

Project 12: Engaging Farmers and Other Landowners to Support Monarch Butterfly and Pollinator Conservation	Operating Year(s): 2015–2016
Planned Budget for Two Years: C\$300,000 Year 1: C\$150,000 Year 2: C\$150,000	
Strategic Priority/Subtheme <ul style="list-style-type: none"> Sustainable Communities and Ecosystems / Priority Species and Ecosystems; and Sustainable Communities <p>This project will provide leadership and knowledge for improving and restoring habitat for the Monarch butterfly, a beloved species that traverses all three North American countries during its annual migratory cycle.</p>	
How will this project address the cross-cutting themes? <ul style="list-style-type: none"> Enhancing information-sharing, transparency, capacity building, and communication <p>This project will enhance information, transparency, capacity building, and communication by developing a unique model for sharing conservation information with farmers and other agricultural landowners and managers across international borders.</p> <ul style="list-style-type: none"> Learning from and assisting vulnerable groups and indigenous communities <p>This project will also assist and learn from farmers and private landowners to enhance Monarch butterfly conservation.</p>	
Project Summary (including a clear statement of project goal) <p>Monarch butterflies require a wide range of habitats in Canada, the United States, and Mexico, and conservation of their migratory phenomenon requires trilateral cooperation. In June 2007, the CEC Council acknowledged this shared conservation responsibility and instructed the Secretariat to support a multi-stakeholder collaborative effort to develop a North American Monarch Conservation Plan (NAMCP). The 2008 NAMCP provided an account of the species' status, threats to the migratory phenomenon throughout its range, and key trilateral collaborative actions for conservation. The 2008 plan identified actions to address habitat loss and degradation in Monarch breeding areas as critical priorities.</p> <p>Although the charismatic Monarch butterfly and its migrations have garnered much public, scientific, and governmental conservation attention since release of the 2008 plan, this iconic species continues to face steep and significant population declines. The number of Monarch butterflies in the overwintering colonies in Mexico reached a 20-year low during the 2013–2014 season. Limiting factors are numerous, including an extensive loss of milkweed, the Monarch's sole larval food source, due to changes in agricultural practices; urban and suburban development; land management activities, such as mowing and herbicide applications along roadsides and rights-of-way; use of insecticides; and severe weather events likely related to climate change.</p>	

Significantly, the most drastic habitat losses since 2008 have occurred in the “Corn Belt” of the Upper Midwestern US and is likely in southern Ontario and Quebec, the heart of the eastern Monarch’s breeding ground and the major source of Monarchs overwintering in Mexico. Eradication of common milkweed in and around farm fields due to widespread adoption of glyphosate-resistant corn and soybeans has resulted in extensive habitat loss. The data show a direct relation between the loss of milkweed host plants in agricultural areas in the US and the number of Monarchs wintering in Mexico. Texas is important as Monarchs leaving Mexico stop to lay eggs for their first generation on their way north and for nectar on their way south. Northern Mexico is also an area that is important for migrating Monarchs to fuel up on nectar as they fly north and south during their spring and fall migrations. Thus, it is key that restoration of regionally-appropriate native milkweeds and regionally-appropriate native nectar plants, and implementation of “Monarch-friendly” land management practices focus in these areas. Addressing habitat restoration and enhancement in these important areas is a priority for all three countries as they work together to update the 2008 NAMCP and develop a Trinational Action Plan.

The overarching goal of this project is to promote habitat restoration and enhancement in key breeding grounds and migration corridors in Canada, Mexico, and the US. Much of the breeding habitat lost to Monarchs has been in agricultural fields. This poses a challenge, since restoration efforts must occur in areas in which there is strong pressure on land use from agricultural interests. This project will address this challenge by reaching out to agriculture communities, organizations, and agencies in all three countries using audience-appropriate publications, full-day short courses, workshops, and webinars to provide practical, tested guidance about how to install and maintain Monarch-friendly restoration plantings. The most important project outcomes will be promotion and sharing of information about Monarch and pollinator conservation in areas currently dominated by agriculture. Farmers and private landowners can play an important role in the conservation of Monarch butterflies and other native pollinators, and this project will provide evidence to farmers and agency personnel that Monarch habitat and agriculture are compatible.

This proposal will create a compendium of information for farmers, other landowners, and land managers as well as lasting partnerships at the regional, national, and continental scales to ensure that Monarch-friendly practices are adopted and landscapes are managed over the long term. The proposal combines community-level involvement and multi-agency partnerships, and will demonstrate that Monarch conservation can be incentivized across private lands in Canada, Mexico, and the United States.

