

Best Management Practices



for road work
with reduced
impacts on
species of
conservation
concern

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Acknowledgments

Georgian Bay Mnidoo Gamii Biosphere gratefully acknowledges we are located on *Anishinaabek* territory. Our office is currently located where the *Zigwan* (spring) or *Gizhijwan* (fast-flowing river) meets *Mnidoo-gamii*, Great Lake of the Spirit.

We respect and recognize the inherent rights and governance of the *Anishinaabek* pre-confederation and acknowledge the rights recognized in the Robinson-Huron Treaty of 1850 and the Williams Treaty of 1923.

We appreciate communities in the region for sharing your knowledge and time with us. Miigwetch Magnetawan First Nation, Shawanaga First Nation, Wasauksing First Nation, and Moose Deer Point First Nation.

We appreciate the input received from municipalities on road management practices. Thank you, Township of The Archipelago, Township of Carling, Township of Georgian Bay, Municipality of McDougall, Town of Parry Sound, and Township of Seguin.

These *Best Management Practices for Road Work with Reduced Impact on Species of Conservation Concern* are a product of the work of the Maamwi Anjiakiziwin initiative. The First Nations and municipalities listed above are partners in Maamwi Anjiakiziwin. We are thankful for funding from Environment and Climate Change Canada through the Community Nominated Priority Places for Species at Risk program that supported this partnership. Maamwi Anjiakiziwin seeks to strengthen collaborative relationships, leading to better decisions and strategies for how we, as humans, use and benefit from eastern Georgian Bay while ensuring conservation and stewardship of these lands and waters for species at risk.

We are grateful, Mother Earth. *Miigwetchwendam Shkakmigkwe.*

Georgian Bay Mnidoo Gamii Biosphere's Commitments

To Indigenous peoples:

We honour the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and strive to meet the Calls to Action set out by the Truth and Reconciliation Commission of Canada. We are committed to our responsibility of relationship building with Indigenous peoples and respect their knowledge and ways of being. We wish to honour Indigenous resilience since time immemorial. We wish to express our gratitude to our Indigenous relations for continuously leading the way in sustainability, respect, and reciprocity.

Our organization is privileged, and working to unlearn some of what we have been taught and decolonize our ways of knowing and being. We need to hear the truth so we can reconcile with our past, create new relationships, and move forward together in a good way.

To road managers and road work crews:

Georgian Bay Mnidoo Gamii Biosphere is committed to actively researching, developing, and evaluating practices that are not only beneficial for species and habitat, but easily incorporated into road management practices. We aim to provide cost-effective, actionable strategies that align road work with conservation priorities, improve efficiency, and offer economic benefits.

We would like to work with the people applying these Best Management Practices so we can continue to learn and adapt our recommendations.

To the land:

Georgian Bay Mnidoo Gamii Biosphere acknowledges our responsibilities for caretaking and reciprocity, and supports biodiversity conservation.

We aim to minimize harm to species and habitats through offering practical recommendations for road work projects. We hope to support the recovery of impacted species by mitigating long-term effects of roads on ecosystems. By learning from local and Indigenous traditional knowledge, scientific research, and technologies, and incorporating this knowledge into road work Best Management Practices, we can become better stewards of the land.

Introduction

Purpose

These Best Management Practices (BMPs) are guidance for doing road work in a way that reduces impacts on species of conservation concern in eastern Georgian Bay.

Road work means any road construction or maintenance project within the road right-of-way. This includes the road surface, water crossings, shoulders, medians, and ditches.

Species of conservation concern are invasive species, species at risk, migratory birds, and fish.

How to use this document

The Best Management Practices start on page 9. Follow the nine steps.

Each step includes a checklist of key tasks, followed by information and resources to support you in completing those tasks.

Numbers in brackets correspond to the documents, guidelines, and other sources that informed the Best Management Practices. Each number matches a reference in the list starting on page 113.

The nine steps are *Standard Best Management Practices* that apply to all roadwork projects. Several steps link to additional detailed guidance called *Specific Road Work Activity Best Management Practices*. The detailed guidance is organized in tables by when, where, and how to do the work. The tables identify the species who benefit from following each Best Management Practice, using an icon that matches the species whose critical life stages are described on page 19.

The *Specific Road Work Activity Best Management Practices* are also rated, from minimum to better to best. In some cases, there is no rating between minimum and best. In others, better is the highest currently feasible level. To help you choose which level of Best Management Practices to apply, they are explained in the following table.

Snapping turtle. Photo: Kayla Martin/GBB



Choose which level of Best Management Practices to apply:

Rating	Description	How the rating was determined	Information used to determine the rating
minimum	actions to provide basic protection to species and habitat	<ol style="list-style-type: none"> 1. based on legal requirements 2. if no legal requirements exist, then based on widely accepted Best Management Practices documents 3. if no Best Management Practices are currently published, then the minimum Best Management Practice was created to provide basic protection for species or habitat 	<p>legal and technical documents</p> <p>other Best Management Practices documents</p> <p>personal communication with knowledge holders</p>
better	additional actions are encouraged to improve on the minimum	<ol style="list-style-type: none"> 1. incorporates enhancements to the minimum 2. involves proactive actions 	<p>scholarly articles</p> <p>results of studies</p> <p>other Best Management Practices documents</p> <p>local knowledge</p> <p>personal communication with knowledge holders</p>
best	additional recommended actions for the best possible outcomes for species and habitat	<ol style="list-style-type: none"> 1. includes proactive actions 2. includes enhancements proven or known to result in the best currently available outcomes for species and habitat protection 	<p>scholarly articles</p> <p>results of studies</p> <p>other Best Management Practices documents</p> <p>local knowledge</p> <p>personal communication with knowledge holders</p>

Best Management Practices are advice, not permits

These Best Management Practices do not replace any permits or approvals. Best Management Practices are the best currently available advice.

It may be possible to use these Best Management Practices to plan the work to reduce impacts so permits and approvals aren't required.

Following Best Management Practices saves time, money, and species

Cost Savings: Apply Best Management Practices to lower long-term maintenance costs. Prevent spreading invasive species, like knotweeds which can grow through concrete or pavement and take a significant amount of time and effort to remove. Reduce the risk of fines and expensive restoration efforts by following Best Management Practices.

Increased Funding: Save money with grants and financial incentives available for conservation projects and eco-friendly infrastructure.

Enhanced Reputation: Save time by reducing opposition to projects with a commitment to the environment. Environmental commitments build community trust, strengthen relationships, and improve public perception.

Legal and Regulatory Compliance: Reduce the risk of project delays and unexpected expenses from stop work orders, fines or having to restore an area. Following Best Management Practices contributes to meeting legal requirements.

Resource Efficiency: Reduce maintenance by installing materials that require less work, like native plants that rarely need mowing and act as natural barriers to control snow drift.

In addition to these general benefits, benefits are listed for each *Specific Road Work Activity Best Management Practice*.

Case Study: *Enhanced Reputation*

The Township of the Archipelago saved thousands of baby turtles while reconstructing a road.

The project is known as the *Tale of a Thousand Turtles*. It was cost-neutral, construction was completed on time, and species at risk were protected. The municipality won an award from the Association of Municipalities of Ontario for innovating and collaborating on the project.

The next year road reconstruction continued. More than 2000 turtles were saved, and the municipality won a Sustainable Community Award from the Federation of Canadian Municipalities.

[See the story on YouTube.](#)

These Best Management Practices were developed specifically for eastern Georgian Bay

To help balance road work with taking care of the environment, Municipal Public Works departments indicated it would be useful to have Best Management Practices specific to eastern Georgian Bay. Existing road work Best Management Practices included advice for species not found in the area. There were also gaps with little or no advice for some species that are typical of eastern Georgian Bay.

To create this document, Georgian Bay Mnidoo Gamii Biosphere:

1. compiled existing Best Management Practices for road work,
2. filtered the existing Best Management Practices to include only those applicable to eastern Georgian Bay,
3. filled gaps with new Best Management Practices created by species at risk biologists based on the best currently available information from reports and knowledge holders.

For over 20 years, Georgian Bay Mnidoo Gamii Biosphere has worked with species of conservation concern, gaining the experience needed to develop these Best Management Practices. See [Appendix A](#) for other ways our knowledge and experience could be helpful in planning and carrying out your road work project.

Snapping turtle hatchlings rescued from a road construction site. Photo: Samantha Stephens



Balancing road work with taking care of the environment is important in eastern Georgian Bay

There are 60+ species at risk in eastern Georgian Bay. Roads divide habitats, making it harder for animals to get where they need to go to eat or reproduce. Some animals are injured and killed on roads when accidentally or illegally hit by vehicles.

The area is significant to migratory birds. Migratory birds control insect populations, disperse seeds, and pollinate plants. Road work can negatively impact migratory birds. Some birds may be injured or killed when they collide with structures built for roads, including lighting used during construction.

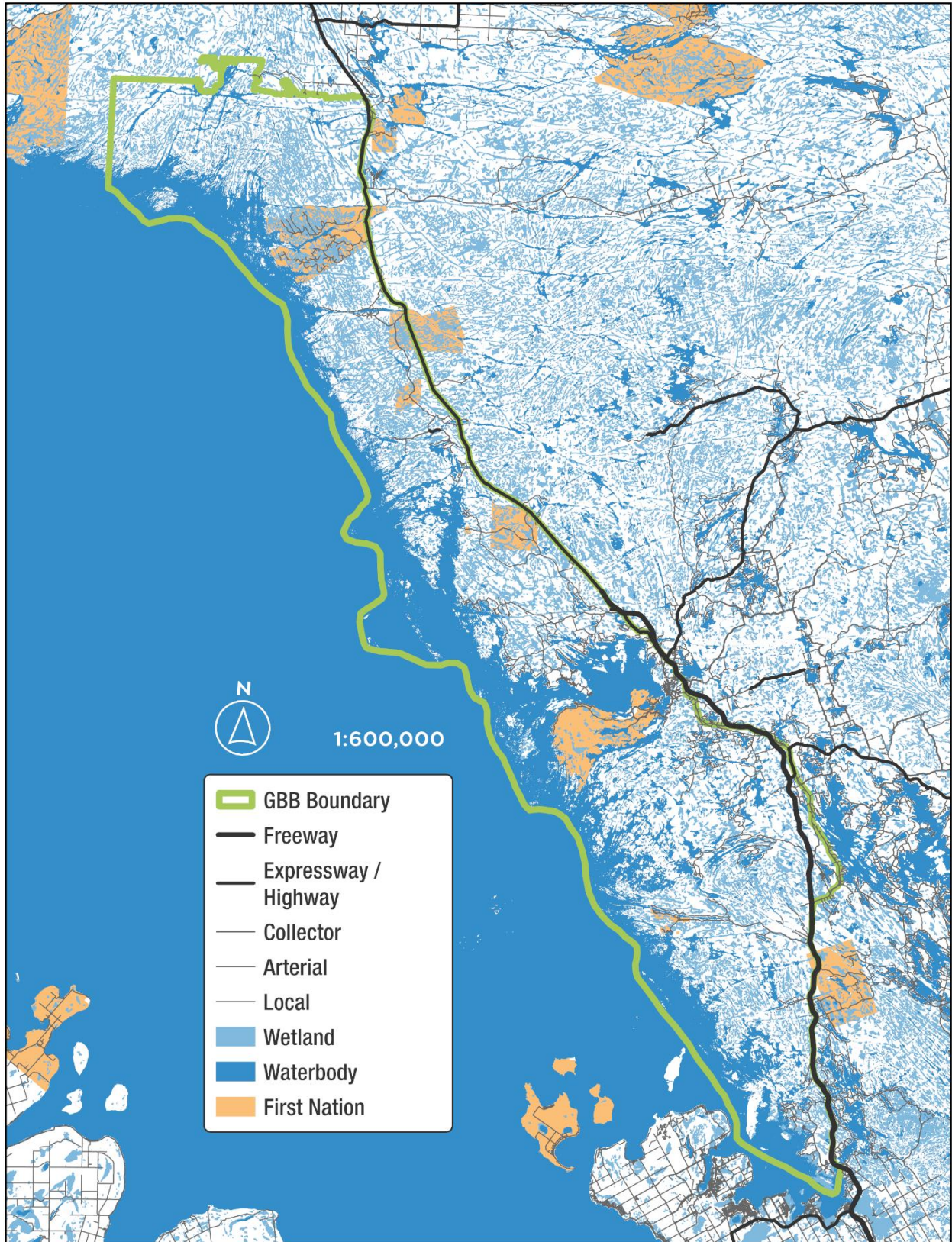
Fish in the area support food chains, including recreational and commercial fishing. Road work can pollute or destroy fish habitat. Culverts can block fish from reaching spawning areas.

Invasive species are becoming more common. Road work can spread these species. Some cause a lot of damage to infrastructure or ecosystems. Preventing them takes less money, time and effort than removing them.

Every road in eastern Georgian Bay is home to one or more species of conservation concern. Eastern Georgian Bay is made up of waterbodies and wetlands, as shown on the map below. Shorelines, shallow water areas, and all types of wetlands are important habitats for species at risk. These species move within and between habitats, crossing roads if they need to.

Blanding's turtles will move up to five kilometres between a wetland and their nesting location. Other species don't go quite so far. Georgian Bay Biosphere conducted a Geographic Information Systems (GIS) analysis to see how many roads in eastern Georgian Bay are within one kilometre of a wetland or waterbody. The answer: all of them. (1)

In addition to species at risk habitat, eastern Georgian Bay provides habitat for fish and migratory birds, and has known locations of invasive species. Add it all up, and every road in eastern Georgian Bay is home to one or more species of conservation concern.



Eastern Georgian Bay is made up of waterbodies and wetlands.

Standard Best Management Practices

Applicable to all road work projects

Step 1: Evaluate alternatives

Every road construction or maintenance project in eastern Georgian Bay can bring people and equipment into contact with species of conservation concern.

Key Tasks:

- Ask if the project is necessary and if there is an alternative. Alternatives include doing nothing or maintaining things so they stay how they currently are. Evaluate the impacts and benefits of all options on infrastructure and species of conservation concern.

The simplest way to avoid impacting species of conservation concern is to avoid developing or altering the natural landscape.

Step 2: Contact Indigenous communities

Every place in eastern Georgian Bay is the traditional territory of one or more Indigenous communities.

Key Tasks:

- Contact and consult affected Indigenous communities at the start of road work planning so they can fully participate in the planning process.
- Follow the consultation guidelines of each community. If there aren't any guidelines, plan to allow Indigenous communities a minimum of 12 weeks to do an initial review of project proposals.
- Respect Indigenous communities by fully considering their recommendations, requests or information, and discussing the potential for partnership or collaboration on the project.

There may be a legal Duty to Consult on the project. The Duty to Consult rests with the Crown through the federal and provincial governments, but some parts of the consultation procedure may be delegated to municipalities, depending on the scope and location of the project.

Even if there isn't a Duty to Consult, consulting and engaging with Indigenous peoples is important for:

- **Human rights.** People should be informed about decisions affecting them and given the opportunity to be involved. The *United Nations Declaration on the Rights of Indigenous Peoples* includes specific direction that Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, and have the right to determine and develop priorities and strategies for the development or use of their lands or territories.
- **Relationships.** Good relationships support reconciliation with Indigenous peoples. Good relationships also mean less conflict, or conflict that is more easily resolved. Good relationships build trust.
- **Knowledge.** Many Indigenous peoples hold local and traditional ecological knowledge they may be willing to share to help plan the best possible project.

Resources are available to help determine which communities to connect with:

- **Shared Path:** The [Shared Land Map](#) is a starting point to identify who and how to contact Indigenous communities. It is continually being updated and not a comprehensive list of Indigenous nations so it should be used along with other sources.
- **Government of Canada First Nation Profiles Interactive Map:** The [Government of Canada First Nation Profiles Interactive Map](#) shows locations of First Nation communities and provides basic information such as governance, population data, and links to the First Nations' own websites.
- **Native Land Digital:** The maps on [Native Land Digital](#) help identify territories, languages, treaties, relationships, and connections. This resource is a working document and does not represent legal boundaries of Indigenous nations.

Step 3: Determine which species of conservation concern are present or possible in the work area

Good planning requires good information and this step takes time. A habitat survey provides the best information. Habitat at the worksite may be protected year-round even if species only use the habitat during specific times of year.

Key Tasks:

- Start at least a year before the roadwork is scheduled.
- Consult local species records and descriptions of their habitat for an idea of which species and habitats might be at the worksite.
- Conduct site-specific assessments to confirm which species and habitats are at the worksite.
- Involve local community members to help identify and flag important plants.
- Determine if any species at the worksite have legal designations.
- Work with a qualified person to conduct site-specific assessments if you are unsure or if there are species and habitats that are difficult to identify.

Species of conservation concern are:

invasive species	species at risk	migratory birds	fish
non-native plants, animals, or micro-organisms who can spread quickly in new areas where there aren't natural competitors to control their populations	designated species at risk of disappearing	birds who travel seasonally between breeding areas in Canada and areas outside Canada where they spend the winter	fish contribute to recreational and commercial fishing industries, and healthy lakes and rivers

When the habitat is there but nobody's home

For species at risk, migratory birds, and fish, in most cases if their habitat is there, that habitat is protected.

Habitat is an area of the natural environment a species depends on, directly or indirectly, to carry out its life processes. Examples of life processes are mating, nesting, and eating.

You can identify habitat by:

- observing a species in the area
- seeing signs a species is using the area
- comparing the features of an area to the habitat needs of species

Species use different habitats over their lives. If the habitat is there, the species will be there. Sometimes they are easy to miss. Sometimes they will be there when it's the right time of year to use that habitat.

Case Study:

Where are the snakes this year?

Some snake species may only give birth once every two years. This can make it challenging to identify snake gestation and birthing habitats.

You might not see snakes so it will be important to compare the features of the area to the features of snake gestation and birthing habitat. They'll be back next year and will need this important habitat.

Snake gestation habitat. Photo: David Bywater/GBB



Case Study: *Blanding's turtles go the distance*

Even if a species isn't nesting on the worksite you may have to plan work carefully to avoid harming them. Animals move, and habitats are connected. Be prepared by finding out which habitats are in the area surrounding the worksite.

Most worksites in eastern Georgian Bay have the potential for Blanding's turtles (a threatened species). These turtles use water and land habitats throughout the year. In summer, they will travel up to five kilometres from a wetland to nest on land wherever they find the right conditions, which might be in a forest clearing or, unfortunately, on the shoulder of a road. After the eggs hatch, the young need to get to a wetland for food and shelter.

If road work takes place during the summer, turtles may want to pass through the worksite even if their nest is kilometres away. Even at a dry worksite, if there is a wetland nearby, that can be close enough for turtles to try to move through the worksite to get where they need to go.

The importance of starting early

The best practice is to start identifying species and habitats a year or more before the project is scheduled to begin.

This proactive approach provides several benefits to the roadwork project and species of conservation concern:

Comprehensive planning: Plan effectively by understanding the area thoroughly. Identify potential challenges early so mitigation measures can be integrated into project design.

Time and cost efficiency: Avoid later delays and unanticipated costs from discovering unexpected species or habitats.

Regulatory compliance: Have enough time to apply for and obtain permits. Take time to properly implement mitigation measures. Reduce the risk of project delays or fines due to non-compliance.

Resources to help identify species of conservation concern and their habitats

The following resources are starting points for identifying species and locating habitats. They do not replace site-specific surveys conducted by qualified people. When hiring consultants ensure they are aware of and use these resources.

