

# LEGACY PRAIRIE GARDEN

2013-2014, Niagara Parks Botanical Garden, Niagara Falls, ON



## PROJECT OVERVIEW:

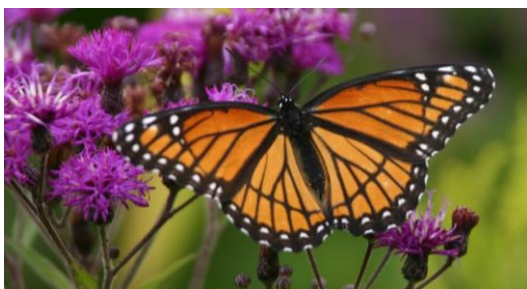
- 4,000 m<sup>2</sup> (one acre) public demonstration garden that serves as an educational facility for students from the Niagara Parks School of Horticulture.
- Designed to showcase ways of incorporating Ontario's prairie-like ecosystems into the built environment.
- Augments the work of the nearby Niagara Parks Butterfly Conservatory by providing pollen to vast numbers of native butterflies from May to October.

## LEGACY PRAIRIE GARDEN (Cont'd)...



### MY SCOPE:

- Preparation of planting concept. Presentation of concept to alumni committee and funders.
- Planting zone design development (including site layout plans).
- Planting list for five different ecosystems.
- Rain garden design.
- Planting design and planting plan for the 1-acre garden.
- Growing medium specifications for the five garden zones.
- Specifications for planting beds and planting materials.



### APPROACH:

- This project demanded expertise in the areas of planting design, ecological design, landscape construction, digital technologies, interdisciplinary collaboration, and education.
- The planting design style used principles from the New Perennial style and matrix plantings popularized by garden designers such as Piet Oudolf, Oehme Van Sweden, Noel Kingsbury, and Nigel Dunnett.
- A habitat analogue approach also informed design, plant list, and growing medium specifications.

### TEAM:

The project team included Natvik Design, a landscape architect, horticulturists, landscape contractors, Niagara Parks School of Horticulture alumni, project donors, and the Ministry of Natural Resources.

# COOPER-KOO ROOF GARDEN

2015-2017, Cherry Street YMCA, Toronto, ON



## PROJECT OVERVIEW:

- 2,000 m<sup>2</sup> semi-intensive green roof.
- Roof garden layout determined via a participatory design process involving YMCA and community members.
- The project included multiple elements: diverse pollinator meadows, rain garden, shade structures, urban agriculture, vegetated façade, seating areas, outdoor studio, and viewpoints of Toronto's skyline.

## COOPER-KOO ROOF GARDEN (Cont'd)...



### MY SCOPE:

- Led participatory design process with stakeholders.
- Created concept drawings that captured stakeholder input.
- Provided consultation services covering green roof construction, universal design, and low-input planting design.
- Production of construction documents with drawings and specifications for roof garden layout, section details, growing mediums, plant list, and planting plan.



### APPROACH:

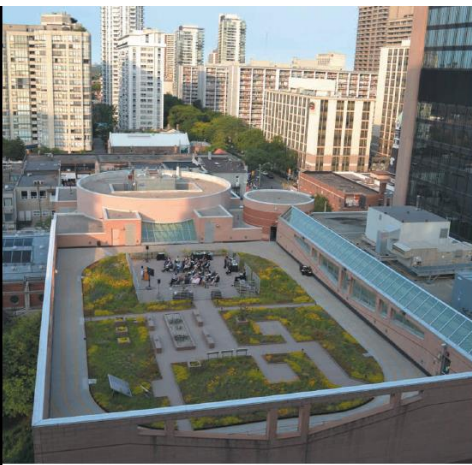
- This project demanded expertise in the areas of participatory design, universal design, innovative design, green roof construction, concept drawings, construction drawings, community outreach, and interdisciplinary collaboration.
- Design of the project incorporated best practices in green roof design and construction, attention to ecological footprint, and climate change responsiveness.

### TEAM:

In addition to YMCA community members, I provided green roof expertise to private, organizational, and governmental stakeholders that were part of this multi-million dollar project in Toronto's Canary District.

