THE ROAD TO EXTINCTION:

A call to end the snapping turtle hunt

Above: Hatchling snapping turtles, like this one, are approximately the size of a toonie (photo by: Scott Gillingwater).
Right: A snapping turtle laying her eggs at the side of the road in the City of Kawartha Lakes (photo by: John Urquhart).
Cover: Adult male snapping turtle in Algonquin Provincial Park (photo by: James Paterson).

Turtles and tortoises are among the most endangered group of vertebrate animals in the world: more than half of the 328 known species are threatened with extinction.

A Call to Action

The history of the snapping turtle is long and complex. If generations of snapping turtles were lined up mother to daughter, they would extend back 40 million years.

Yet despite the snapping turtle's incredibly long history of survival and carry-along armour, the species is at risk of disappearing from Ontario forever. The threats to its survival are numerous and include habitat loss and fragmentation, pollution, road mortality, and legal and illegal hunting.

The Ontario Ministry of Natural Resources (MNR) permits the hunting of this species at risk, despite the fact that snapping turtle populations cannot sustain significant adult mortality because of the late age at which this species reaches sexual maturity and the low likelihood of its offspring surviving to adulthood. What is not known, unfortunately, is how many people are hunting snapping turtles and how many are killed each year, or even how many turtles remain across the province. This report calls on the government to end the unsustainable hunt of the snapping turtle, a species already at risk.

Why should the snapping turtle be protected? In healthy aquatic ecosystems, snapping turtles make up 10 times as much biomass (i.e., living organisms by weight) as most mammal and bird species, such as beavers or mallards. Their abundance benefits ecosystems in several ways: turtle eggs are a highly nutritious food that mammals and birds can feed to their young;

turtles clean waterways by consuming dead and decaying fish and other animals; and turtles create channels that fish, amphibians and smaller reptiles use to move efficiently through a muddy wetland. The loss of snapping turtles would eliminate these substantial ecological services and reduce the quality and functionality of Ontario's wetlands and lakes. And regardless of their usefulness, snapping turtles are an ancient and fascinating thread in the web of life.

What will happen to the snapping turtle as a species is uncertain. After thriving for millions of years as a top predator in aquatic ecosystems, the snapping turtle is now in trouble. Since human activities are the main cause of its decline, it seems appropriate that humans should help to reverse it. The future of this prehistoric creature now depends largely on the choices people make and the actions they take. Will remaining wetlands be protected, or will they be converted into subdivisions? Will drivers continue to run over turtles, or will people help them cross roads safely? Will humans continue to allow the pollution of wetlands and waterways – ecosystems on which they, as well as other creatures, depend – or clean up their act? And finally, will the unsustainable, unmonitored hunting of snapping turtles be permitted to continue, or will the government end the hunt?

This report outlines the most significant threats to snapping turtles, including the hunt and road mortality. It identifies eight Ontario road mortality hotspots for turtles and discusses the potential of eco-passages, such as those currently being installed along Highway 400, to address this threat. The report also examines the levels of two persistent toxins – polychlorinated biphenyls (PCBs) and mercury – that these top predators absorb from Ontario's sometimes highly polluted lakes, marshes and rivers. The level of toxins found in turtles should ring warning bells for all of us, given that we live near these water systems and ultimately depend on them. The report concludes by identifying actions people can take to ensure that the snapping turtle endures long into the future.

The Snapping Turtle: A Species at Risk

At present, the snapping turtle is listed under Ontario's Endangered Species Act, 2007 as a species of **special concern.** This designation means that the species is not yet **endangered** or **threatened** but may become so due to a combination of biological characteristics and identified threats.[1] While snapping turtles are still present in many places in the province, the many threats to these animals, combined with their complex life cycle, make them vulnerable to extinction.

Why then does MNR still allow the snapping turtle to be hunted?