- [Natural Heritage Information Centre](#) species at risk occurrence information
- [Species at Risk in Ontario List](#)
- [Species status reports by COSEWIC](#)
- [Georgian Bay Biosphere Species at Risk Database](#)
- [Ontario Breeding Bird Atlas](#)
- [eBird](#), or download their mobile apps
- [Merlin](#), an app to help ID birds by sight and sound
- [Fisheries and Oceans Canada \(DFO\) mapping](#)
- [DFO aquatic species search](#)
- [Ontario fish identification](#)
- [Ontario baitfish primer](#)
- [Ontario Nature's Reptile and Amphibian Atlas Field Guide](#)
- [iNaturalist](#), an app used to help identify species and collect observations to contribute to biodiversity science
- [Best Management Practices for Identifying, Managing and Creating Habitat for Ontario's Species at Risk Snakes](#)
- [Invasive species identification](#) from the Ontario Invasive Plant Council
- [Early Detection and Distribution \(EDD\) mapping system](#), which identifies where invasive species have been documented in Ontario

After identifying the species present or possible at the worksite, determine if they have any legal designations. Check whether a species is:

- [endangered, extirpated, threatened or special concern in Ontario](#)
- [endangered, extirpated, threatened or special concern in Canada](#)
- [a migratory bird](#)
- [a migratory bird whose nest is protected year-round](#)
- [a prohibited or restricted invasive](#)



Case Study: *Community members identify “No Mow Zones”*

The Township of Seguin works with volunteers to GPS mark and visually flag swaths of milkweed. Milkweed is a critical monarch butterfly food source.

The Township of the Archipelago Public Works Department is working with an elder from Shawanaga First Nation to identify culturally significant medicinal plants.

These areas can become “no mow zones” to protect important species and habitats, and in some places, support local harvesting along roadsides.

Signs posted along the Rose Point Trail in Seguin Township. Photo: GBB

Step 4: Determine which permits and approvals may be needed

By using the Best Management Practices in this document, you may be able to plan the work to reduce impacts so permits or approvals aren’t required.

Key Tasks:

- Understand your responsibilities under the laws related to species of conservation concern. Further information on legal requirements related to species of conservation concern is in [Appendix B](#).
- Determine which permits, authorizations, registrations, or notifications may be needed.
- Speak with an expert, hire a consultant, or contact the applicable government department if you are unsure which permits or approvals you need.
- Plan to apply early for permits.

Permits and authorizations commonly related to doing road work where there are species of conservation concern are outlined in the table below. Additional approvals, activity registrations, or notifications may be needed for the road work project. See [Appendix B](#) for further information on legal requirements related to species of conservation concern.

You are responsible for meeting all legal requirements, obtaining any permits and approvals, and submitting any registrations or notifications required for the project before starting work.

	Permit, authorization, registration, or notification	When is it required?	Where is it required? private, public, municipal, provincial, federal or other land	How long to find out if approved or denied?	Who issues the permit, or requires the registration or notification?
species at risk	Permit Authorizing an Activity Affecting Listed Wildlife Species (<i>Species at Risk Act</i> section 73 permit)	if the work may affect listed extirpated, endangered or threatened species or their critical habitat	all lands and waters for aquatic and migratory bird species federal lands for all other species	up to 90 days	<i>for aquatic species:</i> Fisheries and Oceans Canada <i>for all other species:</i> Environment and Climate Change Canada
	Register an Activity (<i>Species Conservation Act, 2025</i>)	if the work will, or is likely to, impact a protected species or their habitat	all lands and waters	not applicable	Ontario Ministry of the Environment, Conservation and Parks
	Permit (<i>Species Conservation Act, 2025</i>)	if the work requires killing, harming, capturing, or taking members of a protected species	all lands and waters	no timeline identified yet	Ontario Ministry of the Environment, Conservation and Parks

table continues on next page

migratory birds	Damage or Danger Permit	if the work will harm migratory birds, their eggs, active nests, or nests of species protected year-round	all lands and waters	up to 35 days for most applications	Canadian Wildlife Service
	Abandoned Nest Registry	as an alternative to a Permit for damaging, destroying, removing, or disturbing an unoccupied nest of a species whose nests are protected year-round	all lands and waters	1 to 3 year waiting period, depending on the species	Canadian Wildlife Service
fish and fish habitat	<i>Fisheries Act</i> Authorization	if the project is likely to kill fish or harmfully alter, disrupt or destroy fish habitat	all waters and lands below the ordinary high water mark containing fish or fish habitat	within 90 days of completing required consultation with Indigenous peoples	Fisheries and Oceans Canada
	Code of Practice Notification	when following the measures and meeting the conditions of a Code of Practice for a routine project	all waters and lands below the ordinary high water mark containing fish or fish habitat	no approval, but submit the Notification Form 10 working days before starting work	Fisheries and Oceans Canada
invasive species	<i>Invasive Species Act, 2015</i> Authorization	when the Prevention and Response Plan for the species cannot be followed	all lands and waters	no timeline identified yet	Ontario Ministry of Natural Resources

Step 5: Plan work to minimize and mitigate impacts on species of conservation concern

There are ways to reduce impacts on species of conservation concern during all types of road work.

Key Tasks:







- Follow four steps to reduce impacts: avoid → modify → mitigate → compensate.
- Incorporate applicable Best Management Practices in your project plans.
- Work with a qualified person if you are unsure which strategies to avoid, modify, mitigate and compensate for impacts to species of conservation concern are best for the specific conditions at the worksite.




First, plan to **avoid** impacts.

- Plan work for the time of year and time of day that avoids disrupting wildlife.

The table on page 19 summarizes when species critical life stages happen in eastern Georgian Bay and the corresponding time period when carrying out roadwork activities has the least risk of harming these species. For detailed guidance on timing specific road work activities, see the “when” guidance in each *Specific Road Work Activity Best Management Practice*.
- Change the location of the project to avoid important habitat.
- Avoid disturbing vegetation at the worksite. Pollinators rely on plants for feeding, nesting and laying eggs. They are sensitive to changes in vegetation communities.
- Avoid disturbing pools (vernal pools or standing water in ditches) and wetlands at the worksite in the spring and summer. Frogs and many other amphibians lay egg sacs in these habitats. The eggs develop and hatch into tadpoles. These early life stages rely on stable aquatic conditions.
- Avoid working within 30 metres of the high water mark of waterbodies. Maintain this area as a vegetated buffer. Vegetation buffers filter surface water run-off, helping prevent sediment from contaminating waterways. Removing trees and other vegetation in riparian habitat can change the amount of light available in the waterbody, and also the temperature of the water. This can have a negative impact on some fish communities.
- Avoid spreading invasive plants by planning to start work in areas without invasive species, and end work in areas with invasive species. Then clean equipment following the steps in the [Equipment Selection, Operation, and Management BMP](#).
- Choose the least disruptive equipment for the activity. Hand tools are best. Heavy equipment can cause rutting and soil compaction. This makes it harder for native plants to regrow, and creates opportunities for invasive species to establish. (2) (3) (4) (5)

Critical life stages of species of conservation concern

Species	Critical Life Stages	Period of Least Risk
 Turtles	<p>Nest between May and July. Females often nest in exposed gravel on road shoulders and in open, sunlit areas like lawns, parks, and sports fields.</p> <p>Hatchlings emerge from nests in August and September. Some nests overwinter and hatchlings emerge in May.</p>	<p>October – April <i>except activities that change water levels in turtle and snake hibernation habitats should not occur during this period</i></p>
 Snakes	<p>Egg laying species nest mid-June to late July.</p> <p>Live birth species gestate and birth between mid-May and September. Females move to gestation sites after emerging from hibernation and stay until giving birth between mid-July and September.</p>	<p>September – May <i>except activities that change water levels in turtle and snake hibernation habitats should not occur during this period</i></p>
 Amphibians	<p>Breed from March to June.</p> <p>Active from March to August.</p>	<p>September – February</p>
 Fish	<p>Spawning and egg and fry development depends on the species.</p> <p>Spring spawning species generally spawn and have their eggs and fry develop between mid-March and mid-July.</p> <p>Fall spawning species generally spawn and have their eggs and fry develop between October and May 31.</p> <p>See timing for specific species.</p>	<p><i>spring spawning species</i> March – July</p> <p><i>fall spawning species</i> October – May</p>
 Birds	<p>Nest generally between May and August. Timing depends on the species. Many species at risk birds nest in long grass, brush, or trees, putting them at risk from road work activities such as clearing, grubbing, or mowing. Allow young to develop and leave the nest before beginning work.</p> <p>Some species and their nests are protected year-round. At the time of writing this document, great blue heron, green heron, and pileated woodpecker nest in eastern Georgian Bay and their nests are protected year-round.</p>	<p>September – April</p>
 Bats	<p>Roost from April to September. Bats may use bridges as roosting habitat, as well as adjacent forest edge habitat including live and dead standing trees.</p> <p>In a nursing colony from mid-April to mid-September.</p> <p>Birth in June.</p>	<p>September – April</p>

 Plants	Sensitive plant communities such as mosses or lichens are vulnerable year-round.	none
 Pollinators	Emerge and locate a colony from March and April. Feed (pollinate) from May to September. Reproduce from June to September.	October – February
 Invasives	Seed heads of invasive plants develop at different times depending on the species. Some invasive plants don't need seeds to spread and it's important to be careful year-round.	<i>seed spreaders</i> before seed head development <i>non-seed spreaders</i> none

Second, **modify** plans to reduce unavoidable impacts.

- Minimize habitat disturbance by limiting the work footprint.
- If work is permitted within 30 metres of a waterbody, maintain riparian vegetation to keep banks and shorelines stable and reduce erosion. Remove no more than 1/3 of the woody vegetation, prune or top vegetation instead, leave root masses undisturbed, and remove vegetation by hand (6).
- Plan equipment needs with the [Equipment Selection, Operation, and Management BMP](#).
- Plan how the worksite will be set up with the:
 - [Staging Area BMP](#)
 - [Dewatering and In-Water Works BMP](#)
- Design the roadwork project using the:
 - [Substrate Choice BMP](#)
 - [Mowing BMP](#)
 - [Brushing BMP](#)
 - [Clearing and Grubbing BMP](#)
 - [Grading and Shouldering BMP](#)
 - [Salting and Plowing BMP](#)
 - [Ditching and Ditch Clean Out BMP](#)
 - [Culverts BMP](#)
 - [Other Infrastructure and Maintenance BMP](#)
 - [New Roads BMP](#)

Third, **mitigate** if there will still be impacts after modifying plans.

- Evaluate the risk of erosion. Consider work activity, soil type, rainfall, climate conditions and topography. If there is a risk of erosion, identify the sensitive areas and watercourses to protect with erosion and sediment control measures. Prepare an erosion and sediment control plan based on the worksite, species, habitat, and erosion risk. (3) (7) Plan to follow the [Erosion and Sediment Control BMP](#).
- Plan to follow the:
 - [Temporary Wildlife Exclusion Fencing BMP](#) or consider options like collecting turtle eggs, incubating them off-site, then re-introducing hatchlings after work is completed.
 - [Dust Suppression BMP](#)
 - [Invasive Species Management BMP](#)
- Incorporate long-term or permanent strategies like eco-fencing and wildlife crossings.

Fourth, **compensate** if there will still be impacts after mitigating.

- Create new habitat or contribute to off-site conservation efforts. This is also called offsetting habitat loss.

Some information on habitat compensation and offsetting is available from:

- [Fisheries and Oceans Canada: *What is offsetting and how to prepare an offsetting plan*](#)
- [Toronto and Region Conservation Authority: *What is ecosystem compensation*](#)
- [Ontario Nature: *A primer on wetland offsetting in Ontario*](#)
- [City of Barrie: *Ecological Offsetting Policy*](#)

Case Study: *Moving milkweed to offset pollinator habitat*

Instead of maintaining milkweed along roads, Seguin Township planted milkweed and successfully created pollinator habitat at transfer stations, cemeteries, and other public places. This has benefitted drivers, public works operations, and pollinators.

Maintaining milkweed along roads had been a challenge in Seguin Township. Mowing around milkweed was really slowing down public works operations, and compromising road safety. Plants and trees encroaching on some roads were impairing driver visibility, and roots were growing into the roadway. But mowing the milkweed meant less habitat for pollinators, which upset Township residents who care for the environment, resulting in numerous complaints to the municipality.

To offset the loss of roadside habitat that would be mowed, Seguin Township created pollinator habitat in other places. Pollinators benefit from the higher quality habitat. Along busy roadsides, plants can become covered in dust and pollutants, and pollinators can be hit by vehicles. The habitat created at transfer stations, cemeteries, and other public places, is safer and healthier for pollinators. And instead of complaints, Seguin Township now receives compliments from residents on their efforts to provide habitat for pollinators.

This work was highlighted by the Association of Ontario Road Supervisors. Read more about it in their [Fall 2025 Newsletter article](#) titled *“Protecting the Environment in Seguin Township”*.

The Township of Georgian Bay also created pollinator habitat at their offices. Photo: GBB



Step 6: Get permits and approvals

Work cannot start until you receive the required permits and approvals, and submit the required activity registrations and notifications.

Key Tasks:

- Revisit Step 4 with completed project plans to confirm which permits, approvals, registrations, and notifications are needed.
- If required, apply for permits and approvals, and submit registrations and notifications.

Applications for permits and approvals often ask how you will reduce harm to species during your roadwork project. The Best Management Practices in this document are intended to help you do that.

If permits and approvals are issued, they may include conditions to avoid and mitigate harm to species of conservation concern. The conditions may be like Best Management Practices in this document.

Installing wildlife exclusion fencing. Photo: GBB



Step 7: Prepare workers and worksite

Everyone is responsible for preventing invasive species from spreading and for protecting species risk, migratory birds and fish.

Key Tasks:

- Conduct species at risk awareness and handling training for all staff.
- Familiarize workers with conditions of permits.
- Familiarize workers with legal requirements related to species of conservation concern.
- Implement *Specific Road Work Activity Best Management Practices* related to preparing the worksite.

When preparing the worksite:

- Use existing trails or paths for access to minimize the area disturbed.
- Mark sensitive habitat areas and set appropriate buffers around the area.

For example, create Turtle Exclusion Zones. Work with a qualified person to identify areas at the work site likely to be turtle nesting habitat, like road shoulders adjacent to wetlands and waterbodies. Avoid working in these areas.
- Identify, flag, and report invasive species.
- Follow the [Temporary Wildlife Exclusion Fencing BMP](#) to prevent wildlife from entering work zones. Or, implement a planned alternative like collecting turtle eggs, incubating them off-site, and re-introducing hatchlings after the work is completed.
- Follow the:
 - [Equipment Selection, Operation, and Management BMP](#)
 - [Staging Area BMP](#)
 - [Erosion and Sediment Control BMP](#)
 - [Dewatering and In-Water Works BMP](#)

Step 8: Implement and Monitor

Follow Best Management Practices and watch carefully for species at risk while working.

Key Tasks:

- Implement the *Specific Road Work Activity Best Management Practices* and conditions of any permits or legal approvals identified in Steps 5, 6 and 7.
- Monitor the site continually for new or unexpected species and be prepared to implement additional Best Management Practices if needed.
- Check for species at risk on the worksite and equipment daily.
- Walk through ahead of equipment to flush out species from the area. Snakes basking on road surfaces, turtle hatchlings crossing the road, and ground-nesting birds may be difficult to see while driving machinery. (8)
- Operate all equipment at reduced speeds so species on the road or in the right-of-way can be detected. Reptiles like turtles and snakes are often found on roads but can be difficult to see on the road surface. (3)
- Keep the work and staging areas clean and free from garbage, debris, mud, or pooling water. This helps prevent attracting wildlife to the site and the risk of sediment escaping to a nearby waterbody. Avoid unnecessary wildlife interactions as well as harm to wildlife and their habitat. (9)
- Ensure the road work will not contribute to spreading invasive species. Follow appropriate invasive species management practices, including proper removal and disposal. This is especially important for phragmites. For example, if mature phragmites is mowed, it will spread pieces and seeds new plants can grow from. (10) (11)
- Avoid contact with existing wildlife fences. Immediately inspect and repair any fences damaged by operating equipment. Reptiles will cross any fence that has an opening, like a crack, gap, or depressed area. Being trapped on the road increases their mortality risk. Damaged fences with jagged or sharp edges can injure wildlife.
- Know the species at risk, sensitive habitats, and invasive species at routine maintenance sites and adjust work as needed when there are unexpected changes.
- Stop work immediately if a species is in danger due to the work. Follow appropriate wildlife encounter procedures.

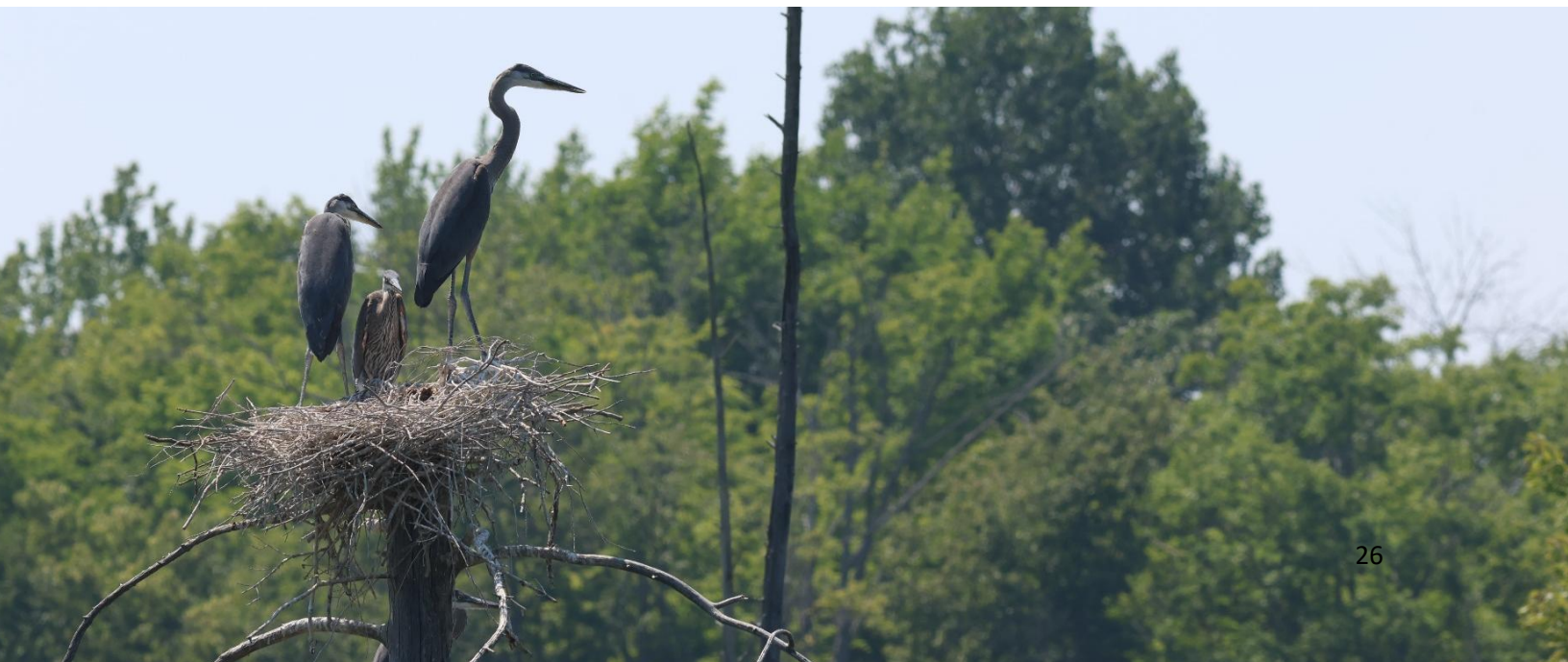
What to do when you find a bird nest at the worksite

All migratory bird nests are protected while occupied. Some nests are protected year-round. At the time of writing this document, three birds who nest in eastern Georgian Bay have their nests protected year-round: great blue heron, green heron, and pileated woodpecker.