Short-term Outcomes (at halfway point)

- Guidelines and other materials that capture beneficial management practices for restoring and managing Monarch habitat.
- Workshop, webinar, and full-day short course curriculum developed and outreach events scheduled throughout the Monarch range.

Long-term Outcomes (by the end of the project)

- Audience-specific information on Monarch habitat restoration and management, including the following:
 - 1) Guidance on how to evaluate Monarch habitat, including Monarch use of habitat via monitoring.
 - 2) Step-by-step guidance for site preparation, planting methods, and weed management; tailored to specific ecoregions and types of agricultural habitat (e.g., row crops, roadsides, pasture, yards).
 - 3) Direction on how to manage farm landscapes for Monarchs. This includes managing habitat for the benefit of Monarchs as well as mitigating the impact of pesticides on Monarchs and their habitat.

- 4) Workshops and other education events in Canada, Mexico, and the US, for farmers, landowners, and agency/NGO staff on sustainable, Monarch-friendly practices in agricultural areas.

Longer-term, Environmental Outcome (post-project)

The longer-term outcome will be additional habitat for Monarchs. Post-workshop surveys for similar efforts to promote adoption of pollinator conservation practices on farms throughout the US show that 90% of respondents said they were improving management and/or providing additional habitat for pollinators as a result of their participation.

All workshops will be documented, with surveys conducted before and afterwards. The surveys will be designed to estimate commitment to engage in Monarch conservation, education, or monitoring; overall usefulness of the workshop; and suggestions for improvement or additional information or resources needed.

Initial and continued outreach to native-seed producers, landowners, agency staff, and other workshop participants will help to inform the success of and needed improvements to this approach to conservation. We will facilitate the creation of a network of individuals experienced with Monarch habitat restoration and management to continue communication beyond the life of the project.

Performance Measures (quantified SMART measures)

Outcome	Measure	Target	Indicator
By 2017, the development, compilation and distribution of best practices for Monarch habitat restoration and management	Wide dissemination of guidelines and beneficial practices for restoring and maintaining Monarch habitat	100% of materials available on website	Availability of material on website
By 2017, compilation and dissemination of country-specific information on incentives for private landowners that would promote adoption of Monarch conservation beneficial management practices	Wide dissemination of information on incentive programs to promote Monarch conservation through beneficial management practices	100% of materials available on website for each country	Availability of material on website
By 2017, agency staff in the three countries will be trained to provide technical assistance to the target audiences	Training for agency staff farmers, and other landowners and managers is complete	100% of agency staff associated with Monarch conservation efforts trained to provide technical assistance	Number of agency staff trained

By 2017, established partners in Canada, the US and Mexico (governmental, nongovernmental, local communities) to participate in regional, national, and continental networks	Establishment of appropriate networks	Appropriate partners are included in network	Increase in the number of partners in the three countries participating in networks	
By 2017, the identification and sharing of existing pilot projects and actions at the regional, national, and continental scales	Tools and practices that support conservation and sustainable management of Monarch habitat	Tools and practices are shared	Increase in the number of tools and practices shared	
By 2017, development of a user-friendly Web portal, and all relevant materials posted	Web portal established	Web portal developed and functional	Availability of material on website	
By 2017, workshops/short courses delivered to participants in the target audiences (farmers, ranchers, other landowners, and agency staff)	Number of workshop/short courses delivered; number of participants	Workshops/short course in all target areas complete	Workshops/short courses completed	
By 2017, development and dissemination of guidelines and other materials that capture beneficial management practices for restoring and managing Monarch habitat through network of agriculture agencies, regional and state Conservation Districts, Monarch Joint Venture partners, and sustainable agriculture contacts	Uptake of beneficial management practices by agricultural community throughout the continent (because all materials will be available in French, English and Spanish)	Wide dissemination of guidelines and beneficial practices for restoring and maintaining Monarch habitat	Availability of guidance in three languages	

Tasks necessary to reach the environmental outcome

1. Coordinate, synthesize, and disseminate existing information about agriculture and other related activities on the landscape into guidelines and beneficial management practices that will promote Monarch habitat restoration and management
2. Initiate a continental partnership to identify and implement actions that promote Monarch habitat restoration and management at regional, national, and continental levels.
3. Conduct workshops, all-day short courses, and webinars for landowners and agency staff and disseminate written and Web-based materials.

