



Reptiles we know and love

By Pat Bumstead

This is a series of discovery for youth and leaders! In these occasional features, you will learn about Canadian species of reptiles and amphibians and how they survive our harsh winters. You'll find out which animals live in your province, and learn fascinating and useful information for badges.

Canadian Creatures

Canada is a vast country of nearly 10 million square kilometres. It stretches 4,800 km from the Atlantic

to the Pacific, and 4,500 km from its southern border to the northern limit of land on Ellesmere Island in the Arctic.

Within this huge expanse are tremendously diverse life zones – the Arctic tundra, ocean coastlines, prairie grasslands, mountains, and four different types of forest. With the exception of the northern tundra, each of these zones is home to animals that depend on external heat sources to survive.

Animals that require a heat source from outside their body are called ectothermic.

Once called cold-blooded, this term is no longer used, as it gives the impression they are cold to the touch. The body temperature of amphibians and reptiles is usually not much cooler than that of birds or



mammals. They control their temperature by moving from warm places to cooler ones, and back again.

Famous for our harsh and variable climate, it seems astonishing that these animals can survive here. But survive they do, and with some amazing adaptations.


Unlike humans, these animals do not need to eat on a regular basis to produce body heat and energy. They can go for long periods without eating. This means they can live in remote areas with scarce prey.

Strength in Numbers

Overwintering in the nest – All turtles must come on land to lay their eggs in a nest chamber dug deep in soft soil. The young turtles break their way out of their shell with a tempo-

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rary egg tooth, and dig their way to the surface. If the temperature on the surface is not warm enough when they hatch, they will spend the winter deep in the protective nest chamber, emerging in the spring.

Working as a group – During the winter, reptiles rely on warm, dry den sites that provide protection from the elements. The temperature in the chosen den never drops below freezing. Snakes are often found in dens, or hibernaculum, numbering several hundred animals. Even species that are enemies during the summer months will spend the winter huddled together. Many species of turtle also hibernate in groups. For many salamander, lizard and snake species, communal nesting sites are the answer. Multiple females will lay their eggs in a particularly choice site, rather than use a less desirable one on their own. This improves the chance of a successful hatching, and is common in areas where good nesting sites are scarce.

Freeze Proof

Freeze tolerant – In the cool temperate regions, some species of frog freeze solid during the winter, and can survive temperatures as low as -6°C. To do this, their body increases specialized protein and glucose levels to protect the cells from freezing and drying out. Ice crystals form beneath the skin and throughout the muscles. Up to 60 percent of their body fluids freeze, blood circulation stops and the heart stops pumping. In the spring, they thaw out and resume normal activities.

Hiding below the frost – Many species of amphibian and reptile look to holes in the ground to protect them from freezing. A few species dig their own burrow, but most will use one that has been abandoned by a small mammal. The temperature of the ground below the frost level is warm enough for them to survive the winter.

Aquatic amphibians may spend the winter in water that is too deep or fast flowing to freeze solid. Beneath the ice, there is enough oxygen in the water to keep them alive. Some species of salamander may be seen swimming beneath the frozen surface of their pond. Tadpoles and salamander larvae, if they don't develop into

land-dwelling adults their first season, spend the winter buried in the mud at the pond bottom. Some turtle species also overwinter in the bottom sediment.



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Darker is better

Being darker – Dark colours absorb heat from the sun more readily than lighter ones. Larvae of most amphibians are dark green, brownish or black. They often swarm together, increasing the size of the mass to attract more heat. Eggs are also laid in large masses so the small dark embryos can attract more heat.

This rule also holds true for many of our reptiles. Their tropical cousins are bright and colourful, but ours are various shades of brown. Reptiles living this far from the equator need to receive as much heat as they can from the weaker sun rays.

Using nature's supplies

Algae growing on eggs – Frogs and salamanders lay jelly-like masses of eggs. The thick jelly holding the mass together acts as an insulator against the cold. Sometimes these egg masses support the growth of a dark green algae, which provides additional temperature protection, as well as camouflage.