If there is a new nest at the worksite, or a nest is discovered that was missed during the habitat survey in the planning stage:

1. Immediately stop working where the nest is.
2. If the nest is occupied by a bird or an egg, do not disturb the nest or the vegetation in the area. Create a buffer around the nest. To determine how wide the buffer should be, see the [Guidelines to Avoid Harm to Migratory Birds](#). Avoid this buffer area until the young have permanently left. Then, if the road work will not destroy or damage the nest, work can proceed. If the road work will damage or destroy the nest, for example cutting down the tree the nest is in, you must determine if the nest is protected year-round.
3. If the nest is empty, or it was occupied and the young have left and the road work requires destroying or damaging the nest, determine if the nest is protected year-round. The list is in [Schedule 1 of the federal Migratory Birds Regulations, 2022](#) and includes great blue heron, green heron, and pileated woodpecker, who all nest in eastern Georgian Bay.
4. Work with a qualified person to identify which bird species the nest belongs to, or what to do next if you are unsure.
5. If the nest is unoccupied and not protected year-round, work may proceed.
6. If the nest is protected year-round, you must get a permit from Environment and Climate Change Canada to relocate or destroy the nest. Another option is to register the unoccupied nest on the Abandoned Nest Registry, then watch and wait 24-36 months (depending on the species), and if no bird occupies the nest during that time, it can then be destroyed. A third option is to modify your road work project to leave the nest in place

Great blue heron nest. Photo: GBB





Blanding's turtle. Photo: GBB

What to do when you encounter species at risk at the worksite

1. Immediately stop working where the species is.
2. If the species is a moss, lichen, or plant:
 - a) Install protective barriers around them. Work can then continue if it won't impact the moss, lichen, or plant.
 - b) If the work will impact the species, they should be relocated to a safe, suitable area nearby. Contact a trained professional if unsure which species you've encountered or how to relocate them.
3. If the species is an animal:
 - a) Do not approach or handle the species yet. Give the animal the opportunity to leave the area on its own. This means giving the animal space and time.
 - b) Identify the species. Contact a trained professional if unsure which species you've encountered or what to do.
 - c) If the species is in harm's way or does not leave on its own, and you are trained and permitted to assist, follow approved protocols to guide it safely out of the work zone. If you are not trained, please contact a professional for help moving the animal.
4. Document and report all species at risk encounters. Report encounters within 90 days to the Ontario Ministry of Natural Resources Natural Heritage Information Centre using the Natural Heritage Information Centre Observation Reporting Form.

Step 9: Finishing work

Don't spread invasive species or leave hazards for wildlife. Clean up and stabilize the worksite as soon as work is done.

Key Tasks:

- Clean equipment following the steps in the [Equipment Selection, Operation, and Management BMP](#).
- Follow the [Revegetation BMP](#).
- Remove sediment and erosion control and temporary wildlife exclusion fencing from the site.
- Share your experience, and celebrate a job well done!

When the road work is complete, ensure the work area is restored to its original state or better. Revegetating the site and restoring habitat allows plants and animals to move back to the area. (12) (9)

Congratulations on a job well done, and thank you! By following these Best Management Practices, you've helped maintain the globally-significant Georgian Bay Mnidoo Gamii Biosphere region by integrating people and nature for sustainable development, biodiversity conservation, and reconciliation.

Please share your story! Help improve these Best Management Practices, and help others in the eastern Georgian Bay region with their road work projects. Connect with Georgian Bay Mnidoo Gamii Biosphere by emailing info@georgianbaybiosphere.com or phoning (705) 774-0978.

Township of Carling. Photo credit: GBB



Specific Road Work Activity Best Management Practices

Applicable to many road work projects:

Equipment Selection, Operation, and Management	30
Staging Area	33
Erosion and Sediment Control	36
Temporary Wildlife Exclusion Fencing	45
Revegetation	50
Invasive Species Management	56

Applicable to certain types of road work:

Substrate Choice	60
Dewatering and In-Water Works	63
Mowing	67
Brushing	72
Clearing and Grubbing	77
Grading and Shouldering	82
Dust Suppression	86
Salting and Plowing	89
Ditching and Ditch Clean Out	93
Culverts	98
Other Infrastructure and Maintenance	105
New Roads	109

Equipment Selection, Operation, and Management

Which vehicles, machinery, and tools to use for the road work, and how to use them.

Benefits of following Equipment Selection, Operation, and Management BMPs

Save \$

Smaller equipment is less expensive, easier to transport, and requires a smaller staging area.

Long Life







Avoid frequent repairs and replacements with regular cleaning and maintenance. Frequent cleaning prevents wear and tear, giving equipment a long life.




Invasive Species

Defend against invasive species. Routinely checking and cleaning equipment is one of the most cost-effective ways to prevent invasives from spreading. Invasives can easily spread from equipment and staff into new environments. Once in a new area, removing them can take a lot of effort, cost, and time.
(13)

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Equipment Selection, Operation, and Management Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Follow all guidelines in the <i>Clean Equipment Protocol for Industry</i> . In work tenders, incorporate a specific clause to follow the <i>Clean Equipment Protocol for Industry</i> . (13)	Best		Ensuring equipment is free of invasive species helps prevent invasive species from spreading to new areas. (13) (14)
Frequently inspect equipment for accumulated dirt, plant material, or seeds. Look carefully in small and hidden spaces. (3) (13)	Best		Helps prevent the spread of invasive species, especially at job sites where only sections or localized areas are known to have invasive species. Some invasive species, such as phragmites, can spread year-round, even in harsh winter conditions. (13)
Re-clean equipment if invasive species were encountered on site prior to advancing to invasive free areas. (13)	Best		Helps prevent the spread or introduction of invasive species in new areas.
Clean equipment between projects. (13)	Minimum		Helps prevent the spread or introduction of invasive species in new areas.
Ensure equipment arrives on site clean. In work tenders, incorporate a specific clause requiring all equipment be clean and free of invasive species. (13) (10)	Minimum		Helps prevent the spread or introduction of invasive species in new areas.
If washing equipment is required on site, ensure contaminated water and debris are disposed of properly. (13)	Minimum		Helps prevent the spread or introduction of invasive species in new areas.

Equipment Selection, Operation, and Management Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If equipment is left unattended, inspect equipment for any wildlife before starting work or using equipment. Birds, snakes, and other wildlife may be occupying crevices or enclosed areas. (3)	Minimum		Prevents accidental injury or death of wildlife seeking shelter in or under equipment.
Do not operate equipment in water or in areas containing sensitive plant communities if it is not necessary. Operate all equipment from dry and stable areas. Ensure sediment and erosion controls, and restoration plans, are in place. (10) (12)	Minimum		Aquatic species and sensitive plant species can be harmed or killed by eroding soil and sediment.
If operating equipment in-water is required, operate during dry and low-water periods. Ensure proper erosion, sediment, de-watering, and restoration measures are in place. (12) (6)	Minimum		Fish, invertebrates, turtles and their habitats are sensitive to disturbance and changes to their environment.
Fuel vehicles, machinery, or equipment at least 30 metres away, and as far away as possible, from watercourses. Fuel stations should not be near any sensitive plant communities or habitats. Fuel in a way that prevents sediment or deleterious substances from entering a watercourse. (12) (15)	Minimum	All	Ensure no deleterious substances are spilled into the natural environment.
Ensure proper spill kits and plans are prepared and on site. (10) (12) (9) (15)	Minimum	All	Minimize environmental impact by promptly cleaning up any spilled deleterious substances.

General references for Equipment Selection, Operation, and Management BMPs

See (3) (13) (11) (16) (12) (9)

Staging Area

Designated area for parking and storing equipment and materials.

Benefits of following Staging Area BMPs

Save \$

Using existing staging areas reduces the need for environmental assessments, vegetation clearing, and habitat restoration. This leads to savings in time, effort, and financial resources.

Maintaining staging areas during the project simplifies post-construction cleanup, saving time and reducing restoration expenses.

Safe Roads



Keep workers and wildlife safe. Minimize wildlife-human interactions and the associated risks. (17) (18)


Invasive Species

Looking for, then removing invasive species before using a staging area prevents them from spreading. This reduces long-term management costs and maintains the ecological integrity of the site. (19) (20)

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Staging Area Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Construct and use staging areas October 1 to April 30.	Best	All	Constructing and using staging areas between October and April poses the least risk to species of conservation concern.
If using stockpiles on staging areas between May 1 and September 30 in areas of turtle habitat: <ul style="list-style-type: none"> • Have a qualified person clear the area where the stockpile will be placed. • Isolate the area containing the material with fencing. • Before using a stockpile that was left exposed during turtle nesting season (mid-May to mid-July), ensure the material is cleared by a qualified person so no turtle nests are harmed or exposed. 	Minimum		Avoid harm to turtle nests. Ensure no material is placed on top of turtle nests, and no nests in stockpiles are harmed.
If using stockpiles on staging areas between mid-April and September 30, and liners are used to suppress dust on stockpiles, thoroughly inspect the stockpiles for signs of wildlife before covering them. Use extra caution during bank swallow nesting season from mid-April – late August.	Minimum		Avoid harm to wildlife. Turtles and some birds, particularly bank swallows, will nest in sand or gravel piles.
Where			
Use an existing cleared section if available to minimize footprint. (10)	Best	All	Reduces the project’s footprint, minimizes impacts to vegetation communities, and helps preserve species habitat.

How			
When clearing an area for staging, minimize the amount of vegetation removed. (10)	Better	All	Minimizing disturbance to vegetation helps preserve habitats, maintain soil stability, and support overall ecosystem health, benefiting the many species that rely on these plant communities.
Don't leave materials on-site that could disturb or attract wildlife, including human food, garbage, and petroleum products. (17) (18)	Minimum	All	Prevent unnecessary wildlife interactions as well as harm to wildlife and their habitat.
Ensure clean fill and quality aggregates are used and locally sourced when possible. (21)	Minimum		Clean fill substrates can reduce the spread of invasive species.

General references for Staging Area BMPs

See (11) (3) (10)

Erosion and Sediment Control

Technologies, practices, and procedures to prevent erosion and sediment release into the environment.

Benefits of following Erosion and Sediment Control BMPs

Save \$

Avoid repair and compensation costs from eroding public land and private property downstream. Unstable banks and streambeds at the work site can change a watercourse resulting in erosion downstream. (7)

Reduce the need for repairs to roads, ditches, and culverts caused by sediment buildup and unstable road edges. (22)

Preventive actions mean fewer emergency repairs and construction delays. (23)

Re-vegetation is one of the most cost-effective long-term erosion control solutions. It requires less maintenance, enhances landscape aesthetics, and provides dense vegetation cover, which stabilizes roadside slopes. (24)

Safe Roads

Stable is safe. Implement erosion and sediment control to reduce the risk of road damage and erosion-related hazards that compromise public safety. (7)

Less pollution, less waste

Non-degradable synthetic geotextiles cause plastic pollution and waste. Using fewer synthetic geotextiles means reduced pollution, less cleanup, and lower disposal costs. (24) (25)

Public Perception

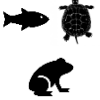

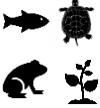
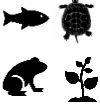
Plants look better than plastic. Using fewer synthetic materials and re-vegetating improves the visual appeal of road work sites, which can increase community support and satisfaction with municipal initiatives. (24)

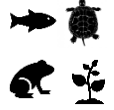
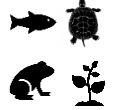
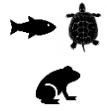
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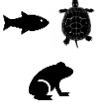

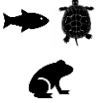
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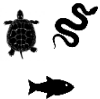
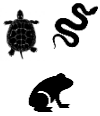



Erosion and Sediment Control Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Inspect erosion and sediment control measures daily prior to starting work for the day.	Best	All	Daily checks help catch failures early, preventing sediment from entering nearby habitats.
Reinforce or replace damaged controls immediately.	Best	All	Prompt action maintains barrier effectiveness, reducing the risk of erosion and preserving nearby habitat.
Mulch, seed, and stabilize exposed soils immediately after disturbance. (7) (12) (26)	Best	All	Prevent erosion and promote vegetation growth to reduce future erosion and protect species that rely on stable, vegetated environments.
Install adequate erosion and sediment controls before starting work. (12) (22) (27)	Minimum	All	Proper sediment and erosion control prevent soil loss, protects water quality, and reduces habitat degradation.
Inspect erosion and sediment control measures at least once a week, as well as before any forecasted rain and immediately following any rain or extreme weather event. (28)	Minimum	All	Detecting failures early prevents sediment from entering habitats. This protects sensitive plant communities, maintains water quality, and reduces habitat degradation for aquatic species like fish and amphibians.
Reinforce or replace damaged controls within 24 hours. (27)	Minimum	All	Detecting failures early and making timely repairs prevents sediment from entering habitats, protecting sensitive plant communities, maintaining water quality, and reducing habitat degradation for aquatic species such as fish and amphibians.
Stabilize high risk areas and areas with bare soil that will be inactive for 30 days or longer. (7) Key areas to apply erosion controls are: <ul style="list-style-type: none"> • Slopes 	Minimum	All	Prevent erosion caused by water and wind. Prevent sediment runoff into sensitive habitats, protecting water quality and habitat for plants and wildlife.






Erosion and Sediment Control Best Management Practices (BMPs)	Rating	Species	Benefit to Species
<ul style="list-style-type: none"> • Stockpiles • Runoff conveyance channels • Areas downstream of water outlets • Banks of detention ponds and sediment traps • Lay down areas for sediment bags • Areas where runoff flows directly to sensitive habitats 			
Minimize the duration of exposed soil. Ensure the area is revegetated following work. (10)	Minimum	All	Revegetating as soon as possible prevents invasive species from establishing. It also reduces erosion and sedimentation, protecting nearby habitats, maintaining water quality, and supporting native plant and wildlife communities.
Maintain erosion and sediment controls until the area is permanently stabilized and/or successfully re-vegetated. (27) (26)	Minimum	All	Prevent sediment from entering nearby habitats. This protects water quality and habitat for plants and wildlife.
Maintain all erosion and sediment control measures to be in an effective, functioning, and stable condition for entirety of its use. (28)	Minimum	All	Minimizes sediment disturbance and protects aquatic habitats.
If it's near the end of the growing season, stabilize the site, for example, with erosion control blankets, to protect the soil over winter, then plant vegetation the following spring. (26)	Minimum	All	Temporary stabilization prevents soil erosion during off-seasons, promoting effective re-vegetation.
Monitor weather events and time activities accordingly. Only work in dry weather conditions. Stop work during periods of heavy rainfall. (3) (12) (22)	Minimum	All	Under heavy rainfall, disturbed areas are more likely to release sediment or deleterious substances into aquatic and/or terrestrial habitats. In dry and windy conditions, ditching is likely to cause erosion of exposed topsoil that can release sediment into aquatic/terrestrial habitats.

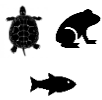
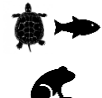
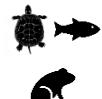

Erosion and Sediment Control Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If using erosion and sediment control fencing for wildlife exclusion, install it before the species' critical activity periods (e.g., nesting) to prevent access (see <i>Temporary Exclusion Fencing BMP</i>). (3) (29)	Minimum	All	Prevents species from entering the site before activities begin.
Site isolation measures should be installed prior to in-water work and remain effective at all times. (12)	Minimum		Protects fish and aquatic species by limiting sedimentation and habitat disruption during in-water work. Excess sediment can impact habitat necessary for species to complete critical life stages.
Immediately following work activities, stabilize waterbody banks and riparian habitat that have been disturbed. Restore them to their original condition as soon as possible. (30) Especially before winter when species begin overwintering.	Minimum	All	This protects water quality, preserves aquatic habitat, and supports the health of fish, amphibians, and other species that depend on clean, well-oxygenated water. This is especially important during overwintering, when species are more sensitive to changes in water conditions.
Ensure erosion and sediment controls remain in place during all stages of work. Do not remove control methods until the work area has been properly stabilized. (12)	Minimum		Prevent sediment from entering waterbodies and harming fish. Excess sediment can reduce water clarity, damage fish gills, and smother eggs or spawning habitat by covering clean gravel substrates.
Where			
Avoid working on slopes or in erosion-prone areas. (31) (7)	Best		Steep slopes erode easily. Avoid erosion on slopes to prevent soil from entering waterbodies and harming fish, and prevent soil from entering sensitive plant communities. Also avoids the difficult task of revegetating sensitive plant communities after soil loss.
On steep slopes or embankments, apply erosion control blankets or mats to help reduce erosion. (7)	Better		Steep slopes erode easily. Avoid erosion on slopes to prevent soil from entering waterbodies and harming fish, and prevent soil from entering sensitive plant

Erosion and Sediment Control Best Management Practices (BMPs)	Rating	Species	Benefit to Species
			communities. Also avoids the difficult task of revegetating sensitive plant communities after soil loss.
On slopes with exposed soil, use surface roughening techniques to reduce runoff velocity. (7)	Better		Promotes water infiltration and traps sediment so it can't enter waterbodies and harm fish or erode into adjacent sensitive plant communities.
Do phased construction, stabilizing small parcels before moving to the next phase. (7)	Better	All	Reduces erosion risk by only clearing areas necessary for immediate construction, and progressively stabilizing finished areas.
For construction or maintenance activities that disturb soil near ditches, slopes, culverts, or drainage pathways, especially when working near watercourses or in areas with sensitive habitats, consider techniques to reduce the velocity of flowing water such as check dams or filter socks. (7)	Better		Reduce water velocity and capture sediment before it enters habitats to prevent soil from reaching waterbodies and harming fish, and to minimize erosion into sensitive plant communities.
In areas where runoff may flow toward watercourses, direct drainage from work areas through vegetated filter strips to slow flow, trap sediment, and reduce contaminants before water enters streams or wetlands. (7)	Better		This protects water quality, preserves aquatic habitat, and supports the health of fish, amphibians, and other species that depend on clean, well-oxygenated water.
Stabilize slopes up to a 3:1 gradient by applying seed and covering it 0.3 to 0.6 cm deep, or leaving a minimum of 5 cm of native topsoil with an intact natural seed bank, then mulching with straw, hydromulch, or straw/coconut fiber mats. Stabilize slopes steeper than 3:1 by using seed and biodegradable erosion control blankets or a flexible growth medium. (32)	Minimum	All	Stabilized slopes prevent erosion and encourage native vegetation regrowth, enhancing bank resilience and habitat quality.

