

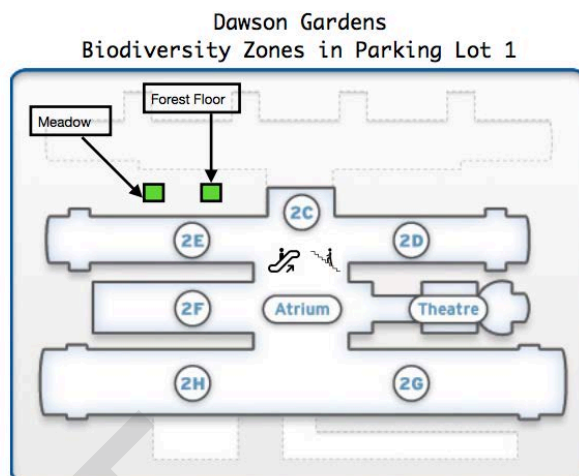
Dawson College Garden & Biodiversity Maintenance Guide



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Meadow



Goal

This island within the parking lot 1 was once lawn was maintained by the landscape contractors. It is meant to demonstrate a small area that has no woody plants other than the large tree in its center. It has been left to grow as a meadow and species are developing that encourage pollinators such as butterflies.

Maintenance Needed

- Weekly check for any garbage or damage
- Any trees or shrubs (woody plants) should be cut several times a year
- Snip all Goutweed any time it is noticed and return weekly to snip if found (do not dig out roots)
- Tie any tall plant exceeding the cement/pavement border to make sure people entering and leaving their cars do not touch the plants (e.g. pollen & dew on clothing)

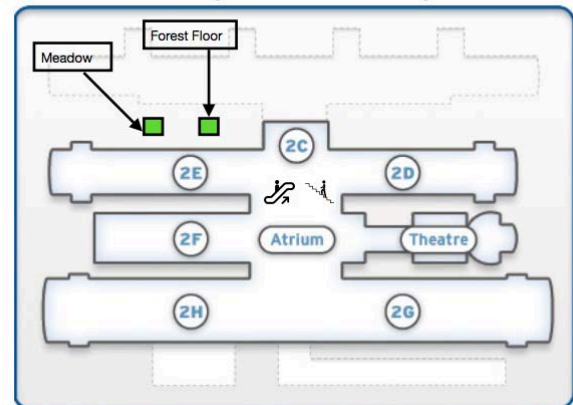
Interesting Notes

- Many species have come on their own to this “island” through wind and bird dispersion.
- Squirrels also bury seeds in this area resulting in tree growth.
- Staff parking in this area notice wasps and sticky ‘droplets’ on the surface and windshield of their cars. This occurs during the Fall when the aphids on the basswood tree above release sugary droplets causing the sticky feeling when it is touched. The wasps are attracted to the car surface because they are eating the sweet droplets. Solution – avoid parking under the tree in the Fall.

Forest Floor



Dawson Gardens
Biodiversity Zones in Parking Lot 1



Goal

This area was created to mimic the forest floor of Mount Royal. Rocks, decomposing logs, ferns and shade-loving plants were planted here. A layer of leaves is added every Fall to mimic the process in the forests.



Maintenance Needed

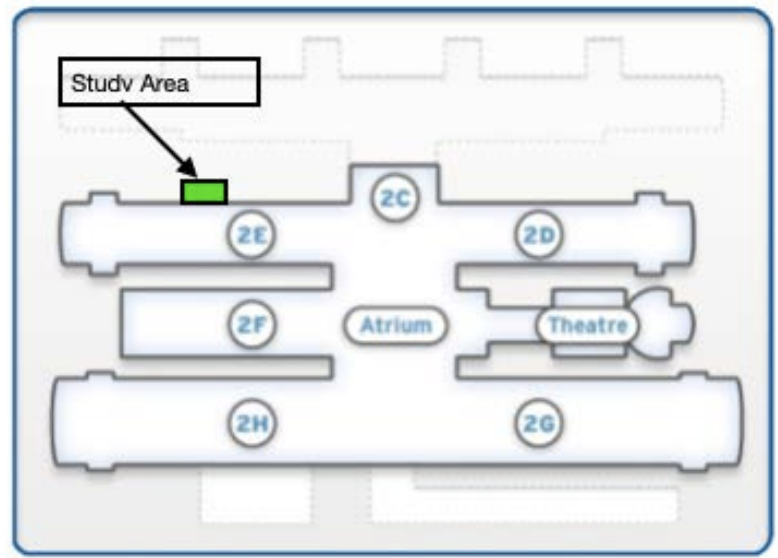
- Weekly check for any garbage or damage
- Snip all Goutweed any time it is noticed and return weekly to snip if found (do not dig out)
- Trim any plants that grow over pavement or tree branches that interfere with people getting to their cars
- Place leaves (3-4 inches thick) over the area in late October or November. Leaves can be taken from the Dawson grounds. Do not take oak leaves as they are not as easy to decompose for invertebrates. This leaf-litter is very important to maintain this biodiversity area.
- Cut “sucker shoots” from base of tree when warranted