# MANUAL OF EXTENSIVE GREEN ROOF HORTICULTURE FOR THE LOWER GREAT LAKES REGION

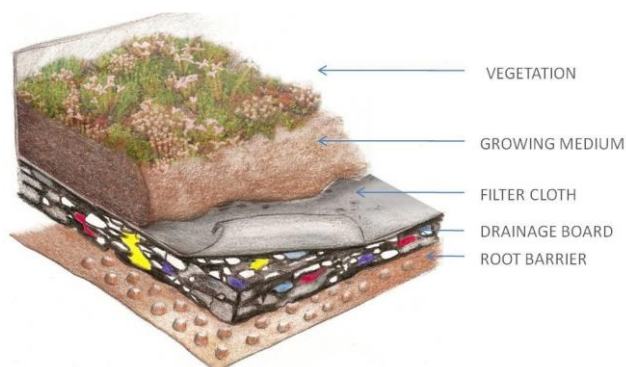
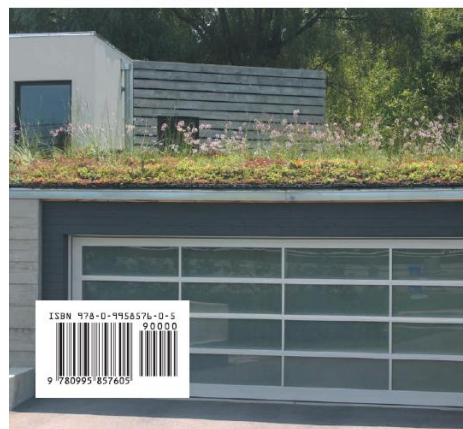
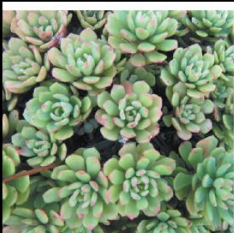
In press – summer 2018



With the rising popularity of extensive green roofs (EGRs), there is a need for expert knowledge about green roof plants and growing mediums. This manual discusses the ecological principles that should drive plant and growing medium selection for low maintenance EGRs. It also includes a detailed description of crucial EGR growing medium properties as well as planting lists designed specifically for low-maintenance EGRs in the Lower Great Lake Region. Also featured are ten EGR projects which illustrate how to put ecological principles into practice. Written by Mathis Natvik, MLA and PhD candidate, this handbook will help anyone involved in the green roof industry to create biologically diverse, economical, and high performing EGRs.

MANUAL OF  
EXTENSIVE GREEN ROOF HORTICULTURE  
FOR THE LOWER GREAT LAKES REGION

MATHIS NATVIK



## PROJECT OVERVIEW:

- 44,000-word technical manual.
- Will be in press fall 2020.
- Includes over 150 figures including plant photos, construction drawings, and planting designs.
- Written for an interdisciplinary audience including landscape architects, landscape designers, architects, contractors and horticultural professionals.
- Inspired by Master of Landscape Architecture thesis completed in 2012.

## MANUAL OF EXTENSIVE GREEN ROOF HORTICULTURE FOR THE LOWER GREAT LAKES REGION (Cont'd)...

*Tradescantia ohiensis* (Ohio spiderwort)



- › Native to the dry soils of tallgrass prairies and the rock outcrops of eastern USA.
- › Suitable for naturalistic designs on 150 mm, full to part shade EGRs.
- › Vigorously self-seeds in early stages of vegetation establishment.
- › Like *Penstemon hirsutus*, its grass like foliage dies back during summer months.
- › Blooms peak in June and are attractive to bees.

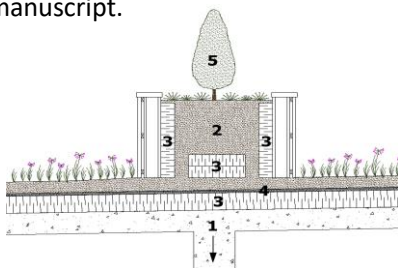
*Asclepias verticillata* (whorled milkweed)



- › Only native milkweed that survives on EGRs in the Lower Great Lakes region.
- › Survives on 150 mm EGRs with winter shade. Sensitive to freeze-thaw cycles.
- › Spreads slowly by rhizomes on EGRs, creating a naturalistic, prairie-like look.
- › Flowers are incredibly productive and will attract a multitude of bees and butterflies.
- › Hosts the larvae of monarch butterflies.

### SCOPE:

- Review of the scientific literature. Translating findings into accessible and actionable language for the target audience.
- Creation of an organizational framework for delivering vital information about green roof growing medium and plants.
- Prioritizing information such that critical elements are emphasized within the manuscript.
- Creation of reader-friendly tables and figures that effectively convey crucial information. Writing large tracts of text with multiple revision rounds to ensure a high-quality manuscript.



