

PORTFOLIO

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TO

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INTRODUCTION

From writing, acting, and puppeteering in one-man nature themed musicals, to sharing new experiences like laser tag with newcomer youths at the Boys and Girls club at Edmonton, to picking through piles of pickled insects to study urban green roofs, I am consistently dedicated to serving my community according to my core values.

- 1) Removing barriers to both urban and rural green spaces and increasing community engagement with wilderness.
- 2) Creating physically, emotionally, and informationally connected urban spaces for all.

My creative work includes illustration, painting, and written works. I enjoy exploring space with my art by manipulating scale. Included are small animals in large urban environments, to imaginary continents, to medium-scale Albertan landscapes. I am constantly experimenting creatively as I continue to experience new spaces and learn from them.



Mill Creek. 2017.
Oil on canvas

URBANISING "THE WIND IN THE WILLOWS"

2017. Watercolour on cotton paper and essay.

The late nineteenth century, when the text was written, was in the midst of the industrial revolution, and a reaction to the sudden industrialization of the countryside was a desire to preserve and idealize landscapes. The idealization of landscape is present in children's works, like "The Wind in the Willows", which complements the idealization of childhood also occurring at this time. Modern children are less sheltered to the idea of environmental destruction, through the media and by seeing the effects of decades of industrial activity. By updating the illustrations in "The Wind in the Willows" to reflect modern conditions, the disparity between the condition of the environment in the past and present will be stark to adult readers who remember the original pastoral images, and children will be reminded of current conditions by viewing the characters interact with their polluted environment.





"The miles were eaten as he sped he knew not whither,
living his hour, reckless of what might come to him." p. 115



"Toad sniffed, and looked at the gipsy; and the gipsy smoked, and looked at him" p. 147



"A great stone, dropped from above,
smashed
through the
bottom of the
boat" (p. 151)



Epigaeic arthropod assemblages of green roofs: composition and dynamics

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Introduction

As urban planning shifts to more ecocentric strategies, there is an emerging interest in assessing conservation value of low impact, energy efficient, green infrastructures. **Vegetated green roofs are an increasingly popular method in urban design, functioning as insulators, water run-off collectors, and urban habitats**, benefitting both the owner of the building and conservation strategies (Oberndorfer et al. 2007). However the way and extent of which they function as habitats to native species is still uncertain.

We attempt to understand how ground-dwelling invertebrates (e.g., carabid beetles, rove beetles, spiders and ants) use **green roof habitats in Edmonton, AB, Canada, in comparison to adjacent urban green space, prairie, and aspen parkland areas**.

Methods

The study was conducted in urban Edmonton, Alberta, including the Edmonton Valley Zoo, and the city center region.

5 pitfall traps were installed on each of 6 extensive green roof sites (Figure 1), and 4 extensively managed ground sites for a total of 50 traps.

Traps were filled with vinegar and collected weekly for a total of 20 weeks for the roof sites and 16 weeks for the ground sites from May 1st until October 17th.



Figure 5. Green roof sites in Edmonton Alberta. A. ATB Financial (492m²). B. Stantec (819m²). C. Arctic Shore (354m²). D. Immigration Hall (396.98m²). E. Edventure (379m²) F. John Janzen Nature Centre (261m²). Traps are circled in red.

Results

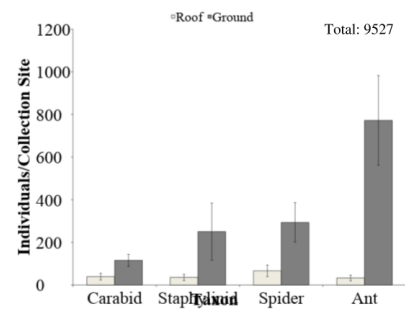


Figure 2. Mean individuals collected per collection site by taxa and site type from June October 2014. Total counts above columns.

