Rare Plants of the Endangered High Park Black Oak Savannah

A Volunteer Stewardship Program Guidebook

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High Park Stewards
(formerly High Park Volunteer Stewardship Program)
and
High Park Community Advisory Council (HPCAC)

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The 2017 re-issue of this book is dedicated to Jane Schmidt,
who passed away in 2012 and represented the heart and soul of stewardship

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Inside back: CW; **Back cover:** SL

About our cover photos:

Front: Wild Lupines return – a story of stewardship, a sign of hope
Back: as significant as the savannah's 200-year old giants – new oak growth

Printed in Canada by Couto Printing and Publishing Services
on 80 lb matte-coated stock containing post-consumer recycled content

Thanks & Acknowledgements:

Through the snowy winter of 2007 and early spring of 2008, three members of the High Park Volunteer Stewardship Program, serving as its book committee, took this Guidebook from a vague concept to reality. They did so by providing vision and leadership, and also by contributing an astonishing number of personal hours of volunteer work. Jane Schmidt put in hundreds of often intensely solitary hours, conceptualizing, researching and writing the *Twenty Six Rare Plant Profiles* that are the book's heart and soul. Sharon Lovett and Lisa Kemp made significant contributions to the remaining writing, and in two other crucial areas: Sharon anchored the effort of communicating with the contributors and gathering the photography, with her own collection of Park photographs as a mainstay; Lisa contributed many photographs, and her time and talent as both art director and designer, somehow cajoling all the book's disparate elements into a coherent whole.

The VSP book committee for this project was rounded out by two City of Toronto Parks, Forestry & Recreation staff members, Natural Resource Specialist Cara Webster, and Sarah Lamon who was a natural resource worker in the Park during the winter of 2007, and continued to contribute insights to the draft after her term was over. Cara and Sarah voluntarily anchored the proofreading of the manuscript, joined in this role by Steve Varga of the MNR (who also contributed the book's informed foreword), and Karen Yukich, the High Park Community Advisory Council's natural environment committee chair, who stayed the course to the very last.

Other key contributors you will meet by name, either in the course of the book or via the photography credits on the previous page: Les Babbage, Dagmar Baur, Gillian Smith, Terry Fahey, Bob Yukich, Michelle Gordon, … . The list could continue, but arguably it should not: because the reason this book was able to come to fruition is the same as the reason the initiatives described in the book have borne fruit – the work of hundreds of volunteers who remain nameless, but all of whom collectively in ways little and large kindled the flame of community stewardship, and keep it burning, in this great Park.

The High Park Community Advisory Council itself, under whose auspices the VSP operates, plays a key role in sparking projects such as this, and providing firm but gentle guidance in seeing them through. (Our thanks in particular to Ken Sharratt and Robin Sorys in this regard.) Finally, all the contributions noted above notwithstanding, the project's ultimate catalyst was the financial support of the **Ontario Ministry of Natural Resources Species at Risk Stewardship Fund**.

David Perlman, project editor

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Foreword: A Special Place Revisited

The City of Toronto is blessed with many natural ecosystems: from its shoreline dunes and wet meadows on the Toronto Islands, and the spectacular cliffs of the Scarborough Bluffs that record the advances and retreats of ice ages and lake levels, to our numerous forested ravines, most beautifully displayed at the Rouge Park. Among all these great parks, High Park stands out for supporting a continentally endangered ecosystem, the Black Oak savannah, famous for its rare prairie grasses and wildflowers and its 200-year-old open grown oaks. Historically, the dry sandy soils of the Humber Plains which encompassed High Park supported extensive open oak woodlands, savannahs and pine barrens, with a rich assemblage of showy prairie species. In contrast, scattered wet depressions and seeps on the sand plain contained cool northern swamps, marshes, ponds and, up until the early 1900s, a sphagnum bog noted for its rare orchids and pitcher plants.

For the past 28 years I've had the privilege of exploring the botanical wonders of High Park and writing popular articles and scientific reports on its botanical importance. Its varied habitats range from the Black Oak savannahs on its central plateau and upper ravine slopes, to moist ravine forests, seepage-fed wetlands and a lakeshore marsh at Grenadier Pond. As a result, the flora of High Park is outstanding for its 99 significant species (4 provincially rare, 9 regionally rare and 86 locally rare plants), many with southern/western and prairie/savannah affinities. A number of the rarities, particularly those in the cool ravines and wetlands, also have northern affinities. In the late 1800s and into the 1900s, High Park and its Humber Plains environs supported an additional 114 significant species (19 provincially rare, 10 regionally rare and 85 locally rare). Another 19 more common native plants have also disappeared. These declines are attributable to the loss of savannah and wetland habitats, and the curtailment of ground fires which once maintained the open, park-like savannah conditions.

Left: Aerial photograph of High Park

Since the 1990s, High Park has witnessed a remarkable rejuvenation coordinated by the City of Toronto, the High Park Community Advisory Council and its Volunteer Stewardship Program. Mowing has stopped over large areas of the Park, a number of prescribed burns have been carried out to bring back the prairie grasses and wildflowers and restore its Black Oak savannahs, an eradication program of invasive species has allowed its native flora to come back, the shorelines of Grenadier Pond have been re-naturalized, and a cadre of volunteers has planted out many native species, including some that had been lost from the Park. All these efforts have had great results, with dramatic increases in the numbers of many prairie and savannah plants, and a restoration of the park-like oak savannahs that made High Park such a unique ecosystem in the city.

This guide will further our efforts to inform citizens, and restore High Park and the surrounding Humber Plains to its former glory as the premier botanical wonder of the City of Toronto. The savannahs, woodlands and prairies of the Humber Plains, encompassing the natural remnants at High Park, Lambton Park, Rennie Park and the lower Humber River valley, are, with the efforts of the Volunteer Stewardship Program, being expanded out into neighbouring backyards, front yards, railway lines, street medians, hydro-right-of-ways, vacant lots and parkettes. The stewardship program strives to bring more of the beauty of the Humber Plains to every citizen in West Toronto and ensures that its unique plant life lives on. Here's to all the community volunteers and the staff at the City of Toronto that have made such great strides over the past 20 years.

Steve Varga, Inventory Biologist
Ontario Ministry of Natural Resources, Aurora District
March 2008

Upper Right: Community volunteers; Lower Right: City of Toronto staff

Introduction: A Brief History of High Park

Geological History

The geological character of High Park was formed in the distant past by collisions of tectonic plates and the erosion of seas, lakes, ice, and wind. Seventy thousand years ago during the last great ice age, all of this part of Ontario was covered by a single lobe of the mile-thick giant Wisconsin Glacier. Then, approximately 13,000 years ago, as the Ontario ice lobe retreated, it left behind it Lake Iroquois, three times the size of the current Lake Ontario. Later, as Iroquois drained, it even became, briefly, a bay of the ocean. Then, freed of the crushing weight of the ice, the land rebounded, and the present Lake Ontario assumed its place in the deep furrow scoured by the glacial ice. These galvanic forces have left their mark on the landscape of High Park to this day, its ravines and sandy tablelands, ponds and streams creating a unique environment. Today this includes rare flora, fauna, and vegetation communities not found together in this way anywhere else in Ontario.

Human History

First Nations people began living in the Toronto area approximately 11,000 years ago. Beginning as hunters, they developed into agricultural communities, establishing a complex bond with the ecosystem and incorporating it into their spiritual beliefs and cultural practices, including, as we shall see, the use of fire as a regenerative force in the savannahs.

The arrival of European fur traders and settlers changed the First Nation communities and the landscape. New cultural traditions and

Right: Black Oak trees

beliefs were introduced, as was trading for fur and other goods.

The Europeans coming to the area established both urban and agricultural settlements. They contracted treaties with First Nations, and transformed lives and landscape as they settled into building their communities.

High Park History

Two of these settlers, John Howard and his wife Jemima, purchased 165 acres (67 hectares) of land in 1836 and called it High Park, because of the height to which it ascended, from its southern edge on Lake Ontario to its northern boundary at Bloor Street. In 1837 they designed and built Colborne Lodge, a regency style cottage, toward the southern end of the property, and made it their home. In 1873, the Howards deeded High Park to the City of Toronto as a public park. The deed stipulated that the property must be left in its natural state as far as possible, must remain free in perpetuity to the citizens of Toronto, and must always be called High Park.

In 1876 the City extended the Park by purchasing the 172 acres (69.5 ha) to the east from the Ridout family. The Park grew again in 1890, on the death of John Howard, with the transfer to the City of Toronto of the remaining 45 acres (18 ha) of the Howard property. This included Colborne Lodge, its outbuildings, and the Howard tomb, resting place of John and Jemima; all were transferred to the City of Toronto.

Under City of Toronto management of the Park, the first boat rentals on Grenadier Pond occurred in 1893 and the animal paddocks were established in the same year. The neighbourhoods surrounding the park were developed from 1900-1914 and have

Upper Right: Colborne Lodge; Middle Right: High Park postcard - 1909; Lower Right: High Park postcard - 1910

become highly desirable places to live. In 1930 the City purchased an additional 71 acres (29 ha) on the western edge of the park (some sources say from the Ellises, some from the Chapmans), thereby enclosing Grenadier Pond within the Park boundaries, and bringing the Park to its present size – 399 acres (161 ha). Many recreation facilities were added to the Park in the 1960s, increasing the range of facilities enjoyed by park users, but accelerating the decline of the Park as the natural preserve envisioned by the Howards.

ANSI (Area of Natural and Scientific Interest)

One hundred years after the Howards gave High Park to the people of Toronto, the Park's key asset, its natural environment, started coming into its own again. Starting in 1976, key studies, botanical inventories and restoration management plans were prepared. Then, in 1989 the Ontario Ministry of Natural Resources designated 125 acres (55.5 hectares) of High Park's Black Oak woodland and marshland as an Area of Natural and Scientific Interest (ANSI). High Park's natural areas are seriously declining, they warned; many of the oldest Black Oaks have reached biological maturity and are not regenerating naturally. Largely as a result of human influences and practices, including the exclusion of natural fires from the Park, a serious decline in plant and wildlife diversity has already occurred.

Above: Savannah Grass

Following more detailed study, this ANSI was increased to 131 acres (59 ha). In the early 1990s, native plant propagation began in the Park's greenhouses for seed source and demonstration gardens. The City of Toronto and the Province began to study and implement the preservation and restoration of the ecologically significant areas of High Park, including the Park's precious 65 acres (26 ha) of Black Oak savannah and woodland.

Black Oak Savannah

Oak savannah consists of open parkland, containing scattered trees and shrubs, surrounded by grasses and wildflowers. Grasses such as Big Bluestem, Little Bluestem, and Indian Grass create wind-blown waves of moving colour, shifting through the seasons from greens in the spring to oranges, browns and reds in the summer and fall. Intermingling with these grasses, wildflowers spark with colour, turning the savannah blue in June when the Wild Lupines bloom, and pink and yellow when the Showy Tick

Trefoil and Goldenrod are on display. Savannah shrubs provide shelter for birds and mammals and check erosion, rounding out a lively and ever-changing environment, playing their part in a functioning ecosystem.

The High Park Black Oak Savannah is a nationally rare vegetation community, the last sizeable remaining tract of Toronto's post-glacial Iroquois Sand Plain. The savannah itself is home to many rare and significant native plant species (4 provincially rare, a further 64 locally and regionally rare). It is also home to 2 provincially rare birds. As part of the High Park Area of Natural and Scientific Interest it is host to 260 species of migratory birds, 48 species of breeding birds, 19 mammal species, 8 reptile and amphibian species, and numerous species of butterfly. The Black Oak Savannah is the key to maintaining High Park as a living natural history museum, and the effort is now under way both to preserve and to restore it.

Native Plants

Native plants are those which are part of the local vegetative community and as such have evolved, interdependently, methods of survival specific to local growing conditions They provide a source of food and shelter for birds, mammals, and insects, many of whom thrive in their presence and do not adapt well to areas containing more invasive or non-native species. In High Park native plants are an important building block of the living history of the Black Oak Savannah. They provide the foundations on which the restoration work is based and the base of the hoped-for increase in the populations of native birds, insects, and mammals.

There is a growing public awareness of the importance of the environment to the sustainability of life across the planet. Preserving and restoring plants native to the local ecosystem is an important part of the picture in beginning to restore the life of the planet and regain some balance between technological advances and quality of life. Getting the local community involved in the local restoration effort is another important part.