Erosion and Sediment Control Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Minimize soil disturbance, soil exposure, and vegetation clearing. (7)	Minimum	All	Avoid the risk of erosion and the impacts sediment has on sensitive and aquatic habitats. Preserving existing vegetation provides a natural barrier against erosion, reducing sediment runoff into nearby habitats. It also limits the area where sediment control measures are needed.
When working near waterbodies or in areas with surface flow, divert clean water around the work area to prevent it from mixing with disturbed soils or contaminants. (7)	Minimum		Reducing the risk of mixing clean and sediment-laden water protects water quality, prevents sediment from degrading aquatic habitats, and helps maintain healthy conditions for fish, amphibians, and other species that rely on clear, oxygen-rich water.
On sites where there are amphibians and reptiles, ensure sediment fencing is installed following proper wildlife safe design considerations (<i>see Temporary Wildlife Exclusion Fencing</i>). (29) (33) (34)	Minimum		Protects wildlife from injury or death caused by fences that aren't properly installed or maintained.
All accumulated debris, vegetation, or logs that are removed from the site is temporarily stored and stabilized a minimum of 30 metres away from watercourses above the highwater mark to prevent re-entry. (12) (23)	Minimum		Prevents re-entry of debris into aquatic habitats, supporting water quality and habitat integrity.
Excess material that poses a risk of contamination should be disposed of off-site. Clean surplus material should be disposed of at designated sites away from sensitive habitats and a minimum of 30 metres from waterbodies. (35) (36) (37)	Minimum	All	Prevent the run off of deleterious substances into adjacent terrestrial and aquatic habitats.

Erosion and Sediment Control Best Management Practices (BMPs)	Rating	Species	Benefit to Species
How			
Maintain all naturally occurring native vegetation where possible. (7)	Best	All	Support long-term erosion control by maintaining natural vegetation, which stabilizes soil and preserves habitat for species.
When permanent bank stabilization is necessary, use natural materials like native stone, vegetation, and woody materials for bank stabilization. Avoid hard engineering like stone block walls, gabions, or rock rip-rap. (38)	Best		Creates naturalized shorelines, restoring and enhancing riparian and aquatic habitats for species. Amphibians and reptiles move more easily over softer shorelines and smaller substrates.
Use wildlife-safe materials and avoid netting that could trap small animals. (33) (34)	Best		Protects small mammals, reptiles, and amphibians from becoming trapped, injured, or killed.
Use coir or biodegradable materials instead of plastic mesh products. (33) (34)	Best		If control materials are accidentally left on site, using materials that decompose naturally reduces pollution and the risk of wildlife entrapment.
Use native species for revegetating areas of exposed soil. Use local native species for seed sourcing. To choose which species, consider suitability to climate, habitat needs, erosion control ability, topographical adaptability, palatability to herbivores, and balanced life expectancy for natural succession. (10)	Best		Provides habitat with locally adapted plants and minimizes non-native species invasion risks.
Uncontaminated topsoil removed from the worksite can be stockpiled within the work area rather than removing it from the site. Store and later	Better		Reuses site soil which maintains the local seed bank.

redistribute the topsoil as a base for seeding and planting.			
When permanent erosion control is necessary, combine hard and soft stabilization techniques by using rock and vegetation. (39)	Better		Blending hard and soft erosion control methods helps stabilize shorelines while maintaining natural habitat features that support aquatic and riparian species. Vegetation provides cover, food, and breeding habitat, while rip-rap reduces erosion and protects water quality.
If rock rip-rap reinforcement is necessary: <ul style="list-style-type: none"> • use clean rock, sized and placed appropriately. • install rock at a similar slope as the original stream bank to maintain a uniform stream bank and natural alignment • do not use acid generating rock where it does not already exist • do not obtain rock from below the ordinary high water mark • ensure rip-rap does not interfere with fish passage or constrict the channel width. (40) 	Minimum		Avoid erosion and scour at pipe outlets which causes sediment to enter the waterbody and harm fish, or causes a perched culvert which blocks fish from moving between habitats. Prevent sedimentation while maintaining stream connectivity for fish movement. Everything below the ordinary high water mark is part of fish habitat. Rocks provide different habitat functions, for example as spawning habitat for some species, and hiding places for other species to avoid predators or help seek prey.
If rip-rap is required, use nonwoven geotextile to separate exposed soil from rip-rap. (41) (42)	Minimum		Prevent erosion of exposed soil beneath rip-rap.
If the work activity requires stock piles or other materials on the work site, ensure that sediment is contained and managed appropriately on site. (7)	Minimum		Prevent sediment from leaving the site to reduce impacts on nearby habitats. Excess sediment can smother sensitive plant communities and degrade aquatic habitats, harming species like fish.
Properly install and maintain sediment fencing around the perimeter of the work area, stockpiles/soil areas, sensitive habitats, and downslope of disturbed areas. (28)	Minimum		Capture sediment before it enters habitats to prevent soil from reaching waterbodies and harming fish, and to reduce erosion into sensitive plant communities.

When necessary, install temporary diversion channels to direct runoff around areas with exposed soil or substrate. Design swales with sufficient capacity to handle peak stormwater flows. Line swales with geotextiles or riprap if necessary to prevent erosion (7) (28)	Minimum		Installing temporary diversion channels prevents clean water from flowing over exposed soil, reducing sediment transport into nearby habitats. Properly designed and stabilized swales protect water quality and prevent erosion, helping maintain healthy aquatic and terrestrial environments for species.
Remove accumulated sediment when it reaches half the height of the temporary erosion control measure or 300mm, whichever is less. (28)	Minimum	All	This prevents overflow or structural failure, maintaining effectiveness in trapping sediment and protecting habitat.
Ensure accumulated sediment is removed before removing the temporary erosion control measure. (28)	Minimum	All	Prevents the sudden release of sediment into nearby habitats.
When work does not require working in the dry, a turbidity curtain can be used and maintained to isolate the work area. (7) (43)	Minimum		Prevent sediment from entering waterbodies and harming fish. Excess sediment can reduce water clarity, damage fish gills, and smother eggs or spawning habitat by covering clean gravel substrates.
Apply appropriate permanent erosion control measures on disturbed shorelines or banks (e.g., riprap) where necessary. (12)	Minimum		Prevent erosion of disturbed banks and shorelines to reduce impacts to riparian habitat, aquatic species and aquatic habitat.
Use erosion control materials that are clean and free of invasive species or deleterious substances.	Minimum		Reduces risk of introducing invasive species and contaminants to the environment.

General references for Erosion and Sediment Control BMPs

See (12) (12) (28) (44) (45) (27) (46) (47) (7) (48)

Additional resources

See (47) (46) (7) (48) (38)

Temporary Wildlife Exclusion Fencing

Fences placed around the perimeter of a construction site to keep reptiles, amphibians, and other small animals out.

Benefits of following Temporary Wildlife Exclusion Fencing BMPs

Health and Safety

A safer construction site has fewer wildlife interactions. (18) (17)

Work Efficiency

Construction stops when wildlife is on site. Waiting for animals to leave or be relocated takes time. Avoid delays by preventing wildlife from entering the worksite.

Public Perception

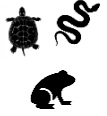
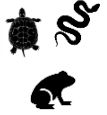

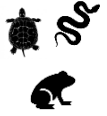
Wildlife exclusion fencing is a commitment to protecting wildlife that people can see. This enhances a municipality's reputation for environmental stewardship and responsibility, improving public image and community relations.





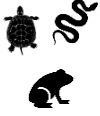
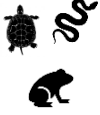
An alternative to installing temporary wildlife exclusion fencing


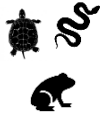


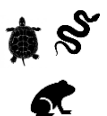
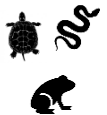

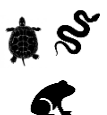
For short-term projects, consider an option like collecting turtle eggs, incubating them off-site, then re-introducing hatchlings after work is completed. See [Appendix A](#) for a case study.

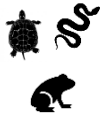
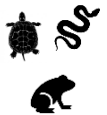
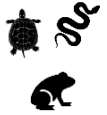
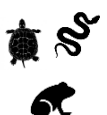
Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Temporary Wildlife Exclusion Fencing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Inspect the fence daily, especially after rain or wind, to ensure it is working properly.	Best		Ensures the fence is most effective at preventing wildlife access.
Immediately repair any holes, gaps, sagging, or other damage to the fence.	Best		Prevents animals from entering the construction area through damaged sections.
Install fencing before the critical activity periods for turtles and snakes. (3) (29)	Minimum		Installing fences before snakes and turtles begin looking for nesting or birthing locations means they won't be able to nest on the worksite, and will nest somewhere safer for them and their eggs. This gives their young a better chance at survival.
Install fencing before starting construction. (29)	Minimum	All	Bringing in equipment and beginning work won't harm animals because they aren't there. This also gives any animals caught within the worksite a chance to be relocated out of the worksite before construction activities can harm them.
After installing the fence, ensure no species are trapped in the work area. (29)	Minimum		Relocate animals before they can be harmed by construction activities.

Temporary Wildlife Exclusion Fencing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Prior to starting work each day, inspect the work area for animals. (3)	Minimum		If any animals bypassed the fence while construction was stopped, they can be relocated before there is a chance of being harmed by construction activities.
Routinely inspect fencing throughout the active season and after spring thaw if it remains over the winter. Promptly repair any damage. (3) (29)	Minimum		Ensures the fence is effective at preventing wildlife access.
Remove fencing promptly after construction. (29)	Minimum		Leaving fences up when they aren't needed prevents wildlife from moving between habitats. Over time the materials in the fences degrade, causing environmental pollution and a hazard for wildlife who could become tangled in the materials and injured.
Where			
Where there are large-bodied species like foxsnakes and snapping turtles, ensure fencing is at least 2 metres high, has smooth material on the side of the fence that is outside the work area, and stakes are on the work area side of the fence. (29) (49)	Minimum		Keep larger species who can climb out of the work site.
In areas like rock barrens where burying the fence is not possible, use heavy objects, like sandbags, to weigh down the fence. (29)	Minimum		Secures fencing in rocky terrain, reducing the risk of animals accessing the work site.
Install fences so the ends curve away from any openings or roadways. (29)	Minimum		Helps redirect species to habitat instead of into the worksite.

How			
For fence stability, the higher the fence, the shorter the distance between the posts. (29)	Best		Ensures fence remains upright and effective.
Use backfill on the worksite side of the fence as escape ramps, allowing trapped animals to climb over the fence to safety. (49)	Best		Keep animals out of the work site.
Bury fencing at least 20 cm (and deeper if recommended) to prevent animals from burrowing underneath. (29) (49)	Minimum		Prevents animals from digging under the fence and entering the work area.
Where there are species that burrow, install an additional 10 cm horizontal buried lip at the base of the fence to prevent burrowing. (29)	Minimum		Prevents burrowing species from entering the work area.
Install fences with an overhang or "lip" (with the lip on the side of the fence that is outside of the work area) at worksites where species like foxsnakes, snapping turtles, or toads are likely to climb over. (29) (49)	Minimum		Installing fences with an overhang prevents climbing species like foxsnakes, snapping turtles, and toads from entering hazardous work areas, reducing injury and mortality.
Install fencing to the recommended height, ranging from 50 to 200 cm depending on species present in the work area. (29) (49)	Minimum		Prevents animals from climbing or jumping over the fence.
Install posts on the worksite side of the fence and bury them 30 cm into the ground to prevent animals from climbing the posts and breaching the fence. (29) (49)	Minimum		Helps to prevent climbing species, especially foxsnakes, from entering the work site.
Manage tall or woody vegetation outside the fence. (29)	Minimum		Prevent animals from climbing over, using vegetation to bypass the fence.

<p>Install durable, wildlife-safe fabric fencing that is smooth and free of gaps or entanglement risks. (29)</p>	<p>Minimum</p>		<p>Reduces risk of animals being injured or becoming entangled.</p>
<p>If netting or mesh is required, use durable, wildlife safe options with elongated mesh netting (rectangular mesh compared to square) and loose weave designs with movable joints (movement between vertical and horizontal material). Do not use plastic or nylon mesh fencing/lining, including polypropylene, nylon, polyethylene, or polyester. (3) (29) (49)</p>	<p>Minimum</p>		<p>Plastic and nylon mesh fencing/lining tangle, injure and kill small mammals, reptiles, and amphibians.</p>
<p>Light-duty geotextile fencing can be used for short-term projects, up to 6 months. Fencing fabric should be attached to stakes (wooden, heavy plastic, or metal) using heavy-duty wire staples or tie-wire. Stakes should be on the worksite side of the fence, 2 to 3 meters apart, and driven into the ground to a depth of 30 cm. The fabric should be buried and back-filled with soil. (29)</p>	<p>Minimum</p>		<p>Light-duty geotextile fencing poses less risk of injury or entanglement than heavy-duty geotextiles that are supported by mesh or wire fence. Prevent animals from climbing the stakes by having them on the worksite side, and other animals from burrowing underneath by burying the fabric.</p>
<p>For longer-term wildlife exclusion projects use heavy-duty geotextile or galvanized mesh. When necessary, support the geotextile with a woven wire fence (e.g. chain link) or similar structure for durability. Install the wire fence on the worksite side. (29)</p>	<p>Minimum</p>		<p>Wire fence on the worksite side prevents animals from climbing into the worksite area while allowing escape if animals are on the wrong side.</p>

General references for Temporary Wildlife Exclusion Fencing BMPs

See (3) (29) (49)

Revegetation



Planting or seeding areas disturbed by road work or other past activities, especially areas of exposed soil.





Benefits of following Revegetation BMPs





Save \$	Long Life	Climate Resilience	Public Perception	Invasive Species
<p>Making revegetation plans early leads to more successful and cost-effective restoration at the end of the project. Early planning helps ensure the appropriate species, equipment, and methods are used. (50)</p> <p>Native vegetation needs less mowing and less watering. Less maintenance means more cost-effective work plans. (50)</p> <p>Lower snow plowing and winter maintenance costs. Plants act as natural barriers, controlling snow drift and reducing the risk of storm damage. (51)</p>	<p>Prolong the life of the road. Native vegetation on the roadside reinforces road alignment, stabilizes slopes, reduces erosion, controls snow drift, and helps stormproof roads. (52)</p>	<p>Improve air quality and reduce greenhouse gases. Plants release oxygen, absorb carbon dioxide from the atmosphere, and store carbon in the soil long-term. (50)</p>	<p>Plants look great. Natural habitats with native species show the natural beauty of the area to residents and visitors. (50)</p>	<p>Defend against invasive species in a low-cost and long-term way by establishing native plants. (50) (14)</p>





Wait! Did you come here straight from the table of contents?


Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Revegetation Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Mulch, seed, and stabilize exposed soils immediately after disturbance. (12) (7) (26)	Best	All	Prevent erosions and promote vegetation growth to reduce future erosion and protect species that rely on stable, vegetated environments.
Weed control is critical in the first year of establishing new vegetation. Conduct regular site inspections and maintenance to ensure native species establish and are not being out-competed by invasive or non-target species. Depending on the species planted and types of weeds present, mowing may assist in managing weeds. (53) (54)	Best		Invasive species can establish quickly in a new area or exposed soil. It is important to ensure that only intended plant species grow in the right-of-way.
Monitor the restoration site annually during the growing season, applying amendments as needed. Re-seed if plant density is unlikely to meet the standard within 5 years. (10)	Best	All	Supports progressive reclamation and ensures vegetation success and density over time.
Prepare a new restoration plan as necessary if standards aren't met within 5 years. (10)	Best	All	Maintains restoration goals and habitat quality, adapting to environmental or site-specific challenges.
Wait for further research before creating or maintaining wildflower meadows and other pollinator habitats in highway medians. (55) (56)	Best		Current research shows wildflower meadows on medians encourage pollinators to cross roads, increasing their risk of mortality.
Where			
Maintain as much native vegetation at the work site as possible, especially in ditches. (57) (58) (7)	Best	All	Retaining native vegetation minimizes erosion, preserves habitat structure, and reduces opportunities for invasive species to establish in ditches.

Revegetation Best Management Practices (BMPs)	Rating	Species	Benefit to Species
How			
Remove all invasive species prior to planting. (53)	Best		Reduce competition for the species being planted, increasing revegetation success.
Prepare the site with any necessary soil and site treatments. It may be necessary to create a suitable planting bed by smoothing or roughening. (54) (53)	Best		Ensure plants root in the desired soil bed. Optimize seed-to-soil contact and encourage effective growth. Invasive species can establish quickly in a new area or exposed soil. It is important to ensure that only intended plant species grow in the right-of-way.
Use native species for revegetating areas of exposed soil. Use local native species for seed sourcing. To choose which species, consider suitability to climate, habitat needs, erosion control ability, topographical adaptability, palatability to herbivores, and balanced life expectancy for natural succession. (10)	Best	All	Provides habitat with locally adapted plants and minimizes non-native species invasion risks.
Use a diversity of plant species.	Best	All	Supports biodiversity by encouraging various pollinators and other animals that rely on a variety of species.
Avoid planting fruit-bearing or other vegetation that attracts birds and wildlife to forage or nest in medians or along roadsides. (59) (60) (55)	Best		Reduce risk of road mortality.
Select planting method and timing based on species and site needs. Carefully choose the least disruptive method that effectively supports site and species-specific revegetation goals. (53)	Best		Revegetation will be more effective if there is minimal disturbance to the rest of the habitat at the site. This supports ecosystem integrity.
Build partnerships to test and expand revegetation strategies with local organizations or experts. (54) (53)	Best	All	Enhances Best Management Practice effectiveness with trial projects and local expertise.

Revegetation Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Organic material, including trees, stumps, woody debris, and shrubs removed from work sites can be turned into mulch and used for local revegetation projects. If used, ensure all organic material is free of weeds or invasive species prior to use. (2) (22)	Best		Incorporating organic material (such as mulch) in a revegetation project can help reduce erosion, improve water storage, and increase soil nutrients for plant growth.
Install fencing/signage in revegetated areas to inform the public and prevent disturbance. (53)	Best	All	Prevent foot/vehicle traffic so vegetation can re-establish successfully.
Ensure all staff are aware of revegetation areas. (54)	Best	All	Avoid disturbing the area during other work activities. Organizational support increases the success of revegetation efforts.
Select species suited for site-specific conditions.	Better		In some cases, native species may not be able to establish if there is high salt accumulation in the roadsides.
Uncontaminated topsoil removed from the worksite can be stockpiled within the work area rather than removing it from the site. Store and later redistribute the topsoil as a base for seeding and planting.	Better		Reuses site soil which maintains the local seed bank.
Use minimally disruptive seeding methods, such as broadcast or hand seeding, especially for species with fine seeds and smooth seedbeds. (53)	Better		Minimally disruptive to right-of-way habitat, effective for fine-seeded species, and promotes natural habitat restoration.
Use mechanical or drill seeding only for large areas requiring revegetation. When using this method, minimize disturbed or exposed soil from machinery use and combine with erosion control, such as mulching, until vegetation is established. (53)	Better	All	Minimizing equipment use decreases erosion risk and amount of disturbed habitat. Mechanical or seed drilling allows rapid revegetation for extensive areas.

Revegetation Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Hydroseeding is effective for steep slopes, bridges, or culverts to reduce soil erosion. When using this method, follow the manufacturer's specifications for application rate and depth, and use in combination with other erosion control, such as hydro mulching, until vegetation is established. (53)	Better	All	Because equipment is usually mounted on trucks with an approximately 150 metre hose range, the equipment can stay on the road, causing minimal disturbance to habitat. This method is particularly suited for challenging areas.
Return any natural debris that was removed or cleared for the worksite.	Better	All	Ensure site conditions and habitats are restored.
Do not stockpile or reuse soil impacted by invasive species. (45)	Minimum		Prevent the spread of invasive species.
Imported topsoil must be free from invasive species and contaminants that could impact plant growth. (61)	Minimum		Prevents the spread of invasive species in restored or revegetated areas.
Use a fertile loam material, free from roots, vegetation, or debris that may get in the way of planting. Topsoil should not contain stones or clods over 25 mm. (61)	Minimum		Quality topsoil leads to optimal plant growth and stability.
Stabilize slopes up to a 3:1 gradient by applying seed and covering it 0.3 to 0.6 cm deep, or leaving a minimum of 5 cm of native topsoil with an intact natural seed bank, then mulching with straw, hydromulch, or straw/coconut fiber mats. Stabilize slopes steeper than 3:1 by using seed and biodegradable erosion control blankets or a flexible growth medium. (32)	Minimum	All	Stabilized slopes prevent erosion and encourage native vegetation regrowth, enhancing bank resilience and habitat quality.
Maintain effective sediment and erosion control measures until disturbed areas are successfully re-vegetated. (26)	Minimum		Ensures soil doesn't erode into watercourses and harm fish while the site is re-vegetating.