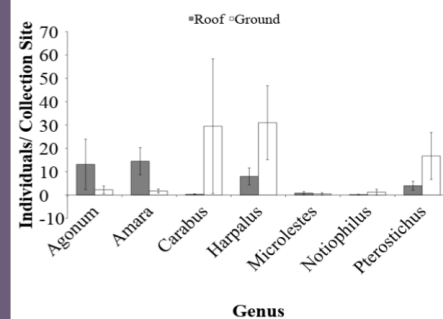


Figure 3. Mean individuals per collection site by taxa and site type. Total counts above columns.

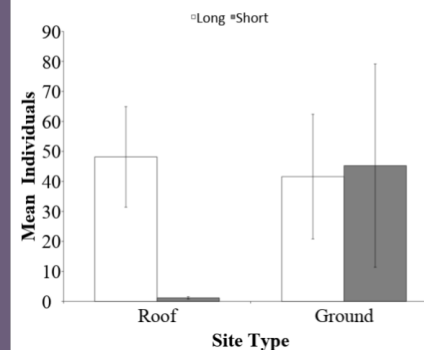


Figure 4. Mean of long and short winged individuals by green roof and surrounding area sampling site. Error bars represent standard deviation. Ratio strength is of of short : long winged individuals.

Table 1. Commonly found species in green roof and ground sites. * indicates a non-native species.

Green Roof	Ground Site
<i>Pterostichus adstrictus</i>	<i>Pterostichus melanarius</i> *
<i>Amara patruelis</i>	<i>Carabus nemoralis</i> *
<i>Agonum cupreum</i>	<i>Harpalus ventralis</i>
<i>Harpalus laevipes</i>	<i>Agonum cupreum</i>

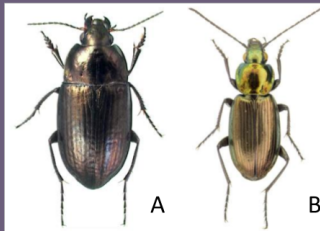


Figure 1. A. *Amara patruelis*. B. *Agonum cupreum*

Results & Discussion

Less carabids, staphylinids, ants and spiders were collected from roofs than from ground sites (Fig. X). Edmonton's extensive green roofs with shallow soils are exposed to arid environmental conditions (high and low temperature extremes, strong winds and dry conditions). Roofs are also difficult to colonize. Small area compared to ground sites may also play a role in keeping low numbers of individuals.

Agonum and *Amara* genera are found in higher abundance on the roofs but it is the opposite for *Carabus*, *Harpalus* and *Pterostichus* (Fig. 3). *Agonum cupreum* and *Amara patruelis* are macropterous species well adapted to dry prairie like conditions similar to roofs environment. *C. nemoralis* and *C. granulatus* have short wings which makes it harder to colonize roofs. Similarly, *P. melanarius* population in downtown Edmonton are mostly macropterous. *P. adstrictus* is well able to colonize roofs.

Non-native species (Table 1) were all caught on ground sites except for two individuals of *P. melanarius*. Both *Carabus* species are micropterous and likely not able to colonize roofs. The majority of *P. melanarius* are also micropterous but the two individuals caught on the roofs were macropterous.

Nearly all individuals from roofs are macropterous but micropterous and macropterous individuals are found in about the same abundances in ground sites (Fig. 4). We suggest that frequent colonization by flight contributes to maintaining populations on green roofs. Green roofs may act as population sinks and carabids may use green roofs as itinerant patches in urban environments rather than establishing viable populations.