Anyone with a valid Ontario small game or fishing licence may kill up to two snapping turtles a day; the possession limit is five turtles. MNR does not monitor or track how many turtles hunters kill.

The Endangered Species Act is supposed to be implemented according to the precautionary principle. As set out in the legislation, where the threat of significant reduction or loss of biological diversity exists, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.[2] It is difficult to understand how MNR reconciles the required precautionary approach with the hunting of this species at risk, especially in the absence of any monitoring of the impacts of hunting on vulnerable populations.

> In his 2010/11 annual report, the Environmental Commissioner of Ontario concluded that MNR should exercise a precautionary approach and impose a moratorium or ban on the hunting of snapping turtles until the issue had been properly examined with full public consultation.[3]

Why Turtles Cannot Be Harvested Sustainably

Snapping turtles mature very slowly. Females do not start to lay eggs until they are between 17 and 19 years old. Once an egg is laid, the probability that the offspring will survive to adulthood is very small. On average, a female snapping turtle would have to lay about 1,400 eggs during her lifetime in order for **one** of her offspring to survive to adulthood![4] In other words, a female snapping turtle that lays an average of 34 eggs per year would need to survive 58 to 60 years to replace herself in the population with another adult snapping turtle. In comparison, a female white-tailed deer, which matures at two years of age, is able to replace herself in only four years.

> Ontario should join Quebec and Nova Scotia and prohibit the hunting of snapping turtles, a species at risk.[3]

Due to the snapping turtle's low rate of reproduction, any increase in the number of adult deaths, such as those due to hunting or road mortaility, will cause populations to decline. Scientists have shown that even a 10% increase in adult mortality in a snapping turtle population would result in the disappearance of half of that population in less than 20 years.[5]

Few data are available on how many snapping turtles are taken in Ontario each year or how large populations are. Huge portions of their natural habitat have disappeared – over 70% of southern Ontario's wetlands are gone. As well, large numbers of snapping turtles are known to be killed on roads every year. These factors, in combination with the snapping turtle's low reproductive rate, make it clear that this species cannot be sustainably hunted.

Notice the small lower shell of this young snapping turtle (photo by: James Paterson).

Dispelling the Myths

People have no reason to feel threatened by snapping turtles while swimming, boating or otherwise enjoying the water. They will not bite unless harassed, and in most cases will not bite underwater even if harassed. Snapping turtles may bite while on land if they encounter a threat. This is because they lack a large protective shell on their underside and are completely defenceless if a predator flips them over. Snapping at potential predators, including people, when approached too closely is this species' primary means of self-defence.

Snapping turtles **do not** have enough strength in their jaws to bite through bone and cannot bite off a person's finger or toe.

Are Snapping Turtles Safe to Eat?

Currently, people who have a small game or fishing licence can harvest snapping turtles legally in Ontario. Since these animals are omnivorous – they eat aquatic plants, molluscs, fish and frogs – and live for a long time (some studies suggest over 80 years), harmful pollutants can accumulate to high levels in their bodies. These contaminants, such as lead, mercury and organochlorines, can harm people who eat turtles. In general, the older (bigger) turtles are, the more contaminants they contain because these chemicals build up over time and do not break down in the body of turtles.

The Guide to Eating Ontario Sport Fish, 2010–2011[6] provides recommendations on the number of fish that can be safely eaten, based on contaminant levels. Because almost no data on contaminant levels in snapping turtles are available, however, that publication provides vague guidelines on the health risks of eating snapping turtle meat.

The concentration of PCBs and mercury in the fat and flesh of snapping turtles may pose a health risk to people who eat them.

Ontario Nature, the David Suzuki Foundation and the Kawartha Turtle Trauma Centre undertook a study to test a small sample of adult snapping turtles that were found dead on the road in Ontario to see whether they contained mercury and PCBs. Both muscle and fat tissue of 14 adult turtles was tested.