Revegetation Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If it's near the end of the growing season, stabilize the site, for example, with erosion control blankets, to protect the soil over winter, then plant vegetation the following spring. (26)	Minimum		Temporary stabilization prevents soil erosion during off-seasons, promoting effective re-vegetation.

General references for Revegetation BMPs

See (45) (61) (47) (50) (54)

Invasive Species Management

Removing or controlling non-native plants.

Benefits of following Invasive Species Management BMPs

Save \$

Proactive efforts to identify invasive species leads to significantly lower costs to manage them. (19) (20)

Grants and funding are available for proactive and collaborative invasive species control programs.

Establishing native plants early in the road planning process can be the one of the best long-term and low-cost defenses against invasive species. (14) (50)

Inviting public participation in using EDDMapS for invasive species reporting expands monitoring capacity without significant cost increases, providing more information for better decision making.

Safe Roads

Pavement, bridge abutments, and building foundations can be damaged by invasive species like knotweed. Dense stands of phragmites on roadsides pose a fire hazard. Manage invasive species for safer roads, by preventing infrastructure damage and reducing roadside hazards. (62) (20)

Health and Safety




Proactively managing invasive species reduces the need for herbicides, lowering environmental contamination risks and protecting public and worker health.


Public Perception

Demonstrating proactive invasive species management highlights environmental stewardship, improving community relations and building public trust.

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Invasive Species Management Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Manage invasive species according to species-specific plant flowering and seed production calendars. This can vary regionally. Use local information when available.	Best		The timing windows for effective removal of invasive species varies depending on the species.
Understand the life-cycle of the invasive species, and if herbicide is an effective way to control or remove it, apply the herbicide when it is most effective. Generally, this is prior to flowering. Phragmites stands are best treated with herbicides in early fall. Herbicide is best applied on knotweed in the fall.	Minimum		Treating phragmites stands in fall is best because young nesting animals have matured and can avoid the herbicide, and most native plants have gone dormant for the season. Phragmites is one of the last species to go dormant and will still transport herbicide into the root system in the fall.
If herbicides are necessary and effective for controlling or removing an invasive species, do not apply herbicides when wind speeds are above 16 kilometres per hour. (63)	Minimum	All	Reduce drift. Ensure the herbicide is only applied to the target species and doesn't impact adjacent habitats and sensitive species.
Where			
Flag sensitive species that need protection and create an adequate buffer around the area. Do not use herbicides in these areas. (3)	Minimum		Flagging sensitive species and maintaining buffers protects native wildflowers, supporting pollinators like monarch butterflies and bees by preserving their habitat and food sources.

Invasive Species Management Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Where invasive species work is occurring, or invasive species are present, establish signs or information stations to notify the public. (14)	Better	All	Raise awareness to prevent the spread of invasive species. Example: information signs in parking lots at rest stops, trail heads, and parks where invasive species are likely to spread.
Where plants are sold (e.g., green houses, hardware stores, grocery stores) require warning labels on invasive plant species. A warning label should include "Invasive Species – Harmful to the Environment" with information suggesting native plant alternatives and best practices for reducing spread if the species is planted. (14)	Best	All	Help prevent the spread of invasive species by raising consumer awareness on the harmful effects of planting invasive species in local and household gardens.
How			
Encourage staff and the public to use EDDMapS, an early detection reporting system. Use information from EDDMapS in planning road work and invasive species management projects.	Best	All	Helps track and prevent the spread of invasive plants.
Collaborate with other organizations to develop a proactive, regional system to detect invasive species early and respond rapidly. (14)	Best	All	Prevents invasive species from establishing.
Follow all guidelines in the "Clean Equipment Protocol for Industry". In work tenders, incorporate a specific clause to follow the "Clean Equipment Protocol for Industry". (13)	Best		Ensuring equipment is free of invasive species helps prevent invasive species from spreading to new areas. (13) (14)
Use an integrated vegetation management approach to invasive species removal. Incorporate appropriate timing and use of manual, cultural, mechanical and chemical methods. (11)	Best	All	Incorporate site-specific measures to reduce harm to species and habitat while targeting invasive species through multiple methods.

Invasive Species Management Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If herbicide is necessary for invasive species removal, it should be part of an integrated vegetation management plan.	Better	All	Target invasive species through multiple methods. Reduce the need for herbicide which can impact adjacent habitats and sensitive species.
Only use herbicide when necessary and effective for the target invasive species. Follow herbicide label instructions, use the minimum concentration required, and use products approved for terrestrial and aquatic uses. (63)	Minimum	All	Ensure herbicide is only applied to target species to reduce herbicide from impacting adjacent habitats and sensitive species.

Additional Resources

See (64) (65) (13)

Substrate Choice

Selecting the surface material of a road.

Benefits of following Substrate Choice BMPs

Save \$

Reduce long-term maintenance costs from washouts, flooding, and potholes by considering the local hydrological effects of substrate choice for road bases, surfaces, and shoulders. (5)

Sustainable approach

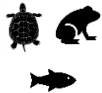
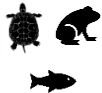

Permeable pavement can increase snow and ice melting, which can reduce costs and environmental risk of winter plowing and salting activities. (66)


Invasive species

Using clean fill and quality aggregates, especially locally sourced materials, limits the spread of invasive species. This reduces future costs related to managing or removing invasive species management and restoring affected areas. (19) (20)

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Substrate Choice Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Select surface materials that reduce noise and vibrations. (67)	Best	All	Wildlife depend on sound for communication, mating, navigation and foraging. Using “silent paving” methods can mitigate noise pollution, benefiting wildlife in surrounding habitats, particularly migratory birds.
Select a permeable base material that improves drainage and helps facilitate subsurface waterflow. For example, shot rock creates a larger rock base to allow for subsurface flow. This method is not a replacement for culverts but can be used alongside them at stream crossings or in areas with surface or subsurface flow to enhance water movement and reduce erosion. (5) (68) (69)	Best		Protect natural drainage patterns and local hydrology (surface and subsurface flow), maintaining habitat conditions necessary for wetland and aquatic species.
Choose permeable pavement for road surfaces and parking lots. (70)	Best		Allow water to infiltrate into the ground, helping to reduce surface runoff, erosion, and pollution that can degrade aquatic ecosystems.
Choose substrate on a project-specific basis. In addition to factors such as the function of the road, type and volume of traffic, and speed limits, there are ecological factors to consider, such as local hydrology and whether the substrate could attract or possibly benefit wildlife. Work with a qualified person if unsure.	Best		Reptiles are attracted to both paved and exposed gravel surfaces during critical life stages. Specific substrates may benefit species by reducing mortality and nest compaction. In areas where there are turtles but natural nesting habitat is limited, maintaining exposed gravel shoulders instead of paving may be an option that benefits turtles as long as additional mitigation measures are implemented to minimize road-related impacts, such as wildlife exclusion fencing. (71) (72)

Substrate Choice Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Use clean, locally-sourced fill, aggregate, and erosion control materials. (21)	Minimum		Clean substrates reduce the risk of introducing invasive species and contaminants to the environment.

General references for Substrate Choice BMPs

See (3) (67) (73) (74) (21)

Dewatering and In-Water Works

Technologies, practices, and procedures for working within waterbodies and watercourses.






Benefits of following Dewatering and In-Water Works BMPs




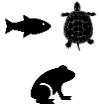
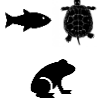
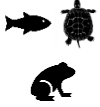

Limit Impacts Downstream






Controlled water diversion and managing sediment helps maintain natural streamflow patterns, limiting impacts to properties and habitats downstream.

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Dewatering and In-Water Works Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Dewater or do in-water work between August 1 and September 30.	Best	All	Dewatering or doing in-water work in August or September poses the least risk to species of conservation concern.
If dewatering or in-water work cannot be done between August 1 and September 30, then work outside the critical spawning time periods for the specific fish species present.	Minimum		Avoid harming fish. Changes can impact the habitat fish use to complete critical life stages like spawning or incubating eggs.
Avoid dewatering or in-water work in ponds and wetlands during amphibian breeding season, from March 1 to June 30.	Minimum		Many amphibians, such as frogs, lay egg sacs in these habitats, where the eggs develop and hatch into tadpoles. These early life stages rely on stable aquatic conditions.
During the reptile overwintering period from September to May, do not do any dewatering or in-water work that will change the water level of reptile overwintering habitat. (75)	Minimum		Avoid activities that may affect the water table in turtle and snake overwintering habitat. If the water level drops, turtles can freeze to death and snakes can die from a lack of water. If the water level rises, snakes can drown. (76) (77)
If equipment must be operated in water, conduct the work during dry and low-water periods. (10) (6) (12)	Minimum		Lower water flows can lessen the risk of erosion or sedimentation which can harm fish, turtles and amphibians, and their food sources and habitats.
Monitor weather events and time activities accordingly. Only work in dry weather conditions. Stop work during periods of heavy rainfall. (3) (12) (22)	Minimum		Under heavy rainfall, disturbed areas are more likely to release sediment or deleterious substances into aquatic and/or terrestrial habitats.

Dewatering and In-Water Works Best Management Practices (BMPs)	Rating	Species	Benefit to Species
How			
Salvage coarse substrates and in-stream cover elements, like logs and boulders, from the work area and reuse them during restoration after work is complete.	Best		Re-establishing natural stream structure provides habitat for aquatic species used for feeding, spawning, and shelter.
Keep in-water work brief. (78) (79)	Minimum		Minimize disruption to aquatic and riparian habitats.
When deploying turbidity curtains to isolate an in-water work area, deploy them from one point outward, like inflating a balloon. (80)	Minimum		Exclude fish and other aquatic species from the work area. Fish trapped within the work area will be harmed or killed by the work or exposure to sediments.
When dewatering, install the upstream barrier first, then herd fish and other aquatic species downstream, out of the area to be isolated, before installing the downstream barrier. (81) (30)	Minimum		Exclude fish and other aquatic species from the work area. Fish trapped within the work area will be harmed or killed by the work or exposure to sediments.
Dewater gradually. (80)	Minimum		Gradually dewatering reduces the risk of fish and wildlife becoming stranded and dying.
Carefully salvage and relocate fish and aquatic species from the isolated area to an area downstream. (7)	Minimum		Fish and aquatic animals trapped within the work area will be harmed or killed by the work or exposure to sediments.
For pumps used to dewater a work area or pass water around a dewatered work area, install intake pipes at least 30 cm above the bottom of the waterbody and screen the pipes with appropriately sized mesh for the fish and species present. Guidance is available in DFO's Interim code of	Minimum		Take in water, not sediment or benthic invertebrates which are a food source for fish. Prevent fish being sucked up against a screen or through a pump, which harms or kills them.

Dewatering and In-Water Works Best Management Practices (BMPs)	Rating	Species	Benefit to Species
<i>practice: End-of-pipe fish protection screens for small water intakes in freshwater.</i> (43) (82)			
Direct discharge water from dewatering to a temporary sediment control area or vegetated area at least 30 m away from waterbodies. (83)	Minimum		Allow sediment to settle out before returning water to the waterbody. Sediment in water can harm or kill fish.
If a diversion channel is required to pass water around a dewatered work area, ensure the channel is established prior to starting work, is stable, and can accommodate peak seasonal flow. (12) (43)	Minimum		Maintain continuous water flow downstream so fish and aquatic species don't become stranded. Reduce the risk of eroding channel banks or sediment entering the waterbody. Sediment can harm or kill fish.
When a diversion channel must provide fish passage, construct the channel with features that will allow the species present to pass upstream. (43) (83)	Minimum		Different species require different conditions for fish passage. Constructing the diversion channel with low enough water velocity and rest areas allows fish to move upstream to access important habitats like spawning areas.
Regularly inspect isolated areas, dewatering systems, and sediment controls and immediately repair any damage or deficiencies. (43)	Minimum		Sediment can harm or kill fish.
Re-water slowly. Ensure sediment has settled before removing isolating turbidity curtains. Remove downstream isolation dams first and allow water levels to equalize before removing upstream dams. (43)	Minimum		Sediment can harm or kill fish. Prevent sediment-laden water from entering downstream habitats. Prevent sudden flow surges that could harm species or cause erosion and sedimentation downstream.

General references for Dewatering and In-Water Works BMPs

See (3) (10) (30) (58) (6) (22) (84) (79) (85) (80) (86) (12) (83) (44) (87)

Mowing

Using equipment or machines to cut down vegetation in the right-of-way.

Benefits of following mowing BMPs



Save \$	Climate	Invasive Species	Social	Public Perception
<p>Reduce the number of repairs to roads, ditches and culverts. Mowing that maintains vegetated buffers prevents soil erosion during stormwater runoff. (2) (50)</p> <p>Reduce fuel use, equipment wear, and mowing time with spot mowing and selective cutting.</p> <p>Reduce mowing days. Native vegetation needs to be mown less often. (50)</p> <p>Lower snow plowing and winter maintenance costs. Plants act as natural barriers, controlling snow drift and reducing the risk of storm damage. (51)</p>	<p>Improve air quality and reduce greenhouse gases. Plants release oxygen, absorb carbon dioxide from the atmosphere, and store carbon in the soil long-term. (50)</p>	<p>Defend against invasive species in a low-cost and long-term way by establishing native plants early in the road planning process. (50) (14)</p>	<p>Plants look great. Enhance the natural beauty of an area for residents and visitors by mowing only where necessary. (50)</p>	<p>Improve public image by making a mark for monarchs. Mowing around milkweed shows residents and visitors your municipality values nature, and it benefits the butterflies, too.</p> <p>Maximize scenic views and minimize disruption for visitors by mowing during the period of least risk for species. It lines up with off-peak tourism season.</p>



Case Study: Spring mowing helps keep moose and deer off roads





In areas where moose and deer browse, mowing or brushing woody plants in April and May can help improve road safety. Mowing woody plants early in the spring can produce lower quality regrowth/browsing vegetation for moose and deer. Mowing woody plants in summer produces high-quality and nutritionally dense growth for several years post mowing. Reduce quality by mowing in the spring so moose and deer are less likely to browse along roadsides. This can help prevent wildlife-vehicle collisions. (91) (90)

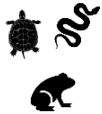
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Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Mowing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Mow October 1 to April 30.	Best	All	Mowing between October and April poses the least risk to species of conservation concern.
<p>If mowing is required between May 1 and September 30, monitor the weather and daily temperature to mow during the hottest times of the day. (50)</p> <p>Aim to mow when temperatures are hot and sunny ($\geq 32^\circ$). Avoid mowing during cooler temperatures when pollinators, amphibians, and reptiles are less active (e.g., early morning, dusk, or in the evening).</p>	Best		<p>When pollinators and reptiles are active, they can escape mowing activities.</p> <p>Bees, butterflies and other pollinator insects are less active in colder temperatures (e.g. early morning, dusk, or in the evening). (53)</p> <p>Reptiles and amphibians will retreat to cover objects or waterbodies during the hottest times of day, making them less likely to be in open areas to be mowed.</p>
If mowing is required between May 1 and September 30, mow infrequently and allow native plants to bloom and go to seed before mowing.	Best		Allows more native plants and species at risk plants to grow to maturity along the buffer. It also helps to ensure populations can re-establish in the right of way.

Mowing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If mowing is required between May 1 and September 30, mow during the warmer months (e.g., late July).	Better		When pollinators are active (during warmer temperatures) they can escape mowing activities. Avoid mowing during cooler months in the spring and fall when pollinators, amphibians, and reptile are less active.
Where			
Do not mow if it is not necessary for driver safety. Maintain dense native vegetation coverage when possible.	Best	All	<ul style="list-style-type: none"> • Dense native vegetation can help prevent invasive species from establishing. • Reduces road edge effects on forest habitat. • Dense buffer vegetation may discourage turtles nesting along roadways. • Dense buffer vegetation reduces erosion in the buffer and manages road water runoff more effectively. • A vegetated buffer helps to filter road pollutants, preventing them from entering waterways.
Put signs around important habitat areas to ensure all workers are aware of no mow zones. For example, “Monarch Breeding Area, do not cut or mow” signs can be placed around patches of milkweed.	Better		Helps protect pollinator habitats and ensures workers are aware of restrictions.
In open areas or fields, use spot mowing rather than mowing the entire area. Leave sections vegetated to maintain wildlife cover.	Better	All	Reduces habitat disturbance and allows native plants to grow to maturity.
Along roadsides, limit mowing to essential areas needed to maintain clear zones.	Better	All	Reduces habitat disturbance and allows native plants to grow to maturity.

How			
If mowing is required between May 1 and September 30, when mowing a field type habitat, start in the middle and work out to the edges.	Best		This allows wildlife the opportunity to escape outward, preventing them from becoming trapped as mowing progresses toward the edges.
Mowing can be part of an invasive species integrated vegetation management plan; however, the timing and method is species-specific.	Best		Using mowing as part of an integrated vegetation management plan helps control invasive species while minimizing harm to native plants and wildlife. When timed appropriately, it supports habitat restoration and protects sensitive species from disturbance.
Sign on to the National Wildlife Federation's Mayors' Monarch Pledge program to commit to making the region more monarch friendly.	Best		Mayors and other local and Indigenous governments are committing to taking actions to help save the monarch butterfly and its critical habitat.
If mowing is required between May 1 and September 30, use a flushing bar to allow extra time for species to escape the mower. (53)	Better	All	Flushing bars can encourage species to move or fly out of the way before the mower and blades reach them. (53)
If mowing is required between May 1 and September 30, when mowing an area with ground-nesting birds, check for nests before starting to mow. (3) First, turn off all equipment and vehicles to better hear bird activity. Then walk the area to look for nests on the ground. If a bird flushes from the ground or a tree, or you find a nest, follow the steps under " What to do when you find a bird nest " on page 26.	Minimum		Avoid harm to birds and their nests.

<p>If mowing is required between May 1 and September 30, ensure the mower height is at a minimum of 20cm. (3)</p>	<p>Minimum</p>		<p>Helps to avoid turtle or snake casualties from contact with blades. (76) Greater mower height also reduces stress to plant species allowing them to recover more quickly. (53)</p>
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General references for Mowing BMPs

See (3) (53) (88) (89) (35) (54) (11) (12) (36)

Case Study: Mayors' Monarch Pledge

The Township of Carling first participated in the Mayors Monarch Pledge in 2017. The Township has planted milkweed, encouraged residents to plant milkweed, and created a pollinator garden at the township office. The Township changed mowing practices to avoid areas of milkweed. A "Monarchs in Carling Township" citizen science project was launched on iNaturalist, a website where residents reported milkweed and monarch sightings to help identify areas to protect and restore.

Brushing

Removing trees, shrubs, or vegetation.

