
# Routes to Pollinator Habitat Restoration

This document is designed to help rights-of-way (ROW) managers consider multiple approaches to restoring pollinator habitat including public engagement, passive restoration, and active restoration.

## Pollinators 101

There are thousands of insect species that are pollinators, including native bees, flies, butterflies, moths, wasps, and beetles. Canada is home to approximately 800 species of native bees alone, most being solitary species. Honeybees, while much loved, are non-native and may also compete with native bees for resources. The Monarch Butterfly is a threatened species in Canada that feeds on many species of wildflowers as well as its host plant, the milkweed.

All insect pollinators use open meadows full of wildflowers and grasses. The flowers provide pollen and nectar, and the vegetation in general provides places to hide, nest, and overwinter. CWF's Rights-of-Way Habitat Restoration program is focused on supporting native pollinators.

## Public Engagement

There are many opportunities to engage your community in pollinator habitat restoration to garner support and promote the sustainability of your efforts.

### Managing Expectations from the Public (sleep, creep, leap)

When dealing with native seed, it is important to remember that the appearance of native wildflower species follows the sleep, creep, and leap mode. This means that the first year after seeding, you may get a few species growing, but most are sleeping. The second year, the seeds are creeping awake, putting out roots and gathering nutrients. The third year you will see the majority of the species present. It is important to communicate to the public that this is a "work in progress" and although it may look messy and weedy to them at the start, the final stage is when the beauty of the meadow can be most appreciated.

### Signage

To compliment your pollinator restoration initiatives, posting signage indicating *pollinator habitat restoration in progress*, is a significant educational opportunity. Signage informs the public of the purpose of the work taking place, reduces concerns and increases support for the continuation of the activities.

### Native Meadow Demonstration Site

Planting a native meadow as a demonstration site in a highly visited area is an effective education tool in communicating pollinator habitat restoration with your community. A demonstration of a small-sized meadow can also act as a pilot to test various restoration techniques and determine methods that work for your municipality. Volunteers can join in on multiple aspects of the restoration including

preparation, seeding, or planting and maintenance, allowing opportunity to learn about the significant stages of work and the importance of meadows as habitat for pollinator nesting, breeding and nectaring. Learning by seeing and doing through the demonstration site will prepare the community in understanding and supporting future pollinator restoration work on roadsides.

### iNaturalist Initiative

Through the online citizen science platform iNaturalist.ca, members of the public can record and share photos of the pollinators they observe in nature to monitor progress of work. Anyone who is able to take a photograph with a smartphone or digital camera can contribute to a growing wealth of knowledge about pollinators. These discoveries are identified by experts, then vetted through NatureServe Canada to end up in the hands of decision makers and academics who can use this vital information to conserve pollinators. Residents will be able to follow and connect with other community members to see what they are sharing.

This is a collaborative and inclusive method of developing a living record of your pollinator restoration efforts and show how you are taking strides to meet your biodiversity goals. This activity pairs well with other citizen engagement initiatives such as a native meadow demonstration site, Adopt-a-Road, and opt-out spraying programs.

## Passive Restoration

### Mowing Timing and Frequency

Most municipalities already include mowing in their regular roadside maintenance activities. Frequent mowing removes nectar, pollen and shelter for most pollinators and kills eggs, caterpillars, and adults on mown vegetation. Adjusting the timing and frequency of mowing to account for pollinator nesting and breeding will significantly improve outcomes for pollinators while reducing maintenance costs without compromising safety. Seeds of some native species remain in the soil and may germinate when conditions are favourable such as following reduced mowing frequency.

On roadsides, only mow to the clear zone regularly. Areas beyond the clear zone can be mowed once a year or twice a year if necessary. Mowing in early spring has the least impact on Monarch Butterflies as they have not arrived yet in Canada. A late autumn mowing has the least impact on pollinators when flowers have finished blooming and most pollinators are no longer active.

*Photo by Lindsay Ralph*

## Active Restoration

### Native Seeding

For the biggest conservation outcome, seeding roadsides with native species is recommended. First, our native pollinators are adapted to recognizing and using native plant species. Second, regionally native plant species are adapted to our seasonal variations (frost, wind, snow, rain) and hardiness zones. The genetics of these plants also allows them to adjust to a changing climate. The purchase of native seed from local growers supports this new industry and sends a message that we want to build a supply of native seed local to our area. Prior to seeding, it is important to remove invasive species and weeds from the area to prevent the displacement of the native plants. Proper preparation of the seed bed will save a lot of effort in the long term.