PCBs – persistent organic pollutants, which are predominantly stored in fat tissue – were originally produced for use as industrial coolants, but their production was officially banned in 2001. Unfortunately, this toxin persists in the environment for decades. PCBs are known to be carcinogenic and cause disruption to the immune system, and may reduce reproductive success in humans.

Mercury, a naturally occurring element found at low levels in the environment, is released into the atmosphere by the burning of fossil fuels and the incineration of waste. Mercury enters aquatic systems through rainfall and then accumulates up the food chain. The concentration of methylmercury in top aquatic predators such as tuna can reach a level one million times higher than the level found in water and is stored in all body tissues. Long-term exposure to mercury, even in low concentrations, can cause damage to the nervous system and kidneys in humans. In addition, mercury can be particularly harmful to pregnant and breastfeeding women, increasing the risk of developmental defects in their children.

The study mentioned above found that most of the snapping turtles tested had high levels of PCBs in their fat tissue. Of 14 turtles tested for PCB's, two had insufficient tissue samples to determine PCB concentrations. Figure 2 shows that nine of

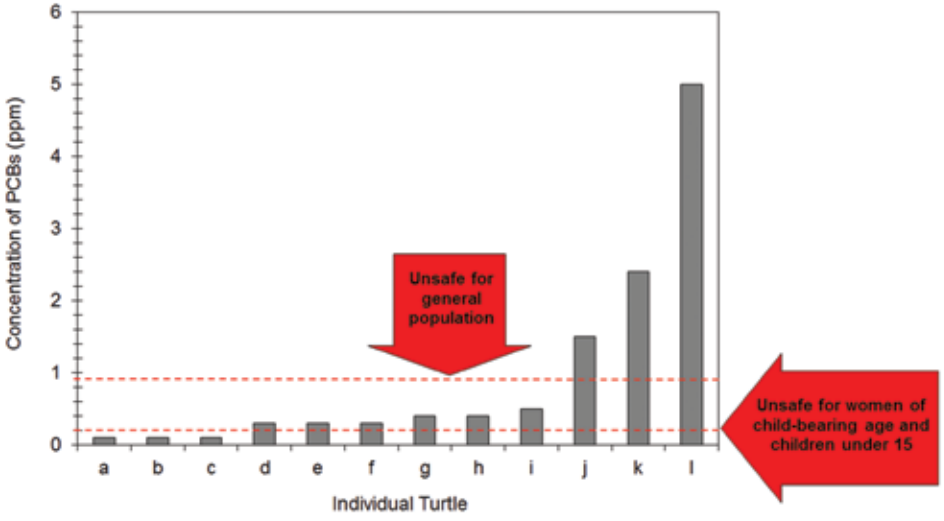

Figure 1: Levels of PCBs found in adult snapping turtle fat tissue in different regions of Ontario. Health Canada recommends to avoid eating any turtle meat for women of child-bearing age with PCB levels above 0.21 parts per million (lower dotted line)[6] and for everyone at 0.84 parts per million (upper dotted line). Parts per million = ppm.

12 turtles (75%) had PCB concentrations high enough that no amount of turtle meat would be safe for women of child-bearing age and children under 15 to eat. Three turtles (25%) had PCB concentrations that were so high that no amount of their meat would be safe **for anyone** to eat.

The tests found low levels of mercury in the fat and muscle of each of the 14 turtles sampled. Only one muscle tissue sample had a mercury level close to the unsafe limit for women of child-bearing age and children under 15. However, the presence of mercury in the bodies of every turtle tested suggests that they – and humans – depend on contaminated water systems, and that the health of humans and turtles alike may be at risk as a result. Hunting and eating turtles, of course, magnifies the risk of humans being contaminated.

Adult female snapping turtle in Pinery Provincial Park (photo by: Brian Lasenby).

