POLLINATOR PARTNERSHIP CANADA

Habitat Stewardship Program Species at Risk Stream Final Report

Monarch Meadows

Pollinator Partnership Canada 2019



Final Report: Monarch Meadows Prepared by Kathleen Law, Monarch Program Coordinator - Pollinator Partnership Canada

Presented to Environment and Climate Change Canada and TransCanada April 2019

Program: HSP SAR Project ID: 2017HSP7934 Fiscal Year: 2018-2019

This report provides a narrative summary of a twoyear Habitat Stewardship Program Species at Risk Stream project that addressed the need to create habitat for the Monarch butterfly. A total of fiftyone sites were enhanced with locally sourced native plants, including milkweed, across the Ontario portion of the Eastern Monarch population's breeding range.

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Cover photo: Dan Werner, Kayanase - Monarch caterpillar on butterfly milkweed in six-week old monarch Meadow garden, I.L. Thomas School, Six Nations.

Monarch Meadows Engaging Canadians in habitat creation

Monarch Meadows is a two year habitat creation and outreach program by Pollinator Partnership Canada to implement conservation measures outlined in the *Management Plan for the Monarch (Danaus plexippus) in Canada* (ECCC 2016). This program received the generous financial support of Environment and Climate Change Canada and TransCanada, as well as the in-kind support and collaboration of Carolinian Canada Coalition, David Suzuki Foundation, Ontario NativeScape and the North American Pollinator Protection Campaign.

The main objective of Monarch Meadows was to demonstrate the many forms Monarch habitat can take in human-affected landscapes. By creating habitat in school yards, on farms, in



Immediately post-planting in October 2018, a Monarch Meadows site in Guelph, at the Ignatius Jesuit Centre, a collaboration with Pollination Guelph and the IJC.

renewable energy arrays, on roadsides, and in other types of landscapes, we have supported local stakeholders in integrating conservation into their local communities. These gardens and restoration sites will continue to engage Canadians in stewardship and education activities while providing habitat to Monarchs and other species. In addition to supporting on-the-ground habitat creation, funding for this program allowed for a variety of outreach initiatives that not only informed Canadians of the biology and conservation status of the Monarch, but importantly, provided them with the tools and knowledge to actively participate in conservation activities beyond the direct support provided by Pollinator Partnership Canada. From naturalist clubs and museum visitors to solar energy engineers and farming associations, Pollinator Partnership Canada met stakeholders where they were to empower them with the knowledge they need to help conserve monarchs.

Students of École secondaire publique De La Salle (Ottawa) planting a Monarch Meadows garden on the school grounds, June 2018



Habitat Types

Integrating Monarch habitat into a diversity of ecosystems and land uses



School and Community Gardens



Energy Generation and Industrial Lands



Farmland



Habitat Restoration Sites



Municipal and Urban Sites



Restoring a pinery to tallgrass prairie at the Beagle Club Trail, Northumberland Forests

A Minnesota solar array for illustrative purposes of outreach efforts to the renewable energy sector (photo: Rob Davis, Fresh Energy)



Six weeks later, the I.L. Thomas Monarch Meadow is blooming. Photo: Dan Werner, Kayanase

 Students of Orde Street Public School, planting a Monarch

 Budents of Orde Street Public School, planting a Monarch

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 Budents of Orde Street Public School, planting a Monarch

 Budents of Monarch</td

School and Community Gardens

Sixteen of the fifty-one sites were created in collaboration with community groups and schools. These projects engaged students, teachers, and volunteers in the planning, design, and planting of the gardens which always involved a lesson, presentation or activity on Monarch biology and conservation. Participating schools were French and English language schools, primary and secondary, Catholic and public, as well as First Nations.

The gardens were all planted with locally-sourced ecotypes of native plants, which means better adapted and resilient gardens that contribute to maintaining plant genetic biodiversity. The benefits of these gardens can now spill over beyond their flower beds, as community members collect seeds from the garden in an ongoing stewardship activity to further enhance the landscape. The seeds can then be dispersed throughout the community to people's private gardens, extending Monarch habitat at little to no-cost.