Left: Kestrel on oak tree

Community Involvement

An important part of the renewed commitment, from the mid-70s on, to the preservation and restoration of High Park as a natural treasure, was the establishment in 1995 of the High Park Community Advisory Council (HPCAC). It was formed to provide feedback and advice to the City of Toronto regarding preservation and improvements to High Park. The Volunteer Stewardship Program (VSP) was established soon after, in 1996, to assist the City Parks, Forestry, and Recreation staff in restoring High Park's natural areas to pre-settlement conditions.

The VSP does so by engaging in, and encouraging, a wide range of activities (described in more detail in the following pages) – activities which (like this book) encourage and support the local community to get involved in the ongoing environmental stewardship of High Park.

Lisa Kemp
Volunteer Stewardship Program

Right: VSP Seed Collecting; Far Right: John Howard's 1870s watercolour and ink map of High Park


BLOOR STREET
HIGH PARK
LAKE ROAD
LAKE ONTARIO

Restoration: Whys and Wherefores

Why

High Park has a very complex natural environment, which includes remnants of the Black Oak Savannah. Although the Black Oak tree is the icon of this environment, it is the grasslands that contain the diversity of herbaceous species that provide the reasons for the ANSI and ESA (Environmentally Sensitive Area) designations. Other areas of the park, such as woodlands and marsh, have been declared worthy of protection as well.

Because it is a city park, it has the added pressure of being a recreational site. There are those that believe all of the park should be for the express use of people, while others believe that part of the park should exist as a natural area that people can visit and respect, nurture and not damage. Other creatures including birds, insects and animals depend on a suitable habitat, not for their enjoyment but for their survival.

How

Restoration is both a political and an environmental process. There needs to be agreement among the scientific community on what the habitat should consist of. Management plans are developed and presented to the park's financial and management staff who then need public approval to implement their vision. This is the difficult part because there are many conflicting interests and competing demands for areas of the park. Committees are formed, differing viewpoints are noted and a plan is developed. Once the plans are accepted the city and its citizens can work together to implement them. Volunteers working with city staff can create a wonderful place for all.

Upper Right: Monitoring natural area; Middle Right: Erosion damage; Lower Right: Wildflowers

Public use of the park's natural areas

We like to think of coming to the park as visiting a neighbour who happens to have a very large yard with sports and recreation facilities as well as a variety of different types of gardens. Tennis courts and baseball fields are for very different sports, just as horticultural gardens with their contained opulent and colourful flowers are different from the "wild" native plant habitats. Activities in each area depend on their purpose.

Fallen logs, flowers, berries, nuts and mushrooms provide wildlife with the healthy food and shelter they need. Removing this material through "foraging" hinders the ability of the plants and wildlife to be self-sustaining. Many animals have also been killed by inappropriate feeding and litter. Erosion caused by people, pets and bicycles outside of paths degrades the land and compacts the soil, hindering plant growth and creating dangerously slippery slopes in inclement weather.

The public needs to respect the natural areas as much as they would their own homes and gardens.

Sharon Lovett
Volunteer Stewardship Program

Upper Right: Designed landscape; Lower Right: Natural landscape

Twenty-Six Rare Savannah Plants

Introduction, original concept, and plant profiles by Jane Schmidt

Be Still

If you look quickly at a forest or a meadow it can first appear like a green amorphous mass. If you take your time and allow yourself to be still, you will notice for the first time what has always been there. Individual plants appear as if coming into focus: this one is tall and narrow, this one has an arching stem, this one stretches along the ground. Let time pass and you will see details: a pale leaf, a hairy stem, sharp thorns. Approach a little closer and you will notice textures: this pale leaf feels fuzzy, this hairy stem is bristly and this sharp thorn is curved. Each plant is an individual member of a distinct species.

There is a satisfaction in learning the name of a plant. Then, to find out more about it – its habits, preferences and behaviors is a kind of empowerment that reinforces the ability to recognize the plant even in passing. Plants do have behaviors and personalities. Plants behave by responding to what is around them. They live in their neighborhoods of choice within larger communities. They have companions and relationships, interactions and reactions: in fact, they have social lives. They are adaptive to changing situations and, contrary to popular belief, they are not exactly stationary.

The plants described in this Guidebook were chosen to best represent those of the Black Oak Savannah but it was a difficult decision to select only 26. The rare and rarely photographed Hay Sedge (*Carex siccata*), unfortunately, gets a mere mention. Some important species were omitted: Round-headed Bush-clover (*Lespedeza capitata*), and Canada Frostweed (*Helianthemum canadense*), both indicator species of the Black Oak Savannah, in favour of others. There are regrets that the White Pine (*Pinus strobus*) was not included as it is very important in High Park but less so as part of the Savannah. On the contrary, Switch Grass, possibly not indigenous to High Park but recently planted, is included because it completes the picture of the Big Four Grasses.

The Black Oak Savannah, notable for having species like Sassafras occurring in the northernmost limit of their range, is only one ecosystem in High Park. There are wetland and woodland ecosystems as well. The latter includes Boreal species notable for being at the southernmost limit of their range. There are enough plants in the various ecosystems to fill several Guidebooks, a future possibility.

Plant Profiles:

Shrubs:

Trees:

Grasses & Sedges:

Wildflowers:

Twenty-Six Rare Savannah Plants

Rules of Plant Etiquette in High Park (and any other park for that matter):

- **Let plants stay planted.**
- **Stem the urge to pick.**
- **Let the flowers flourish.**
- **Leave the leaves for compost.**
- **Love shoots and roots.**
- **Don't dig shoots and roots.**
- **Bury thoughts of eating berries.**
- **Don't beat about the bush.**
- **Trample not lest ye destroy.**
- **Going to seed is a good thing.**
- **Acorns are oaks in transition.**
- **Only take photos and memories.**

JS

First Nations

At one time, not so long ago, the plants of this Guidebook and their benefits were common knowledge - used for food, medicine, insulation, tools, implements, building materials and more. They were involved in every aspect of the daily lives of North America`s First Nations peoples, and to a lesser extent the early pioneers. (Settlers brought plants familiar to them from Europe, some of which have become, as non-native species, invasive.) The notes on medical and edible uses reveal the interrelationship between these plants and the people who understood plant properties and respected them as sources of healing and nourishment. *To be sure, wildcrafting or harvesting of plants from High Park for medicinal or any other purpose is not at all encouraged.*

The plants were used medicinally in diverse ways throughout the different regions of North America so there is no specific designation by nation in the Guidebook. High Park is very close to the "Toronto Passage", a land and water-way trade route between Georgian Bay and Lake Ontario that ended at nearby Humber Bay. It was travelled for thousands of years by many different indigenous people. Iroquois lived in the region 1,500 to 700 years ago there is archeological evidence of their agrarian settlements complete with longhouses. It is interesting to note that when a location`s resources were depleted after 10 to 20 years, the Iroquois moved to new areas, and old ones were allowed to return to their natural state.

The Iroquois left the region that is now Toronto for the Georgian Bay environs. (Some cottagers today might understand the allure.) For 300 years, Toronto became an uninhabited backwater, a place to pass through for trade but not to settle. When the Seneca, an Iroquois nation, did come back in the 1660s, it was as immigrants from the New York area. Although they lived in the Teiaiagonon community (on the Humber at present-day Bloor Street) for only a couple of decades, they left behind the legacy of the name Toronto, which means, "where there are trees in water", a reference to fishing weirs.

Then the Ojibways (or Anishinabe) Algonkians moved in and became known as the Mississaugas, a name now given to the neighboring city to the west of High Park. In 1787 there was again a change, with enduring consequences, when the Mississaugas sold the Toronto lands and Europeans became the dominant peoples of the region. Our restoration projects aim to recreate the pre-colonial natural environment.

Twenty-Six Rare Savannah Plants

Categories and Seasons

There is an obvious difference between trees and wildflowers, shrubs and grasses. Distinguishing the various plants within each category is more problematic. This Guidebook tries to address the most salient features to help with identification. A little patience and powers of observation are all it takes.

Shrubs are first in the Guidebook, because they often get short shrift, and because they are texturally interesting in the winter. Then come the trees, which inspire gravitas by their sheer size, magnitude and longevity and whose leaf buds unfolding are the TRUE sign that spring has arrived and is sticking around. Grasses and sedges are next because summer, when they stand tall, is the main growth period for many. Finally, finishing off, are the pretty wildflowers that vividly colour the spring, summer and fall before they virtually disappear in the cold and snow of winter.

These plants, as much as they can look alike, have strong individual differences. But as different as they are, all share the same savannah ecosystem and have adapted in similar ways. Within that environment, one species may prefer more light and can tolerate drier conditions and so they live in the sunny gaps in the tree canopy. Some can tolerate more shade and like moister soil and find their way under the canopy. Within the ecosystem there are certain niche areas. It is easier to get along when each individual has its own room.

Behavior: Plant and Human

Plants can be opportunistic, even aggressive or patient, quietly abiding their time. They can be prickly and irritating, soft and comforting. Just as they can invade territories, they can also be excellent hosts. They, like us, have sunny days to enjoy and crises and catastrophes to overcome. They have relationships to negotiate, neighbours to get along with and they are intent on providing well for their “children”. This is not to say that plants are just like humans, but that plants are subject to the same conditions of life. They do their best to survive, thrive and share the world.

Now, go meet the plants in person. Treat them with gentleness and respect and you will be rewarded a hundred-fold with the joy of their great spirits.

Jane Schmidt, Co-Chair, Volunteer Stewardship Program

Please Remember:

- **It is unlawful to pick or harvest plants or any part of them for any purpose be it food, medicinal, bouquets or other reasons.**
- **It is unlawful to feed the wildlife. It creates an unnatural dependence. Nature provides a bounty of wild food which is nutritionally perfect for wildlife.**
- **Leave the plants for others to enjoy: that is both people and wildlife who need them in order to survive.**

Right: Juvenal’s Duskywing Butterfly

New Jersey Tea *Ceanothus americanus*

Plant Personality: ***It would not be taxing to invite this cordial plant to a tea party.*** During the American Revolution, sparked by the high tax on tea from Britain, the leaves were used as a tea substitute. It tastes like regular tea but better, because it's caffeine-free.

Identifying Characteristics: The alternate name, **Snowball**, describes the white fluffy flowers that bloom profusely most of the summer. It's a big show for a little shrub, 50 centimetres to 1 metre tall. Small but mighty, given the right conditions, it is prominent within the savannah community.

Relatives: This shrub is a member of the notorious Buckthorn family. But, unlike its non-native cousins from Europe, the aggressively invasive Common and Glossy Buckthorn, New Jersey Tea is well behaved.

Roots: The roots are nothing short of amazing. After a ground fire, the roots respond by sprouting prolifically so the plant not only survives but flourishes. Conversely, First Nations burned the woody roots for fuel when on hunting trips. The pseudonym, **Red Root**, describes the colour of the tough convoluted roots once used as a dye and to tan leather, due to the high tannin content. The tenacious roots kept the prairie soils intact and gave the pioneers grief to plough.

Wild Popularity: The cordial shrub is a frequent host to the Summer Azure Butterfly but no longer to the Mottled Duskywing which has disappeared from High Park because New Jersey Tea numbers are not as abundant as they once were. The flower nectar draws many other insects, moths and butterflies. Various mammals eat the foliage in the summer and the twigs in winter.

Medicinal Uses: First Nations used the astringent roots for intestinal troubles, snakebite, lung problems and stomach aches. The flowers, when crushed in water, form a soapy lather that is good for skin conditions. It has recently been discovered that the roots have blood-clotting abilities applicable for surgical use in modern medicine.

Hidden Talents: This shrub, like legumes, fixes nitrogen, which benefits the soil and gives the plant a competitive advantage.

Smooth Rose *Rosa blanda*

Plant Personality: ***A pretty hip, smooth operator that always comes up smelling like a, well, rose.*** This wild rose with smooth, thornless stems really gets around, by sending out root suckers to form thickets. In fragrance and appearance, the pale to dark pink flowers look like other wild roses. The fruit, called hips, ripen from August to October.

Identifying Characteristics: Smooth Rose is the only rose without thorns on its branches. Alternately named, **Early Wild Rose**, it is the very first rose to appear, blooming from June until August. In contrast, the bright red hips are the last to drop and often stay on the plant all winter, adding vivid colour to the landscape.

