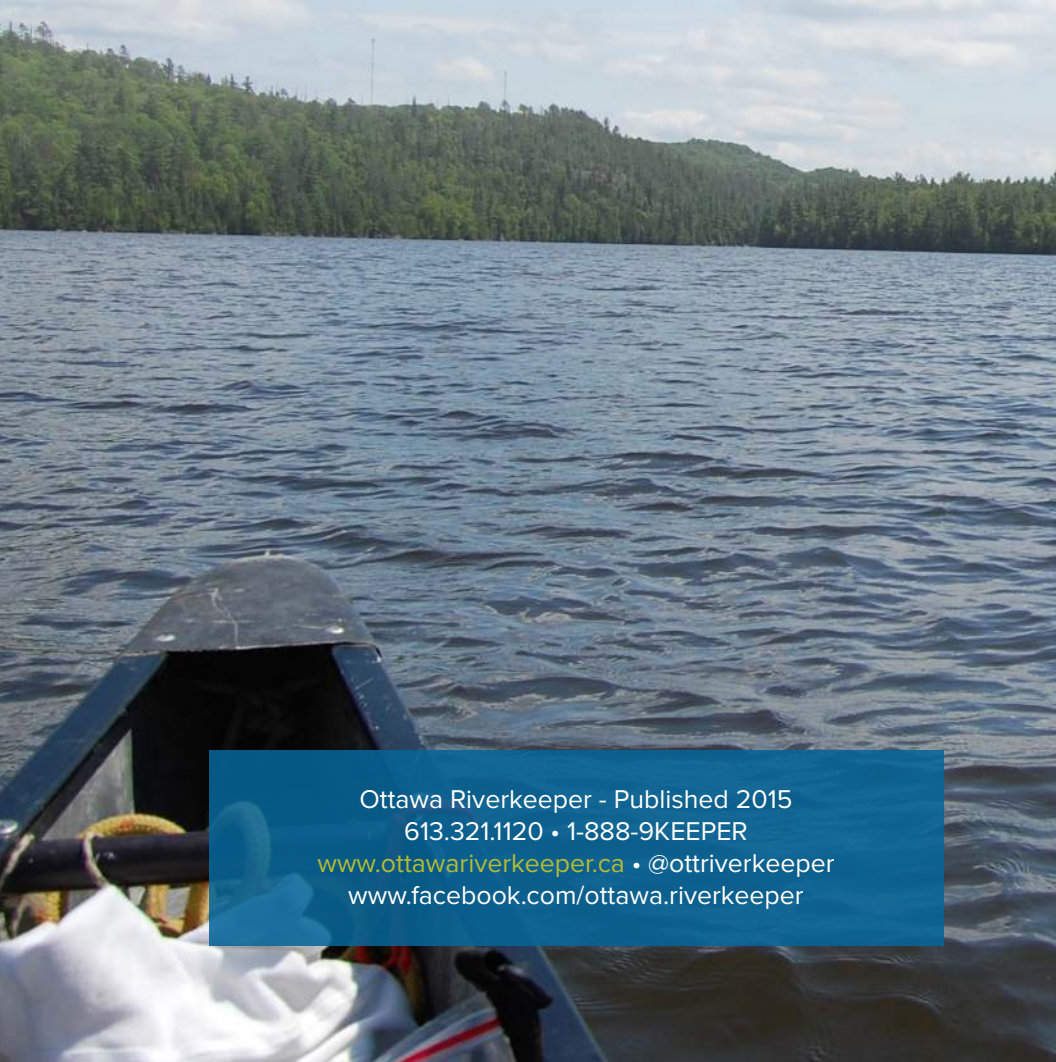




Ottawa RIVERKEEPER®
SENTINELLE *Outaouais*

The Riverwatch Handbook

A field guide for Ottawa Riverkeeper's Riverwatchers



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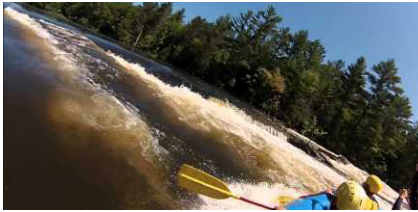
This field guide is designed to help riverwatchers 1) identify aquatic phenomena and environmental concerns, 2) collect the information needed to report their observations, and 3) connect with the proper agencies and organizations with these questions and concerns.

Riverwatchers should consider potential sources and causes of observed phenomena. In a river system, causes can come from activities on land (e.g. deforestation, development/construction), areas upstream, and be the result of events that have happened recently (e.g. water releases from dams, heavy rains and wind).