### APPROACH:

- This project demanded expertise in the areas of planting design, green roof construction, drawings, ecology, and integration of research into frontline practice.
- This manual provided an opportunity to contribute to the body of knowledge in the green roof field and can be used for both educational and outreach purposes.

### EDUCATIONAL GOAL:

Translating research and front-line experience into knowledge that can be shared with other practitioners.

## WOODSTOCK RAIN GARDEN

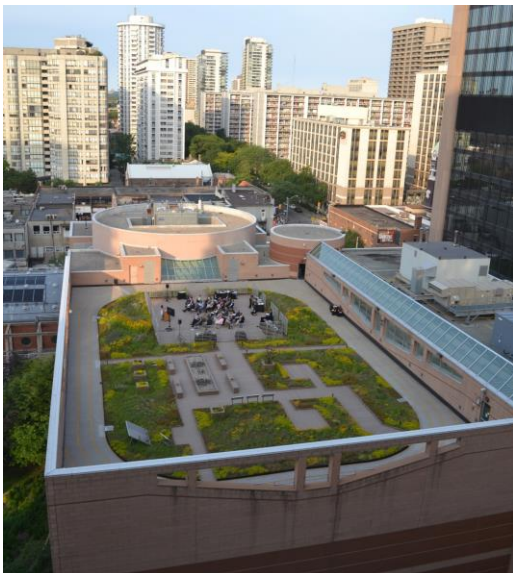
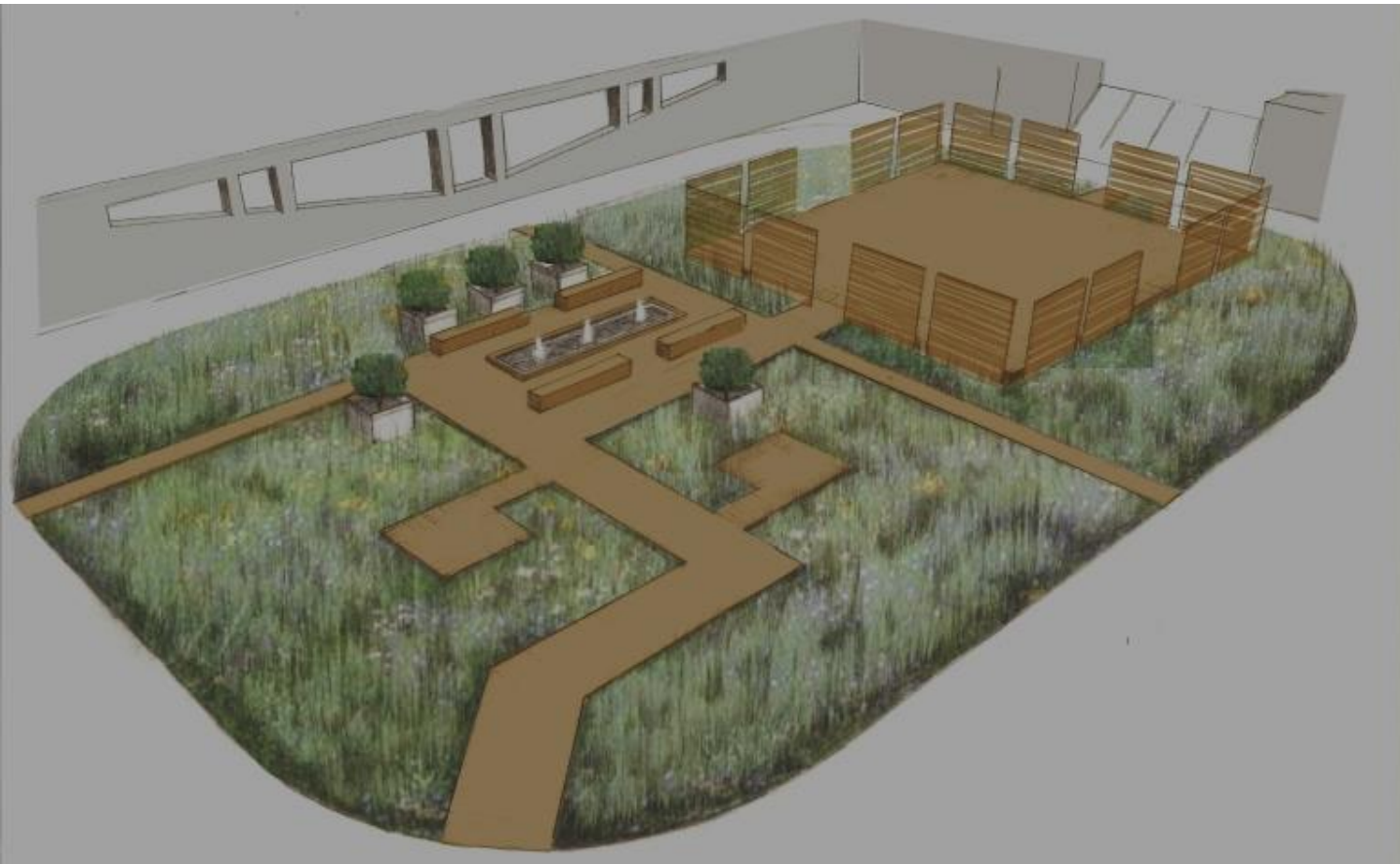
2009, Public Works, City of Woodstock, ON