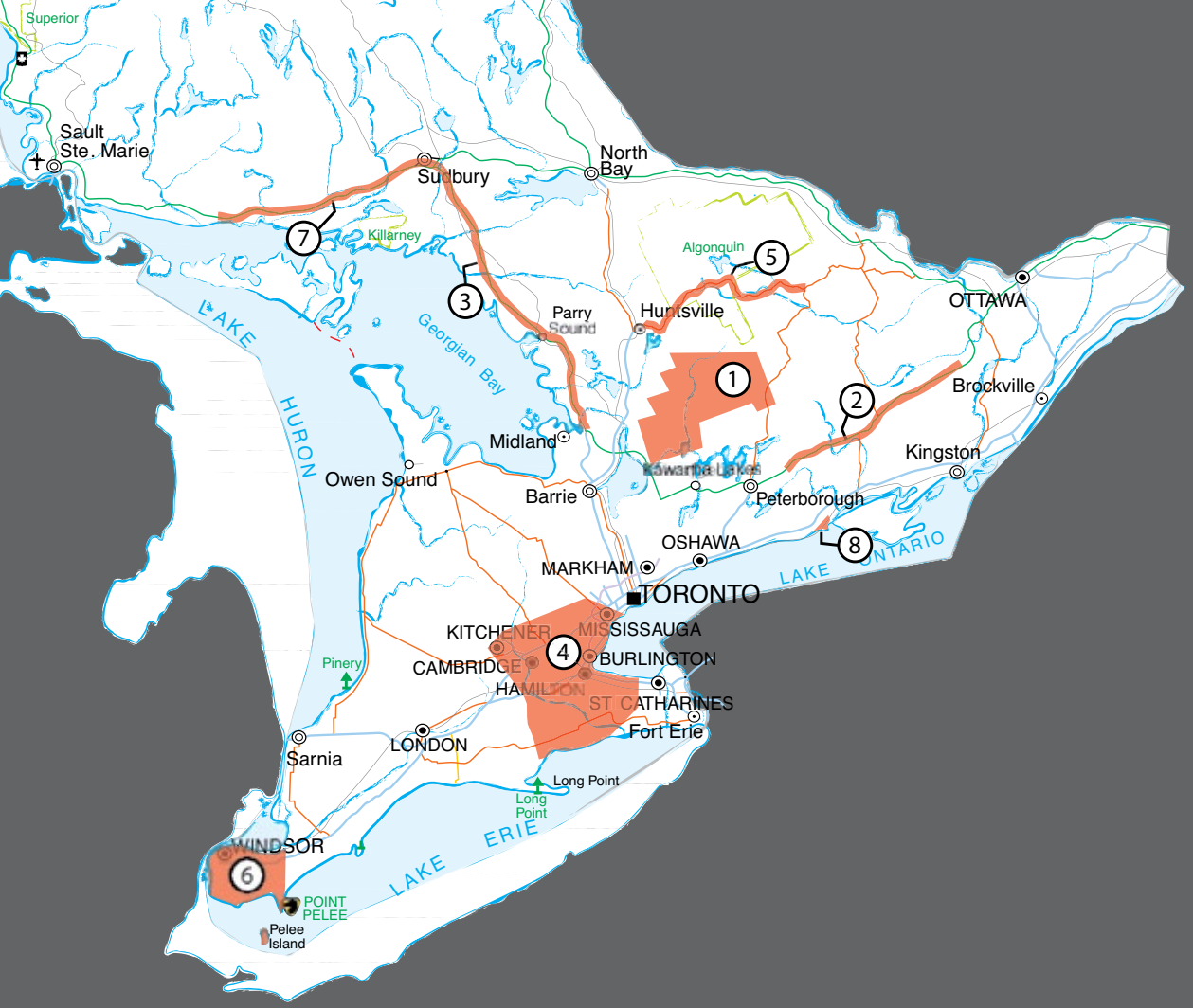

Figure 2: Hotspots for turtle mortality on roads in southern Ontario, listed from most turtles observed on roads to least. A tiny fraction of turtles on roads are actually reported to turtle monitoring groups so many unknown road mortality hotspots likely exist.