1. Aquatic Phenomena

1.1 Water Colour

Brown Tea Colour: dissolved organic matter (i.e. decaying plant matter), algae growth, and minerals such as iron. Just as tea leaves alter the colour of the water in your tea cup, the plant material adds organic matter and color to the water.



Ottawa River at Rocher Fendu. Photo: Wilderness Tours

Red: Suspended sediment from run-off, and minerals such as iron.



Ottawa River at Hudson, QC. Photo: Sue McLennan

Brown/Cloudy Colour: Suspended sediment from runoff or erosion.



Ottawa River at Hawkesbury, ON. Photo: Meaghan Murphy

Grey: Suspended sediment from runoff (typically in urban areas from streams and storm drains)



Gatineau River tributary, QC. Photo: Rita Jain

Yellow: Some algae or tree pollen.



Private lake in South Ottawa. Photo: Larry Pegg

Green/Blue-Green: Algae bloom



Ottawa River at Lake Timiskaming. Photo: OBVT

1.2 What's that floating in the water?



Ottawa Rowing Club. Photo: Paul Mudroch

Foam: The majority of foam that we see is natural. When organic matter like leaves and twigs begin to break down, they release compounds into the water called surfactants, which create foam when water is turbulent.

How do we know if the foam is natural?

Natural foam smells like fish or earth and has tan colour. Foam from pollution (detergents/soaps) can smell like perfume and is bright white.



Photos: Liz Henwood (left) and Barry Stemshorn (right)

Insect skins: In early summer the skins of insects can be seen covering the water surface along the shore and may be mistaken for dead minnows. The skins come from the aquatic larvae of insects (e.g. mayflies, shadflies) that shed their skins to become flying adults.

Pollen: In spring and early summer, pollen often collects on the surface of the water forming a yellow film.



Photo: John Stetson

Oily sheen: An oil sheen on a water surface can be petroleum but it can also be the result of natural bacterial processes. Try using something to pierce the center of the oil sheen and if it rejoins then it is likely petroleum where as if it does not rejoin than it is likely natural.



Hudson, QC. Photo: Sue McLennan

Excessive plant growth: Aquatic plant growth can vary from year to year due to nutrient pollution, the current or previous summer's temperatures, and/or changes in water levels. In some cases, strong winds, wave action and/or boats can uproot aquatic plants, causing them to collect near shore. The introduction of invasive plants can also be a cause.



Norway Bay, QC. Photo: Meaghan Murphy



Victoria Island. Photo: Meredith Brown

1.3 Algae and Blue-Green Algae blooms

While both groups photosynthesize like plants, algae are most similar to aquatic plants while blue-green algae is a type of bacteria called cyanobacteria. Algae form the base of the aquatic food chain and can be single-celled or multicellular. Blue-green algae can produce toxins that are harmful to humans and wildlife. Blooms of both types can occur naturally, but are often a sign of nutrient pollution in waterways when they are persistent or occur routinely.



Green algae bloom on the Mississippi River. Photo: Pat Tait



Blue green algae bloom in September 2013 in Ville Marie, QC on Lac Temiscaming. Photo: OBVT/Ambroise Lycke

Algae	Blue-Green Algae (Cyanobacteria)
Typically occur in late spring/early summer	Occur in mid to late summer
Green thread clumped together at or below surface	Water appears blue-green or like pea soup. Blooms may look like a spill of turquoise paint
Do not release toxins, although they can deplete oxygen in water causing fish kills	Can release toxins that are harmful to humans and wildlife



If you suspect a blue-green algae bloom, report it immediately and include photos and information on the size and location of the bloom- see section 6: Reporting.

2. Invasive Alien Species

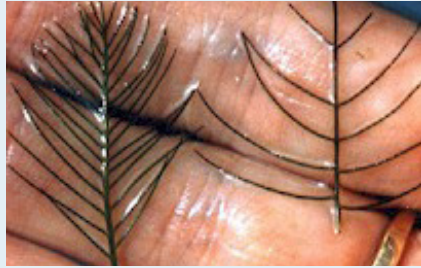
Invasive plants:

Eurasian Water-Milfoil

(*Myriophyllum spicatum*)

Submerged leaf, each with 12 or more thread-like segments.

Note: native species have fewer than 12 thread-like segments (right on photo).



Milfoil: Invasive (left) & native (right). Photo: Dept. of Ecology, State of Washington

European Water Chestnut (*Trapa natans*)

Floating leaves with sharply toothed edges, flower is white with four petals. Seeds are hard with sharp barbed spines



Photo: Ontario Federation of Anglers and Hunters

European Frogbit

(*Hydrocharis morsus-ranae*)

Floating leaf 2-5 cm wide with a spongy coating on only a portion of the leaf underside.