Interesting Notes

This biodiversity zone has been partially cut several times by contractors. It has survived fairly well. The basswood tree above this area and several small trees provide shade. Cutting the trees for safety reasons (facilities) has been an issue as it then lets in far more sunlight.

Biodiversity Study Area - Plant Succession (Regenerating area)



Location: Parking lot 1 by 2E wing

Goal

This area was created to demonstrate what happens to the plant life and associated invertebrates when the lawn at Dawson is left undisturbed by cutting. Since 2014, a small 3 -4 metre area has been extended along the building and cutting stopped, thus we now have several years of areas to show. Many tree seeds have been blown in by the wind or dispersed by birds and the last area is quickly being taken over by trees.

Maintenance

- Weekly check for any garbage or damage
- Snip all goutweed any time it is noticed and return weekly to snip if found (do not dig out)
- Non-Native shrub species growing beside air exchanger is sending shoots into the biodiversity area. They must be trimmed yearly as they will dominate the area.
- Barriers and sign checked weekly for damage

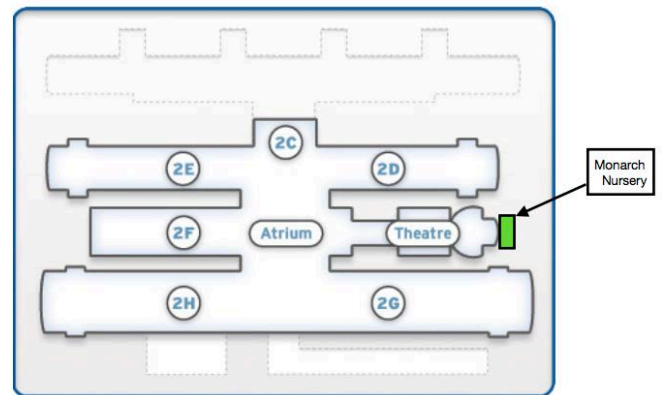
Interesting Notes

- This area is being used by biology teachers and has a path built so students and staff can have easy access. Walking on the metal grill besides the building is not permitted.

Monarch Nursery Garden



Dawson Gardens
Monarch Nursery Garden



Goal

Milkweed plants for egg-laying and asters, bee balm and goldenrod plants for late Fall feeding of adult butterflies were planted in this area. Over 200 milkweed plants comprised of several native species are growing. This garden houses approximately half of the 400+ milkweed plants on the property to help the monarch butterfly, a species at risk.