Wild Popularity: Smooth Rose is a hip gathering place for wildlife. Birds such as the High Park winter residents, Dark-eyed Juncos, eat the hips as do Chipmunks and other mammals, which also seek safe shelter under the thickets that, on rare occasions, are host to the Striped Hairstreak butterfly caterpillars.

Incredible Edible: The hips are packed with minerals, vitamins A, C and E, anti-oxidants and essential fatty acids but *the prickly coverings of the hip seeds must be removed before eating to prevent irritation*. Rose hip tea is popular, but equally delicious are rose hip jams and jellies. The flowers taste as good as they smell and, made into rose water, they flavour desserts. First Nations ate the leaves and shoots when other food was scarce.

Medicinal Uses: Hips were used by First Nations for sore eyes and itchy piles, an interesting juxtaposition. The inner bark of the roots treated indigestion and powdered flowers eased heartburn. Currently, the nutrient-rich hips are being studied for their potential in preventing and reducing cancer.

Hidden Talents: The unarmed Smooth Rose with the delicate flower is much tougher than it looks. A very hardy plant, it will assertively establish itself even in rough neighbourhoods.

Lower Right: Dark-eyed Junco

Dry-land Blueberry *Vaccinium pallidum*

Plant Personality: ***This popular plant with great taste draws large, adoring crowds.*** This is one of the tastiest of all blueberries, loved by many birds, mammals and people. Robins and various Thrushes and Tanagers are some of the High Park birds that flock to the blueberries that ripen from July to September. Squirrels, Chipmunks, Foxes and Skunks also compete for the treat. After the wild crowds have left, people are out of luck.

Identifying Characteristics: The blueberries, the most obvious clue, disappear too quickly to be relied upon for identification purposes. A more dependable sign is the bloom of its small but showy flowers, which appear in May. The little green-white bells with a hint of pink are arranged in clusters before the leaves have developed on the 30 to 60 centimetres low shrub. Even then, one must be quick. The bloom does not last long. In fall, the leaves of the plant, bereft of bloom and berry, blush bright red.

Community: Dry-land Blueberry, which forms large colonies through the spread of new growth by rhizomes, is a prominent plant in the understory of the Black Oak Savannah. Also named **Hillside Blueberry** for its preference to live on sandy, dry hillsides, it plays a valuable role in erosion prevention on steep slopes, which is potentially beneficial for some of the many ravines in High Park.

Incredible Edible: Delicious fresh or cooked as jams, syrups or jellies, blueberries in general have recently become celebrated for their high levels of healthy anti-oxidants. Not to be left out, the leaves also make a tasty tea. But in High Park, remember to leave the leaves and bury thoughts of eating the berries of this rare resident plant.

Hidden Talents: Dry-land Blueberry has an unusual adaptation to fire: the *buds* are heat resistant. So, once things have cooled off, the buds sprout into action and, for good measure, so do the roots. After one controlled burn in High Park, a Dry-land Blueberry colony increased by 50%!

Low Serviceberry *Amelanchier stolonifera*

Plant Personality: ***This plant runs, tells time and is related to fish.*** If it would only do the dishes! In pioneer times, flowering of the Serviceberry in April was the first sign of spring thaw. It served notice that the preacher could travel to resume church services and conduct funerals because the ground was soft enough to dig graves after the winter. It is also called **Shadberry** because the bloom coincided with the shad fish swimming upriver from the ocean to spawn. Another name, **Running Juneberry**, describes both the time of year that the berries ripen and the way the plant colonizes by sending out low-lying branches called “runners”. A plant with so many aliases must be on the run.

Identifying Characteristics: Low Serviceberry, an upright shrub about 1 metre high, is most identifiable in April by the abundance of white flowers that cover it like a blossoming apple tree, which is a relative.

Wild Popularity: Black-capped Chickadees, Blue Jays, Robins and Hairy and Downy Woodpeckers are just some of the birds that devour serviceberries. Foxes eat the buds and twigs. The flowers’ pollen and nectar may be the first food for bees and insects after the winter.

Incredible Edible: The size and shape of blueberries, serviceberries first appear red and eventually turn dark purple. The unique taste is like a pear with almond-flavoured seeds. A staple food for First Nations, who called them **Little Pear**, they were eaten raw, cooked or preserved and blended with meat and fat to make pemmican.

Medicinal Uses: First Nations used the bark as a tonic. The fruit was both a blood remedy and restorer of strength after childbirth.

Hidden Talents: There is no end to them. Low Serviceberry can also fly. First Nations used the surprisingly strong, dense and durable wood for arrow shafts, giving rise to yet another name, **Arrow Wood**.

Northern Dewberry *Rubus flagellaris*

Plant Personality: ***Careful, this creepy plant has thorns, whips and teeth. But it's very sweet natured.*** The low, whip-like branches that creep along the ground ready to trip anything are full of spiny thorns. The leaves have deeply toothed edges. This well-defended plant hides a treat: sweet and tasty berries that ripen in July and August.

Identifying Characteristics: Wider than it is tall, the branches can reach out as much as 4 1/2 metres. Roots often sprout from the tips of the long branches to establish colonies. The attractive white or creamy flowers (but don't touch, even they have prickles) bloom in June.

Doppelgangers: Strongly resembling blackberries, dewberries are distinguished by fewer and larger black segments. The Blackberry plant itself is much taller with arching stems kept well off the ground.

Wild Popularity: Rose-breasted Grosbeaks, Orioles and Common Grackles are just three of the many birds of High Park that feast on dewberries. Bees and butterflies are drawn to the flowers while many insects prefer the succulent stems and leaves. Small mammals find protective cover under the thorny plant.

Incredible Edible: The berries are delicious raw and cooked but the birds usually get them first. The tender spring shoots are a delectable treat (thorns removed, of course) reminiscent of rhubarb.

Medicinal Uses: The thorns were used advantageously by First Nations as a needle to inject other remedies! Chewed, the astringent root uncoats a coated tongue. Both root and leaf infusions were used to treat diarrhea.

Hidden Talents: Northern Dewberry is a biennial plant with a perennial root system which means that new shoots are produced every year but wait to flower in the second year. If a catastrophe like fire or cutting occurs, then the dormant shoots wake up to replace those lost. This plant is always well prepared.

Upland Willow *Salix humilis*

Plant Personality: ***This humble plant would never give you a headache even though it's a bit of a basket case.*** In fact, this low growing willow cures headaches because the bark, leaves and buds contain the active ingredient used in aspirin. The medicinal value of pain and fever relief was known for thousands of years by the First Nations who also used the pliable branches to make baskets, mats and drying racks.

Identifying Characteristics: This willow (1 to 2½ metres high) is the only willow that inhabits dry upland areas. All others prefer getting their feet wet and live close to water. The wand-like branches are downy rather than smooth like the rest of the clan. The long and narrow leaves, typical of willows, are otherwise distinguished by velvety undersides. The catkin flowers appear first thing in spring and resemble mini pussy willows, which gives rise to the alternate name, Small Pussy Willow.

Lifetime: It grows wild and fast but, short-lived, it's the James Dean of plants with a lifespan of 20 years or so.

Wild Popularity: Many caterpillars of various moths and butterflies such as Mourning Cloak (common), and White Admiral (uncommon) feed on the foliage. Although Beavers and Muskrats have a preference for willow for food and construction materials, Upland is too inconveniently far from water. Millions of years ago, much larger creatures munched on willows. Fossil records show that dinosaurs, including brontosaurus, used willows as a food source!

Medicinal Uses: First Nations not only relied on the leaves for aches and pains but also applied them as poultices for wounds. They even consumed the leaves, high in vitamin C, and smoked them on ceremonial occasions.

Hidden Talents: The willow bark was used to prevent cavities and to clean teeth. This would be a good preparation if one was to act on the rumour that the catkins are an aphrodisiac.

Lower Right: Mourning Cloak butterfly

Black Oak *Quercus velutina*

Plant Personality: ***Black Oak, the King of the Savannah, wears its crown jauntily.*** The lion rules in the African savannah, but in High Park it is the Black Oak tree which dominates in numbers, endurance and majesty. It is not the largest, longest lived or stateliest oak but Black Oak is the most resilient and best adapted to the savannah ecosystem conditions of drought, poor, sandy soil and, before modern human intervention, periodic ground fires.

Identifying Characteristics: The large pointy-lobed leaves have a unique velvety underside, probably acting to control moisture loss. The leaves of all other oaks are smooth on both sides. The bark, darker than any other oak, becomes blacker and more deeply furrowed with age. The two centimetre acorns have caps that resemble fuzzy toques pulled down low over the acorn head.

Physical Traits: Black Oaks, living 150 to 200 or so years, average 18 to 25 metres high with a trunk diameter of 60 to 120 centimetres. The King of the Savannah's asymmetrical crown of foliage gives its silhouette a somewhat windswept and careworn look. The catkin flowers bloom in May.

In Transition: Black Oak is the indicator species of the transition from an open savannah, prairie or grassland to a woodlands ecosystem.

Regeneration Gap: Fire is required for the successful regeneration of Black, Red and White Oaks. Burns are advantageous for the shade-intolerant oak seedlings. Fires open up the canopy to light, clear the undergrowth of faster growing competitors and stimulate vigorous sprouting from the root collars, which survive even if the top is killed. Black Oak, in particular, resists drought and ground fires by putting much initial energy into growing its large taproot. Waiting for the right opportunity to grow above ground while undergoing numerous fires, the roots may be several decades older that the tree portion! Red Oak seedlings are less drought-adapted but more shade tolerant than Black Oaks.

The full grown oaks survive burns and if injured, can redirect the operations of the cambium within weeks. It helps to be a straight shooter: leaning trees are vulnerable to flames getting under the stem causing irreparable damage. White Oak with its thick, rough bark is more fire resistant than the tight barked Red Oak, which does not always increase in numbers post-fire the way Black Oaks do. All three oaks respond to the trauma by producing massive

Lower Left: Edwards' Hairstreak butterfly

Black Oak *Quercus velutina*

amounts of acorns. In general, fires occurring more often than every eight or ten years could stress the trees enough to eradicate them.

Black Oak regeneration is particularly important in High Park. It is of great concern that many Black Oaks in High Park are close to or well over 200 years old and may be coming to the end of their lives. A large gap exists between the mature oaks and their successors. So far, Oak seedlings transplanted in the park have a 70% success rate. Direct planting of acorns has proven to be a more effective way to increase the chance of survival. Experimentation is ongoing in finding methods to improve the likelihood of healthy oaks reaching maturity.

Wild Dependence: Edwards' Hairstreak butterflies rely exclusively on oaks, Black Oak saplings in particular, as a host for its larvae (caterpillars). As oaks fail to produce young, Edwards' Hairstreaks are greatly affected and the population is in serious decline. Ants are not happy either: they actually protect the caterpillars and build nests at the base of the trunk for them to return to after a hard day of eating oak leaves. But the ants do charge rent: they eat the sweet nectar that the caterpillars secrete.

Hidden Talents: The inner bark of Black Oak is a surprising bright yellow and was used as a dye and to tan leather until the 1940s, thus its pseudonyms: **Yellow Oak** and **Dyer's Oak**.

Red Oak *Quercus rubra*

Plant Personality: ***Lofty and swift, the Red Oak is the would-be Queen of the Savannah.*** In many other ecosystems, the Red Oak, the tallest and fastest growing oak, would dominate as its alternate name, **Champion Oak**, would suggest. But in High Park, it concedes to the Black Oak. There is no animosity, however. They like each other well enough to readily hybridize, challenging even the experts in telling them apart.

Identifying Characteristics: The pointy-lobed leaves, resembling those of Black Oak, have smooth, not velvety, undersides. The bark has unique shiny reddish stripes running down the ridges of the trunk. Lattice-patterned beret caps perch on top of the 3 centimetre nuts.

Physical Traits: The Red Oak can grow up to 35 metres tall with a trunk diameter ranging from 1 to 2 metres. In ideal conditions, it can be much bigger. This tree, with a lifespan of 300 years, has a symmetrical, rounded silhouette. The green, barely apparent flowers occur in April or May.

Location, Location, Location: Of the three oaks, Red prefers the moister woodland valley slopes in High Park. Black goes for the driest upland areas and upper rises of the ravines. White is happy somewhere in between.