Note: The native species has a spongy coating covering the entire leaf bottom.



Photo: Ontario Federation of Anglers and Hunters

Invasive invertebrates:

Zebra Mussels (*Dreissena polymorpha*)

Triangular in shape and sits flat on underside. Black or brown in colour with white to yellow zig-zag pattern.

Note: Unlike native mussels which burrow in sediment, zebra mussels can attach to docks, boats and moorings and are much smaller (<2.5 cm).



Photo: Ontario Federation of Anglers and Hunters

Rusty Crayfish (*Orconectes rusticus*)

Claws have black bands at tips and form an oval gap when closed; body has a pair of dark, rust coloured spots.

Note: they look similar to the native species so make sure to take a photo so that it can be verified.

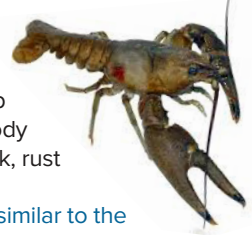


Photo: Minnesota Sea Grant

Invasive Fish

Asian Carp

(*Hypophthalmichthys nobilis*,
Hypophthalmichthys molitrix,
Ctenopharyngodon idella,
Mylopharyngodon piceus)

There are four species of Asian carp of concern. However, the bighead and silver carp pose the biggest threat. Both have large heads and toothless mouths with eyes that sit below the mouth.



Illustrations: Joe Tomelleri

3. Species at Risk in our Watershed

Lake Sturgeon (*Acipenser fulvescens*)



Illustration: Ellen Edmonson and Hugh Chrisp, New York State Department of Environmental Conservation

- Largest freshwater fish in Canada, reaching over 2 meters long and weighing up to 180 kg
- Endangered species in Ontario due to harvesting, dams and other river barriers, and habitat loss

American Eel (*Anguilla rostrata*)

- Once made up over 50% of the total biomass in the Ottawa River
- Endangered species in Ontario due to river fragmentation by dams which prevent access to feeding and spawning areas

Found an eel (live or dead)?

1. Take a photo and record the location
2. If the eel is dead and the head is intact, put it in a plastic bag and bring it to Ottawa Riverkeeper
3. Send any info to Ottawa Riverkeeper



Illustration: Ellen Edmonson and Hugh Chrisp, New York State Department of Environmental Conservation



Photo: Ohio Department of Natural Resources Division of Wildlife

Western Chorus Frog (*Pseudacris triseriata*)

- White stripe along upper lip, brown strip running from nostrils through eyes to groin
- Breeds in almost any fishless pond, including temporary ponds in floodplains
- Maximum adult size of 4 cm
- Threatened species in Quebec and Ontario due to habitat loss

Least Bittern (*Ixobrychus exilis*)

- Crown and back are black/brown, neck and sides are orange
- Smallest member of the heron family, slightly larger than the American robin
- Nests are found near the open water of a wetland, above marshes in densely vegetated areas
- Threatened species in Quebec and Ontario due to destruction of wetland habitats, shoreline development, invasive species, and human disturbance



Photo: Steve Arena, US Fish & Wildlife Service



Illustration: John Edwards Holbrook

Blanding's Turtle (*Emydoidea blandingii*)

- Domed black or brown shell with yellow flecks and streaks and can grow up to 27 cm
- Live in shallow waters, large wetlands or shallow lakes abundant in aquatic plants
- Threatened species in Quebec and Ontario due to habitat loss and land fragmentation, motor vehicles, and mammals such as raccoons and foxes that prey on eggs



4. Photographing Plants & Animals For Identification

Plants:

1) Take three photos:

- Overall shape of the plant
- The leaf as it connects to stem
- Flowers and how they are arranged, bark (if a tree)

2) Note the following information:

- Location of the plant
- Plant size (height)
- habitat where the plant is growing (water, shoreline, etc.)
- Colour of underside of leaves (e.g. white v. green)
- Hairiness- note if hair is present on leaves, stems and/or twigs

Animals:

1) For **upclose** photos of species

- Take a close up of the species
- Capture bird's eye views, side views, and underside views of the species next to an object like a pen for a sense of scale

2) If you are only able to take a photo from **far away**, note the following:

- Location
- Approximate size
- Habitat
- Any behavior (basking, diving, foraging)
- Any sounds (bird songs, etc.)

