http://www.turtleshelltortue.org)



## Suggested Further Reading

### **Amphibiens et Reptiles du Québec et des Maritimes**

Jean-François Desroches and David Rodrigue. Waterloo: Éditions Michel Quintin, 2004.  
*Great field guide to the amphibians and reptiles of Quebec and the Maritimes. Lots of photographs. In French.*

### **Introduction to Canadian Amphibians and Reptiles.**

Francis Cook. Ottawa: National Museum of Natural Sciences, 1984.  
ISBN 0-660-10755-4. 200 p. Paperback.

*An excellent field guide to all Canadian species, illustrated with line drawings by Charles Douglas, range maps and thorough descriptions of the animals and their habits. Unfortunately, long out of print but you may be able to find it in a used bookstore or library. Inexpensive.*

### **Introduction aux amphibiens et reptiles du Canada.**

ISBN 0-660-90276-1

*As above, also out of print.*

### **La Tortue.**

Helmut Wilke and Uwe Anders. France: Marabout, 1999. (Translated from Die Schildkröte, mein Heimtier. Munich: Grafe & Unzer Verlag GmbH.) 126 p, photos and drawings.  
*(In French) Detailed descriptions of turtles and their care. Strongly recommended.*

### **Reptiles and Amphibians of Eastern and Central North America.**

Roger Conant and Joseph Collins. New York: Petersen Field Guide Series, Houghton Mifflin Company, 1998, Third edition. ISBN 0-395-90452-8. 668 p. Paperback or cloth.  
*The classic field guide to reptiles and amphibians of eastern North America.*

### **The ROM Field Guide to Amphibians and Reptiles of Ontario.**

Ross MacCulloch. Toronto: Royal Ontario Museum and McClelland & Stewart, 2002.  
*A great field guide to the amphibians and reptiles of eastern Canada. Lots of photographs.*

### **Survivors in Armor: Turtles, Tortoises and Terrapins.**

Oreinsten, Ronald. Toronto: Key Porter Books, 2001.

*A wonderful book on turtle biology and conservation with lots of gorgeous colour photos. Aimed at a general audience and the text is very clearly written*

### **Tortues.**

Helmut Wilke. Paris: Hachette Livre, 1992. (Translated from Schildkroten richtig und verstehen. Munich: Grafe & Unzer Verlag GmbH.) ISBN 2. 0101.7408.9 59p. illustrated.  
*(French edition) It is an excellent brief guide to turtles, their structure and their care.*

### **Turtles of the United States and Canada.**

Carl Ernst and Jeffrey Lovich. Baltimore: Johns Hopkins University Press, 2009. ISBN 13-978-0-8018-9121-2. 827 p. Cloth.

*If you are VERY interested in turtles and live in North America, this is the best there is. Lots of photos and exhaustive text that covers almost every aspect of turtle biology with thoroughness and accuracy. Written by the best in the business, this is one for the school library or for someone who really wants to KNOW. Expensive but worth it. You will have to order this one through your bookseller; it won't likely be on the shelves.*

**NOTE:** *If you are interested in captive care of amphibians and reptiles or in a particular aspect of their biology or habits, please contact us for recommended reading.*

## NOTE TO EDUCATORS

The information contained in this booklet “Let’s Talk Turtles” is a general overview of why turtles need to be protected and how turtle crossing road signs are one way of doing this. It is designed for administrators considering erecting signs in their municipalities and/or counties, as well as for educators.

For educators specifically, the booklet can be used as a resource for you and your students in creating an understanding of how turtles’ life cycles and habits bring them into danger. This could be accomplished in approximately one hour of class time, using activities from the list below or activities of your own design. Our hope is that children will then be equipped to increase the awareness of their parents of the danger that turtles encounter on our highways.

The activities below can be used to fulfill requirements of the Ontario Curriculum as outlined on the Ontario Ministry of Education website [www.edu.gov.on.ca](http://www.edu.gov.on.ca). Specifically in the Life Systems Strand of the Science and Technology curriculum, “Let’s Talk Turtles” can be used for the section “Characteristics and Needs of Living Things” in Grade 1, for “Growth and Changes in Animals” in Grade 2, for “Habitats and Communities” in Grade 4, for “Diversity of Living Things” in Grade 6 and for “Interactions within Ecosystems” in Grade 7. The material can also be used by older students as a direct research resource.

Some of the activities in the activity list are based on those found in Project Wild published by The Canadian Wildlife Federation in 1988 (ISBN 1-55029-012-6).

### Suggested Activities using “Let’s Talk Turtles”

Description of Suggested Activity	Grade level curriculum	Booklet Page references
Draw poster distinguishing it from other animals, or colour one already prepared	Grade One	p. 4
Act out turtle abilities and how they move in an imaginative drama activity	Grade One	p. 7
Create poster of life cycle or hibernation habits	Grade One, Grade 2	p. 8-10
Label picture identifying the parts of the turtle	Grade Two	p. 8
Discuss effects of humans on turtles	Grade Four	p. 11-13
Create a warning sign for turtles (as the target audience) What must turtles be warned against, like we have poison warnings and road signs	Grade Four	p. 11-13
Create a food chain poster	Grade Four	p. 8
Create a Photo Album of a turtle’s life using drawings and cut-out photos	Grade Four	p. 4, p.8-10
Trace a Turtle’s Journey from its home to lay eggs, to bask, to hibernate etc.		p.9, p.10
Draw a plan for a turtle’s home as compared to your own	Grade Four	p. 9-10
Include turtles in classification exercises	Grade 6	
List activities harmful to wildlife and environment		p. 11-13, see p. 186 of P.W.*
Prepare cards describing a scenario that would affect turtles, other animals, and their habitats. Discuss.	Grade 7	All, see p. 197 of P.W.*
Imagine solutions to environmental problems observed	All grades	Intro, p. 11-13
Explore how turtles are used in various cultures’ art, particularly in North American native art and story	Grade 4	
Visualize a turtle’s perspective and then write a poem -- a cinquain format is particularly good	Grade 1, all levels	

\*P.W. is Project WILD, Canadian Federation of Wildlife, 1988.