Benefits of following Brushing BMPs




Save \$	Safe Roads	Invasive species	Public perception
Brushing outside the growing season minimizes regrowth into road corridors, reducing long-term maintenance needs. (90)	Early spring brushing promotes faster plant healing and recovery, lowering disease risks and the likelihood of tree falls along road edges. (90)	Defend against invasive species in a low-cost and long-term way by preserving native vegetation. (50) (14)	Minimizing environmental impact can improve public image and community relations.


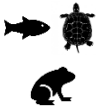
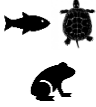


Case Study: *Spring brushing helps keep moose and deer off roads*






In areas where moose and deer browse, brushing or mowing woody plants in April and May can help improve road safety. Brushing woody plants early in the spring can produce lower quality regrowth/browsing vegetation for moose and deer. Brushing woody plants in summer produces high-quality and nutritionally dense growth for several years post mowing. Reduce quality by brushing in the spring so moose and deer are less likely to browse along roadsides. This can help prevent wildlife-vehicle collisions. (91) (90)

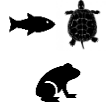
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Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Brushing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Brush October 1 to April 30.	Best	All	Brushing between October and April poses the least risk to species of conservation concern.
When brushing in bat habitat or where bats are known to occur, remove trees with a diameter at breast height of 25 cm or more, or trees with loose shaggy bark, between November 1 and March 1. If the tree must be removed during the active bat season, it should be done after dusk. (15)	Best		Avoid harm to bats by working when they aren't there.
Stagger brushing operations across multiple years to allow for habitat recovery.	Better	All	Reduce long-term disturbance and allow habitat to regenerate between brushing events.
Brush early in the spring before milkweed and other flowering plants emerge. (53)	Minimum		Milkweed takes several years to grow to maturity. Removing milkweed removes this important monarch food source for multiple years. Brushing periodically helps milkweed and other pollinator plants by removing woody plants that crowd them out.
Near reptile overwintering habitat, do not significantly alter or clear-cut areas during their overwintering period. (75)	Minimum		Avoid activities that may affect the water table in turtle and snake overwintering habitat. If the water level drops, turtles can freeze to death and snakes can die from a lack of water. If the water level rises, snakes can drown. (76) (77)
Where			

Brushing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If brushing between May 1 and September 30 in foxsnake habitat, inspect trees thoroughly before removing, limbing, trimming, or topping them. (92)	Best		Prevent harm to foxsnakes who are good climbers and may be in the trees.
Minimize the width of brushing corridors.	Better	All	Narrow corridors reduce habitat fragmentation and minimize disturbance to sensitive areas.
Avoid brushing on slopes or erosion-prone areas. (7)	Minimum	All	Brushing in these areas can destabilize soils, leading to erosion that degrades both terrestrial habitats and nearby aquatic ecosystems through increased sedimentation.
Ensure only the approved area is brushed. Set boundaries for brushing zones, using tree protection barriers. (93) (94)	Minimum	All	Ensure only the approved area is impacted, protecting surrounding trees. Tree root systems can extend 1-3 times greater than the height of a tree. (94)
How			
On stream banks or in riparian zones, if some removal is necessary, prune or top vegetation instead of full removal.	Minimum		Maintain root systems. It helps to stabilize banks and reduce erosion.
Do not use wetlands, waterways, or water bodies to transport or dispose of vegetation. (10)	Minimum		Prevents degradation of aquatic environments and preserves sensitive habitat for amphibians, fish, turtles, and plants.
Organic material (trees, stumps, woody debris, shrubs) removed from work sites can be turned into mulch and used for local revegetation projects. If used, ensure all organic material is free of weeds or invasive species prior to use. (22) (2)	Best		Incorporating organic material (such as mulch) in a revegetation project can help reduce erosion, improve water storage, and increase soil nutrients for plant growth.
Prioritize retaining trees with abundant seeds, cones, or nuts, like oaks, pines, and beech. (76)	Best		These trees provide food for several species that snakes eat.

Brushing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Leave brush piles in place. Use logs, branches, and shrubs that have been removed to create brush piles within or along the edges of clearings. (76)	Best	All	Brush piles provide temporary cover for wildlife.
Retain wildlife trees (e.g., snags, cavity trees). Where full retention is not possible, preserve dead or decaying trees by limbing or topping instead of full removal. (10) (53)	Best		Leave trees that are used by wildlife.
If natural habitat must be significantly altered, maintain or replace all naturally occurring snake habitat structures, including cover objects like rocks, brush piles, logs, and rock piles. (76)	Best		Preserves habitat features for snakes and other wildlife that depend on cover objects for protection and thermoregulation.
Brush, clear or grub to create openings that are mostly exposed to sunlight during the day, but have some shrub and ground cover. (76)	Best		Removing vegetation in human-built areas can sometimes improve snake habitat. Creating sunlit openings creates habitats where snakes can thermoregulate. They also need some cover they can retreat to.
Leave the stump and root system of cut trees. (76)	Best		The stump and root system can provide hibernation sites for some snake species.
Only remove trees that create a hazard for driver safety. Selectively trim trees to preserve wildlife habitat while maintaining road safety. (10) (53)	Better	All	Preserving trees maintains habitats, and selective trimming can create beneficial pollinator habitat.
All accumulated debris, vegetation, or logs that are removed from the site is temporarily stored and stabilized a minimum of 30 m away from watercourses above the highwater mark to prevent re-entry. (12) (23)	Minimum		Prevents re-entry of debris into aquatic habitats, supporting water quality and habitat integrity.

Brushing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Fell trees away from all watercourses. (95)	Minimum		This prevents direct damage to streambanks and aquatic habitats, preserving riparian vegetation that supports fish, amphibians, and other wildlife.

General references for Brushing BMPs

See (3) (10) (22) (53) (37) (96) (27)

Clearing and Grubbing

Removing trees, shrubs, other plants, stumps, and roots.

Benefits of following clearing and grubbing BMPs

Work efficiency

Stable soil means stable roads, ditches and culverts. Managing vegetation for stable soil reduces long-term maintenance. It helps prevent erosion during stormwater runoff that can damage roads and habitats.

Preserve native vegetation during road work instead of doing costly revegetation projects afterwards.

Invasive species




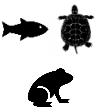
Defend against invasive species in a low-cost and long-term way by preserving native vegetation. (50) (14)


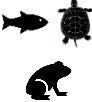


Public perception





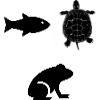

Minimizing environmental impact can improve public image and community relations.

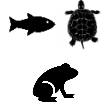
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Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Clearing and Grubbing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Clear and grub October 1 to April 30.	Best	All	Clearing and grubbing between October and April poses the least risk to species of conservation concern.
When clearing in bat habitat or where bats are known to occur, remove trees with a diameter at breast height of 25 cm or more, or trees with loose shaggy bark, between November 1 and March 1. If the tree must be removed during the active bat season, it should be done after dusk. (15)	Best		Avoid harm to bats by working when they aren't there.
Clearing or grubbing should not occur too far ahead of construction to ensure vegetation cover is maintained for as long as possible. There should be less than 48 hours between removing vegetation and placing permanent cover. (22) (2) (27)	Minimum		This minimizes soil exposure, reducing erosion and the spread of invasive species, while maintaining soil stability and habitat quality for native vegetation and dependent species.
Near reptile overwintering habitat, do not significantly alter or clear-cut areas during their overwintering period. (75)	Minimum		Avoid activities that may affect the water table in turtle and snake overwintering habitat. If the water level drops, turtles can freeze to death and snakes can die from a lack of water. If the water level rises, snakes can drown. (76) (77)
Where			
Establish a no grub zone on either side of watercourses. There should be a minimum of 30 m vegetated buffer retained around waterbodies.	Best		Vegetation buffers protect waterways and surrounding habitats by reducing erosion and preventing sediment from entering aquatic environments. They filter runoff

Clearing and Grubbing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
			before it reaches waterbodies, helping maintain water quality for fish and other aquatic species.
If clearing between May 1 and September 30 in foxsnake habitat, inspect trees thoroughly before removing, limbing, trimming, or topping them. (92)	Best		Prevent harm to foxsnakes who are good climbers and may be in the trees.
Avoid grubbing within 2 m of any standing trees to prevent damage to root systems. (97)	Better	All	Protecting root systems preserves tree stability, nutrient and water uptake, and overall health, which supports long-term survival and maintains habitat for wildlife.
Avoid grubbing near wetlands or sandy soils prone to rutting and compaction. (22)	Better		Rutting and compaction can impact local hydrology, changing the conditions necessary for SAR to complete their critical life stages. (5)
Minimize the area cleared by only clearing or grubbing vegetation that is necessary.	Minimum	All	Minimizing clearing reduces unnecessary habitat loss and soil disturbance. It preserves native vegetation that provides food and cover for wildlife, helps prevent erosion and sedimentation, and limits disturbed areas where invasive species can establish.
How			
If natural habitat must be significantly altered, maintain or replace all naturally occurring snake habitat structures, including cover objects like rocks, brush piles, logs, and rock piles. (76)	Best		Preserves habitat features for snakes and other wildlife that depend on cover objects for protection and thermoregulation.
Organic material (trees, stumps, woody debris, shrubs) removed from work sites can be turned into mulch and used for local revegetation projects. If used, ensure all organic material is free of weeds or invasive species prior to use. (22) (2)	Best		Incorporating organic material (such as mulch) in a revegetation project can help reduce erosion, improve water storage, and increase soil nutrients for plant growth.

Clearing and Grubbing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Retain wildlife trees (e.g., snags, cavity trees). Where full retention is not possible, preserve dead or decaying trees by limbing or topping instead of full removal. (10) (53)	Best		Leave trees that are used by wildlife.
Brush, clear or grub to create openings that are mostly exposed to sunlight during the day, but have some shrub and ground cover. (76)	Best		Removing vegetation in human-built areas can sometimes improve snake habitat. Creating sunlit openings creates habitats where snakes can thermoregulate. They also need some cover they can retreat to.
Leave the stump and root system of cut trees. (76)	Best		The stump and root system can provide hibernation sites for some snake species.
Prune or top trees instead of clearing or grubbing.	Better	All	Leave trees that are used by wildlife.
When grubbing, soil or other debris from stumps and roots should be removed within the work area prior to transporting off-site. (10)	Better	All	Avoid spreading soil and/or debris into surrounding aquatic or terrestrial habitats.
All accumulated debris, vegetation, or logs that are removed from the site is temporarily stored and stabilized a minimum of 30 m away from watercourses above the highwater mark to prevent re-entry. (12) (23)	Minimum		Prevents re-entry of debris into aquatic habitats, supporting water quality and habitat integrity.
Do not use wetlands, waterways, or water bodies to transport or dispose of vegetation. (10)	Minimum		Prevents degradation of aquatic environments and preserves sensitive habitat for amphibians, fish, turtles, and plants.
On stream banks or in riparian zones, if some removal is necessary, prune or top vegetation instead of full removal.	Minimum		Maintain root systems. It helps to stabilize banks and reduce erosion.

Clearing and Grubbing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Fell trees away from all watercourses. (95)	Minimum		This prevents direct damage to streambanks and aquatic habitats, preserving riparian vegetation that supports fish, amphibians, and other wildlife.
Fill in depressions remaining after grubbing with suitable earth material. (96)	Minimum	All	Filling depressions prevents water pooling, which minimizes erosion and reduces sedimentation in nearby habitats. It also maintains stable ground conditions that support vegetation regrowth.

General references for Clearing and Grubbing BMPs

See (3) (10) (96) (27) (12)

Grading and Shouldering

Using a grader to level, reshape, compact, or add new substrate.

Benefits of following Grading and Shouldering BMPs

Save \$

Lower maintenance costs by reducing the need to re-grade roads. Design roads in a way that allows water to move without eroding the road surface. (52)

Safe Roads



Deteriorating roads can compromise traffic flow and driver safety. Water should move off roads without eroding the road surface. (52)


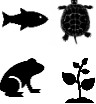
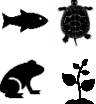
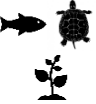

Long life


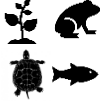
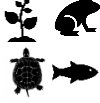



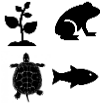
Avoid wash boarding and other road surface erosion issues by working during optimal weather conditions. (52)

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Grading and Shouldering Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Do grading and shouldering work October 1 to April 30.	Best	All	Grading and shouldering between October and April poses the least risk to species of conservation concern.
<p>If grading and shouldering is necessary between May and September where turtles are nesting, either:</p> <ul style="list-style-type: none"> • Install temporary fencing before turtle nesting season to prevent turtles from nesting in the work site, or, • Work with qualified persons to plan an alternative solution to temporary fencing, for example collecting turtle eggs, incubating them off-site, and re-introducing hatchlings after the work is completed. (3) (98) 	Minimum		Keep turtles and their eggs safe. Protect nesting turtles, eggs, and hatchlings by preventing nest compaction and reducing the risk of injury or mortality during critical nesting and hatching periods.
Grade roads in early spring before seed heads develop, or late in the season when plants are dormant. The specific timing window will depend on the invasive species of concern at the site. (10)	Best		Avoid spreading invasive species.
The optimal time window for grading is when there is enough moisture content in the road surface to allow for immediate compaction. This is typically shortly after a rain when surface materials are moist, but not wet. (52)	Better	All	Damp road aggregate is easier to compact and less likely to generate dust which can smother vegetation, pollute water, and degrade habitat quality for wildlife.

Grading and Shouldering Best Management Practices (BMPs)	Rating	Species	Benefit to Species
If grading and shouldering activities must occur in the rain, ensure appropriate erosion control measures are in place and that no sediment or deleterious substances are released into watercourses. (35)	Minimum		Avoid harming or killing fish by preventing sediment or other deleterious substances from entering the waterway.
Ensure the entire area disturbed by grading is compacted by the end of the day. (52)	Minimum		Prevent materials or dust from eroding into adjacent terrestrial and aquatic habitats.
Monitor weather events and time activities accordingly. Only work in dry weather conditions. Stop work during periods of heavy rainfall. (3) (12) (22)	Minimum		Under heavy rainfall, disturbed areas are more likely to release sediment or deleterious substances into aquatic and terrestrial habitats.
Where			
Only grade sections that need it. Raise the grader blade in sections where grading is not necessary. (3)	Better		Avoid displacing sediment or dust into the surrounding landscape, which can smother vegetation and degrade habitat quality. During summer, it also reduces the risk of disturbing turtle nests laid in gravel roads or shoulders, helping protect eggs and hatchlings that may be present in unexpected locations.
If shouldering is not necessary, allow vegetation to establish along the shoulder. (2)	Better		Can reduce impacts to surrounding landscape by stabilizing substrate, filtering and controlling water runoff, and lowering the risk of invasive species establishing.
How			

Grading and Shouldering Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Avoid applying surface treatments like dust palliatives. (35)	Better		Reduces the risk of chemical leaching or runoff, which can impact vegetation and contaminate aquatic and wetland habitats used by amphibians, turtles, and fish.
If dust suppression is required, ensure it is applied in a uniform manner to avoid run off, ponding, drifting, or tracking beyond the area of application. (99)	Minimum		Prevent deleterious substances from running off into adjacent terrestrial and aquatic habitats.
Ensure all water required for dust suppression or compaction is free of contaminants. (100)	Minimum		Prevent deleterious substances from running off into adjacent terrestrial and aquatic habitats.
Shape roads to maintain a crowned surface to allow for sufficient drainage to prevent water pooling and erosion. (5)	Minimum		Amphibians are attracted to pooling water. Also minimize species such as moose being attracted to roads by preventing salt lick sites from forming in puddles on the road. (91)
Ensure clean fill and quality aggregates are used and locally sourced when possible. (21)	Minimum		Clean fill substrates can reduce the spread of invasive species.
When grading, ensure that no materials are deposited into roadside watercourses, on bridge decking, or over the ends of culverts. (10) (35) (12)	Minimum		Avoid displacing sediment or dust into surrounding habitats. Excess sediment can reduce water clarity, damage fish gills, and smother eggs or spawning habitat by covering clean gravel substrates.
Excess material that poses a risk of contamination should be disposed of off-site. Clean surplus material should be disposed of at designated sites away from sensitive habitats and a minimum of 30m from waterbodies. (35) (36) (37)	Minimum		Prevent the run off of deleterious substances into adjacent terrestrial and aquatic habitats.

General references for Grading and Shouldering BMPs

See (52) (3) (10) (35) (12) (100) (21) (99) (101) (102)

Dust Suppression

Using mechanical or chemical methods to prevent particles from becoming airborne off gravel road surfaces or construction sites.

Benefits of following Dust Suppression BMPs

Save \$

Watering for dust control requires frequent application. Carefully applying dust suppressants avoids excessive water use, and limits runoff and leaching. This reduces risks of erosion and environmental contamination, avoiding possible future site maintenance, clean-up or restoration costs. (103) (104)

Long Life

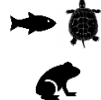



Dust control treatments reduce the loss of fines and aggregate, keeping the road surface stable and minimizing the need for frequent grading and re-graveling. This extends the road lifespan, and adds up to significant savings in road maintenance costs over time. (103)

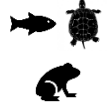

Health and Safety

Limiting airborne dust with non-chemical methods like wind barriers and surface upgrades reduces chemical exposure risks for personnel and minimizes health hazards associated with fine particulate matter. (103)

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Dust Suppression Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Where			
Do not draw water for dust suppression from wetland communities, streams less than five metres wide at the surface, or a lake with less than one hectare surface area. Avoid withdrawing water from the shallow nearshore area where water is typically two to five metres deep. Limit total water withdrawal from a single source to under 5 consecutive days and no more than 10 days within any 30-day period. (10)	Best		Avoid disturbing wetland and aquatic communities important for turtles, fish, and amphibians. Water withdrawal can destroy amphibian egg sacs, harm fish, disrupt vegetation, and reduce key macroinvertebrate food sources. Limit water withdrawal from any one source to maintain natural water levels, protect habitats, and support aquatic species' survival and movement.
How			
Limit or avoid using chemical dust suppressants.	Best		Some chemical dust suppressants are harmful to the environment. Prevent pollutants from entering waterbodies to avoid harming fish and turtles. (104)
Prevent chemical dust suppressants from leaching into the environment. Apply dust suppressants sparingly and only in necessary areas. Avoid applying suppressants to wet surfaces. Apply only during dry weather conditions, and stop during rainfall or when wet conditions are forecasted. (3) (12) (99)	Minimum		Water-based suppressants can mobilize surface contaminants causing them to enter and pollute or harm fish, turtles and amphibians. Non-water-based suppressants often contain ecologically damaging agents and/or components that attract wildlife to the site. Keep suppressants from seeping into gravel road shoulders used by turtles for nesting.
Apply dust suppression in a uniform manner to avoid run off, ponding, drifting, or tracking beyond the area of application. (31)	Minimum		Prevent deleterious substances from running into waterbodies where they can harm fish, amphibians and turtles. (5)

Dust Suppression Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When applying water for dust suppression, apply at a rate that does not wash away surface contaminants. Apply frequently enough to be effective, as water can evaporate quickly during dry weather conditions. Use water that is free of contaminants. (3) (31)	Minimum		Careful application of water as a dust suppressant prevents dust from entering waterbodies where it can harm fish, amphibians and turtles. (5)
When drawing water for dust suppression from a waterbody, screen intakes according to the species present and intake flow rates. (82)	Minimum		Appropriate screening prevents fish and other species from being drawn into the pumps or stuck up against the screen, which can injure or kill them.

General references for Dust Suppression BMPs

See (103) (104) (105) (21) (12) (36) (99)

Salting and Plowing

Winter road maintenance activities.