This 2,000 m<sup>2</sup> garden was designed to accept runoff from the public parking lot at the Woodstock Public Works building. Rainwater is absorbed by the deep beds of sand found in the meadow-style garden.

## CENTRAL YMCA ROOF GARDEN

2009, Central YMCA, Toronto, ON

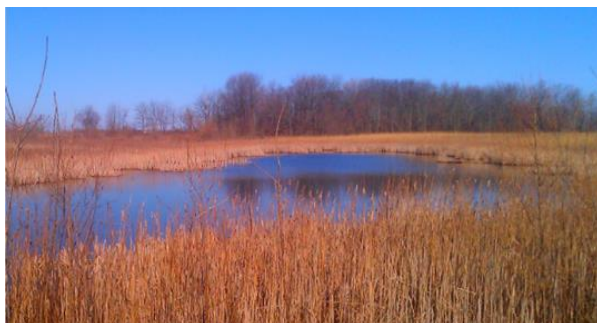


A 930 m<sup>2</sup> green roof was designed to incorporate the former rooftop running track and act as an oasis in the city. YMCA members enjoy the use of the running track, outdoor studio, benches and pathways from April to November. This design was created through a participatory design process and construction by volunteers led by Mathis Natvik. Most of the vegetated area consists of meadow of native wildflowers, grasses, and shrubs.



## **LOVELL WETLAND COMPLEX**

2001-2017, Southwest Middlesex, ON



The Lovell farm is located near the Thames River in Southwest Middlesex. Heavily grazed pastures demonstrating severe erosion covered 40 hectares (100 acres) of this farm.

Starting in 2001, I provided plans for establishing a mix of forests, meadows, and wetlands for the owner of the farm. Three tracts of pit and mound forests were established, along with several wetlands surrounded by wet tallgrass prairies. Many species of waterfowl nest on the restored farm, including sandhill cranes.

## **ACTIVIA ROOF MEADOW**

2008, Activia Sportsplex, Kitchener, ON



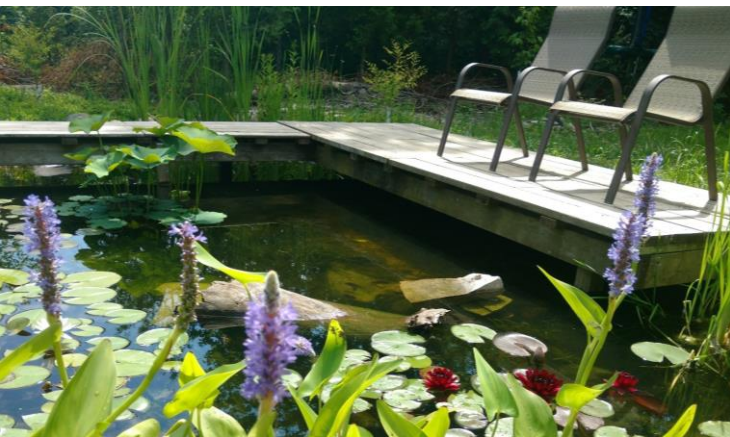
The Activia Sportsplex features a 250 m<sup>2</sup> extensive green roof, designed to mimic the soils and vegetation found on Ontario alvars. Rare alvar wildflowers such as prairie smoke, nodding wild onion, and lakeside daisy were included on the planting list for this project.

My growing medium and planting design were created based on the alvars of Pelee Island and the Carden Plain near Orillia.

This green roof is now going into its 11<sup>th</sup> growing season, and the plant mix is thriving despite minimal maintenance.