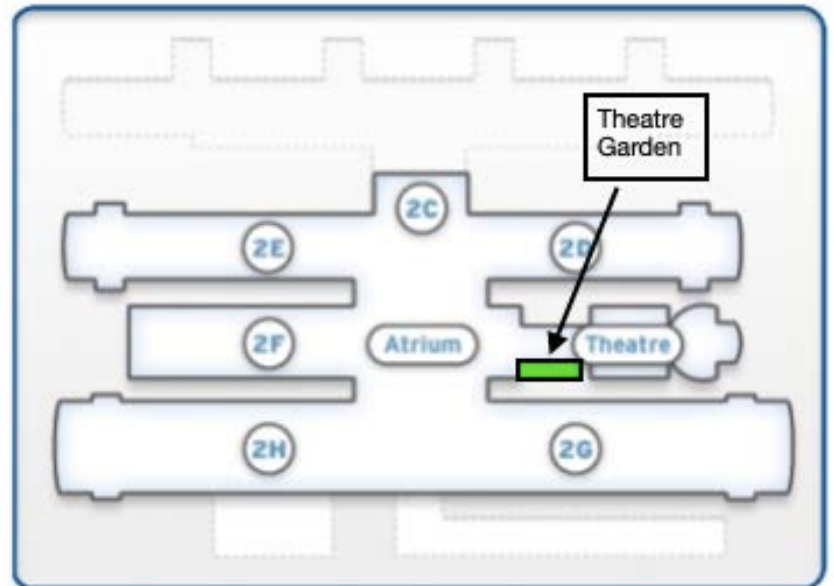
Maintenance

- Snip all Goutweed any time it is noticed and return weekly to snip if found (do not dig out)
- Weed unwanted species to maximize milkweed growth
- Collect seeds from dried up milkweed pods when ready in the Fall
- Remove unwanted dried stems in the Spring
- Trim plants that hang over cement ledge where students sit or walk by
- When transplanting, clean ledge and surrounding area
- Write yearly update to Theatre Dept chairperson (they permitted the establishment of the garden)
- Weekly check for any garbage or damage

Interesting Notes

- A Girl Guides group came in 2016 and donated 150 milkweed plants that they grew and planted on this spot. The first wild monarchs seen laying eggs in this area was in 2018. Dawson College was certified a Monarch Oasis by Montreal's "Espace pour la vie".

Theatre Garden



Goal

The theatre garden was created as an educational tool for students and employees to learn about urban agriculture. Volunteers are recruited to care and maintain the raised beds and trio lifes full of leafy greens, vegetables and perennial herbs. The harvest is sold to the Dawson Community or donated to local food bank. Any profit made goes back into the gardens and towards summer student volunteer field trips to other local gardens for shared knowledge. The garden is also used by classes by learning about starting seedlings, pest control, seed collecting and how to successfully grow vegetables organically.

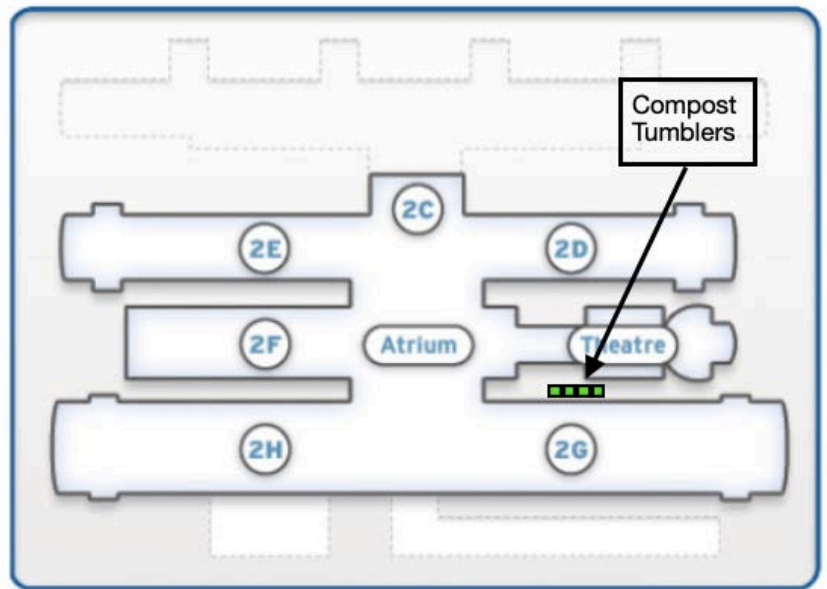
Maintenance

- Water garden thoroughly everyday
- Continuously weeding to ensure they do not take over the vegetables.
- Application of natural pest control and fertilizers when needed (Algae, kelp, mineral oil, Diatomaceous earth).

Interesting Notes

Students are involved in closed loop growing. We plants seeds which we collected from the previous year. We also compost all overgrown plants and transform the compost into soil in compost tumblers located beside the gardens. This soil is then used back into the gardens.

Composters



Goal

To demonstrate on-site composting and reduce the waste going to landfill.