Benefits of following salting and plowing BMPs

Save \$

Lower de-icing material costs by implementing precise application methods and targeting only high-risk areas for salt application.

Minimize fuel consumption and wear on plowing and spreading equipment. Strategic planning of plow routes and reducing double-salting leads to lower maintenance and fuel expenses.

Avoid habitat restoration expenses by avoiding runoff into sensitive areas. Salt contamination can lead to a need to replant native vegetation.

Long Life

High salt concentrations can accelerate road surface degradation, meaning more frequent repairs. Minimizing road salt and chemical de-icers preserves road infrastructure.


Safe Roads, Safe Water


Prevent salt contamination in groundwater by using alternative de-icing methods in salt-vulnerable areas. This reduces costs associated with water treatment for potable sources and aligns with regulations to protect drinking water quality. (106)


Reduce the risk of vehicle collisions by decreasing the likelihood of attracting moose and deer to roads. (91)

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Salting and Plowing Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Monitor weather events and time de-icing agents appropriately. Proactive anti-icing can reduce salt application. Promptly remove and dispose of any salt applied prior to a storm if the weather event passes. (107)	Best	All	Avoid excess salt application that can harm wildlife and surrounding habitat.
Where			
Identify salt vulnerable areas and implement targeted measures to avoid contamination. This includes avoiding runoff to sensitive areas and implementing buffer zones when needed. (108) (109) (110)	Minimum	All	Ensure sensitive areas are not contaminated with salt or other de-icing agents.
Plan and manage plow routes to avoid double salting areas.	Minimum	All	Avoid excess salt application that can harm wildlife and surrounding habitat.
Manage and plan snow piles: <ul style="list-style-type: none"> • Select locations away from watercourses and sensitive habitat • Spread piles prior to snow melt in spring • Locate in an area with vegetation to help filter melt water in the spring prior to entering waterways • Ensure all debris and contaminants at pile sites are collected and properly disposed of following snow melt (109) 	Minimum		Avoid polluting waterways or surrounding habitats with chemical and de-icing agents accumulated in the meltwater. Avoid excessive run-off into wetlands or watercourses during periods of melt (winter or spring) which can influence local hydrology. Altering the water table in wetlands where reptiles overwinter can kill them. If the water level drops, turtles can freeze to death and snakes can die from a lack of water. If the water level rises, snakes can drown. (76) (77)

How			
Reduce snow drifts by revegetating roadsides with native grasses, and the right-of-way with trees and/or shrubs. This vegetation acts as effective barriers that trap snow. (51)	Best	All	Native plants improve the quality of roadside habitat while also reducing impacts from plowing and salting.
Use non-chemical de-icing. Replace road salt with a mix of sand and granular materials which can improve traction without the use of chemicals. (107) (111)	Better		<p>Reduce harmful runoff. The invasive plant phragmites is tolerant of salty road conditions and can out compete native plants in these conditions.</p> <p>Avoid polluting waterways or surrounding habitats with chemical and de-icing agents.</p> <p>Birds are very sensitive to salt. If birds ingest salt crystals they can die.</p> <p>Moose and deer seek salt licks and will be attracted to salt on road surfaces, causing a collision risk.</p>
Select the right de-icing agent for the weather and road conditions (e.g., air and pavement temperature). (107) (111)	Minimum	All	Reduces harmful chemical runoff that can degrade freshwater habitats and negatively affect aquatic species. Prevents exposure of birds and small mammals to toxic salt residues.
Salt only where necessary on critical sections of the roadways, such as inclines, intersections, crosswalks, etc. (108)	Minimum	All	Using salt only on critical road sections reduces runoff into adjacent habitats, helping protect sensitive species and vegetation from salt toxicity. It also decreases the likelihood of attracting wildlife like moose and deer to salted areas, reducing the risk of vehicle collisions.
Use appropriate equipment for snow removal and de-icing application that minimizes the area and spread of anti-icing agents, such as precision application equipment. (108)	Minimum	All	Avoid broadcasting de-icing agents into the surrounding environment.
Develop and implement a salt management plan, covering all operations, including storage, application, and snow disposal. Ensure personnel	Minimum	All	Minimizing salt use reduces the risk of contamination in nearby soil, vegetation, and waterbodies, protecting aquatic species, amphibians, and roadside vegetation that are sensitive to elevated salt levels.

are aware of best practices for salt use and de-icing techniques. (108) (109) (110)			
Implement ongoing training for winter maintenance staff on salt application and storage best practices to maximize effectiveness and minimize environmental impact. (110) (108) (109)	Minimum	All	Maximizes winter road maintenance effectiveness while minimizing environmental impact.
Develop and implement a water quality monitoring plan to track impacts on water systems from salt use. (110) (108) (109)	Minimum	All	Prevents contamination of local water sources by monitoring and managing salt runoff.
Ensure salt and sand piles are properly managed and stored. Store salt in a covered facility. If salt or salt-sand mix is stored outside, establish a berm and cover the piles. During the summer, inspect the piles for birds before disturbing or covering the piles. (108)	Minimum		Prevent salt or sand from drifting into adjacent habitats. Avoid harm to bird species such as bank swallows who will occupy sand or gravel piles for nesting. Extra caution and assessment are needed during nesting season. Bank swallows nest from mid-April to late August.

General references for Salting and Plowing BMPs

See (110) (109) (107)

Ditching and Ditch Clean Out

Re-grading, contouring, and removing accumulated debris, sediment, garbage, or rock from artificial watercourses alongside roads.

Benefits of following Ditching and Ditch Clean Out BMPs

Save \$

Reduce the amount of ditch maintenance needed by reducing the amount of gravel and dirt entering ditches. (57)





Prolong the life of the road by maintaining roadside vegetation. Native vegetation reinforces road alignment, stabilizes slopes, reduces erosion, controls snow drift, and helps stormproof roads. (52)





Climate Resilience






Roads are more resilient to extreme weather events and the impacts of climate change with proper ditch maintenance. Ditches that can handle more frequent and severe storms, and higher water levels, contribute to improved road safety and reduced repair costs.

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Ditching and Ditch Clean-Out Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Do ditch work in October.	Best	All	Doing ditch work in October poses the least risk to species of conservation concern.
When there is standing water in the ditch, avoid ditch work during the active amphibian season, from March 1 to August 31.	Better		Avoid harm to amphibians who may not be able to move out of the way quickly enough to avoid the work.
When there is standing water in the ditch, avoid ditch work during amphibian breeding season, from March 1 to June 30.	Minimum		Avoiding disturbance to spring pools and wetlands during the active amphibian season protects important breeding areas. Many amphibians, such as frogs, lay egg sacs in these habitats, where the eggs develop and hatch into tadpoles. These early life stages rely on stable aquatic conditions, making them especially vulnerable to disruption.
During the reptile overwintering period from September to May, do not do any ditch work near reptile overwintering habitat that will change the water level. (75)	Minimum		Avoid activities that may affect the water table in turtle and snake overwintering habitat. If the water level drops, turtles can freeze to death and snakes can die from a lack of water. If the water level rises, snakes can drown. (76) (77)
If ditch work is necessary in foxsnake habitat in June and July (nesting season), avoid removing deep grasses or displacing rock piles in drainage ditches. (112)	Minimum		Prevent direct harm or injury to snakes.

Ditching and Ditch Clean-Out Best Management Practices (BMPs)	Rating	Species	Benefit to Species
<p>If ditch work is necessary between May and September where turtles are nesting, either:</p> <ul style="list-style-type: none"> • Install temporary fencing before turtle nesting season to prevent turtles from nesting in the work site, or, • Work with qualified persons to plan an alternative solution to temporary fencing, for example collecting turtle eggs, incubating them off-site, and re-introducing hatchlings after the work is completed. (3) (98) 	Minimum		<p>Keep turtles and their eggs safe. Protect nesting turtles, eggs, and hatchlings by preventing nest compaction and reducing the risk of injury or mortality during critical nesting and hatching periods.</p>
Where			
<p>Create shallow ditches or berms around sensitive vegetation communities to help prevent water from pooling in the vegetation. Ensure water is directed to a filter berm, or to areas with vegetation that can filter salt-laden, sediment-laden, or polluted run-off, before it enters sensitive habitat. (52)</p>	Better		<p>Sensitive plant communities can be harmed or killed by salt-laden, sediment-laden, or polluted run-off.</p>
<p>Prevent runoff from entering waterways. Ditches should flow into vegetated areas located upslope of watercourses. (22) (95)</p>	Minimum		<p>Avoid harming or killing fish by preventing sediment or other deleterious substances from entering the waterway.</p>
<p>Ditches can be fish habitat. If the ditch is within 30 m of waterbodies, or may be connected to waterbodies farther away, assess the ditch to determine if it is fish habitat. If so, all maintenance activities should be done within the appropriate timing window for the fish species present, follow Fisheries and Oceans Canada fish and habitat standards, limit work within fish habitat, and ensure</p>	Minimum		<p>Prevent altering fish habitat and prevent harm to fish in natural or man-made water courses.</p>

Ditching and Ditch Clean-Out Best Management Practices (BMPs)	Rating	Species	Benefit to Species
that no sediment or debris enters the waterbody. (95)			
How			
Maintain native vegetation in ditches. (58) (57)	Best		Retaining native vegetation minimizes erosion, preserves habitat structure, and reduces opportunities for invasive species to establish in ditches.
Maintain natural features and coarse substrate, including cobble and gravel. (113)	Best		Substrate can provide spawning habitat for a variety of fish species.
When possible, maintain meanders, pools, and riffles that can provide important fish habitat. (113)	Best		Can provide important fish habitat for rearing, spawning, and resting.
When possible, instead of conducting a full clean out of ditches, consider staged clean outs (i.e. clean out 1 km, leave 1km) or phased clean outs (conducted over multiple years). (113)	Better	All	Phased or staged cleanouts minimize disturbance to wildlife and habitats, allowing vegetation to recover and maintaining ecological function within ditch systems.
If dense vegetation is interrupting drainage flow, consider mowing ditches instead of removing vegetation to re-establish flow. (57)	Better	All	Mowing maintains vegetation while restoring flow, reducing erosion and minimizing habitat loss for species using ditches.
Make all efforts to reduce impacts to local hydrology when conducting drainage work. If necessary, use preventative measures to avoid increased water flow downstream (e.g., temporary check dams). (113) (57)	Better		Maintaining natural hydrology protects aquatic habitat quality, including plant communities that provide food for species like waterfowl and turtles. Between September and May, prevent sudden water level changes that can flood overwintering sites used by reptiles such as turtles and snakes, potentially drowning individuals during hibernation when they cannot escape.
Clean out rather than scrape out ditches to limit disturbance to native species and ditch stability. Regrade ditches only when necessary. (52)	Minimum		Prevent erosion or sedimentation into aquatic habitats and help prevent invasive species from establishing.

Ditching and Ditch Clean-Out Best Management Practices (BMPs)	Rating	Species	Benefit to Species
			Limit the impacts of disturbance on native species. Prevent altering the stability of ditches.
On the top of the bank, if vegetation must be removed it should be removed from only one side of the ditch/drain, leaving the shade-producing side intact. (113)	Minimum	All	Retaining vegetation helps minimize erosion, stabilize banks, and improve water quality. Maintaining the shaded side of vegetation is important for regulating environmental conditions in fish habitat (e.g., temperature and light), as changes can negatively affect fish communities.
Ensure ditches allow for adequate drainage during periods of high water levels (e.g., spring melt and storms). (113)	Minimum	All	Prevent the risk of flooding or high velocity run-off into terrestrial or aquatic habitats that can increase erosion, sedimentation, or alter habitat quality.
When conducting ditch clean out operations, line ditches appropriately with vegetation, or stone if necessary. Do not leave exposed soil. (52)	Minimum	All	Lining ditches stabilizes banks and covers exposed soil, reducing erosion, preventing sediment from entering watercourses, and protecting aquatic and riparian habitats.

General references for Ditching and Ditch Clean-Out BMPs

See (3) (10) (52) (113) (58) (35) (12) (36) (27) (28) (96)

Culverts

Install, repair, replace or maintain structures that pass water under roads or trails.

Benefits of following Culvert BMPs

Save \$

Explore grants and funding programs aimed at enhancing biodiversity. Projects that support species at risk are more eligible for financial assistance.

Do maintenance and repairs less often. Following Culvert BMPs means minimizing erosion and sediment buildup which can block and damage culverts.

Culverts embedded deep enough flush naturally. This clears sediment deposits and maintains effective water flow which reduces ongoing maintenance and keeps waterways clear. (114)

Long life


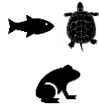



Arch culverts and bridges are less vulnerable to washouts and issues caused by beaver activity. Compared to traditional round culverts, they offer long-term durability and reduced maintenance, which offsets their higher upfront costs. (22)





Public Perception




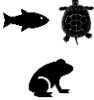

Off-peak tourism season lines up with the period of least risk for species. Schedule construction outside peak tourism season to minimize disruption to local businesses and enhance public support.

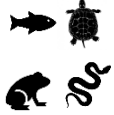
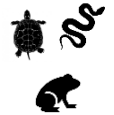
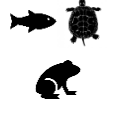

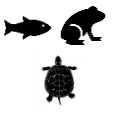
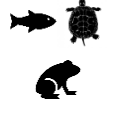
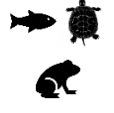
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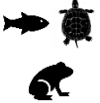



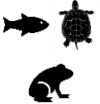


Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Culvert Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Install, replace, repair or maintain culverts between August 1 and September 30.	Best	All	Doing culvert work in August or September poses the least risk to species of conservation concern.
If culverts must be installed, replaced, repaired or maintained in waterbodies containing fish habitat between October 1 and July 31, do the work within the appropriate timing window for the fish species present, follow Fisheries and Oceans Canada standards, and ensure no sediment or debris enters the waterbody. (95)	Minimum		Prevent harm to fish.
Regularly monitor culverts for blockages. Follow culvert inspection procedures. Where beavers are causing blockages, install beaver deterrents to prevent future blockages. (79) (115)	Best		Maintains passage for aquatic species.
During the reptile overwintering period from September to May, do not do any culvert work near reptile overwintering habitat that will change the water level. (75)	Minimum		Avoid activities that may affect the water table in turtle and snake overwintering habitat. If the water level drops, turtles can freeze to death and snakes can die from a lack of water. If the water level rises, snakes can drown. (76) (77)
When there is standing water, avoid culvert work during the active amphibian season, from March 1 to August 31.	Better		Avoid harm to amphibians who may not be able to move out of the way quickly enough to avoid the work.
When there is standing water, avoid culvert work during amphibian breeding season, from March 1 to June 30.	Minimum		Avoiding disturbance to spring pools and wetlands during the active amphibian season protects important breeding areas. Many amphibians, such as frogs, lay egg

Culvert Best Management Practices (BMPs)	Rating	Species	Benefit to Species
			sacs in these habitats, where the eggs develop and hatch into tadpoles. These early life stages rely on stable aquatic conditions, making them especially vulnerable to disruption.
<p>If culvert work is necessary between May and September where turtles are nesting, either:</p> <ul style="list-style-type: none"> • Install temporary fencing before turtle nesting season to prevent turtles from nesting in the work site, or, • Work with qualified persons to plan an alternative solution to temporary fencing, for example collecting turtle eggs, incubating them off-site, and re-introducing hatchlings after the work is completed. (3) (98) 	Minimum		Keep turtles and their eggs safe. Protect nesting turtles, eggs, and hatchlings by preventing nest compaction and reducing the risk of injury or mortality during critical nesting and hatching periods.
Keep in-water work brief. (78) (79)	Minimum		Minimizes disruption to aquatic and riparian habitats. Habitat disturbance can degrade habitat quality and negatively impact fish, turtles, and other aquatic species.
Where			
In wetland areas, space culverts appropriately for the type of wetland to prevent ponding and maintain flow: 200 metres apart for bogs, 150 metres for fens, 100 metres for swamps and marshes. (5)	Best		Ensures adequate water flow, reducing ponding that can erode embankments and cause sedimentation that is harmful to fish. Maintaining natural flow also supports habitat connectivity, helping sustain downstream water levels essential for fish, turtles, and aquatic plants.
In amphibian and reptile habitat, space culverts appropriately for the species' migration radius: 50 metres apart for amphibians, and 150 to 300 metres apart for reptiles. (49)	Best		Increase the likelihood amphibians and reptiles will find safe passage under the road, instead of trying to cross over the road which puts them at risk of injury or death.

Culvert Best Management Practices (BMPs)	Rating	Species	Benefit to Species
In deep peatlands, culverts are more likely to distort (bow) over time due to the weight of the road above. Regular monitoring and appropriate materials can help mitigate this issue. (5)	Best	All	Prevents structural failure under the weight of the road in peatland areas.
When working in snake habitat, be extra cautious when replacing or working around culverts. Several species will use culverts, embankments, and the space between culverts and embankments as habitat. (3) (76)	Best		Foxsnakes have been found nesting in the space between culverts and the road bed. Snakes will use culvert embankments as overwintering habitat.
On large streams (>2 m wide) and areas with groundwater upwelling, instead of a culvert, install a bridge or arc (open-bottom) culvert. (5)	Best		Maintains the stream channel and substrate, which maintains fish passage and habitat features. Open-bottom culverts allow natural groundwater upwelling. Also reduces the risk of beaver blockage, which maintains fish passage.
Near sensitive fish habitat, install bridges and culverts an appropriate distance away: 100 metres for fish spawning areas, 500 metres from naturally reproducing brook trout lakes. (79)	Minimum		Preserves aquatic passage and avoids fish injury or habitat disruption.
How			
Plant native vegetation at culvert entrances to provide shade, cover, and food sources. (116)	Best	All	Enhances habitat value for wildlife.
Remove debris and other obstructions that impede water flow and create barriers at culvert entrances. (116)	Best		Improves access for fish and aquatic species.
Prepare a long-term maintenance plan for timely debris clearing. (10)	Best		Maintains culvert effectiveness, ensuring habitat connectivity and flow.

Culvert Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Design new culverts and retrofit existing culverts to improve wildlife movement. Install dry pathways within culverts, such as ~0.5 m – 1.0 m wide wildlife benches with ramps, or natural rock ledges. Place natural substrates such as branches and leaf litter on the pathways. Prioritize this in wetlands or habitats with high wildlife presence. (116) (49)	Best		Help facilitate safe wildlife movement under the road. Provides a dry path for small and medium-sized mammals and reptiles to safely cross under the road during periods of high water. Branches and leaf litter provide refuge. Enhances habitat connectivity.
Install permanent wildlife fencing to accompany culverts that also provide wildlife passage. (116) (49)	Best		Directs species away from roadways, enhancing safety and connectivity.
Retrofit existing culverts to improve fish and wildlife movement. Incorporate natural substrate or other cover elements within the structure. (116)	Best		Mimics natural streambed conditions so habitat quality is maintained. Improves fish passage and encourages aquatic species to use the habitat.
Retrofit existing culverts with baffles to provide fish passage where needed. (116)	Best		Reduces water velocity and creates resting areas within the culvert, enabling fish to swim through and access spawning or feeding areas.
Replace any disturbed woody debris, boulders, or other natural elements fish and aquatic species might use for cover. Integrate overhanging vegetation in the bank design. (117)	Best		Enhances in-stream habitat for fish and aquatic species, gives them places to hide, maintains ecosystem structure and function.
Use single large culverts over multiple smaller ones. (5)	Better		Larger culverts reduce debris blockages and maintain clear pathways, improving safe passage for fish and wildlife.
Design culverts for water passage without causing back-flooding or perched outlets. (79)	Better		Maintains natural water flow and habitat connectivity.