5. Shoreline Issues

Shoreline Activities	Quebec	Ontario
Remove/cut vegetation within 10-15 m of shoreline	Not permitted* (except for 2.5 m access strip to water)	Allowed (but not recommended) <small>**Many municipalities require a permit to cut down trees > 50 cm diameter</small>
Plant a lawn to the water's edge	Not permitted* (except for 2.5 m access strip to water)	Allowed (but not recommended)
Dig or fill in a strip of shoreline or river bed	Not permitted*	Requires permit
Add sand to a beach	Not permitted*	Not permitted*
Create a private boat launch	Not permitted*	Requires permit
Remove aquatic vegetation or rocks	Not permitted*	Requires permit

*While these practices are generally not permitted or recommended, it is possible to apply for permits for some of these activities.



Photo: Marshall Maruska Aerial Images

If you suspect illegal shoreline activities, take a photo and contact the proper sources (see Section 6 on shoreline development concerns for guidance on who to contact). Always cc Ottawa Riverkeeper on any written correspondence with government agencies.

For more information on best practices for shorelines visit Ottawa Riverkeeper's website.

6. Reporting

You can report anything of concern to **Ottawa Riverkeeper's Pollution Hotline**
1-888-9KEEPER (1-888-953-3737)

When reporting any concerns, provide as much detail as possible to help investigators identify the issue and take action. Here are a few key details you should include:

1. Location of incident/occurrence
(GPS coordinates, water body, closest landmark/street)
2. Date observed
3. Weather in the past 24 hours, any recent water level fluctuations
4. Detailed description of issue
5. Photos of issue
6. Information on who may be responsible
(e.g. Name, address, boat registration number, license plate)

Reporting issues directly to the appropriate sources:

Reporting Issue	Ontario	Quebec
Algae Blooms	<p>Blue-green algae: Municipal Health Unit</p> <p>Ontario's Spills Action Center 1-800-268-6060</p> <p>Any algae bloom: www.citizenwaterwatch.ca</p>	<p>Blue-green algae: Municipality</p> <p>Regional Office of MDDELCC (during business hours)</p> <p>MDDELCC (after hours) 1-866-694-5454</p> <p>www.mddelcc.gouv.qc.ca/eau/eco_aquacyanobacteries/formulaire/formulaire.asp</p> <p>Any algae bloom: Regional Office of MDDELCC (during business hours)</p>
Fish Kills	<p>Ministry of Natural Resources and Forestry 1-800-667-1940</p> <p>Related to a spill: Spills Action Center 1-800-268-6060</p>	<p>Regional Office of MDDELCC (during business hours)</p> <p>MDDELCC (after hours) 1-866-694-5454</p>
Invasive Species	<p>Invasive Species Hotline 1-800-563-7711 info@invadingspecies.com</p> <p>Early Detection and Distribution Mapping System Ontario www.eddmaps.org/ontario/</p>	<p>MDDELCC's Sentinelle Program: www.mddelcc.gouv.qc.ca/biodiversite/especes-exotiques-envahissantes/sentinelle.htm</p>

Reporting Issue	Ontario	Quebec
<p>Species at Risk</p>	<p>Ontario's Ministry of Natural Resources & Forestry Rare Species Reporting Form http://www.ontario.ca/form/rare-species-reporting-form</p> <p>American Eel (dead or alive): Kirby Punt at OMNRF kirby.punt@ontario.ca</p>	<p>To report an endangered species: cdpnq.gouv.qc.ca/espece.htm</p> <p>Endangered plants: cdpnqflore.signalements@mdelcc.gouv.qc.ca</p> <p>Endangered birds: there is also a non-provincial website: http://quebecoiseaux.org/sospop/</p> <p>Aquatic Species at Risk: lep-sara-qc@dfo-mpo.gc.ca</p>
<p>Poaching</p>	<p>Crime Stoppers 1-800-222-TIPS (8477)</p> <p>OMNRF natural resource violations: 1-877-847-7667</p> <p>Regional OMNRF office</p>	<p>SOS Poaching 1-800-463-2191 centralesos@mffp.gouv.qc.ca</p>
<p>Spills</p>	<p>Ontario's Spills Action Center 1-800-268-6060</p>	<p>Quebec's Environmental Emergency line: 1-866-694-5454</p>
<p>Illegal Dumping</p>	<p>Local municipality</p> <p>If dumping impacts fish habitat: 1-800-222-TIPS (8477)</p>	<p>Local municipality</p> <p>If dumping impacts fish habitat DFO: Poaching Alert 1-800-463-9057</p>
<p>Ice Hut Issues</p>	<p>Regional OMNRF office</p>	<p>Poaching Alert 1-800-463-9057</p>
<p>Shoreline development concerns and violations</p>	<p>Lakes and tributaries: Conservation Authorities (or Regional OMNRF Office if not in a CA zone)</p> <p>Ottawa River Shorelines downstream of Gloucester: Infrastructure Ontario Michael Ricciuto 613-738-4102 michael.ricciuto@infrastructureontario.ca</p> <p>Upstream of Gloucester contact regional OMNRF office</p>	<p>Municipality</p> <p>Regional Office of MDDELCC</p> <p>OBVs</p>