## Managing Invasive Species – Spot Spraying

Wild parsnip is an invasive plant that creates dense stands that will outcompete native species favourable to pollinators. Removing wild parsnip effectively is a challenge that has led many municipalities and counties to boom spray and/or mow frequently. As an alternative, consider switching from boom spraying to spot spraying to control specific outbreak sites and reduce the frequency of mowing in the remaining area. Spraying in the short term will reduce maintenance efforts and improve pollinator conditions in the long term. Spot spraying can be combined with reduced mowing frequency and native seed planting for improved conservation outcomes.

## Managing Invasive Species – Hand Pulling

Hand pulling is an alternative to the commonly used mowing and herbicide spraying practices to control invasive species and weeds. This practice can be conducted by groups of volunteers such as those who have joined an Adopt-a-Road initiative. With proper instruction and safety protocol, hand pulling is an effective low-tech option. When hand pulling, it is important to remove the entire root, and if it has gone to seed, the remaining plant material. Otherwise, a new plant may grow. This practice can be combined with seeding native species in patches where wild parsnip was pulled.

## New Construction – Hydro Seeding

To provide a boost to pollinator habitat, use native seed when hydroseeding following a construction project. For example, ditching or culvert construction requires some kind of revegetation when complete. The decision to switch out the standard seed mix for a more supportive pollinator mix is an easy way to significantly increase pollinator habitat. Hydroseeding may require a slightly increased volume of seed and an operator who is experienced with this type of seeding. This kind of seeding can be done throughout the growing season but may be more successful in the spring or fall season. The cost is approximately $1,000 per kilometre including seed and operator. Following establishment of the native vegetation, mowing demands are low to none.

## Tilling and Seeding

When undertaking active restoration projects along a roadside or in a patch with grass cover, we recommend the following spring seeding approach:

- Spray for weeds.
- Wait two weeks.
- Till soil.
- Spray again at three-leaf stage (approximately two to three weeks later, depending on season).
- Wait to assess if a third spray is needed (if three-leaf stage develops).
- When bed is relatively weed free, add wood chips or sawdust about five centimetres thick, and till soil.
- Seed natives (approx. eight to 10 kilograms per hectare). If using millet as a nurse crop, wait until the risk of frost is gone. Millet should be seeded at two kilograms per hectare.
- Pack to ensure seed to soil contact.
- Seed with native species.

Depending on the size and shape of the area and human resources of your project, you may decide to seed your project by hand, ATV, or native drill seed. Hand broadcast seeding is a good approach if you have a crew of volunteers, or you need to keep costs low. A team of individuals can walk a line and toss a flour scoop of seed in an arc every three steps. Once the line has been seeded, the team walks another line at 90 degrees and tosses seed again along this line. Narrow Rights-of-Way can be effectively broadcast seeded by an individual person. It can be a very enjoyable way for volunteers to contribute to a restoration project. It is recommended to follow with a roller to encourage seed to soil contact.

Another option is to use an ATV with a native seed spreader mounted on it. This will allow for even distribution, however you may need to add a thinner such as millet or kitty litter to have it mix evenly. Another option is to have a seed coating applied to smaller seeds to make sure they are present evenly in the mix and to allow the use of a regular seed drill. This can add approximately 10 per cent to the cost of the seed mix. You will want to run a roller overtop to ensure even seed to soil contact.

*Photo by Lindsay Ralph*

For large sites, seeding with a native drill seeder is an option that requires less seed but may be more costly due to the equipment and operator that is needed. Drill seeding is also great for heavy clay soils. A roller is not needed after drill seeding.

Improving pollinator habitat through roadside vegetation management can lead to significant pollinator conservation outcomes. This is compounded by other economic and environmental benefits such as reduced long-term maintenance costs, climate change mitigation and carbon storage benefits. If you are interested in participating in the Canadian Wildlife Federation's program, please contact us today. Our team will provide you with expert advice in selecting and conducting pollinator habitat restoration interventions for your community.

For more information on CWF's Rights-of-Way Habitat Restoration Program, see https://cwf-fcf.org/en/explore/pollinators/habitat-restoration.html

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