Retreating underground – Winter isn't the only problem season for these animals. Hot, dry conditions can be fatal to amphibians, and many will retreat underground until conditions improve. Using abandoned animal burrows, cavities under tree roots or shelters in rocks, they will hide until it's safe to return to the surface. During long periods of drought, they can go into

a kind of dormancy similar to hibernation, which is called aestivation.

Hibernating – With so little to protect their bodies from the elements, reptiles and amphibians use a variety of locations for shelter. Aquatic species may snuggle down into the mud on the bottom of ponds. Turtles can often be found in muskrat or beaver lodges, below the water line. Snakes look for a large, deep rock pile with a warm central area. Salamanders in the moist woodlands survive tucked deep under tree roots, leaf litter, soil and other debris on the forest floor.

Raring to go

Live born young – Many reptile species, instead of laying eggs and leaving them to the elements, retain the eggs inside their bodies and give birth to live young. If the female keeps the eggs inside her body until they hatch, she is better able to regulate their temperature. This is a distinct survival advantage in cooler

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regions. The warmer the incubation temperature, the faster the development of the embryos as well.

There is a trade-off for this protective nurturing, as it results in fewer broods. In the tropics, reptiles may reproduce many times a year. Females in the cooler regions who give birth to live young are only able to do so once every year or two. They give birth in the summer, and may be unable to feed enough before hibernation to reproduce the following year. Live bearers who live at higher elevations may produce a brood only every two or three years.

There will be more of these fascinating creatures to come over the spring issues.

– *Pat Bumstead loves nature and enjoys sharing her knowledge with others. She is the author of Canadian Feathers, a book on the birds of Canada, and has co-authored two books on wild cats of the world. She is founder and president of the non-profit International Society for Endangered Cats (ISEC) Canada, and a member of the World Conservation Union (IUCN) Species Survival Commission Reintroduction Specialist Group.*

Slithery Section Activities



FROG POND

A player is chosen to be the Duck. All others are Frogs. Each Frog selects a “den” or safety spot, a short distance from a “Frog Pond”. (Make sure the Pond is a designated area.)

The Duck goes away, and the players hop around the pond. (A song may be sung.)

The Duck waddles towards them and the Frogs try to hop to safety in their dens before the Duck can catch them. The Frog that gets caught becomes the Duck for the next game.

TADPOLES

What you need: Large plastic containers, fish bowl, algae, fish food

What to do: You may want to lead in to this activity talking to the colony

about tadpoles and their growth into frogs. During the spring, visit a pond and have the youth observe the many kinds of life that exist in that habitat. They may even wish to bring their own fishnets to get a closer look at different phenomenon. Have the youth search along the edges of the pond for tadpole eggs. They have a clear jelly appearance with black spots covering them. If any are found (a leader may want to go in advance to be sure there are some available), have the youth fill the large containers with pond water and algae. Next, the leader should very carefully scoop the eggs into the containers and then carry them back to the meeting place. Over the next week or so, observe how the eggs hatch into tadpoles. When this occurs, the tadpoles should be moved to a larger container; possibly a fish bowl. The group can then continue to watch the tadpoles transform into frogs, and record every stage of the frogs’ development. Eventually, the frogs will need to be returned to their natural habitat. Remember to feed the tadpoles algae and fish food. They will also eat lunch meat and egg yolks for