Wild Popularity: It's those acorns: everyone loves them. Here's a partial list of High Park wildlife that indulge: Crows, Grackles, Mallards, White-breasted Nuthatches, Wood Ducks, Starlings, Brown Thrashers, Voles, Chipmunks, Red Fox, Mice, Racoons, Moth larvae, Weevils and Snakes. Birds and mammals use the trees for cover, shelter and nesting sites on branches which beavers also like for food and building materials. Downy and Hairy Woodpeckers and Northern Flickers create homes in trunk cavities. Oaks host Juvenal Duskywing and Banded Hairstreak Butterfly caterpillars among others. On younger trees especially, some leaves remain on the branches past autumn, thus providing winter protection. The fallen leaves resist rot because of the high tannin content so they offer good ground cover and food.

Lower Left: Juvenal's Duskywing Butterfly

White Oak *Quercus alba*

Plant Personality: ***White Oak has longevity and strength of character. Slow and steady wood would win the race.*** This oak grows slowly but for a long time, as much as 800 years! It can live twice as long as red oaks, four times as long as a Black Oaks and more than ten times longer than the average human. If only it could talk, what tales it would tell.

Identifying Characteristics: Although as large as Red and Black, White Oak leaves have rounded lobes. The light grey bark, which is like rough cork, can be five centimetres thick. The acorn caps resemble a bumpy Cossack fur hat pulled over the ears of the nut, one to two centimetres long.

Physical Traits: This tree grows 18 to 30 metres tall, with a diameter of 60 to 120 centimetres. The silhouette is an irregular pyramid shape. Flowering occurs in May.

Good Wood: The term “oak-aged” refers to White Oak (aka **Stave Oak**) barrels used for fermenting wines and spirits. The White Oak wood is the most desirable for its clarity, strength and close grain. The open-grained, reddish wood of the fast growing Red Oak is made into barrels for dry goods only: it is too porous to hold liquids. Black Oak wood, sold as “red” is of lesser quality with more flaws. All oak woods are used for multiple purposes including fine furniture and flooring. Ironically, considering their great resistance to fires, they make good firewood but should never be cut for that purpose.

Medicinal Uses: The bark of all three oaks is astringent and antiseptic. Infusions were used by First Nations as a tonic and to treat sore throats, coughs, fevers and intestinal inflammation and various lung conditions. Acorn oil alleviated joint pain.

From the Little Acorn...

Good Behaviour: **Red** and **Black Oak acorns** take 2 years to ripen to maturity. **White Oak acorns** will germinate in one season. **Red Oak acorns** mature on the tree for 18 months after spring fertilization of the flower. Once ripened in the second September or October, they continue to stay on the tree all winter and drop to the ground in the spring to germinate immediately. **Black Oak acorns** also mature in 18 months but fall upon ripening in the autumn and lie dormant in the ground all winter before germinating in the spring. **White Oak acorns** mature in a mere four months, tumble off in the fall and sprout instantly. Timing is everything: White Oaks are grown in the High Park native plant greenhouse when the acorns can be retrieved in time.

Viability for all the acorns depends on landing in an area that receives a lot of light and in soil that is covered in leaf litter to prevent dehydration. The good luck not to have been eaten or infected by insect larvae is also a crucial factor in successful germination. Hoarders that bury and forget the acorns assist in germination to varying degrees. Squirrels, overabundant in High Park, due partly to public feeding, eat too many acorns, and hide the rest too close under the shady canopy. Chipmunks are more obliging by carrying them further. Blue Jays are particularly helpful by caching acorns far away at forest edges with lots of light. The extinction of the Passenger Pigeon, the former long-distance champ, drastically affected far-reaching oak dispersal.

Bumper crops, which ensure that at least some acorns will be left over to sprout and grow, are produced by Black Oaks consistently every second or third year, Red Oaks, every 2 to 5 years and White Oaks erratically, anywhere from 2 to 10 years. But a dying or stressed tree also yields greater quantities. Taking advantage of the oak trees' stress response to ground fires, First Nations intentionally set fires to stimulate large acorn crops, an important food source. The White Oak acorn, with the least tannin content, could be eaten raw. Black and Red Oak acorns were first soaked or leached to remove the bitter tannins and then dried and ground as a flour for gruel or cakes. Because tannin acts as a preservative, Red and Black Oak acorns could be stored for two years.

These burns also cleared the ground for easier collecting, fertilized the soil via burnt leaves and killed the moth and weevil larvae which normally infect 95% of acorns. The resultant more open understory also favoured increased populations of traditional game such as Deer, Elk and Wild Turkey.

As a consequence of this activity, oak growth and domination was encouraged. Like the question, "Which comes first, the oak or the acorn?", it might well be asked who encouraged whom in the creation of the once vast expanses of oak savannahs in eastern North America? Was it the people taking advantage of the oaks' response to fire, or was it the oaks taking advantage of people's need for acorns?

Sassafras *Sassafras albidum*

Plant Personality: ***It's a very handy tree for making root beer and gumbo.*** Scratch and sniff the bark, roots and leaves and it will remind you of root beer. Sassafras roots were the original flavouring agent. Filé powder, famous for seasoning and thickening Cajun gumbo, is made from the dried leaves. Root beer and filé are First Nations' inventions.

Identifying Characteristics: Sassafras is unique in producing four leaf forms, all on the same branch. The shapes are oval, three-lobed and mitten-shaped, conveniently for both left and right hands, men's size medium. Thus the name: **Mitten Tree**. The distinctive fruits, like miniature dark blue eggs held in tiny red egg cups, ripen in July and August.

Physical Traits: In High Park, the tree reaches 12 metres with a 1/2 metre trunk diameter. It tends to form thickets with multiple trunks sprouting from the root runners. Branches are upturned like candelabras. Pretty little yellow-green flowers bloom in May.

Relatives: Sassafras is one-of-a-kind in North America. Its closest relatives are Cinnamon and Camphor, fragrant trees native to Asia.

Valuable or Invasive: On the one hand, without regular ground fires, Sassafras became very densely populated in High Park. Its unusual spread shaded out and inhibited the growth of oaks, rare grasses and wildflowers. The slopes where it occurs eroded due to lack of understory plants. Therefore, it is controlled by prescribed burns, cutting and herbicides, as a last resort. On the other hand, Sassafras is at the northernmost limit of the Carolinian Forest in High Park so it is a rare tree in Canada and important as part of the Savannah. It is one of the hosts to the Spicebush Swallowtail Butterfly caterpillar that is now rare to uncommon in High Park. The management practices hope to restore Sassafras to the original scattered copse formations.

Medicinal Uses: The roots and leaves were brewed as restorative teas by First Nations who, not surprisingly, used the aromatic bark as a breath freshener.

Hidden Talents: Sassafras's essential oil, safrole, both attracts and repels. It scents soaps and perfumes but is banned for food use in North America because it's possibly carcinogenic. The aromatic bark, fruits and twigs are food sources for many mammals and birds but insects like mosquitoes, mites and ticks are repelled by the scent. And that's a good thing.

Lower Right: Spicebush Swallowtail butterfly

Big Bluestem *Andropogon gerardii*

Plant Personality: ***This grass is deeply rooted with its feet in the air!*** Also known as **Turkey Foot**, its seed heads look like red turkey feet waving in the wind. Ploughing up Big Bluestem in the prairies was the main cause of the dust bowl of the "dirty thirties". The roots, as deep as 4 metres, kept the soil intact despite the constant winds, so when Big Bluestem went, so did the fertile earth. In High Park, the deep roots can prevent erosion of the sandy soil.

Identifying Characteristics: From August to October, look up, way up, for those feet in the air at the top of stems which can be 3 metres in ideal conditions but 2 metres in High Park's sandy soils. At the start of the growing season in May, the plant appears blue-green but it is most identifiable in the fall by its reddish-brown colour.

Relationships: Big Bluestem, Little Bluestem, Indian Grass and Switch Grass are known as the Big Four grasses that once dominated the many millions of acres of North American mid-west tallgrass prairies and savannahs. They share similar traits: growth patterns and preferences, type of root system, value as forage for wildlife, and the tremendous ability to withstand tough conditions (except the plough). High Park is special because it has typical prairie grasses that have largely disappeared from the prairie lands!

Community: The Big Four all hang out in the same neighbourhood but the most dominant in numbers and size and the most important as forage is the "king" of tall grasses, Big Bluestem. It forms dense hillock-like clumps which, because they block other plants from developing, can spread to a considerable size.

Medicinal Uses: A First Nations' concoction of the leaves reduced fevers and the roots relieved indigestion.

Hidden Talents: The stems, not hollow like other grasses, have been fashioned into knitting needles and toy arrows by First Nations.

Little Bluestem *Schizachyrium scoparium*

Plant Personality: ***Neither especially little nor blue, this grass is misnamed and its scientific name is a mouthful. Thanks a bunch.*** Little Bluestem appears blue-green at its base for a short time in the spring but is most striking for its deep-red fall colour that lasts throughout the winter. At a metre in height, though not exactly little, it is the shortest of the Big Four which are all known as “bunch grass” for their habit of growing in clumps.

Identifying Characteristics: Called **Beardgrass** in honour of the white, fluffy beard-like seed tufts, which are eye-catching seen against the backdrop of the mass of wine-coloured grass, it blooms from July to October. The leaves, folded at the midrib, project 45° from the stem, unlike its namesake, Big Bluestem.

Community Roots: The Big Four all have extensive roots which is one of the ways they have adapted to drought, fire and poor soil conditions. Little Bluestem, with 2 metre roots that are twice as deep as the grass is tall, does the best of the Big Four on drier, sandier soils. Important features of all the roots are rhizomes, modifications that both propagate the plant and determine the growth pattern. Rhizomes produce new shoots and roots from their nodes. If nodes are short and close to the plant, they produce a clump or bunch formation and if they are long, they spread and are sod-forming. The Big Four can grow both ways but are more likely to grow in bunches because they have short rhizomes. Given enough time and the right conditions, though, all have the potential to form sod colonies. After one prescribed burn in High Park, an Indian Grass colony more than doubled in size!

Hidden Talents: Little Blue has a hard and soft side. Bundles of stems were used as switches in sweat lodge ceremonies. Pounded and softened, the stems insulated moccasins for winter conditions.

Indian Grass *Sorghastrum nutans*

Plant Personality: ***This proud figure deigns to give passersby a dignified nod of its golden plumed head.*** Indian Grass stands tall even during the winter. In the summer, it is distinguished by its swaying golden-yellow seed-head plumes, 8 to 25 centimetres long.

Identifying Characteristics: The only one of the Big Four to have such a colouration, the golden bloom of Indian Grass occurs from August to September. Up to 2 metres tall, this grass is also notable for the claw-like or "rabbit ear" lobes formed at the junction of the leaf and stem.

Wild Popularity: A vast abundance of wildlife relies on the Big Four for hiding and grazing cover, nesting materials and food. Some have developed exclusive contracts. For example, the *Flexamia reflexa* leafhopper (small leaf-eating insect) will eat nothing but Indian Grass which is also a preferred host for the larvae of the Crossline Skipper Butterfly, of conservation concern in High Park, as is the Delaware Skipper whose larval host is Big Bluestem or Switch Grass. Diverse, non-exclusive moths and skippers (a type of butterfly that somewhat resembles a moth) are attracted to the pollen. Bits of foam often seen on the stems hide the well-named Spittle Bugs which create the bubbly froth for protection. The grass seeds are an especially important winter food source for many birds. Not to be outdone, Muskrats and Voles also seek their share of the Big Four.

Forage Ahead: The highly nutritious Big Four once fed the millions of Bison that roamed the mid-western prairies. Big Bluestem was the favourite because it was large, plentiful and the most palatable all year since it did not get too coarse after going to seed like the other three. In modern times, the grasses of the prairies are either grazed by livestock and wild Deer and Elk or cut for hay as winter feed.

Bottom Left: Crossline Skipper

Switch Grass *Panicum virgatum*

Plant Personality: ***If you want to switch to biofuel, consider Switch Grass.*** This plant is being investigated for its potential as a renewable energy source that hypothetically won't add to greenhouse gasses. As a perennial, unlike corn, it does not need to be planted every year nor is it a *human* food source. Switch Grass produces a large biomass, the amount of plant material necessary to efficiently convert cellulose into ethanol fuel. The natural advantage of its resistance to disease may change if it is treated as a crop and stressed to produce.

Identifying Characteristics: This very upstanding grass, up to 2 metres high, doesn't keel over in the winter like other tall grasses. It is recognizable by a V-shaped cluster of hairs where the leaf attaches to the stem. From July to September, masses of the distinctive open lacy seed heads appear like a haze.