School and Community Gardens

- Hubbard Park, Toronto
- McCaul-Orde Parkette, Toronto
- I.L. Thomas Elementary School, Six Nations
- École secondaire publique De La Salle, Ottawa
- Leslie Park, Ottawa
- Ignatius Jesuit Centre, Guelph
- Ontario Science Centre, North York
- Rockway Public School, Kitchener
- Ontario Nature Youth Council Garden, Newmarket
- École élémentaire Saint-Philippe, Grande Pointe
- Sacred Heart Catholic School, Port Lambton
- Port Weller Public School, St Catharines
- École secondaire catholique Frère-Saint-André
- École secondaire catholique Sainte-Trinité, Oakville
- Saint Martin Catholic Elementary School, Smithville
- Kikendaasogamig Elementary, Nawash First Nation



A volunteer planting a Monarch Meadow at the Ignatius Jesuit Centre in Guelph

Energy and Industrial Land Uses

Integrating habitat into energy-generating landscapes like utility corridors has been identified as a key strategy for Monarch conservation. Through the Monarch Meadows program, Pollinator Partnership Canada was able to develop new habitat in collaboration with key partners in this sector. The opportunity to integrate habitat into solar arrays is gaining ground in Europe and in the US, but so far has had little uptake in Canada. Pollinator Partnership Canada has been conducting outreach in the renewable energy sector to demonstrate the benefits, to both the environment and companies, of integrating Monarch habitat into energy and industrial land uses. This outreach has resulted in new habitat creation projects with Ontario Power Generation across Ontario as well as the following Monarch Meadows sites:

- A pilot project with EDF (Électricité de France) in Arnprior, in Eastern Ontario, saw the planting of 800 native plants in a solar energy field.
- In Learnington, near the critical Point Pelee Monarch habitat, Pollinator Partnership is working with HydroOne to restore to native vegetation a 7km (a total of 9.4 hectares) stretch of the TransCanada Trail that runs parallel with HydroOne utility lines.



Inventory of native and non-native vegetation on the HydroOne TransCanada Trail in Leamington, pre-restoration





Employees of EDF planting a Monarch Meadows site at the Arnprior Solar Generating Station, Arnprior



Highway 401 at 412 interchange

 Monarch Meadows contributed to the St. Williams Nursery and Ecology Centre's project to re-vegetate post construction areas of the Highway 401 and 412 interchange with native plants, including monarch supporting milkweed and nectar plants.

Lessons Learned

Through the outreach made possible by the Monarch Meadows program, Pollinator Partnership Canada has determined there is an interest and willingness on the part of industrial, municipal, agricultural, and energy sector partners to improve management practices to benefit Monarchs and other wildlife. However, for many of these partners, the lack of sector-specific knowledge and training is often a roadblock to action. In response to this gap, Pollinator Partnership Canada is developing a Pollinator Steward Certification which will deliver the specialized and technical knowledge directly to partners in the form of workshops.

Though the HSP SAR program that made Monarch Meadows possible, this important gap was identified, outreach to potential partners was conducted, and the ground-work for increased Monarch conservation was laid.

Farmland

Agricultural landscapes are critical to Monarch conservation. The loss of biodiversity, and of milkweed and nectar plants in particular, is the leading factor attributed to the decline of the Eastern Monarch population. Restoring this diversity on farms is therefore crucial to stemming the continued decline of this population.

Through Monarch Meadows, Pollinator Partnership Canada was able to partner with Ontario Soil and Crop Improvement Association and Syngenta to bring Monarch-supporting native plants to 20 farms in Ontario. Building on the success of Syngenta's Operation Pollinator Seed Mix in Western Canada, P2 helped develop a high biodiversity mix of local ecotype species appropriate for marginal farmlands. The original mix distributed by Syngenta was composed on non-native agricultural cover crops that provide little benefit to Monarch butterflies and wild species of bees.



Brochure for participating farmers describing the native species in the Operation Pollinator seed mix

Through our outreach, research, and coordination, we developed the seed mix in partnership with St Williams Nursery and Ecology Centre, which was dubbed Operation Pollinator 2.0.

The program was delivered by Ontario Soil and Crop Improvement Association to great success. Twenty hectares (~40 acres) of marginal lands are being sown in 2019 with this species-rich mix of native plants, which includes milkweed. This pilot project not only demonstrates the feasibility of integrating wildlife habitat on farms, but importantly, invested in the creation of a special farm mix of native plants - a critical resource for working with the agricultural community that is otherwise lacking in Ontario. Syngenta has committed to two years of monitoring which will contribute to our understanding of onfarm conservation and help improve the seed mix as necessary. In addition to the Operation Pollinator farm sites, Monarch Meadows also contributed to the inclusion of milkweed in beneficial insect plantings in Holland Marsh. This site is part of University of Guelph Masters' student Dillon Muldoon's research, under the supervision of Professor Cynthia Scott-Dupre. This study is investigating the benefits to crops of diverse plantings that host beneficial insects that prey on crop pests. By including milkweed in the berm plantings, this study not only contributes to habitat but also to deepening our understanding of the multiple benefits that can be accrued by integrating monarch conservation in agriculture.



types of marginal lands that OP 2.0 (native plant mix) will transform into Monarch habitat. Photo: Maria Ramirez, OSCIA

Farm sites by County

- Bruce: 1
- Dufferin: 1
- Elgin: 2
- Essex: 1
- Grey: 4
- Holland Marsh (research site): 1
- Huron: 1
- Kawartha Lakes: 1
- Lambton: 1
- Middlesex: 1
- Oxford: 1
- Perth: 2
- Prescott Russel: 1
- Regional Municipality of Peel: 1
- Renfrew: 1
- Stormont, Dundas and Glengarry: 1



Butterfly milkweed at the Living Centre restoration site, London. Photo: Ben Porchuk, Carolinian Canada Coalition

Habitat Restoration

In addition to supporting demonstration gardens and habitat in working landscapes, Monarch Meadows also contributed to the restoration of natural areas in partnership with local groups and communities, including the indigenous communities of Chippawas of Thames First Nation and Six Nations.