7. Agencies & Sub-Watershed Organizations

Quebec

Regional offices of Ministère du Développement durable, de l'Environnement et Lutte contre les changements climatiques (MDELCC)
www.mdelcc.gouv.qc.ca/ministere/rejoindr/adr_reg.htm

Gatineau-Outaouais
819-772-3434
outaouais@mddelcc.gouv.qc.ca

Abitibi-Témiscamingue et Nord-du-Québec
819-763-3333
abitibi-temiscamingue@mddelcc.gouv.qc.ca

Montréal, Laval, Lanaudière et Laurentides
514-873-3636
montreal@mddelcc.gouv.qc.ca

Regional offices of Ministère des Forêts, de la Faune et des Parcs (MFFP)
www.mffp.gouv.qc.ca/nousjoindre/nousjoindre-ministere.jsp

Outaouais, Laval et Laurentides
Gatineau, QC
819-246-4827 ext 309
outaouais@mffp.gouv.qc.ca

Abitibi-Témiscamingue
819 763-3388
abitibi-temiscamingue@mffp.gouv.qc.ca

Montreal
1-866-786-8441
montreal@mffp.gouv.qc.ca

Organismes de bassins versants du QC
www.robvq.qc.ca

Organisme de bassin versant du Témiscamingue (OBVT)
Ville-Marie, QC
819-629-5010 ext 2
info@obvt.ca
www.obvt.ca

Agence de Bassin Versant des 7 (ABVdes7)
Gatineau, QC
819-771-5025
info@abv7.org | www.abv7.org

Comité du bassin versant de la rivière du Lièvre (COBALI)
Mont-Laurier, QC
819-440-2422
info@cobali.org | www.cobali.org

Organisme de bassins versants des rivières Rouge, Petite Nation et Saumon (RPNS)
Papineauville, QC
819-427-6776
info@rpns.ca | www.rpns.ca

Organisme de bassin versant de la rivière du Nord (Abrinord)
Saint-Jerome, QC
450-432-8490
info@abrinord.qc.ca
www.abrinord.qc.ca

Conseil des bassins versants des Mille-Îles (COBAMIL)
Sainte-Therese, QC
450-818-8565
info@cobamil.ca | www.cobamil.ca

Conseil de bassin versant de la région de Vaudreuil-Soulanges (COBAVER-VS)
Rigaud, QC
450-451-0755
info@cobaver-vs.org
www.cobaver-vs.org

Ontario

District Offices of Ministry of Natural Resources and Forestry

www.ontario.ca/ministry-natural-resources-and-forestry

North Bay

North Bay, ON
705-475-5550

Pembroke

Pembroke, ON
613-732-3661

Kemptville

Kemptville, ON
613-258-8204

Conservation Authorities:

www.conservation-ontario.on.ca/about-us/conservation-authorities/vca-contact-list

Raisin Region Conservation Authority (RRCA)

Cornwall, ON
613-938-3611
info@rrca.on.ca
www.rrca.on.ca

South Nation Conservation (SNC)

Finch, ON
1-877-984-2948
info@nation.on.ca
www.nation.on.ca

Rideau Valley Conservation (RVCA)

Manotick, ON
1-800-267-3504
postmaster@rvca.ca
www.rvca.ca

Mississippi Valley Conservation Authority (MVCA)

Carleton Place ON
613-253-0006
info@mvc.on.ca
mvc.on.ca

North Bay-Mattawa Conservation Authority (NBMCA)

North Bay, ON
705-474-5420
nbmca@nbmca.on.ca
www.nbmca.on.ca

**Ottawa Riverkeeper thanks you
for all that you do to help protect
the Ottawa River watershed!**

“Never doubt that a small group of thoughtful,
committed citizens can change the world;
indeed it is the only thing that ever has.”

Margaret Mead

SPOT SOMETHING FISHY?

STOP POLLUTION. REPORT IT.

1- 888 - 9KEEPER



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OTTAWARIVERKEEPER.CA



ENVIRONMENTAL EMERGENCY NUMBERS

Ontario

Ontario's Spills Action Center

1-800-268-6060

Quebec

Quebec's Environmental Emergency line

1-866-694-5454

Federal

Environment Canada's
Environmental Emergencies Center

1-866-283-2333

This guide was made possible with support from:



**TD Friends of the
Environment
Foundation**