Task #1) Coordinate, synthesize, and disseminate existing information about agriculture and other related activities on the landscape into guidelines and beneficial management practices that will promote Monarch habitat restoration and management				
Subtask	Project outputs	How does the subtask/output move the project towards the environmental outcome	Timing	Budget (C\$) (activities)
1.1 Compile, develop, (and translate where needed), and distribute best practices of Monarch habitat restoration and management Solicit input from local restoration practitioners and landowners to ensure the language and concepts are effective	Wide dissemination of guidelines and beneficial practices for restoring and maintaining Monarch habitat Uptake of beneficial management practices by agricultural community throughout the continent (because all materials will be available in French, English and Spanish)	Develops a set of common practices to promote Monarch habitat restoration and management Provides a framework for Monarch habitat restoration and management	Year 1	Year 1: \$50,000 Year 2: \$0
1.2 Compile and disseminate country-specific information on incentives for private landowners that would promote adoption of Monarch conservation beneficial management practices (e.g., federal farm subsidy programs; federal, state, provincial and local incentives such as conservation easements).	Web-based dissemination of information on incentive programs that will help private landowners adopt conservation practices	Farmers and other landowners are often unable to afford expensive habitat projects—incentives increase the willingness of farmers and other landowners to take conservation action	Year 1	Year 1: \$20,000 Year 2: \$0

Task #2) Initiate a continental partnership to identify and implement actions that promote Monarch habitat restoration and management at regional, national, and continental levels				
Subtask	Project outputs	How does the subtask/output move the project towards the environmental outcome	Timing	Budget (C\$) (activities)
2.1 Identify appropriate partners in Canada, the US and Mexico (governmental, nongovernmental, local communities) to participate in regional, national, and continental networks; this partnership will use existing alliances and networks where possible, such as those developed under the Monarch Joint Venture	Meetings of experts and partners, including Monarch restoration experts, agency staff and NGOs Establishment of appropriate networks	Develops an expanded network of partnerships to coordinate more effective and efficient conservation and sustainable management actions	Year 1	Year 1: \$40,000 Year 2: \$0
2.2 Identify existing pilot projects and actions at the regional, national, and continental scales	Tools and practices that support conservation and sustainable management of Monarch habitat	Will demonstrate existing effective strategies of Monarch habitat restoration and management	Year 1	Year 1: \$10,000 Year 2: \$0
2.3 Identify joint actions for the identified partnerships to undertake to improve Monarch management practices and develop a priority system for Monarch conservation areas based on ecological need, partner opportunity, and outreach to new partners	Prioritization of actions and best practices to achieve restoration and management of Monarch habitat Will include a prioritization of targeted conservation areas and actions and engage new partners such as First Nations, large landowners, and farmer groups	Provides a continental approach to conservation and management and ensures that communities are armed with knowledge of the importance of their lands and the means by which they can manage them in support Monarchs	Year 1	Year 1: \$30,000 Year 2: \$0

Task #3) Outreach: Conduct workshops, all-day short courses, and webinars for landowners and agency staff and disseminate written and Web-based materials				
Subtask	Project outputs	How does the subtask/output move the project towards the environmental outcome	Timing	Budget (C\$) (activities)
3.1 Develop user-friendly Web portal and post all relevant materials	Will include easy-to-use Web portal with relevant information on habitat improvements and management (specific downloadable guidelines, information on incentive programs, highlights and case studies of Monarch conservation success stories)	Will provide easy access to information and an online community experience where people can share their successes	Year 2	Year 1: \$0 Year 2: \$20,000
3.2 Plan and conduct workshops, all-day short courses and webinars for agency/NGO staff, farmers, and other landowners on sustainable, Monarch-friendly practices in agricultural areas	<p>Training for agency staff (FWS, NRCS), farmers, and other landowners and managers</p> <p>We will use a train-the-trainer approach to provide agency staff with the knowledge and tools to provide technical assistance to landowners; this will allow the project to reach many more people initially and extend its effective life by years</p>	<p>Provides underpinning of Monarch biology and conservation, and targeted information on Monarch habitat restoration and management</p> <p>Will also include a section on incentives</p> <p>Includes introduction to citizen monitoring programs, as opportunities for landowners to document Monarch use of habitat that they install</p> <p>Will ensure that dissemination empowers proper site preparation, weed control, and use of locally appropriate</p>	Year 2	Year 1: \$0 Year 2: \$110,000

		quality seed mixes which, as a result, are of higher value to Monarchs		
3.3 Distribute guidelines through network of agriculture agencies, regional and state Conservation Districts, Monarch Joint Venture partners, and sustainable agriculture contacts	Widely available and credible information about restoring and managing habitat for Monarchs in agricultural areas	Supports engagement in conservation practices on farm and ranch lands	Year 2	Year 1: \$0 Year 2: \$20,000