1. County of Haliburton and northern City of Kawartha Lakes
2. Highway 7 from Norwood to Maberly
3. Highway 69/400 from Port Severn to Sudbury
4. Greater Golden Horseshoe
5. Highway 60, especially through Algonquin Provincial Park
6. Essex County, especially Pelee Island
7. Highway 17 west of Sudbury
8. Presqu'ile Provincial Park and surrounding area

Turtle Mortality on Ontario Roads

Every year in Ontario, many snapping turtles die on roads while searching for food, a mate or a place to nest. Adult female snapping turtles, in particular, spend hours or even days on the shoulders of roads searching for suitable nesting sites. Nesting season is from late May to early July, but turtles can be seen on roads from April through October.

Because snapping turtle populations are not monitored, calculating the exact number killed on the road each year in Ontario is impossible, though the number is surely in the thousands. Over 1,300 reports of snapping turtles on roads have been submitted to The Ontario Reptile and Amphibian Atlas since the atlas project began in 2009. Many of these reports are from pre-existing databases so some of the road mortality occurred before 2009. Over 60% of these reports are of dead turtles, representing roughly 800 fatalities. Perhaps even more astonishing is a study done in Norfolk County showing that one in 40 drivers **intentionally** swerved to hit turtles they saw on the roadside.[7]

Road-related deaths of adult snapping turtles alone are likely to cause the eventual disappearance of most snapping turtle populations living near roads. Figure 2 shows eight areas in southern Ontario where reports of snapping turtles on roads are most numerous. Only a tiny percentage of snapping turtles on roads are reported, which means these eight areas are not the only areas of concern. Reports of snapping turtles seen alive

One study of road mortality on the Long Point Causeway near Lake Erie in Norfolk County found 272 dead snapping turtles over four years. Fortunately, measures have been taken at this site to reduce road mortality.

or dead on the road can be submitted to The Ontario Reptile and Amphibian Atlas at www.ontarionature.org/atlas.

Snapping turtles will stand a greater chance of survival if people in these areas take active measures to decrease road mortality, such as moving turtles when they are found crossing the road, establishing guardians where turtles are known to lay eggs, or asking the provincial and municipal government to construct appropriate fencing and culverts that will enable turtles to cross roads safely.

Dr. Sue Carstairs, veterinarian at the Kawartha Turtle Trauma Centre, holding a recovering snapping turtle (photo by: Rebecca Withers).

Keeping Turtles off roads: the Impact of Ecopassages

Ecopassages are wildlife crossings built over and under roads to mitigate the effects of road mortality on wildlife. Many ecopassages have been installed to establish an alternate and safe means for turtles to cross the road. For turtles, effective ecopassages use under-road culverts, with fences on either side, leading the turtle to the safe passage. The construction of culverts associated with permanent fencing has been effective and saved the lives of hundreds of turtles on the Long Point Causeway and other parts of Ontario. It is hoped that effective ecopassages will be installed at all turtle mortality hotspots.

Of course, most roads do not yet have ecopassages so it is not unusual to find a severely injured turtle on the road. If you do, please call the Kawartha Turtle Trauma Centre at 705-741-5000. If you have a plastic container available, and feel that you can safely pick up the turtle, place it in the container, and make sure there are air holes in the lid. Do not give the turtle anything to eat or drink and do not attempt to carry out any treatment yourself. The Kawartha Turtle Trauma Centre will admit injured turtles seven days a week, and will advise you as to the best location to drop off the turtle.

Many of the turtles hit on roads are females that are searching for nesting sites. The Kawartha Turtle Trauma Centre can harvest eggs from deceased turtles, and will incubate, hatch and release them. So, even if you find a deceased turtle, please take it to the Kawartha Turtle Trauma Centre and help to ensure that at least the offspring have a chance.