Warm Welcome: The Big Four are "warm season" grasses. They only start to develop when the soil reaches about 12°C in late spring and grow almost entirely during the summer months. This feature is related to their highly evolved method of photosynthesis (C4) that enables the Big Four to thrive in conditions of high temperatures, low moisture and nutrient-poor soil. Switch Grass, a slight exception, thrives best in more fertile and moisture-rich soils where it is most abundant, so of the Big Four, it produces the most biomass, largely in its extensive root system. Theoretically, the carbon released into the atmosphere during fuel burning can be recycled back to the roots during photosynthesis. Fossil fuels have destroyed the balance by continually discharging carbon dioxide into the atmosphere. The build-up of CO_2, causes global warming. The jury is still out on whether biofuels cost more energy to produce than they create and sadly, for the sake of growing biofuel crops, some forests in Ontario have been cleared.

Brief Introduction: Switch Grass has been planted in High Park as an example of a tallgrass species. There is no historical record of Switch Grass occurring in the park. It grows naturally on the Toronto Islands where the sands are less acidic.

Hidden Talents: There is a dark side. The pernicious ability of the prickly seeds to find their way into any clothing has resulted in Switch Grass acquiring nicknames that cannot be mentioned here. Of course, it's just an attempt to disperse seeds.

Canada Wild Rye *Elymus canadensis*

Plant Personality: ***Which one of these grasses is not like the others?*** Canadian Wild Rye is, in many senses, the opposite of the Big Four. It is shorter lived and has a different growth preference, root system and less value as a forage plant. But found in the same environment as the Big Four, it is just as successful in its own way.

Identifiable Characteristics: Often confused with wheat or cultivated rye, this grass has a similar single-stalked seed head blooming July to September but, at a large 15 centimetres or more, it droops, giving rise to the alternate name, **Nodding Wild Rye**. On sunny days, the leaf blades shine a metallic green on the 1 to 1.5 metre plant.

Cold Comfort: This “cool season” grass uses the less evolved (C3) method of photosynthesis which is not as efficient as the “warm season” grasses in times of drought. To counteract that, the plant will go dormant in the summer if it is too hot or too dry. Unlike the Big Four, it grows during cool weather, starting early in the spring, and continues to grow in the fall until the temperature drops below 0°C for an extended period.

Nursing Station: In High Park, Canada Wild Rye is used as a “nurse crop” to fill in planting sites, compete with unwelcome plants and eventually allow other species to dominate due to its short life span.

Community Roots: Its wiry, multiply branched roots, not rhizomatous, are shallow (less than a metre deep) and wide-spread, up to a metre in diameter around the plant. This grass has a particular adaptation to sand dunes and is excellent for erosion control.

Wild Popularity: Many insects feed on the leaves and roots but birds prefer the grass as a cover rather than an important food source.

Incredible Edible: First Nations cooked or ground the seeds (a painstaking endeavour to extract) into flour for bread. Although nutritious as forage for livestock, it is best eaten before the seeds develop when it becomes too coarse for comfort.

Pennsylvania Sedge *Carex pensylvanica*

Plant Personality: ***Penn Sedge has the edge as the wall-to-wall shag carpet of the Black Oak Savannah.*** This plant, the dominant ground cover of the oak savannah, grows in a plush mat formation. The shadier it is, the lusher it becomes and the more it spreads. Sedges, in general, are differentiated from grasses by characteristic three-edged triangular stems, by rough or sharp leaf edges (the scientific name *Carex* is derived from a Greek word meaning "to cut") and by their fondness for hugging the ground, rarely growing higher than half a metre.

Identifying Characteristics: Most sedges like wet conditions but Penn prefers dry, sandy soil. Also known as **Early Sedge**, this "cool season" plant is one of the first to sprout green in the spring. The rusty-coloured flowers, like miniature turrets on slender stems rising above the foliage, bloom in April. In summer, often occurring in pure stands, it looks like a tufted expanse of verdant carpet.

Open Relations: **Hay Sedge** (*Carex siccata*), a close cousin, shares Penn's fondness for drier conditions but prefers the less shady, open areas of the Black Oak Savannah where it dominates in large stands. Make hay while the sun shines: it's a rare treat to see its May bloom and hay-like long, narrow leaves.

Roots in the Community: This sedge thrives on thin layers of soil or organic matter because the roots are only 10 to 13 centimetres deep. The roots are too shallow to survive fire but the plant readily spreads its rhizomes into areas destroyed by burns or clear cutting.

Wild Popularity: Grasshoppers, leafhoppers and caterpillars feed on the leaves, which the resident ducks of High Park use for nesting materials. Mammals and birds, including most types of Sparrows, eat the seeds. Chipmunks disappearing into the undergrowth may well have been swept under the rug of Pennsylvania Sedge.

Hidden Talents: The leaves continue to photosynthesize into winter so Penn Sedge does not die back, prolonging its already established talent for hiding things.

Lower Right: Eastern Chipmunk

Butterfly Milkweed *Asclepias tuberose*

Plant Personality: ***Everyone can breathe easier around the monarch of the wildflowers.*** All Milkweeds are well known for their special relationship with the Monarch Butterfly, *Danus plexippus*. **Butterfly Milkweed** (or **Butterfly-weed**), in particular, has long been recognized for its medicinal properties. Its scientific name derives from *Asclepius*, the Greek god of healing and medicine and from its large roots (*tuberose*), where the active ingredients are found. It was once commonly called **Pleurisy Root** for its effectiveness in treating lung infections and related conditions like bronchitis and asthma.

Identifying Characteristics: This half to 1 metre tall wildflower doesn't go in for ambiguity and confusion. It is easy to recognize by the large, showy clusters of bright orange flowers blooming from June to September. It is unique among milkweeds for having a clear, not milky, sap. The slender seedpods are filled with the typical seeds bearing silky plumes that are irresistibly soft.

Wild Popularity: This wildflower attracts not only Monarchs, but just about every butterfly and flying insect to its high yielding nectar. Some pay a high price. The specialized flower hides nectar and pollen sacs which require a lot of strength to yank off. Smaller insects lose legs or their very lives in the process. Mammals avoid the plant altogether because of the toxic *cardiac glycoside*, the protective chemical in all milkweeds, which is used by the Monarch to its advantage. Its caterpillars feed almost exclusively on milkweeds and the chemical manifests itself in the butterfly exoskeleton. Birds know to steer clear of Monarchs because they are poisonous to them. Viceroy Butterflies, mimicking the appearance of Monarchs, are also avoided. Butterfly Milkweed is not the only plant to have an exclusive contract with an insect and the Monarch is not the only insect to be milkweed specific. At least 1 weevil, 1 fly, 2 bugs and 4 beetles are milkweed specialists, eating various parts of the plant. The Milkweed Ladybird Beetle feeds on the aphid that feeds on the milkweed, and so the chain goes.

Family Intrigue: The ominously named **Dog Strangling Vines** are Milkweed relatives from the wrong side of the tracks. These non-native species (*Vincetoxicum nigrum* and *V. rossicum*) are highly invasive in High Park. To make matters worse, Monarchs sometimes mistake them for Milkweed and lay their eggs on them. The larvae cannot feed from them and die, one of the factors jeopardizing the Monarch population.

Butterfly Milkweed *Asclepias tuberose*

Meanwhile, two harmless, kind kin are enjoying a resurgence in High Park. **Common Milkweed** (*A. syriaca*) has pale pink flowers with a sweet scent and fat prickly seedpods and **Swamp Milkweed** (*A. incarnate*), found in wetlands, has deeper pink blooms and slim seedpods.

Incredible Edible: All parts of the plant were used as food by the First Nations who boiled and changed water several times to dissipate the bitterness of the leaves, roots and buds. The flowers are said to taste like sweet peas. The pods, pickled before the seeds develop, are a delectable treat. Even the nectar was used as a sweetener. *As a food or medicine, caution must be exercised: Butterfly Milkweed may be toxic and poisonous in large amounts.*

Medicinal Uses: First Nations had a special ceremony connected with the collection of this plant and selected a "keeper of the plant" to safeguard one of their most important medicines. Besides lung complaints, it was also used as a remedy for rheumatism, bruises, swellings and lameness. Milkweed sap is a folk remedy for removing warts. Recently, root extracts have proven to be active against tuberculosis cultures.

Hidden Talents: The silky seed fluff isn't just good for flying in the wind to disperse seeds. The floss has excellent insulation qualities, superior to down, for pillow stuffing and boot linings. During WWII, it was used in life jackets. In very modern usage, it is effective at soaking up oil spills in the ocean!

Lower Left: Viceroy Butterfly; Lower Right: Monarch Butterfly

Cup Plant *Silphium perfoliatum*

Plant Personality: ***The Cup Plant leaves plenty of water for wildlife.*** The leaves joining around the stem create a cup-like formation, which fills with rain water and dew. Even on the hottest days, it provides a water supply for wildlife. There is little finer than the sight of Goldfinches sipping from the Cup Plant on a sultry summer day.

Identifying Characteristics: This tall wildflower, 1.5 to 3 metres high, has abundant daisy-like yellow flowers, 10 centimetres across, blooming from July to October. The large leaves have a rough texture with irregularly toothed edges, thus the name, **Ragged Cup**. The leaf pairs are arranged alternately at right angles to each other along the square stem so that when it rains, the water overfilling the top cup runs down to the next and so on. A living fountain, its cups runneth over.

Neighbourhood of Preference: Cup Plant is a companion to the Big Four grasses. Like them, it has a very deep, thick tap root with rhizomes which result in the formation of thick colonies of plants. Although drought tolerant, it prefers not to risk it: Cup Plant likes to live in moister areas near streams. From a mere ten plants in 1976, Cup Plant is now relatively common in High Park due to planting efforts but remains very rare provincially.

Associates: Plant it and they will come. There is a special affinity between Cup Plant and Goldfinches which not only quench their thirst but consume the seeds that they also feed lovingly to their young.

Wild Popularity: The flower nectar is enjoyed by the occasional Hummingbird, Honey Bees, Butterflies like Painted Lady and Monarchs and many other flying insects, which also drink from the cups of water. The height of the plant and the large leaves offer protection during hot days for birds to rest or seek out insects under the shade.

Medicinal Uses: Cup Plant was a First Nations' source for, of all things, chewing gum (with medicinal properties)! The resinous sap of the stem was tapped, set to harden and then chewed to freshen breath. A concoction of the roots, used in a purification ceremony before hunting, also helped ease back and chest pains.

Lower Left: Painted Lady butterfly

Early Goldenrod *Solidago juncea*

Plant Personality: ***This plant is the first to burst on the scene. It is the earliest of the Goldenrods to bloom, starting in July and continuing until September.*** The flowers are not upright like the most common variety, but burst outward like fireworks or a yellow feather duster turned upside down!

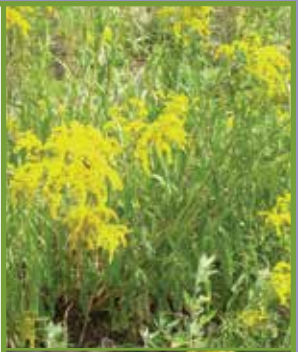
Identifying Characteristics: There are 30 different types of Goldenrods in southern Ontario alone. And 12 in High Park! Besides being first to bloom, the 1 metre high **Early Goldenrod** is the only one with these three features on the same plant: the starburst flowers, smooth, hairless stems and leaves, and an extra set of leaflets where the leaves join the stalk.

Pseudonyms: It has lots of colourful names: **Yellow Tops**, **Sharp-toothed Goldenrod** and **Plume Goldenrod**.

Doppelgangers: There are many look-a-likes because of hybridization: plants can cross-pollinate to create new varieties with different combinations of similar characteristics. It's a way to ensure survival of the species in some shape or form. But it makes identification quite a challenge. Three goldenrods in particular hang out with Early in the drier areas of High Park: **Gray Goldenrod** (*S. nemoralis*: fuzzy stem looks gray, arches over in one direction, blooms late summer and fall, under 20 centimetres high), **Hairy Goldenrod** (*S. hispida*: very fuzzy stems, narrow shape, upright sparse flowers, blooms late summer and fall) and **Silver-rod Goldenrod** (*S. bicolour*: only goldenrod with white flower centres, bloom late summer and fall, large leaves at the base). Good luck.