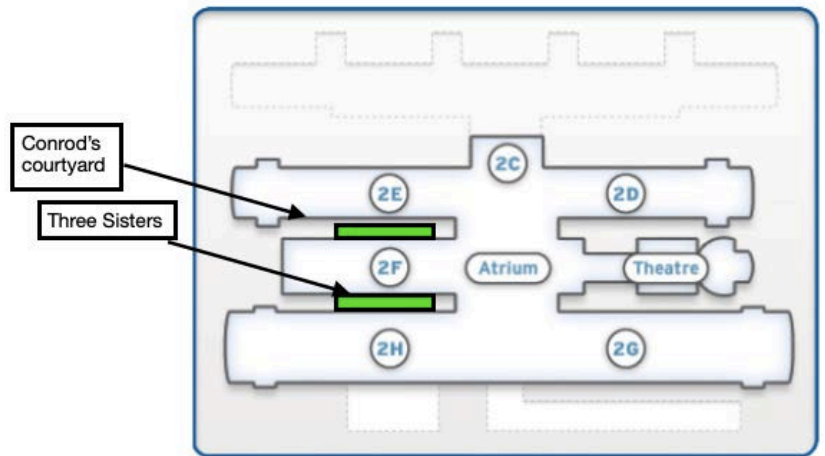
Maintenance

- Composters should be inspected several times a year and any repairs needed reported to garden leader and then to Jora Canada if needed.
- All Jora composters should be locked and turned daily; bucket placed beneath to collect excess water.
- Wood chips (pellets) should be approximately 10% of material entered into composter
- Contents going in should be weighed and documented for yearly data collection
- Fruits and vegetables can be chopped with chopping tool and bucket before being placed in composter to add surface area for microorganisms and increase the composting process.

Interesting Notes

- Many classes are taught about urban agriculture and guests from a variety of organizations visit to see the gardens.
- A website within the SALITISE platform gives examples of how the garden can be used to help meet objectives in various ways within disciplines.
- Composters, when working properly with the appropriate mix of contents, should operate at between 60-70 degrees C and destroy pathogens and seeds of weeds.

Habitat Restoration Project



Location: Conrod's Courtyard-Gym roof

Three Sister's - Gym Roof

Goal

To create a restorative space on the gym roof showcasing native plant species within a variety of micro-habitats and to attract 100+ species of insects and other invertebrate on a rooftop. In 2017 these two areas including Conrod's courtyard and the Three Sister's garden was part of a Habitat Restoration Project during Peace Week, a Dawson Peace Centre initiative demonstrating the College's core value of Well-Being for All. Students and teachers were engaged and happy to contribute to the well-being of other species. Many classes have been involved in 2017, 2018, and 2019 in this project.

Habitat Restoration Project - Gym Roof

Pond



Maintenance:

- Plants are cut in the front of the pond to allow for observation
- Overhanging trees are important in providing shade and decreasing water temperature
- Most falling leaves need to be removed in the fall. Some leaves should be kept in the pond as they provide food for microorganisms and add tannic acid (brown colour) to the water, an important natural sunlight filter for the life under the water.
- Automated water sprinklers provide water to the ponds and function during the evening times. The sprinkler on the right (when facing pond) should be directed over the first section of the pond. This allows time for the chlorine to evaporate and then when it rains and the sprinklers are on, overflow water goes into the second section of the pond.
- Weekly check for any garbage or damage

Interesting Notes

- The pond was created in September 2017. Moss was taken from the cracks of the patio stones on the roof and placed on the geotextile liner when the pond was made. The moss quickly grew to cover the pond borders within a year. Insects appeared within days.
- This is an important water source for Dawson's rooftop honey bees.
- A toad that was brought in with plant shipment from the 4H rooftop was placed in the pond.

Habitat Restoration Project - Gym Rooftop

Decomposition Area



Goal

To showcase the decomposition process away from mammals such as raccoons and squirrels that often pull apart rotting logs to find food. Students can study the decomposition process happen and compare changes on this accessible rooftop. Several species of trees act as nurse logs to many other species, including a host of mushrooms, lichens and mosses.