How You Can Help the Snapping Turtle

These are some actions you can take to help the snapping turtle survive:

- Call or write your local Member of Provincial Parliament and ask him or her to support an end to the snapping turtle hunt.
- Help turtles cross roads – with care. Move turtles in the direction they were going and not more than 100 metres from where you found them. Do not move turtles unless they are crossing the road, and do not disrupt females laying eggs. More information about how to safely move snapping turtles off roads is available from the Kawartha Turtle Trauma Centre website, www.kawarthaturtle.org/index.php?p=help&t=roadhelp.
- Establish a monitoring group in your region if it is one of the hotspots; promote awareness about the plight of snapping turtles by putting up posters in your local library or post office.
- Report all observations of reptiles and amphibians, including snapping turtles, on roads to The Ontario Reptile and Amphibian Atlas at www.ontarionature.org/atlas.
- If you live near a turtle mortality hotspot, ask your municipal government or the provincial government to construct fencing and culverts in areas where turtles cross roads.
- Call on the federal government to ban the release of persistent, bioaccumulative toxic substances into the air and water.

A young lady happily helping a large snapping turtle off of a road (photo by: Scott Gillingwater).

1. Ontario Ministry of Natural Resources, How are species listed “at risk?” www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/244543.html. Accessed November 24, 2011.
2. Ontario Endangered Species Act, 2007, www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm. Accessed January 19, 2012.
3. Environmental Commissioner of Ontario. 2011. Engaging Solutions: Annual Report 2010/2011. pp. 38.
4. Brooks, R.J., Brown, G.P., and Galbraith, D.A. 1991. Effects of a sudden increase in natural mortality of adults on a population of the common Snapping Turtle (*Chelydra serpentina*). *Canadian Journal of Zoology* 69: 1314–20.
5. Congdon, J.D., Dunham, A.E., and van Lobel Sels, R.C. 1994. Demographics of Common Snapping Turtles (*Chelydra serpentina*): implications for conservation and management of long-lived organisms. *American Zoology* 34(3): 397–408.
6. *Guide to Eating Ontario Sport Fish, 2011–2012*. Ontario Ministry of Natural Resources. Queen’s Printer for Ontario, 2011. 25th ed. Accessed at www.ontario.ca/fishguide.
7. Ashley, E.P., and Robinson, J.T. 1996. Road mortality of amphibians, reptiles and other wildlife on the Long Point Causeway, Lake Erie, Ontario. *Canadian Field-Naturalist* 110(3):403–12.

214 King Street West, Suite 612
Toronto, ON M5H 3S6

Tel: 416-448-8419
Toll free: 1-800-440-2366
Fax: 416-444-9866
E-mail: info@ontarionature.org
www.ontarionature.org

Ontario Nature protects wild species and wild spaces through conservation, education and public engagement.

Ontario Nature is a charitable organization representing more than 30,000 members and supporters and over 140 member groups across Ontario.

SOLUTIONS ARE IN OUR NATURE

Toronto Office
101 – 179 John Street
Toronto, ON M5T 1X4

Phone: 416-348-9885

Vancouver (Head Office)
219 – 2211 West 4th Avenue
Vancouver, BC V6K 4S2

Phone: 604-732-4228
or toll free at 1-800-453-1533
Fax: 604-732-0752
www.davidsuzuki.org

Our mission is to protect the diversity of nature and our quality of life, now and for the future.

Mailing Address:
KTTC c/o Riverview Park & Zoo
PO Box 4125
Peterborough, ON K9J 6Z5

Phone: 705-741-5000
www.kawarthaturtle.org

The Kawartha Turtle Trauma Centre (KTTC) is a registered charity, established in 2002, whose goal is to aid in the conservation of Ontario's turtles and the habitat in which they live through rehabilitation of injured turtles and public outreach.

IVEY foundation

This report was made possible due to the generous support of the Ivey Foundation.