## PRIVATE GARDEN DESIGNS

1998-2018, Mix of rural and urban projects in Ontario



I have designed many gardens for private clients in both rural and urban settings. Most commonly the gardens consist of open borders planted with a mix of native plants and non-invasive traditional perennials. These projects are designed to enhance local ecology while providing aesthetic interest across all four seasons.

When possible, I encourage combining ground level gardens with green roofs and rain gardens.

Often my garden design work requires close collaboration with the project architect.

## RARE RESEARCH PRAIRIE

2009-10, RAREsites.org, Cambridge, ON



I designed and installed this 16-hectare (40 acres) tallgrass prairie research site. I custom collected the seeds used for this project from prairie remnants in Southwestern Ontario.

This research prairie was established at RARE, a charitable nature reserve in Cambridge. This site is now being used by various labs at the University of Guelph to study topics such as insect ecology, rodent herbivory, prescribed burn effects, and invasive species biology.

## **WESTERN RESEARCH PRAIRIE**

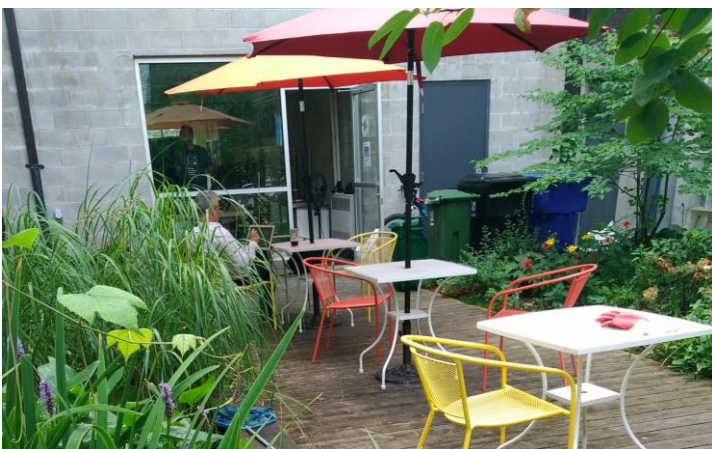
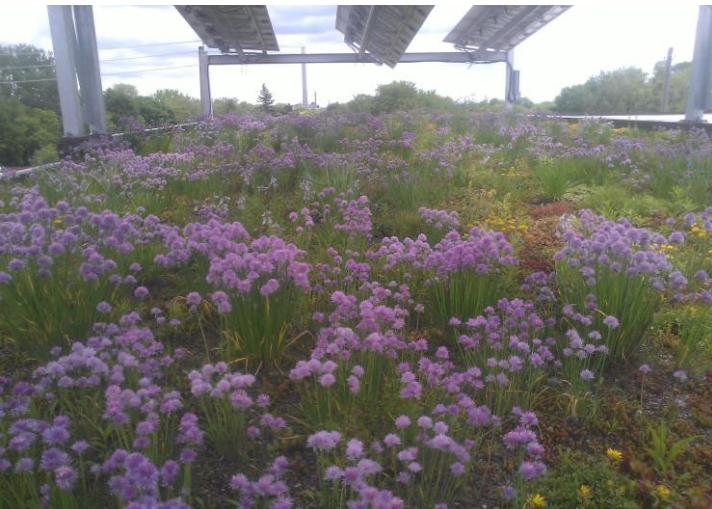
2014-17, Environmental Sciences Western, Ilderton, ON



I provided seed mix design and custom installation of a 4-hectare (10 acre) tallgrass prairie in Arva, Ontario. This research prairie was established on retired agricultural lands and is now being used by various labs at the University of Western Ontario. Students were involved in the collection and processing of seeds used to establish this prairie. I have provided ongoing consultation to students and faculty using this site to research topics related to invasive plants, ecological succession and carbon cycling.

## RIVERDALE HUB COURTYARD & GREEN ROOF

2011-12, Riverdale Immigrant Women Centre, Toronto, ON



### ECOLOGICAL COURTYARD



This property is located in the Riverdale neighbourhood of Toronto and includes a heritage building renovated into offices, meeting rooms, and a café. For the garden design, I integrated a green roof with an at-grade garden to create a landscape that captures all the stormwater runoff from the site. The roof top includes a wildflower meadow beneath a PV solar array and an area of vegetable planters used to produce fresh produce for the café. The back alley was converted into a courtyard with a rain garden. Roof runoff enters a wetland and finally gardens beds with deep sandy substrates designed for quick infiltration. All paths, seating areas, and parking is 100% permeable to water.