Wild Popularity: A multitude of insects like Goldenrod nectar. Goldfinches and many Sparrows (Field, Chipping, Fox, Lincoln's and White-throated to name a few) eat the seeds. Groundhogs browse the foliage. Several moth caterpillars have a preference for Goldenrods and their names reflect that association: Goldenrod Gall Moth (in High Park) and Goldenrod Borer Moth (not in High Park). Goldenrod Soldier Beetle also marches by to munch.

Medicinal Uses: In a case of the medicinal plant resembling the disease, an infusion of the flowers was said to treat jaundice. The roots alleviated convulsions and the leaves reduced diarrhea and nausea.



Pale-leaved Sunflower *Helianthus strumosus*

Plant Personality: ***Although seedy by nature and living on the edge, this plant attracts many by its sunny personality.*** The highly nutritious wild sunflower seeds are a staple food for many wild creatures. Bearing typical bright yellow sunflower heads, this plant is found at the sunny edges of woods as its alternate name **Pale-leaved Woodland Sunflower** implies.

Identifying Characteristics: The 1 to 2.5 metre plant blooms from July to September. The leaves' fuzzy undersides give them the "pale" designation. The plant stands tall with a strong, mainly unbranched stem bearing a single flower head.

Doppelgangers: **Woodland Sunflower** (*H. divaricatus*), found in High Park, can be confused with **Pale-leaved**. Woodland forms branches from the stem and may have more than one flower head. The leaves attach flush to the stem while Pale-leaved has well-defined leaf stalks.

Composite Picture: A sunflower is a composite flower: what looks like one large flower is actually many flowers. Each "petal" is really a complete little ray flower and the inner circle is comprised of many tiny disk flowers. Each forms its own seed. All are attached to the head or *receptacle* which is reinforced at the stem with modified leaves called *bracts*. By mimicking one large flower, like an unmistakable target, it attracts many pollinators to ensure that seeds are produced, more plants grow and the species survive.

Wild Popularity: Sunflowers are an immovable feast. A partial list of birds and mammals eating the seeds are: Chickadees, Cardinals, Nuthatches, Goldfinches, Mourning Doves, Redwing Blackbirds, Common Grackles, many Sparrows, plus the ever-present Squirrels. Insects (beetles, weevils, caterpillars of moths and Silvery Checkerspot Butterflies, which are of special conservation concern in High Park) feed on foliage, roots, and stalks. What a generous hostess!

Incredible Edible: The bulky, tuber-like rhizomes, eaten like Jerusalem artichokes, can be sautéd or served "au gratin". *Délicieux!* But we cannot wish anyone *bon appétit* in High Park.

Medicinal Uses: The roots were used against intestinal worms.

Lower Left: Cardinal

Cylindrical Blazing Star *Liatris cylindrical*

Plant Personality: ***This plant is like a torch, indicating the way.*** This wildflower looks like a half metre torch with a flame of purple flowers flaring from a cylindrical receptacle of diamond-shaped, overlapping bracts (specialized leaves). It is also an *Indicator Species* of the Black Oak Savannah and tallgrass prairies.

Identifying Characteristics: **Cylindrical Blazing Star**; the name says it all but the alternate name, **Barrelhead Gayfeather**, does add to the picture. One to 10 composite flowers bloom at the top of the hairless stem from August to October. The grass-like leaves, long at the base, progressively decrease in size as they go higher up the stalk. One of the shortest of the blazing stars, it is also easy to identify by its distinctive, pointed bracts.

Indicator Signal: Cylindrical Blazing Star along with Black Oak, Big Bluestem, Little Bluestem, Indian Grass, Butterfly Milkweed, New Jersey Tea and Showy Tick-trefoil are all Black Oak Savannah *Indicator Species*. If one or more disappear, this is a sign that the ecosystem itself is endangered. As *Indicator Plants*, they prove the presence of sandy, poor soil, drought and frequent ground fires (until recently) because those are the conditions they have adapted to and in which they thrive.

Caution Signal: Cylindrical Blazing Star is very rare. It is illegal to pick rare plants and there are municipal bylaws against picking flowers in High Park but, because of its striking appearance, it is vulnerable. Let's keep this wildflower in the ground as a beacon: there are only two populations remaining in Toronto.

Neighbourhood of Preference: This plant cannot compete on a level playing field with tall aggressive plants. It has found its niche on sunny hills and slopes with poor, dry soil.

Wild Popularity: The usual flying suspects are attracted to the flower, like moths to a flame, literally. The rare Glorious Flower Moth caterpillars enjoy the flowers for dinner and the seed capsules for dessert but their visits are infrequent due to declining numbers. Groundhogs will consume all parts of the plant. Voles eat the root corms which First Nations regarded as a last resort food to prevent starvation.

Lower Right: Groundhog

Sky-blue Aster *Aster oolentangiensis*

Plant Personality: ***This late bloomer might give you the blues but in a good way.*** This is an exceptionally beautiful wildflower, bearing, for its size, a huge number of flowers of the most brilliant blue surrounding yellow disks. It's all the more extraordinary for its late bloom, starting in August when many other plants are finishing. Continuing through October the plant injects a welcome bright blue hue in the landscape.

Identifying Characteristics: This small plant, 45 to 90 centimetres, has a single stalk branching only for the mass of flower stalks, supporting as many as 25 flowers, half a centimetre in diameter. Sky-blue is distinguished from other Asters by the leaves, which are arrow-shaped and feel like sandpaper.

Doppelgangers: **Large-leaved Aster** (*A. macrophyllus*) has similar blue flowers but is differentiated by its, yes, larger leaves and it is more likely to occur in woodland areas. Both species have multiplied in High Park since the introduction of prescribed burns and the reduction in mowing.

Family Members: As its name suggests, Sky-blue is a member of the Aster Family (*Asteraceae*), the second largest classification of flowering plants. Half the wildflowers depicted in this guide are Aster relatives: Sky-blue Aster, Pale-leaved Sunflower, Cup Plant, Cylindrical Blazing Star and Early Goldenrod. Common characteristics include composite flowers, the ability to grow in dry, open spaces and pollination by insects rather than wind. Aster Family is also known as Daisy, Composite or Sunflower Family. (The Figwort, Dogbane and Bellflower Families are represented by Butterfly Milkweeds, Hairy Beardtongues and Harebells respectively.)

Wild Popularity: The caterpillars of Northern Crescent and Pearl Crescent Butterflies rely on Sky-blue and other members of the Aster family. Many other butterflies, moths and bees, like Green Metallic, feed on the nectar and pollen. Any mammals hanging around the plant might just be admiring the flowers because the foliage has low food value.

Lower Left: Silvery Checkerspot Butterfly

Showy Tick-Trefoil *Desmodium canadense*

Plant Personality: ***The sight of this plant will stick with you for a long time.*** This pretty plant has a profusion of pink or purple pea-like flowers, the largest and showiest display of all the tick-trefoils. The fruits, which look like flattened pea pods with 3 to 5 segments, have hundreds of tiny hooks that stick to anything passing by, such as fur and pant legs.

Identifying Characteristics: "Trefoil" of the name refers to the three clover-like leaflets of the plant, which is 1 to 2 metres tall until it flops over when the seeds are ripe. The bloom, especially attractive when the plant occurs in colonies, appears from June to July.

Pseudonyms: **Beggars' Lice** and **Sticktights** are appropriately descriptive.

Tricky Sticky Tick-Trefoil: This wildflower is always up to tricks. When an insect lands on the flower to retrieve nectar, the petals actively close on the creature which is released only after the plant forcibly shoots pollen on it. The eventual post-pollination seed pod spreads to new locales by hitchhiking on whatever it sticks to. The seed pod is loosely attached to the plant so that it can easily let go and the segments of the pod also readily separate as an extra guarantee. And for final insurance, the plant purposely sags down, all the better to catch on short mammals, cotton socks and shoe laces.

Wild Popularity: As a member of the Legume Family, it is a nutritious wildlife vegetable, high in protein for Mice, Squirrels, Chipmunks, Skunks, Raccoons, Groundhogs and Foxes. Detrimentally, the stem is very palatable and too much nibbling structurally weakens the plant. The nectar is loved by bumblebees and butterflies including Eastern Tailed-Blue and Northern Cloudywing whose caterpillars feed on the plant. Both butterfly species are very "common", meaning not that they are ill-mannered toward their host, but found in healthy numbers.

Lower Left: Eastern Tailed-Blue Butterfly

Wild Lupine *Lupinis perennis*

Plant Personality: ***This wildflower is not just a pretty face; it will throw you for a lupine by how helpful it is.*** The blooming of the Wild Lupines in May and June is a sight to behold. Many come to High Park just to admire and savour the profusion of purple flowers with the honey-like fragrance. The expansion and spread of Wild Lupines is one of the most successful restoration projects in High Park. And the plant is excellent for the soil. But it does throw its seed away. The seed pod, one side facing the sun, dries unevenly which forces the pod to open in an explosion that ejects the seeds a metre or so away. Another sight to behold!

Identifying Characteristics: Wild Lupines, 30 centimetres tall, prefer the gaps in the tree canopy and thrive in the full sun, preferably on a slight slope. The profusion of pea-like flowers most often ranges from purple to blue but can be white as well.

Fixer-Upper: Wild Lupines got a bad rap. Because they are so often found on sterile soil, it was assumed that the Lupines caused the depletion by "wolfing" all the nutrients. So it was named after the Latin word for wolf, lupus. In reality, Lupines enhance the soil through nitrogen fixation. Like all members of the Legume Family, Lupine has a symbiotic relationship with bacteria that form nodules on the roots. In return for food (plant sugars and starches), the bacteria does the work in capturing nitrogen from the atmosphere and transferring it back to earth. Not only do Lupines benefit, but so do any nearby plants.

Pseudonym: It's nicknamed **Sundial Lupine** because the leaves turn in the sun's direction throughout the day.

Arts and Culture: Great stretches of Wild Lupines were once common in Black Oak Savannahs when ground fires were a frequent occurrence. High Park is fortunate to have a remnant of what has become a rare sight. Prescribed burns have successfully increased the size of the Lupines and number of seeds produced. Lupines develop slowly in colonies but once established are persistent and long-lived. Otherwise, they are patient creatures that can germinate the same summer the seeds are sown (or thrown, rather) or bide their time for up to three years. The plant, which flowers in the second year, may decide not to sprout at all in bad years.

Wild Lupine *Lupinis perennis*

Wild Popularity: When Wild Lupine numbers started to decline, so did those who relied upon them and other legumes. You could ask the dazzling little Karner Blue Butterfly, if it weren't extirpated, which means almost extinct. Last seen in High Park in 1926, its caterpillar depended exclusively on Wild Lupines which made sense during the thousands of years when the wildflowers were abundant. In a mere 100 years, the Lupine numbers declined so drastically that it is now considered rare and Karners have disappeared for lack of enough hosts. Unendangered honey bees, beetles, ants and tiny-winged thrips help pollinate the plant.

Incredible Edible: Maybe or maybe not. The seeds of some lupines are poisonous and some are not and it's hard to distinguish the difference. If safe, the somewhat bitter seed pod, cooked, is used like its relative, the bean. But really, for safety reasons, don't risk it.

Medicinal Uses: First Nations drank a tea from the leaves to fight nausea and haemorrhaging.

Harebell *Campanula rotundifolia*

Plant Personality: ***Looking very innocent with its fairy bonnet flowers, this plant is quite the mover and shaker.*** That gentle swaying of the pale blue bell-shaped flowers is a very determined motion: it acts likes a pepper shaker to spew seeds. Harebell, with its tissue-paper thin flowers on hair-like stalks, looks fragile but is very hardy: it spreads opportunistically by rhizomes so wherever it appears, it grows in masses.

Identifying Characteristics: Although small (15 to 30 centimetres) with only one flower per plant, Harebell, aka **Blue Bell** and **Lady's Thimble**, has a huge impact by sheer numbers and its long blooming season from June to October. Although uncommonly beautiful, it is still relatively uncommon in High Park. The scientific name campanula refers to the bell-shape of the flowers, which also act as umbrellas to protect the inner parts from rain and rotundifolia denotes the round-shaped leaves which disappear upon bloom.

Sex Lives of Plants: The two main ways that a plant reproduces are: sexually by seeds produced from the pollination of male (stamen) and female (pistils) parts of a flower - and - asexually by vegetative means from stem or root modifications. Plants grown from seed are genetically different from the parents. Plants propagated from the nodes of rhizomes, stolons, runners or suckers are clones of the parent and often occur in colonies. Sexual reproduction ensures survival of the species and vegetative propagation, the survival of the plant.