Maintenance:

- Make sure sprinkler isn't on too much and the log stays too wet all summer. It should be damp at all times.
- The lock on the log is to be kept there and not opened unless the biology teachers involved with studies are asked. Otherwise it is opened once per week and the insects and invertebrates identified and the populations estimated.
- Weekly check for any garbage or damage

Interesting Notes

- The large tree trunk section is from a 100+ year old oak that had to be cut for safety reasons on Dawson property in 2011. It was cut in half and hinges, handles and a lock were installed so that it could be opened.
- Several species of mushrooms have grown in the first year and during the first month there was a 400% increase in biodiversity noted by students studying the nurse log
- A robin (*Turdus migratorius*) nested in 2017 in this area and a mallard duck (*Anas platyrhynchos*) has nested 5 times between 2015-2017.

Habitat Restoration Project - Gym Rooftop

Wet Meadow



Date Established: 2015

Goal

To provide a small area where plants thrive in a continuously damp soil that receives direct sunlight for only several hours per day situated only 10 – 15 metres from an area on the roof that provides different conditions. Students can compare biodiversity in these differing micro-habitats.

Maintenance:

- Jewel weed (*Impatiens capensis*), also known as touch-me-not because when you touch the swollen seed pods they “explode” the seeds into nearby areas.
- Insect Hotel dominates this area.
- The sprinklers and poor drainage helps this plant thrive. It should be maintained here.
- Weekly check for any garbage or damage

Interesting Notes

- Humid conditions at ground level and dense plant growth producing shade creates a micro-habitat for invertebrates that need these conditions (e.g. slugs, worms).

Habitat Restoration Project - Gym Rooftop

Problematic Plant Display



Goal

To showcase 4 major problem plants that people regularly encounter.

Maintenance:

- Water during dry periods if they do not receive water from sprinklers.
- Leave all pots outside for the winter.
- **Ragweed** (*Ambrosia artemisiifolia*) may grow back in the pot every year. If not, it can be readily transplanted from Dawson grounds to the pot.
- **Stinging nettle** (*Urticaceae*) should be handled with long sleeves and gloves. Tiny spines on the plant cause instant irritation. This rash usually disappears within 30-60 minutes.
- **Poison ivy** (*Toxicodendron radicans*) Do not touch this plant, plants, berries, flowers or roots as they all contain a non-volatile oil that can cause severe rash. If touched with bare skin wash with strong soap immediately several times. Clothing that touches poison ivy or tools used can transmit the oil. Leaves that fall in the Fall can be picked up and put in the waste bins, as they too will still transmit oil. This woody plant can grow 10-20 metres high. If it reaches past 0.5 metres, it should be trimmed. Poison ivy will grow every year.
- **Wild Parsnip** (*Pastinaca sativa*) has a long taproot like a carrot and needs the larger pot. Touching any part of the plant can cause a severe rash. If touched with bare skin wash with strong soap immediately several times. Clothing that touches poison ivy or tools used can transmit the oil. Only people wearing safety glasses should move this plant as the sap can damage the eye (even causing blindness!). Important: to prevent seed dispersal, the flower head should be removed once it has lost its yellow flowers and the seeds start to develop (August-Sept).
- Should any staff or volunteers develop rashes after days of working with these plants, refer them to the school nurse. Do not give medical advice.

Interesting Notes

- The signs describe interesting facts about the plants on display. Although these plants are a problem for humans, they are all important to many species of insects.

Habitat Restoration Project - Gym Rooftop

Meadow



Goal

To show a small area on the rooftop without any trees or shrubs (woody plants) that has native plants present attracting pollinators and other invertebrates.

Maintenance:

- Milkweed (Asclepias) pod seeds can be collected and disperse in key areas of the Dawson grounds

Interesting Notes

- This area was dominated by a non-native plant called Lady's Mantle (Alchemilla) Large amounts of it were removed from the rooftop in 2017 and remaining plants removed in 2018. New Lady's Mantle growth should be snipped when it emerges to weaken any remaining roots.
- Any small trees that grow here should be removed
- More milkweed, grasses, goldenrod (Solidago) and black-eyed-susan (Rudbeckia hirta) plants were introduced in Sept 2018.

Habitat Restoration Project - Gym Rooftop

Insect Resort



Goal

To create artificial nesting sites for insects and specifically solitary bees and wasps that need small holes to make their nest and deposit eggs.