References

Oberndorfer, E., J. Lundholm, B. Bass, R. R. Coffman, H. Doshi, N. Dunnett, S. Gaffin, M. Köhler, K. K. Y. Liu, and B. Rowe. 2007. Green Roofs as Urban Ecosystems: Ecological Structures, Functions, and Services. *BioScience* 57:823–833.
Henri Goulet, Carabid Images, Canadian Biodiversity Information Facility.
Google Earth, Green Roof Images

Acknowledgements

Stantec, City of Edmonton, Hope Mission, Triovest, Alberta Low Impact Development Partnership Green Roof Working Group, NSERC

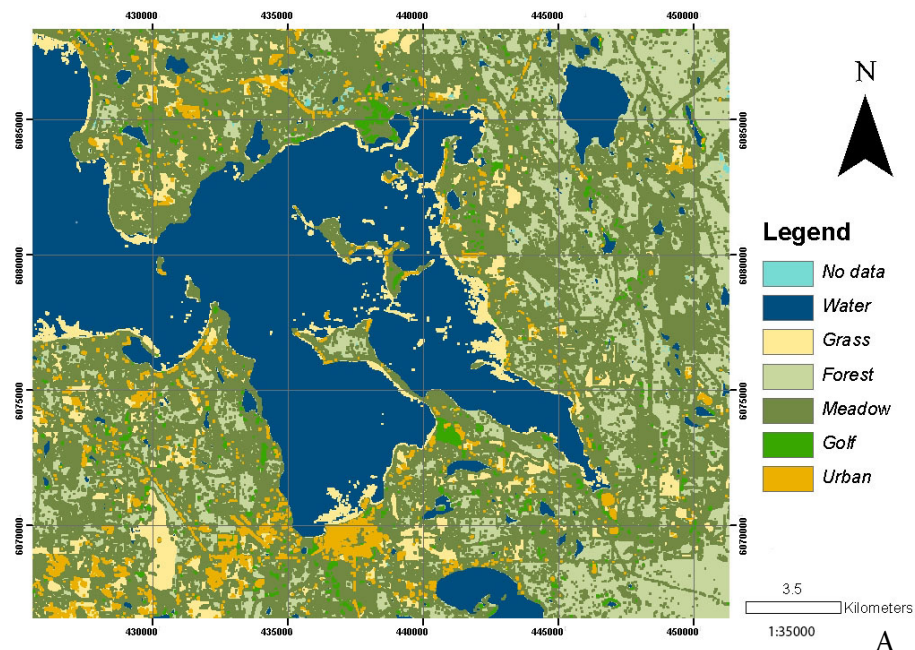
POSTER
PRESENTED AT
17TH ANNNNUAL
CARABIDOLOGY
CONFERENCE.
2015.

ZOE CRANDALL

LAND COVER CLASSIFICATION.

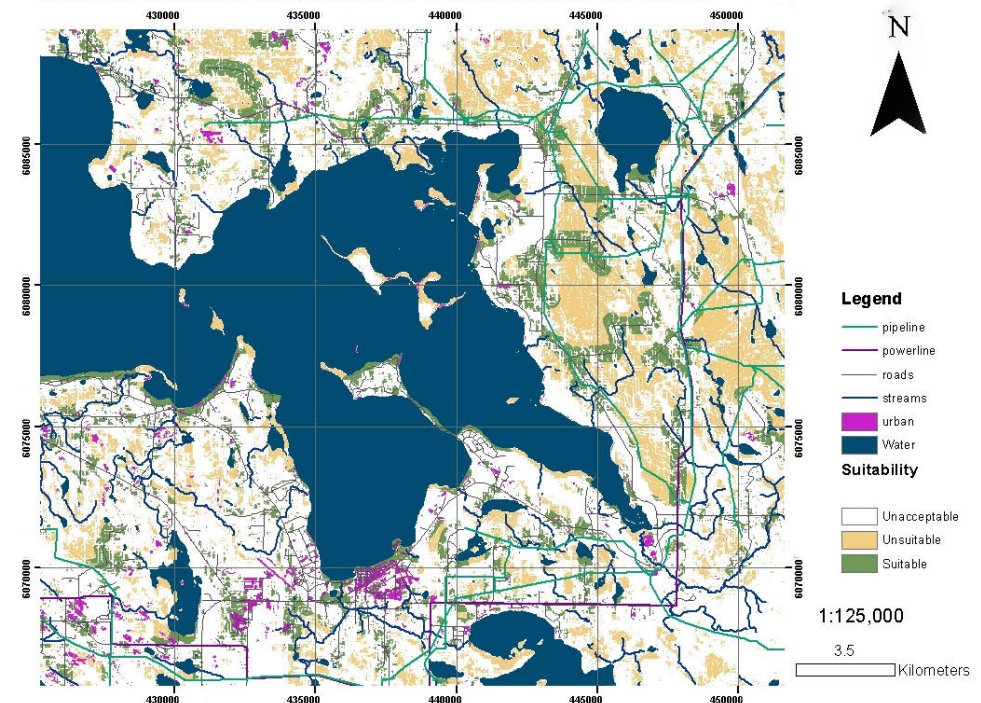
2017. ARCMAP. COURSE LAB COMPONENT.