Wild Popularity: This little wildflower keeps to itself. Except for some small pollinating bees, it is not very popular. The seeds are too minute to interest birds and the foliage, only around a short time, is of limited food value.

Medicinal and Other Uses: First Nations used an infusion of the roots to treat earaches, so that ears might become, ahem, sound as a bell.

Hidden Talents: Harebell's tiny, light seeds float in water, which is the dispersal method when it grows near streams!

Hairy Beardtongue *Penstemon hirsutus*

Plant Personality: ***Fierce of name, fierce of face, fiercely sticking its tongue out; all it wants to do is powder your nose (if you're a bee).*** "Hairy" refers to the stem but can apply to the petals and that tongue. Looked straight on, the flower is like a face with a beard below a wide-open mouth with a you-know-what sticking out from a set of lips. From the side, the purple and white bloom is trumpet-shaped. Either way, the convoluted flower ensures that any insect it goes face to face with is going to get a face full of pollen. The alternate name, **Eastern Penstemon**, is far too staid for this little character.

Identifying Characteristics: The bloom, from June to July, is especially impressive when the flowers, born on loose spikes, occur in masses. The plant, about 30 centimetres in height, is the shortest of all the Penstemons, which is Latin for 5th stamen, the hairy tongue itself.

Welcome Back: Hairy Beardtongue was re-introduced into High Park. Even though there are no historical records, it is assumed that it was once in the park because it occurs in the nearby Humber Valley.

Relatives: They are all a group of funny faces, with descriptive names like **Snapdragon**, **Monkeyflower**, **Blue-eyed Mary**, **Butter-and-eggs** and **Paintbrush**.

Flower Flour: Flowers are all about the pollination. Plants go to great lengths to produce flowers that attract pollinators. Composite flowers are hard-to-miss targets. Butterfly Milkweed has abundant nectar (just another ruse to attract attention) and a contraption to ensure pollen follows the insect. Showy Tick-trefoil purposefully closes around the insect. Hairy Beardtongue has such a complex flower: the tongue flap forces an insect into a tunnel, pinched in at the crucial spot so an insect can't help but carry off that floury pollen. So there.

Wild Popularity: This wildflower hosts caterpillars, and draws many butterflies and moths to the siren call of its trumpet flower. It attracts Ruby-throated Hummingbirds whose long beak is well suited to the tube-like flower. But not in High Park: the flowers are not blooming when the birds pass through during migration.

Medicinal Uses: Aptly, the roots were used to cure toothaches.

Environmental Stewardship: Volunteering

Environmental Stewardship

Environmental stewardship is the responsibility to take care of our natural resources to ensure that they are sustainably managed for current and future generations. Stewardship of the environment can include recycling, conservation, regeneration, and restoration. Stewardship is an ethic whereby citizens participate in the careful and responsible management of air, land, water and biodiversity to ensure healthy ecosystems for present and future generations.

Goals of the High Park Volunteer Stewardship Program

The goal of the High Park Volunteer Stewardship Program is to enable and empower community members to participate fully in the work of environmental stewardship as it applies to the protection of the natural environment of High Park. In practical terms this means assisting the City staff with their management plan, helping increase the biodiversity of native plants in private gardens and public parks in Toronto, participating in community groups and meetings relating to issues in High Park, and collaborating with other environmental organizations when appropriate.

We have planted thousands of native plants within the park. Their progress is monitored and best practices guidelines are being developed based on the results. (Some plants like the Wild Lupine seem to grow best from seed while others work well as transplants. It may be wishful thinking, but we like to think that if we can generate enough Lupines we can even re-establish the Karner Blue Butterfly, not seen in Ontario since 1991.

Upper Right: Oak Seedling; Lower Right: Transplanting native plants

The High Park VSP has also taken on the task of educating the public about, and encouraging, the use of native plants beyond Park borders. In the local community, this has the effect of extending the Park as a wildlife corridor, by providing nectar sources for butterflies and other insects, seed for birds, and so on. This increases the stability of the Park by making it less of a bio-island, because there is a critical mass of native plant habitat for birds, pollinators and other creatures in the surrounding neighbourhoods.

To further extend the use of native plants beyond the Park's boundaries, Native Plant Sales are held in the spring and fall. They educate the public to the use and propagation of native plants in an urban landscape, and extend the use of these plants as they are taken home and planted in a wide variety of gardens all over the city. We hope that our native plant sales will grow, thereby encouraging the general public even more to include these plants in their own gardens and neighbourhoods.

Other VSP activities include planting, weeding, watering, presentations, field trips, and regular two-hour Sunday "events" during which initiatives like cutting back of invasive species such as buckthorn are undertaken.

The VSP has also taken on stewardship of the Adopt-a-Plot program (launched in 1990) which allows individuals or groups of volunteers to adopt and maintain a designated area in the Park using native plants obtained from the Native Plant Nursery at the High Park Greenhouses, through an arrangement between the greenhouses and the VSP. The aim is to help restore the Adopt-a-Plot sites.

In 2000, the VSP established the Boulevard Beds as native plant showcases. Located on the perimeter of the parking lot at the Grenadier Café and Teahouse, these Boulevard Beds are intended to educate the public on the use of native plants in landscaping and to provide easy to spot examples of the plants of the adjacent Black Oak savannah ecosystem now being restored.

Left: Boulevard Beds

Accomplishments

The areas restored with the involvement of the VSP are now available for the public to discover and appreciate. Our main restoration areas are the Tablelands to the east of the All-Star Café, and adjacent to the Boulevard beds in front of the parking lot of the Grenadier Café). The areas are planted based on very strict guidelines from the management plan. It is important to water for the first year and during droughts, and to remove the invasive species on an ongoing basis. This is not a “let nature take its course” type of activity because the invasives would win since they have no natural predators. Although savannah plants are very hardy and can survive a drought, they do need some assistance. The trees are also under a lot of stress due to the lack of water and excessive heat in recent years.

We hope that our accomplishments will encourage other citizens’ group to undertake projects in their own areas using our work as an example of what can be done when citizens and government work cooperatively. We also are proud that we (and HPCAC) have made the natural environment as important as the recreational facilities in the park itself when any development issues are being discussed.

Call for volunteers

We are always looking for people who would like to help with our work. There are many levels of volunteering from casual (showing up for sessions when you want to) to helping organize the hands-on and educational events, to participating on committees. Volunteers have been, and continue to be, a key part of such projects as maintaining the woodland area near Bloor St., and the main tracts of savannah; helping with the Boulevard Beds (demonstration site); helping with invasive species removal and prescribed burns; working on trail management and Black Oak Regeneration; helping with native plant sales; and participating in educational sessions on a variety of environmental issues.

There is a volunteer signup form on our website: www.highpark.org

Sharon Lovett
Co-Chair, Volunteer Stewardship Program

Upper Left: Planting behind the All-Star Cafe

Upper Left: Native plant education; Upper Right: Protecting oak seedlings; Lower Left: Watering native plantings; Lower Right: Planting event

Upper Left: Aerial view of the High Park Tablelands, looking west; Lower Left: Black Oak Savannah; Right: Aerial view of High Park looking north

Restoration: Challenges

Challenges

The main challenges facing environmental volunteers are both attitudinal and logistic.

Native plants are not regarded by the public in the same way as the horticultural “garden” plants. Generally they bloom for a shorter period, are not as “lush” and are often tall. This is especially true for grasses. Fallen logs left to decompose for habitat creation may appear “messy” or “weedy” to those who want gardens to be neat and tidy. As their importance in sustaining the birds, pollinators and wildlife that depend on them becomes understood, this attitude is changing.

Invasive plants and insects are a very real threat to the health of all natural environments, not just the Black Oak savannah. Most of our work in the summer is spent removing plants like European Buckthorn, Himalayan Balsam, Dog-strangling Vine, Garlic Mustard, etc. from the restoration areas. We need to increase our ability to recognize these invasives in the early stages of their growth to inhibit their propagation.

Other challenges and opportunities:

- Increasing the greenhouse space and native plant specialists available. High Park supplies many plants of all types to all City of Toronto parks.

Upper Right: Himalayan Balsam; Lower Right: Cutting Buckthorn

- The Volunteer Stewardship Program spring plant sales are very successful and the demand for native plants is greater than our ability to provide them. We encourage people to attend the fall sale and to plant in early September as well.
- As summers grow hotter and dryer the established plants can survive but watering areas that are newly planted during the first season is difficult.
- Creating satisfying tasks that relatively unskilled volunteers can undertake within a 2 to 3 hour session.
- Accommodating requests from volunteer groups for sessions during business hours, when city staff and volunteer leaders are not available.
- Expanding the core group of volunteers who regularly participate in the hands-on and educational sessions.
- Creating stronger alliances with other stewardship groups through cross-advertising of events, networking and information sharing.
- Finding special project leaders and volunteers for trail and signage projects; to deliver presentations during the winter sessions; organize field trips; create resource materials; write articles for the media; and educate the public in appreciating the Park's natural beauty and importance.

Sharon Lovett
Volunteer Stewardship Program

Upper Right: Native Plant Sale; Lower Right: Native Plants for sale

Volunteer Voices

Dagmar Baur

Dagmar Baur, a vital force in the native plant and community garden movement, is winner of numerous awards for her garden and restoration work in Toronto. Known for her resolute spirit and ability to aid and inspire others, Dagmar was a founding member in the group that became the VSP.

On walking in the park in winter:

On sunny days the winter sun glows pale through the trees and I enjoy the textured silver and black of the trunks, the red of dogwood, the gold of dried grasses. Last Sunday I saw and heard crows over-head. They were scolding a hawk that was dodging them hither and yon. It provided a lesson on the effectiveness of group strategy.

On volunteering:

We are conspiring and aspiring to transform High Park to its former glory. We are saving the Black Oak Savannah! We are bringing back the lupines and the Karner Blue butterfly, replacing concrete with greenery, caring for small forest or prairie plots while monitoring their health – and counting the birds and critters and noting that some of their numbers are increasing and feeling delirious with joy.

On “seed cleaning” in the greenhouse in winter:

The past few Sundays we’ve been discussing the ethics of restoration in the Victorian looking lunchroom where the light is filtered green by leafy, evergreen vines climbing up the windows. At 11:30 we adjourn to cleaning seeds that we gathered in fall. The hard-working Parks staff has prepared our work and it’s important to mention that their levels of commitment are outstanding. They give up Sundays and weekends and work alongside the

Left: Winter in High Park

volunteers… it's two people working together per bench and box of seeds. I choose lupines and Gillian, the VSP prez, brings a beautiful mounted photo of these flowers and places it before me for inspiration. The lupine seeds look like small peas and they're variegated. Some are pale, some are black and some are striped. I can almost tell which ones are viable because some are thin and crumpled looking and others are shiny and round just waiting to burst out into the dreamy blue flowers that will transform the park in spring.

Gillian Smith

Gillian Smith has been a member of the VSP since 1989 and was Co-Chair from 2000 to 2003. Her love of High Park and knowledge of its native plants has enhanced many of our meetings.

On what restoration has done

Restoration shows - in April one of the first wild flowers to appear, close to the ground, is fluffy white Pussytoes, (*Antennaria neglecta*). It can be found across the Tablelands, north of the Grenadier Café. Shortly afterwards the taller, bright as neon, red and yellow Wild Columbine (*Aquilegia canadensis*) blooms. In June flowers grow larger and more colourful when pale blue Harebell (*Campanula rotundifolia*), pink Common Milkweed (*Asclepias syriaca*), bright orange Butterfly Weed (*Asclepias tuberosa*) and masses of bright blue spikes of Wild Lupine (*Lupinus perennis*) come out in force.

These wildflowers were rare around the 1950's, when most of the park was mown flat and sprayed with herbicides to provide grounds for picnickers. Although not allowed to grow tall, mix pollen, spread seed and reproduce as in the current natural areas, some seeds and roots survived that period. Around 1995 High Park Greenhouse staff started collecting wild flower seeds and reproducing them. Wildflowers are difficult to grow, and over the years restoration efforts had some failures, but the many successes can be seen in the changing colours all year long throughout High Park.

I derive great enjoyment from seeing the change from manicured to native over the years.