- Chippawas of the Thames First Nations, with Band Council and Carolinian Canada Coalition
- Kayanase Six Nations Meadow, with Kayanase, Six Nations
- Upper Canada Migratory Bird Sanctuary, with St. Lawrence Parks Commission
- The Living Centre, with Carolinian Canada Coalition
- Beagle Club Trail, with Northumberland Forests
- Dow Wetlands Nature Reserve, with Ontario NativeScape
- Windy Ridges Conservation Area, with Kawarthas
 Conservation Authority and Bee City Kawarthas

Staff of Northumberland Forests and volunteers at the Monarch Meadows planting, restoring a former pinery to tall grass prairie

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DOW WHE

Map of the Dow Wetlands Nature Reserve prairie restoration, lead by Ontario NativeScape

2048 planting 30 acres



Municipal and Urban Sites

Many municipalities are creating 'green infrastructure' policies to help mitigate climate change and return nature to urban spaces. Through outreach and partnerships, Monarch Meadows has helped integrate Monarch habitat into a variety of urban spaces and in the process, guided municipal staff in the best practices around plant sourcing, site preparation, and maintenance.

- 65-85 Liberty East, with City of Toronto and David Suzuki Foundation
- Wharncliffe Rd and Elmwood Ave intersection, with City of London and Carolinian Canada Coalition
- Iron Horse TransCanada Trail, with City of Kitchener and Bee City Kitchener
- Legends on the Niagara Golf Course, with Niagara Parks



ABBR.	BOTANICAL NAME	COMMON NAME	QTY.	PLANTING SIZE	O.C. PLANT SPACING	NOTES
DECIDUOU	IS TREES					
CO	Celtis occidentalis	Hackberry	6	50mm Cal	as shown	Plant as per plan and details
AS	Acer saccharum	Sugar Map l e	5	50mm Cal	as shown	Plant as per plan and details
QR	Quercus rubra	Red Oak	6	50mm Cal	as shown	Plant as per plan and details
PT	Populus tremuloides	Trembling Aspen	5	50mm Ca	as shown	Plant as per plan and details
CONIFER 1	TREES					
PS	Pinus strobus	White Pine	3	50mm Cal	as shown	Plant as per plan and details
TC	Tsuga canadensis	Eastern Hemlock	6	50mm Cal	as shown	Plant as per plan and details
PERENNIA	LS					
f	Rudbeckia fulgida 'Goldstrum'	Goldstrum Coneflower	31	1 gal pot	500mm	Plant as per plan and details
) pv	Panicum virgatum 'Prairie Fire'	Switch Grass	50	1 gal pot	as shown	Plant as per plan and details



NOTES: PROVIDE THE ABOVE SEEDMIX OR APPROVED EQUAL, BY WILDFLOWER FARM OR APPROVE CONTRACTOR TO CONFRM SEED MIX WITH (ITY STAFF PRIOR TO ORDER. INSTALL AS PER SUPPLIERS INSTRUCTIONS. **TOTAL AREA 888 SOM.**

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LIBERTY GREEN - 65-85 EAST LIBERTY ST CONCEPT	<u>E11 TORONTO</u>			TION SERVICES - PUBLIC REA	ALM - BEAUTIFUL STREETS	
WARD 19	DESIGN: R. MA			CONTRACT No.		
LAYOUT/PLANTING PLAN	DRAFTING: M. SED	ORE DATE:	2017-04-23	ISSUE:	NORTH	L.03
	CHECK:					



Students of Orde Street Public School and the Monarch Meadow garden they've planted will grow together...

POLLINATOR PARTNERSHIP C A N A D A

It's only the beginning...

ECCC funding through the HSP SAR program made Monarch Meadows possible. We would like to express our gratitude for the support of this program, which helped Pollinator Partnership Canada make a tangible difference on the ground by developing strong relationships with local community and environmental groups. The gardens and sites restored to diverse plantings of Monarch-supporting species of native plants will continue to grow, engaging Canadians in Monarch conservation at their schools, workplaces and public spaces. We look forward to building on the lessons learned and the relationships cultivated in the last two years as we further our habitat conservation and outreach work.