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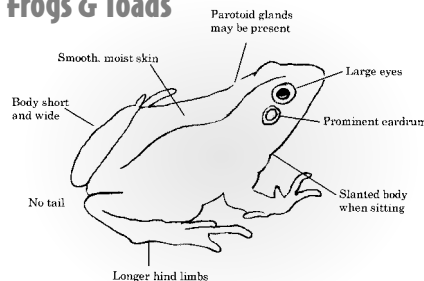
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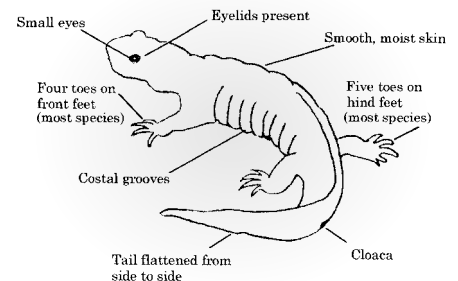
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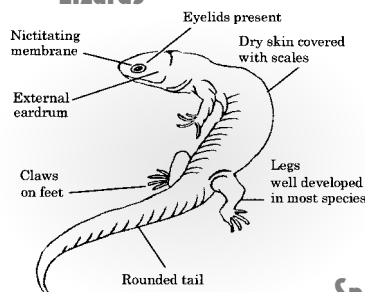
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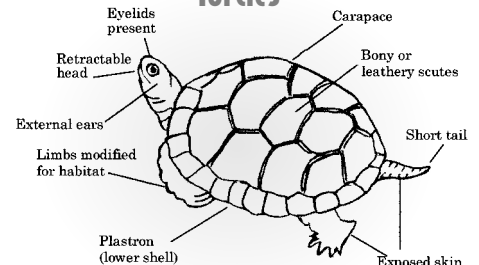
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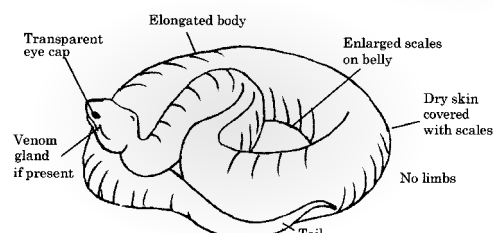
Lizards



Turtles



Snakes



Metamorphosis of the Frog



Tadpole hatches



External gills appear



Gills covered in skin



Hind feet appear



Front feet appear



Tail is absorbed

any eager Beavers who want to bring them a treat. As an additional activity, why not have the youth draw pictures of their new-found friends!

A TORTOISE IS A TURTLE – TRY THIS AS A QUIZ

Tortoises

1. A tortoise is a type of turtle.
2. Tortoises live on land.
3. Tortoises mainly eat plants.
4. Tortoises have stumpy feet just right for walking. They have short claws.



Turtles

1. Turtles live in or near the water.
2. Turtles may eat both plants and meat.
3. Other turtles have feet just right for swimming. They have longer claws.
4. Turtles dig holes in the mud, in ponds, where they settle down for the winter. Turtles can take in air and water while they hibernate. They have openings in their skin that act like a fish's gill.

CROCODILE SONG

She sailed away on a sunny day
on the back of a crocodile.

"You see," said she, "He's as tame as can be,
I'll ride him down the Nile."

The crock winked an eye as the lady waved goodbye,
wearing a happy smile.

At the end of the ride the lady was inside,
and the smile was on the crocodile!

HOPPING FROGS

What you need: Ten sticks per team

What to do: Divide the group into teams and set them up in relay formation. Space the sticks out in front of each team like a ladder. On a signal, the first player in each team hops in the spaces between the sticks until he comes to the last one. He then bends down, picks up the stick and hops back to his team. After being tagged, the next player then repeats the process. This continues until each has had a turn. The first team to finish is the winner.

SHED THAT SNAKESKIN!

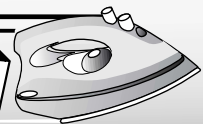
What to do: Divide the group into teams of seven or eight. Have each team stand in a line, one behind the other. Each player then places his right hand through his legs and holds the left hand of the person behind him. The only people with a hand free should be the first and last person of each line. On signal, the last person of each line lies down while the player in front of him walks back-

wards over him and lies down as well. This continues until everyone is lying down and the person from the front of the line is now at the back. The snake has completed shedding its skin! The process is then reversed to get the snake back to normal. Still holding hands, the last player to lie down gets up and walks backwards over all the members of his team, pulling them up as he goes. This continues until the entire snake is pulled up into a standing position again! The first team that sheds its skin and returns to its original position, wins!

TURTLES AND FROGS

What to do: Choose one youth to be the caller. The rest of the group members should line up about two feet from each other, waiting for instructions. If the caller yells "Leap Frog" the youth crouch down, and the last player in line leaps over the rest one by one. When he reaches the front, he crouches down and the youth who is now last in line starts leaping. When the caller wants a change, she yells "Turtle Crawl!" and the youth all stand up so that the last one can now crawl through their legs. The caller can switch back and forth and make it as funny for herself as she likes! X

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