Supervised land cover classification of Lac La Biche with maximum filter.



SUPERVISED LAND COVER CLASSES AND FEATURE BUFFERS CREATED TO AID IN PLANNING A NEW RESORT DEVELOPMENT WITH MINIMAL ENVIRONMENTAL IMPACT. I FIRST CREATED A SUPERVISED

Suitable areas for construction of a resort in Lac La Biche.



LAND COVER CLASSIFICATION (A) AND THEN DETERMINED SUITABLE AREAS FOR CONSTRUCTION OF THE RESORT (B) USING THE RASTER CALCULATOR TOOL AND LOCAL AND FOCAL STATISTICS.

DUNGEONS AND DRAGONS CAMPAIGN MAP.



WATERCOLOUR
ON COTTON
PAPER. 2017.

ALBERTA PARKS. 2016-17

As a park interpreter for Alberta Parks I shared my passion for the outdoors and my love of wildlife with large crowds of visitors at nightly one-man musical programs.

I wrote the scripts, designed and made the costumes, composed the music, and sang, danced, and acted for hundreds. These shows were designed to engage families with Albertan wilderness and were just as fact filled and educational as they were loud, funny, and strange.



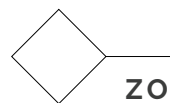
Moose head. 2016. Cotton batting, wire, and bicycle helmet.



Bacteria Puppet and Moose⁰¹. 2017. Fabric and wire.



Tick. 2017. Mattress foam and spray paint.



ZOE CRANDALL

LET'S GO! OUTDOOR EXPO. 2017

"On July 20, Alberta Parks hosted over 100 new Canadians at Strathcona Science Provincial Park for the Let's Go! Outdoor Expo. This event, managed by Catholic Social Services and supported by Alberta Parks, is a wonderful opportunity for newcomers to Canada get familiar with camping and outdoor recreation in Alberta! Hands-on activities included wildlife awareness and an opportunity to learn how to