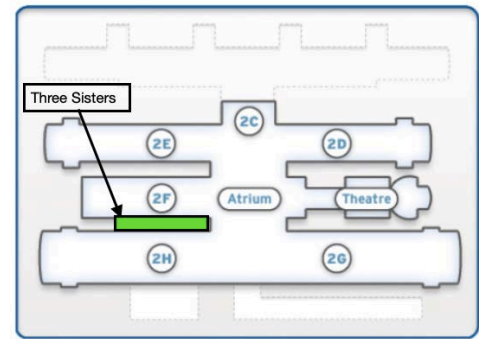
Maintenance

- Check in the Spring and Fall for any areas that have been damaged by wind, snow or people. Replace damaged material.

Interesting Notes

- Several species of solitary bees and wasps nest in the wood with 1/4 inch holes drilled into them and the cut reed grass (*Phragmites*) and bamboo poles. Mason bees (*Osmia*) are important pollinators and will emerge from the holes covered with mud in the spring to repeat the process.
- The box on the bottom with a small hole is a bumblebee (*Bombus*) nesting box. It should have soft material inside for the bumblebee (there is presently old sofa cushion stuffing). The bumblebee box was made by a CRLT student and the insect hotel was made by a variety of employees and students from Dawson and Mexico (Sustainable Campuses Project).

Three Sisters Garden



Goal

This area was originally planted by the support desk staff and used as a leisure area. When key members retired it was left “dormant” and several trees became too large. In 2008 they were removed and plants were added by sustainability staff. In the Fall of 2016, the Dawson Peace Centre and the First Peoples Centre created the Three Sisters Garden, where beans, squash and corn grow in raised beds in a traditional First Peoples example of growing crops.

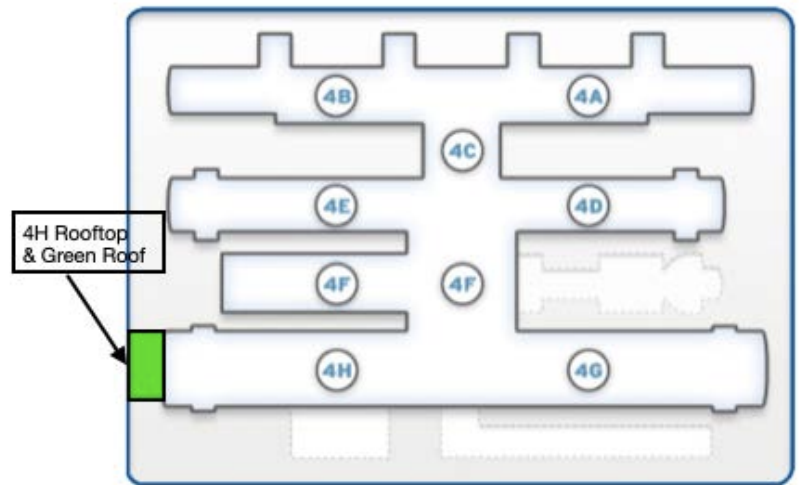
Maintenance

- Goutweed is present in this area. Snip all goutweed any time it is noticed and return weekly to snip if found (do not dig out unless all soil in area is removed to the roof membrane). Do NOT use regular shovels to dig straight down as the roof membrane may be damaged, allowing water to penetrate. All digging on rooftops is only to be done with the guidance of the Dawson staff leader.
- Working inside the butterfly enclosure is only permitted by trained volunteers who have been briefed on monarch diseases and insect predators. For more information on the Monarch Nursery Project
- The monarch enclosure is designed to be taken apart in late October and stored. It has no nails holding it together, only wooden dowels. Set up is in late spring, when the possibility of snow events are over.
- Water with a mild bleach solution can be poured into the floor drain between the patio bricks.
- Care should be taken spraying plants near windows so soil doesn't splash onto the glass. These windows are office spaces on one side. If warranted, create a work order to have the windows cleaned.
- Water in specific areas as needed & report any sprinkler use issue to sustainability staff.
- When working in or after rain, be careful not to track mud throughout hallways – time work when drier, if possible.
- Raised beds should be covered with thick plastic to prevent rain and melting snow in non-growing seasons from entering the garden soil.
- Weekly check for any garbage or damage