Explain how this project meets the selection criteria adopted by Council in the Strategic Plan (see below)

The goal of all projects funded by the CEC will be to support the efforts of the Parties to conserve, protect and/or enhance the North American environment. The following criteria will guide the Secretariat, Working Groups, Committees, and other appropriate officials of the Parties in considering cooperative activities for Council approval under operational plans. These selection criteria do not apply for activities to be funded through the NAPECA grant program.

- **How does the project contribute to achieving Council's strategic objectives as described within the current Strategic Plan, or as related to other priorities subsequently confirmed by Council?**

This project contributes to the Council's strategic objective of addressing Sustainable Communities and Ecosystems by providing leadership and knowledge to increase community-level awareness, engagement, and capacity for improving and restoring habitat for the Monarch butterfly, a shared priority species, in transboundary agricultural landscapes. The project builds upon CEC's experience in providing practical tools and training that promote sustainable use and beneficial management practices through trinational conservation partnerships and networks.

- **Are the proposed objectives North American in scope? In other words, how are the proposed results relevant to protecting the environment in North America? (For example, what would Council members announce to the press at the successful completion of this project?)**

Monarch conservation is a continent-wide issue that will require concerted efforts to protect, manage and restore habitat in Canada, Mexico and the United States. Creating habitat that will make a difference to Monarchs cannot be done in a focused area, nor with focused habitat types, and it requires environmental protection on public and private lands in all three North American countries. While only about 10% of Monarch summer breeding habitat is found in Canada, projected changes in climate are likely to increase this proportion, so the partnership between the US and Canada is important. Additionally, while most ongoing restoration and protection efforts focus on migratory and fall and

spring breeding habitat in the US, Monarchs traverse a large part of Mexico, making the partnership between the southern US sites and Mexico equally important. Given the magnitude of the problem, the only way to support creation of habitat that will make a difference to Monarchs is to educate individual landowners and land managers about how they can create, restore, and manage habitat on their respective properties. Effective Monarch conservation will require engagement of private landowners in agricultural regions, as well as national, state, and local government agencies. Our outcomes—education and dissemination of information—will affect Monarch habitat in key regions in all three North American countries, encompassing prime summer breeding habitat in the northern US and southern Canada, migratory and spring breeding habitat in the southern US and northern Mexico, and migratory habitat in northern Mexico.

- **What specific, clear and tangible results will be achieved and how will progress toward each result be measured over time? Identify performance measures to be used to indicate success at reaching all outcomes and/or performance.**

Performance measures include the following:

- By 2017, the development, compilation and distribution of best practices of Monarch habitat restoration and management.
 - By 2017, compilation and dissemination of country-specific information on incentives for private landowners that would promote adoption of Monarch conservation beneficial management practices.
 - By 2017, agency staff in the three countries will be trained to provide technical assistance to the target audiences.
 - By 2017, established partners in Canada, the US and Mexico (governmental, nongovernmental, local communities) to participate in regional, national, and continental networks.
 - By 2017, the identification and sharing of existing pilot projects and actions at the regional, national, and continental scales.
 - By 2017, development of a user-friendly Web portal, and posting of all relevant materials.
 - By 2017, workshops/short courses delivered to participants in the target audiences (farmers, ranchers, other landowners, and agency staff).
 - By 2017, development and dissemination of guidelines and other materials that capture beneficial management practices for restoring and managing Monarch habitat through network of agriculture agencies, regional and state Conservation Districts, Monarch Joint Venture partners, and sustainable agriculture contacts.
 - By 2017, compilation and dissemination of information on incentives for private landowners that would promote adoption of Monarch conservation principals.
- **Explain why the CEC is the most effective vehicle for the Parties to use in undertaking this project, considering these points:**
 - **The value added of doing it under the CEC cooperative program**
 - **Any other public, private or social organizations that work on such activities**
 - **Opportunities to cooperate and/or leverage resources with such organizations**

The CEC is uniquely positioned to support the Parties in achieving their goal of improving habitat for Monarchs across North America. Many of the tasks in this proposal are identified in the 2008 North American Monarch Conservation Plan, which was funded by the CEC. This is truly a

North American issue; Monarchs cannot be conserved without the cooperation of Canada, Mexico, and the United States so the CEC is uniquely placed to address this issue.