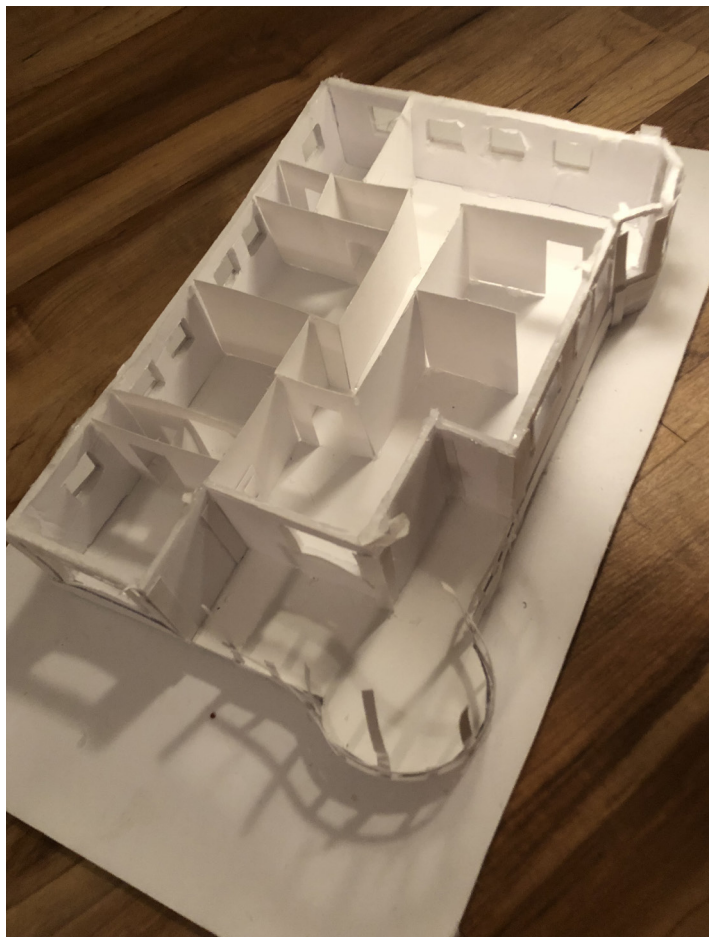


I was the Alberta Parks coordinator for the Let's Go! Outdoor Expo in July of 2017. This event was created for newcomers to Canada to become acquainted and comfortable with the outdoor areas in their communities. From camping, to slacklines, to wildlife, to law enforcement, many aspects of Canadian outdoor engagement can be intimidating to new Canadians. By providing a safe, organized, and fun event to explore the urban wilderness in their new city I aimed to inspire confidence in the newcomer attendees and encourage them to enjoy the Edmonton and area outdoors.

This event had over 200 attendees, . I recruited volunteers and partners including the City of Edmonton, Parks Canada, The University of Alberta Climbing Club, and the John Janzen Nature centre. I lead the Alberta Parks maintenance team in the set-up and take down, managed the volunteers and agencies throughout the event, and interacted with the attendees (that's me with the muskrat fur!).

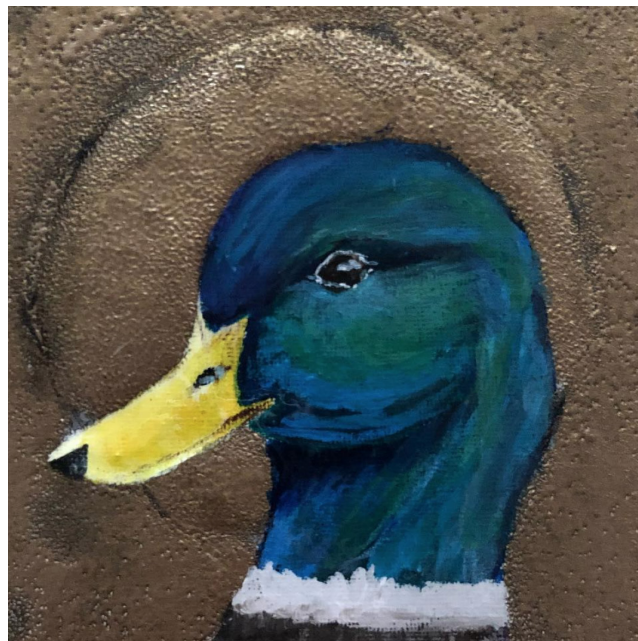


RECREATION OF MY
GRANDPARENT'S HOME.
2018. CARDSTOCK.





SELECT PERSONAL WORKS.



Carabid Beetle. 2018. Watercolour on cotton paper.

St. Cat. 2018. Acrylic on craft paper.

St. Chameleon. 2018. Acrylic on craft paper.

St. Duck. 2018. Acrylic & embossing powder on canvas.

Study of an Emily
Carr landscape.
2015. Oil on canvas.