Interesting Notes

- The soil in the gardens is in the raised beds to separate it from the earth on the rooftop that has accumulated high levels of copper compounds from rainwater falling from the copper roofs above.
- Sunflowers and milkweed are being used as an experiment to capture the copper compounds and remove them (bioremediation)
- A second insect resort (“Bug & Breakfast”) was constructed by Facilities staff and students in 2017
- A monarch nursery and breeding enclosure was built in 2018 to help this species at risk and engage the Dawson Community. It helps control predators, parasites and protect the monarch in all stages of development from severe weather.
- Clover is left to grow between the raised beds to attract pollinators and supply a nectar source to emerging monarch butterflies
- The flat stones by the doorway are deposits of sand from an ancient shallow sea and several of the stones have fossilized ripple marks that were made near a sandy beach.

4H Rooftop Garden & Green roof



Goal

The Green Rooftop was created to be energy saving. There are 20 self watering containers that are brought up every year that grow vegetables that are then harvested, donated or sold to Dawson community and local food banks.

Work needed to be done to renovate the 4H roof, so Dawson decided to move forward with a plan to make the 4H roof “green” in a more permanent way. Getting water to the site is a problem, vegetation on the non-garden side was therefore chosen that can withstand periods of drought and meant to be virtually maintenance free

Maintenance

- Maintenance free
- Once a week you will need to add water to the self watering containers

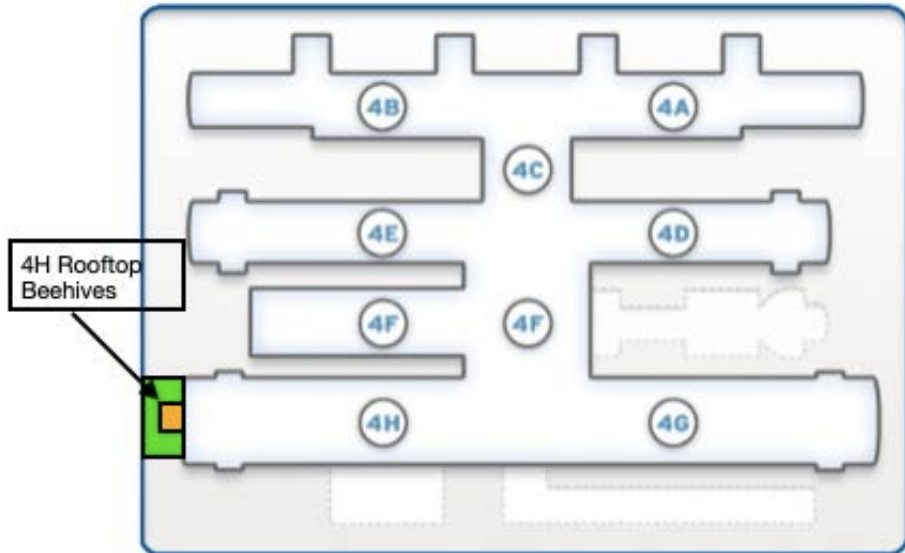
Interesting Notes

- Dawson has it's first ever green rooftop garden
- Supplies our weekly harvest market
- Sustainability-team volunteers always get to go home with produces. It is zero waste

4H Honey Bees



Date Established: 2012



Goal

Urban beekeeping is an unparalleled educational tool - each hive is an opportunity for your students to learn about biology, biodiversity, food production, entrepreneurship and more. (Source: Alveole)

Maintenance

Dawson works with Alveole beekeeping organization who visits every 3 weeks from April to September for hive inspections. There is no maintenance on our part except refilling water jars by the hives on the 4H rooftop.

Interesting Notes

Alveole leads two workshops to Dawson classes per year using the hives. We have a honey extraction workshop using an old artesian drum and an additional workshop learning about the bees. In addition, during their inspections every 3 weeks student volunteers and employees are welcome to come observe and learn about the hives. Honey that is extracted is jarred and given as gifts of appreciation to the Dawson community and external guests.

**For more information please visit our site:
Sustainable Dawson**

**You may also contact us directly at:
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