Culvert Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Culvert embedment must accommodate both surface and subsurface flow. In some cases, especially in wetland habitat, culverts should be embedded approximately 50%. (5)	Better		Supports natural hydrology and maintains habitat integrity in wetlands.
Ensure the culvert is long enough to prevent fill material from obstructing the waterway. (58)	Minimum		Fill material that narrows the waterway can destroy fish habitat by filling it in, and increase the rate of water flow making it harder for fish to pass through. Fill material that blocks the culvert entrance makes it difficult for fish to pass through.
Embed culverts based on the site conditions (a minimum depth of 10%) and avoid locations prone to outlet scouring. (79)	Minimum		Helps prevent culverts from being perched which blocks fish passage.
Ensure culvert is not perched and includes a low-flow channel. Align the culvert with the streambed slope. (5) (79)	Minimum		Fish move between different habitats, and some species travel far to reach spawning habitat. This prevents barriers to fish movement and maintains natural water dynamics.
Ensure the culvert entrance can handle steep roadside ditch flows without overshooting the entrance. (58)	Minimum		Properly directing flow into the culvert prevents erosion and washouts near the entrance, protecting nearby aquatic and riparian habitats.
At culvert entrances and exits, if soft armoring with natural vegetation will not be sufficient long-term stabilization and rocks or rip-rap are required, ensure large gaps between rocks and rip-rap are filled with appropriate material, such as Granular B. (116)	Minimum		Amphibians and reptiles can move more easily over smaller substrates.
Remove debris slowly when clearing culverts to allow clean water to pass and prevent downstream sedimentation. (40)	Minimum		Minimizes disturbance to water quality and habitat. Prevents excess sediment from entering the water, which protects fish by maintaining water clarity,

Culvert Best Management Practices (BMPs)	Rating	Species	Benefit to Species
			preventing gill damage, and preserving clean gravel beds needed for egg laying and spawning.

General references for Culvert BMPs

See (3) (10) (58) (30) (6) (22) (84) (118) (79) (12) (119) (83) (44) (87) (120)

Additional Resources

See (49) (116) (115)

Other Infrastructure and Maintenance

Installing wildlife crossing signs, lighting, and guardrails, plus maintenance activities including patching pavement and road sweeping.

Benefits of following Other Infrastructure and Maintenance BMPs

Save \$

Projects that support species at risk may qualify for grants or funding aimed at conservation efforts.

Safe Roads

Signs warning drivers that certain wildlife are frequently in the area can help reduce vehicle collisions with these animals. (121)

Increase driver safety by planning or retrofitting guardrails, fencing, and medians in ways that deter wildlife from entering roadways. (59)

Clean Air and Water




Proper waste disposal, dust control, and stormwater management help reduce air and water pollution.

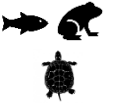
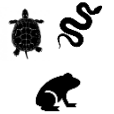


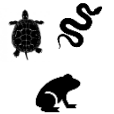
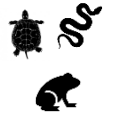
Public Perception

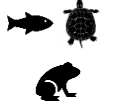

Wildlife signs are a Best Management Practice the public can see. This visible commitment to environmental sustainability fosters public trust and community support.

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

Other Infrastructure and Maintenance Best Management Practices (BMPs)	Rating	Species	Benefit to Species
When			
Do not do cold or hot pavement patch work on road shoulders or embankments between May and September (turtle nesting season). (122)	Best		Turtles may nest in soft pavement before it hardens, which can damage nests and harm developing eggs.
If road sweeping must occur in May, August or September (turtle hatching periods), conduct a visual inspection of the road and shoulders before sweeping, then avoid sweeping in locations where turtles are nesting and turtle hatchlings are present.	Best		Minimize risk to turtle nests and hatchlings.
Schedule road sweeping after rainfall when damp aggregate is easier to collect and generates less dust. (35)	Better	All	Reducing dust prevents sediment and pollutants from leaching into terrestrial and aquatic habitats, protecting plants and animals from smothering and habitat degradation. It also improves collection efficiency, making cleanup more effective and reducing environmental impact.
If infrastructure maintenance is necessary and permitted to go ahead during bird nesting season between May and August, implement measures to discourage nesting before the nesting season begins, for example, tarping or blocking areas where birds may nest. (123)	Minimum		Avoid harm to bird species and their nests.
Where			

Other Infrastructure and Maintenance Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Near water crossings or bridges, promptly collect waste and debris from road sweeping. Dispose of all material collected from road sweeping at least 30 metres from watercourses or water bodies. (6) (124)	Minimum		Prevents sediment and contaminants from entering watercourses and waterbodies where they can degrade aquatic habitats.
Locate wildlife signs in areas where wildlife frequently cross, and install the signs on straight sections before curves so they are visible to drivers. Wildlife signs are recommended as a temporary solution until fencing or eco-passage solutions can be implemented. (121) (125)	Best		Raise public awareness to reduce collisions with wildlife.
Install street lights or outdoor lighting only where necessary for safety. Avoid placing lights near habitats used for species' important life stages. (67) (123) (126) (60)	Best		Roadway lighting disorients migrating birds and bats.
How			
Adjust roadway lighting by using green lighting instead of red or white lights. Use low-intensity, dark sky and species-friendly lighting such as low-pressure sodium lamps with full cut-off shielded fixtures. Use taller streetlights. (67) (123) (126) (60)	Best		Roadway lighting that is dimmer and dark-sky friendly reduces disorientation of migratory species while improving energy efficiency and safety. Taller streetlights guide bats above traffic.
In areas where guardrails create an impermeable feature, such as concrete rails with little or no surface holes or gaps, install wildlife fencing to redirect species to safe passage. (59)	Best		Prevent wildlife from gaining access to the road to reduce the risk of road mortality.
When replacing guardrails, if exclusion fencing is not an option, install guardrails that are permeable metal or cable designs. (125)	Better		Reduce the potential for wildlife to become trapped on the road.

Other Infrastructure and Maintenance Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Use water as needed to control dust during sweeping.	Better	All	Lower airborne dust to maintain air quality and minimize respiratory impacts on nearby wildlife.
Seal drains or open joints before cleaning or sweeping bridge decks. (3) (124)	Minimum		Prevent sediment and contaminants from entering aquatic habitats where they harm fish, turtles and amphibians.
Inspect all infrastructure before any maintenance. Pay particular attention to ledges, vertical surfaces, deck drains, lateral drains, and culverts. (3)	Minimum		Birds, particularly cliff swallows, nest on bridges and other road infrastructure. Avoid harm to birds and bats using infrastructure as habitat for nesting, roosting, or perching.

General references for Other Infrastructure and Maintenance BMPs

See (3) (10) (67) (125) (12)

New Roads

Planning and designing roads where none currently exist.

Benefits of following New Roads BMPs

Save \$

Designing a road to include ecological mitigation measures is less costly than trying to retrofit in the future.

Safe Roads




Directing animals to safe crossings and avoiding attracting them to the roadway results in fewer vehicle-wildlife collisions.





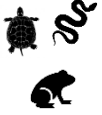
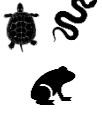
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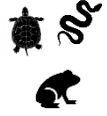



A road that maintains local biodiversity and gets people where they want to go is something people can be proud of.

Wait! Did you come here straight from the table of contents?

Then you missed important standard BMPs that apply to all roadwork projects. Find them within the steps on pages 9 to 29.

New Roads Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Where			
Plan road routes to maintain or enhance habitat connectivity. Approach route planning from a larger, landscape perspective; consider wildlife movement patterns and avoid building roads in significant wildlife habitats, like wetlands. (123)	Best	All	Wildlife need to move through, and between, habitats to carry out all their life processes. Roads and other land developments can prevent wildlife from reaching the habitats they need to get to. Wildlife are injured or die trying to cross roads. Minimizing habitat fragmentation and routing roads away from wildlife movement corridors makes it less likely wildlife will need to cross roads to complete their life cycles.
Consider future land use changes when route planning and bundle roads with other roads or developments. (123)	Best	All	Having less, or no space between a main road and bypass road or other development minimizes habitat fragmentation making it less likely wildlife will need to cross roads to complete their life cycles.
Where roads route along or through bogs and fens, align roads parallel to water flow. (69)	Best		Subsurface flow is important in peatlands. Road effects on peatland hydrology can be minimized by aligning roads parallel to the direction water flows.
How			
Build roads to the minimum width required. (67)	Best		Shorter distances and fewer lanes are easier for wildlife to cross.
Incorporate wildlife crossings and fencing into road designs. (6) (49) (126) (29)	Best		Minimize wildlife mortality by providing safe places for them to cross.

New Roads Best Management Practices (BMPs)	Rating	Species	Benefit to Species
Reduce speed limits or use traffic calming measures on roads with high wildlife mortality, and roads that go through important wildlife habitat. Installing animal-vehicle detection systems is another option. (116) (49)	Best		Minimize wildlife mortality by compelling drivers to pay closer attention and increasing driver reaction time.
Incorporate soil berms or noise reduction walls to reduce noise and separate habitats. (67)	Best		Wildlife depend on sound for communication, mating, navigation and foraging. Mitigating noise pollution benefits wildlife in surrounding habitats, particularly migratory birds.
Modify medians and curbs to facilitate wildlife movement, such as sloped or roughened curbs. (67)	Better		Vertical curbs trap small wildlife, such as amphibians, increasing their risk of injury or mortality. Sloped surfaces allow wildlife to climb off the road surface.
In areas where roads go through important habitat, avoid using barriers like the Ontario Tall Wall or Texas Jersey. (59)	Better		Wildlife can climb or breach these barriers and become trapped on the road, increasing their risk of injury or mortality.
Use metal or cable barriers instead of concrete barriers. (59)	Better		Where permanent wildlife exclusion fencing is not feasible, avoid creating barriers to wildlife. Small- to mid-sized wildlife can pass through metal or cable barriers, so they won't be trapped on the road where they can be injured or killed.
In continuous concrete barrier designs, incorporate scuppers (basal cut-outs) at intervals to meet passage needs of wildlife present. (59)	Better		Where permanent wildlife exclusion fencing is not feasible, include ways wildlife can pass through barriers, so they won't be trapped on the road where they can be injured or killed.

New Roads Best Management Practices (BMPs)	Rating	Species	Benefit to Species
In areas where raised barriers are needed, direct animals toward below-grade passages, such as underpasses, bridges, or creek culverts. (59)	Better		Provide areas for wildlife to cross, so they won't be trapped on the road where they can be injured or killed.
For vegetated medians, minimize the area covered in shrubs. (59)	Better		Areas of dense shrubs attract wildlife looking for cover. Lower the risk of animal-vehicle collisions by attracting less wildlife to the roadway.
For vegetated medians, plant large trees taller than the tallest vehicle on the road. (125)	Better		Help divert species like bats and birds above the roadway to avoid collisions with vehicles.
Wait for further research before creating or maintaining wildflower meadows and other pollinator habitats in highway medians. (55) (56)	Best		Current research shows wildflower meadows on medians encourage pollinators to cross roads, and creates toxic foraging habitat for them. Both of these increase their risk of mortality.

General references for New Roads BMPs

See (67) (59) (126) (116) (123)

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Appendix A: Opportunities to collaborate with Georgian Bay Mnidoo Gamii Biosphere

Your good news story, celebrated by our communities

Georgian Bay Mnidoo Gamii Biosphere is a non-profit charity established in 1998 and designated by UNESCO as a world biosphere region in 2004.

Education is at the core of our work. We strive to inspire people to develop a sense of place, and to care about the unique natural and cultural features of our region. We work hard to tell good news stories and showcase projects that are good for wildlife. In 2025, our social media followers totalled over 12,000, with 3,000 monthly subscribers, and we reached an estimated 10,000 people at workshops and events.

We want to share Best Management Practices with our communities! Please connect with our Communications Director by emailing info@georgianbaybiosphere.com or phoning (705) 774-0978.

Technical support and advice for your project

Generations Effect is the consulting social enterprise of the Georgian Bay Mnidoo Gamii Biosphere charity. It provides consulting and technical services to deliver sustainable solutions for clients, and advance ecological, social and economic well-being in eastern Georgian Bay. Profits are reinvested in the Georgian Bay Mnidoo Gamii Biosphere and other causes in the region that align with the United Nations Sustainable Development Goals.

Through Generations Effect, Georgian Bay Mnidoo Gamii Biosphere could collaborate with you on your road work project, providing technical support and advice from qualified biologists and technicians, including:

- maps of species at risk and their habitat within your work area
- completing habitat assessments and surveying road mortality as part of the road work planning process (ideally at least two years before the road work to ensure enough information is collected)
- reviewing road work plans to recommend species at risk mitigation measures
- training staff in species at risk awareness and handling
- collecting turtle eggs within work areas to be hatched and released post-construction
- being on call to safely remove species at risk from work sites

Connect with Generations Effect by emailing info@generationseffect.com or phoning (705) 773-2286, and visit www.generationseffect.com for more information.



Turtle eggs collected during road construction will be incubated offsite. Photo: Kayla Martin/GBB

Case Study: A cost-effective road ecology approach

In 2022, Dillon Road in the Township of The Archipelago was scheduled for routine road maintenance. Construction was planned during turtle nesting season. In partnership with the Township, a qualified biologist from Georgian Bay Mnidoo Gamii Biosphere provided a mitigation strategy that complied with legal obligations to prevent harm to the species at risk on site and reduced mitigation costs for the Township.

Mitigation	Traditional Temporary Fencing Approach	Georgian Bay Mnidoo Gamii Biosphere Road Ecology Approach
Approximate Cost	\$65,000	\$45,000
Approach	1.62 km of temporary fencing installed at known nest locations and wetland areas to keep wildlife off the worksite	excavate nests and remove turtle eggs from the work site incubate the eggs off site release the hatchlings back at the site once work was complete train road work crews and staff on species at risk awareness and handling complete mandatory reporting to meet species at risk permit requirements

Appendix B: Overview of legal requirements related to species of conservation concern

This is an overview of your responsibilities under laws related to species of conservation concern. Additional legal requirements, permits, approvals for the road work may be required. You are responsible for meeting all legal requirements, obtaining permits and approvals before starting work, and adhering to conditions of permits and approvals.

Species at Risk

Species are assessed and protected both federally and provincially. Species are assessed by an independent group of experts, from lowest to highest risk, as Special Concern, Threatened, Endangered, and Extirpated. One species may have two different designations based on their status within Canada and Ontario. Their designations determine which protections apply.

Species at Risk Act

Purpose of the *Species at Risk Act*

This federal law aims to prevent wildlife species from becoming extinct or extirpated. It supports recovering endangered and threatened species, and managing species of special concern to keep them from becoming endangered or threatened.

Your responsibilities under the Act

- Do not kill, harm, harass, capture, take, possess, collect, buy, sell or trade an individual, or any part of an individual, of a listed extirpated, endangered or threatened species without a permit
- Do not damage or destroy the residences of individuals of endangered, threatened, or extirpated species without a permit
- Do not destroy critical habitat of an endangered, threatened or extirpated species without a permit

More information

- [Species at Risk Act](#)
- [Apply for a permit](#)

Species Conservation Act, 2025

Purpose of the Act

This provincial law aims to provide protection to species classified as extirpated, endangered, or threatened, and their habitat, while considering Ontario's social and economic growth needs. It requires using the best available scientific information, community knowledge and Indigenous traditional knowledge to identify species at risk.

Your responsibilities under the Act

- Do not engage in an activity that will, or is likely to, result in a species no longer living in the wild in Ontario.
- Register or get a permit for any activity that will, or is likely to, result in killing, harming, capturing, or taking a member of a protected species, or damaging or destroying their habitat.
- Register or get a permit to possess, transport, collect, buy, sell, lease, trade, or offer to buy, sell, lease, or trade, a member of a protected species (living or dead, or any part of them).

More information

- [Species Conservation Act, 2025](#)
- [Register an activity](#) that will, or is likely to, impact protected species or their habitats. A conservation plan prepared by a qualified professional is required with every registration.
- Apply for a permit: email SAROntario@ontario.ca
- While this Best Management Practices document was being finalized, the *Species Conservation Act, 2025* came into force, replacing the *Endangered Species Act, 2007*. As this new law is implemented, which activities are registerable and which require permits may be defined, or change. [Follow current guidance from the Ontario Ministry of the Environment, Conservation and Parks](#) to determine your responsibilities and permit requirements under this new law.

Migratory Birds

Migratory Birds Convention Act

Purpose of the Act

This federal law protects migratory birds, their nests, and eggs.

This law is how Canada implements an international agreement (convention) between Canada and the United States of America for protecting migratory birds.

Your responsibilities

- Do not capture, kill, take, injure or harass a migratory bird or attempt to do so.
- Do not destroy, take or disturb an egg.

- Do not damage, destroy, remove or disturb a nest, nest shelter, eider duck shelter or duck box, containing a live bird or a viable egg or built by a species whose nest is protected year-round.
- Do not dump substances harmful to birds in waters or areas frequented by them or in a place where the substance can enter waters or areas frequented by them
- Obtain permits and meet requirements for specific activities involving migratory birds.
 - A Damage or Danger permit issued by Canadian Wildlife Service under the *Migratory Bird Regulations, 2022* authorizes permit holders to scare migratory birds with aircraft or a firearm, destroy eggs or nests, relocate birds or their nests, or kill birds in instances where the birds, nests, or eggs are causing damage to property or threaten public health and safety.
 - For migratory bird species whose nests are protected year-round, an alternative to a Damage or Danger permit for damage, destroying, removing or disturbing an unoccupied nest is to report it to the Abandoned Nest Registry, and the designated waiting period has passed (from 1 to 3 years depending on the species) without the nest being reused.

More information

- [Migratory Birds Convention Act, 1994](#)
- [Migratory Birds Regulations, 2022](#)
- [Apply for a Damage or Danger Permit](#)
- Submit a notice to the [Abandoned Nest Registry](#)
- [Avoid Harm to Migratory Birds](#)
- [Nesting Periods](#)

Fish and Fish Habitat

Fisheries Act

Purpose of the Act

This federal law protects fish and their habitats.

Your responsibilities

- Do not deposit deleterious substances into waters frequented by fish. Sediment and fuel are examples of deleterious substances commonly found at road work sites.
- Do not do anything that kills fish without an authorization
- Do not harmfully alter, disrupt or destroy fish habitat without an authorization

More information

- [Fisheries Act](#)
- Fisheries and Oceans Canada (DFO) [Projects Near Water](#)

- DFO has developed [codes of practice for routine projects](#). If your project meets the conditions and follows the measures to manage risks to fish and fish habitat listed in the code of practice, you submit a notification form and DFO does not need to review your project.
- [Apply for an Authorization](#)

Invasive Species

Invasive Species Act, 2015

Purpose of the Act

This provincial law aims to prevent and control the spread of invasive species.

Your responsibilities

- Do not import, possess, deposit, release, transport, breed/grow, buy, sell, lease or trade prohibited invasive species without authorization
- Do not import, deposit, release, breed/grow, buy, sell, lease or trade restricted invasive species without authorization
- Follow the conditions in a Prevention and Response plan when working to prevent, control or eradicate an invasive species. An authorization is required if the conditions can't be met.

More information

- [Invasive Species Act, 2015](#)
- [Managing invasive species in Ontario](#)
- Apply for an authorization: email invasive.species@ontario.ca

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