CEC funding for this project will leverage the expertise and resources dedicated to Monarch habitat conservation, research, monitoring, and outreach already being carried out by a variety of partners in both the public and private sectors to ensure that the Monarch migratory phenomenon that is such a part of North American culture, scientific discovery, science education, and conservation attention is not lost for future generations.

- **Does the project propose a clear timeline for implementation of the activities, including a target end-date for CEC involvement? Where applicable, describe how the work will continue after CEC involvement ends.**

All project deliverables will be carried out from July 2015 to June 2017. This project expands existing efforts by partners to implement habitat projects for Monarchs and will allow additional outreach to a broader audience base. A key goal will be to use the funds from CEC to leverage additional funds so this project is carried on into the future, and the dissemination materials developed during the funding period will be deliberately designed to be effective for many more years. The tasks will put in place strong continental partnerships, and provide the information needed to assist landowners across a large geographic area in implementing meaningful habitat conservation projects for Monarch butterflies.

- **Where applicable, identify with reasonable specificity:**
 - **Linkages with other relevant CEC projects, past or present, in order to create synergies, capitalize on experience, or avoid duplication**

This project builds directly on previous CEC projects focused on Monarchs, most importantly, the North American Monarch Conservation Plan (CEC 2008). We will utilize both this plan and the accompanying *Monarch Monitoring Handbook* (CEC 2009). We will also collaborate with the Monarch Butterfly Flyway project, which is also part of the CEC 2015–2016 Operational Plan.

- **The target audience, as well as its receptivity and capacity to use the information that may be produced as a result of the project**

Our ultimate target audience includes farmers and other landowners and managers in agricultural areas. While the audience may be perceived as one that is less receptive to conservation measures focused on an insect, there is broad understanding of the importance of pollinators and, to a lesser extent, of the other ecosystem services that are provided by diverse native plantings. We will reach this audience by working with agencies and organizations that have strong relationships with this audience.

- **The beneficiaries of capacity-building activities that the project may include**

Each of the target audiences above will benefit from the proposed work; habitat for Monarchs improves overall habitat for pollinators and other beneficial insects, improves water quality, and also provides beauty within the farm landscape.

- **The relevant stakeholders, with particular attention to communities, academia, NGOs and industry, and their involvement and contribution to a successful outcome**

For this project to be successful, many of the participants will also be stakeholders since any successful alliance requires participation of those with a direct interest in the success of the project. Stakeholders include farmers, ranchers, federal, state and provincial government agencies, and the conservation organizations listed above.

In the US, key NGO partners include The Xerces Society for Invertebrate Conservation, University of Iowa Tallgrass Prairie Center, and the University of Minnesota Monarch Lab, and federal partners include the USDA Natural Resource Conservation Service (NRCS) and Farm Service Agency, US Fish and Wildlife Service (FWS), and the US Forest Service. Other partners may include state departments of natural resources and county Conservation Districts, and many local and regional nonprofits. The current high level of interest in Monarch conservation in all three North American countries will provide a strong incentive for engagement.

In Canada, partner organizations may include provincial ministries of natural resources/environment (Ontario Ministry of Natural Resources and Forestry; *Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques*, in Quebec; *Ministère des Forêts, de la Faune et des Parcs*, in Quebec). Other partners may include agriculture nonprofit organizations such as: the Canadian Federation of Agriculture and the Canadian Forage and Grasslands Association, and NGOs with experience in Monarch education and outreach, such as the Montreal Insectarium, Nature Canada, the Canadian Wildlife Federation, and Pollinator Partnership Canada.

In Mexico, partner governmental organizations include: the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (Sagarpa); the Advisory Body on Organic Agriculture; the National Institute for Research in Agriculture, Fisheries and Forestry; the National Commission for Knowledge and Use of Biodiversity (Conabio); the Federal Agency for Environmental Protection (Profepa); and the International Unit for International Affairs Coordination (UCAI-Semarnat). At the regional level, key state governmental partners include the governments of Tamaulipas, Coahuila, Nuevo León, Michoacán, San Luis Potosí, Querétaro, and Estado de México. Key NGO partners include *Grupo de los Cien*, World Wildlife Fund, WWF-Mexico, and The Nature Conservancy, and partners from universities may include *Instituto de Biología*, of the *Universidad Nacional Autónoma de México* (UNAM), and *Instituto Interamericano de Cooperación de la Agricultura*.