Right: Gillian Smith

Return of the Lupines by Terry Fahey

Terry Fahey has been a gardener for the City of Toronto, including High Park, since 1990, and was instrumental in collecting seed stock for the propagation of native plants. He continues to work on a variety of projects within the Park.

John Howard had deeded his property "for the free use and enjoyment to the citizens of Toronto", and the boundless meadows of High Park quickly became a popular picnic destination. The meadows on the tablelands were renowned for patches of Wild Lupines, but by 1920, as this first photo shows, the meadows (and their Lupines) are gone and the area is visibly maintained as mown turf used for picnics.

In 1988 The High Park Forest Working Plan proposed that "The Natural Environment Zone, outlined for the centre of the park, would serve as an excellent connector. This area of the park once supported an extensive savannah. Some of the old open grown oaks from this savannah still remain amongst the exotic trees which have been planted over the years. The techniques used to successfully restore savannah in the critical areas could be applied to expand savannah onto this connector site".

In this 1990 photo, the tablelands are now part of the larger "Natural Environment Zone", regular mowing has been suspended (and the area is still being used for picnics).

1991 was the year I became actively involved, excited at the prospect of restoring ecological integrity, to free the savannah and in particular explore "savannah aesthetics", to restore the pre-settlement landscape,

Upper Right: The Tablelands, 1920; Lower Right: Same spot, 1990

enabling a renewed sense of this place. Management was supportive of our participatory hands-on, interactive approach with the High Park community.

Whenever we (Solomon “Propagator” Boye and I - I wasn’t alone) would pass by the Tablelands, on our frequent botanizing forays, we would kick about in the sea of introduced fescue for signs of savannah re-emergence. In June of ‘92, mostly in the western portion of the tablelands, we encountered maybe a half dozen sporadic clumps of Big Bluestem Grass, a small pocket of Sand-bank Sedge, a small colony of Nut-Grass (again maybe a half dozen), and some Sand Dropseed on Hawk-hill. According to Steve Varga’s Inventory List these were all savannah species that had not been recently recorded in the tablelands. We continued to monitor for emerging species. In the fall we began harvesting small quantities of mostly savannah species like Big and Little Bluestem Grass, Indian Grass, Wild Bergamot, Sky-Blue Aster ,and Bush Clover, all sourced from the park (about 20 species in total), and commenced propagation trials at the greenhouses.

In the late spring of 1993, Solomon and I collected Lupine seed from plot M, west of West Rd., sowing the green ones immediately and in about two weeks, this first batch was planted on the hill in front of the greenhouse, where they successfully established after only one or two waterings.

In 1994, Lupines were re-introduced in the tablelands, and bloomed the following spring. The Lupines had come home after 75 years of absence.

Lower Left: Wild Lupines in High Park, 2005; Lower Right: Wild Lupines in High Park, 1918

Volunteering for Adopt-a-Plot

A Restoration Story

This area of the Park, commonly referred to as the Tablelands, consists of wooded areas on the east and west borders, a limited number of original oak trees in the centre, and a number of Norway Maples. The non-wooded areas had been cleared to create picnic areas, planted with non-native grasses and mowed regularly. As these picnic areas were abandoned, the area was allowed to "go wild" resulting in primarily goldenrod and other common native and non-native flowers, grasses and shrubs beginning to regenerate in the open areas.

With assistance from City of Toronto staff, volunteer plotholders take responsibility for restoring and monitoring of their assigned plots. Care of an adopted plot includes:

- increasing diversity by removing invasive exotics to prevent a monoculture from forming, and by planting different native plants;
- keeping the plot litter free;
- making a plan and keeping records of vegetation on the plot.

A variety of tools and hoses are available for the volunteers to tend their plots. Each spring the City of Toronto greenhouse staff identify native plants that are available for planting and the volunteers place orders to carry out their plans.

One of the most striking results of these efforts is a new generation of oaks that is springing up across the Tablelands as a result of the planting of hundreds of acorns by volunteers.

Right: Adopt-a-plot wildflowers

Also noteworthy is the spread of Lupines that were reintroduced on the plots and are now propagating through their own distribution of seeds. Other successful plantings have included Thimbleweed, Butterfly Weed, New England and Sky-blue Asters, Wild Columbine, Woodland Sunflowers, Cylindric Blazing Star, Foxglove and Hairy Beardtongue, Blue-eyed Grass, and several varieties of Goldenrod.

Native grasses have also been planted to replace the lawn grass left over from the picnic era, including Canada Wild Rye, Wood Rush, Little Bluestem, Merrit-Fernaldi Sedge, Bottlebrush Grass, Indian Grass and Big Bluestem. Shrubs including New Jersey Tea, Shrubby St. John's Wort and Smooth Rose have also made a comeback.

The struggle to hold back aggressive invasive plants requires constant vigilance and regular uprooting of such plants as Dog-Strangling Vine, Buckthorn, White Poplar and Tall White Clover.

People walking the paths of the Tablelands will notice a diverse variety of flowers and tall grasses during the various seasons, but the "natural" approach to restoration masks the fact that these native species are reclaiming the Park with a helping hand from Adopt-a-Plot volunteers.

Les Babbage has been an active volunteer in the VSP for the past 10 years. He has worked on restoration of a section of the High Park tablelands for the past five years and coordinated the Adopt-a-Plot program from 2004 to 2007.

Lower Left: Adopt-a-plots in spring; Lower Right: Les Babbage in the Adopt-a-Plots

Appendix 1: Rare Plant Ratings

Plant		Status						
Scientific Name	**Common Name**	**Local Rating as per Varga**	**S1 - S3 Provincially Rare**			**R1-R7 Regionally Rare**	**R7-R12 Regionally Uncommon**	**E = Extirpated**
			S1 Extremely Rare	S2 Very Rare	S3 Rare to Uncommon	Indicates number of Toronto places species was recorded	Indicates number of places species was recorded	Extirpated within the City of Toronto
Amelanchier stolonifera	Low Serviceberry	Locally Rare*				R3		
Andropogon gerardii	Big Bluestem Grass	Locally Rare				R7		
Ascelpias tuberosa	Butterfly Milkweed	Locally Rare, historic 1						E (planted in High Park)
Ceanothus americanus	New Jersey Tea	Locally Rare 2				R3		
Elymus canadensis	Canada Wild Rye	Locally Rare, historic				R6		
Helianthus strumosus	Pale-leaved Sunflower	Locally Rare*				R4		
Liatris cylindracea	Cylindrical Blazing Star	Locally Rare 3			S3	R1		
Lupinus perennis	Wild Lupine	Locally Rare 4			S3	R2		
Quercus velutina	Black Oak	Locally Rare 5				R5		
Rosa blanda	Smooth Rose	Common*					X	
Rubus flagellaris	Northern Dewberry	Locally Rare				R4		
Salix humilis	Upland Willow	Locally Rare				R3		
Sassafras albidum	Sassafras	Locally Rare 6				R5		

Schizachyrium scoparus	Little Bluestem	Locally Rare				R2		
Silphium perfolatium	Cup Plant	Locally Rare 7		S2		R4		
Solidago juncea	Early Goldenrod	Common					X	
Sorgastrum nutans	Indian Grass	Locally Rare				R2		
Vacciniium pallidum	Dryland Blueberry	Locally Rare				R3		

Aster oolentangiensis	Sky-blue Aster	Locally Rare 8
Campanula rotundifolia	Harebell	Locally Rare**
Carex pensylvanica	Pennsylvania Sedge	Common
Desmodium canadense	Showy Tick-Trefoil	Common*
Panicum virgatum	Switch Grass	Locally Rare 9
Penstemon hirsutus	Hairy Beardtongue	Locally Rare 10
Quercus alba	White Oak	Common
Quercus rubra	Red Oak	Common

1 Disappeared from High Park in 1941, has been successfully reintroduced but does not exist elsewhere in Toronto

2 Common in High Park Black Oak Savannah but formerly abundant and numbers have declined

3 Very rare and often picked - should be protected with fines against picking

4 Numbers drastically declined from its former abundance but due to burns and lack of mowing numbers have increased recently.

5 Abundant in High Park but the population is aging and strong efforts are underway to increase chances of young saplings reaching maturity.

6 Became abundant due to lack of burns but has been controlled recently by burns and cutting to reduce to numbers historically appropriate to a savannah

7 Planting has increased numbers

8 Numbers have greatly increased in High Park due to prescribed burns and lack of mowing

* Common in High Park Black Oak Savannah

9 Not historically recorded in High Park - Introduced as the fourth member of the Big Four Grasses of the tallgrass prairie

** Uncommon in High Park Black Oak Savannah

10 Introduced and planted in High Park. There are no historical record of its occurrence but very likely was in High Park at one time.

None of the plants mentioned in this Guidebook, nor any in High Park, is listed as Canada Species at Risk in the categories: Vulnerable, Special Concern, Threatened, Endangered, Extirpated or Extinct.

Local Ratings: Varga, S: 2007 High Park Botanical Inventory and Evaluation

Rare Plants Ratings Table compiled and edited by Jane Schmidt

Appendix 2: Sources and Resources

High Park Groups and Programs

Volunteer Groups and Programs – www.highpark.org

- High Park Community Advisory Council
- High Park Initiatives/Friends of High Park
- High Park Nature Centre
- Volunteer Stewardship Program
- Walking Tours
- Children's Events
- Park Watch
- Natural Environment Committee
- Built Environment & Safety Committee
- K-9 Committee

City Programs – www.toronto.ca

- Colborne Lodge
- Children's Garden

City documents:

- Brochure: High Park: Restoring a Jewel of Toronto's Park System
- High Park Woodland and Savannah Management Plan (2002)

Volunteer Stewardship Groups and Resources

- NANPS - North American Native Plant Society - *www.nanps.org*
- LEAF - Local Enhancement & Appreciation of Forests - *www.leaftoronto.org*
- TFN - Toronto Field Naturalists - *www.torontofieldnaturalists.org*
- Planet Friendly - *www.planetfriendly.net*
- World Wildlife Fund Canada - *www.wwf.ca*
- The Evergreen Environmental Foundation - *www.evergreen.ca*
- Evergreen Native Plant database - *www.evergreen.ca/nativeplants*
- Garden Jane (includes organic gardening and permaculture at High Park Children's Garden) - *www.gardenjane.com*
- Ontario Nature *aka* Federation of Ontario Naturalists - *www.ontarionature.org*
- The Nature Conservancy of Canada - *www.natureconservancy.ca*
- We Conserve *and* The Toronto Conservation Action Network- *www.weconserve.ca*

- Humber Arboretum - *www.humberarboretum.on.ca*
- Toronto Parks and Trees Foundation - *www.torontoparksandtrees.org*
- The Nipissing Naturalists Club (book - Species at Risk in the Lake Nipissing Watershed). – *www.nipissing-naturalist.com*
- Ontario Urban Forest Council - *www.oufc.org*
- Canadian Wildlife Federation – *www.cwf-fcf.org*
- Wild About Gardening – Native Plant Encyclopedia - *www.wildaboutgardening.org/en/growing/section4/index.htm*

Savannah Habitat

- Tallgrass Ontario - *www.tallgrassontario.org*
- Alderville Black Oak Savanna - *www.aldervillesavanna.ca*
- Carolinian Canada - *www.carolinian.org*
- Walpole Island Natural Heritage Centre – *www.bkejwanong.com*
- Ojibway Nature Centre and Ojibway Park - *www.ojibway.ca/index/htm*

Government Links

- Toronto Urban Forestry Services - *www.toronto.ca/trees*
- City of Toronto Parks - *www.toronto.ca/parks/parks_gardens/highpark.htm*
- Green Toronto - *www.toronto.ca/greentoronto*
- Environment portal - *www.toronto.ca/environment*
- TRCA - Toronto and Region Conservation Authority- *www.trca.on.ca*
- Rouge Park, map and visitor guide – *www.rougepark.com*

Ontario Ministry of Natural Resources Species at Risk

- *www.mnr.gov.on.ca/mnr/speciesatrisk*

Federal government

- COSEWIC - Canadian Endangered Species Conservation Council - *www.cosewic.gc.ca*
- Environment Canada Ontario Region - *www.ec.gc.ca*
- Stewardship Network of Ontario - *www.stewardshipcentre.on.ca*

Print Resources

Annotated Checklist for High Park and the Surrounding Humber Plain - Steve Varga: Ontario Ministry of Natural Resources, Aurora District 2008

Medicinal Wild Plants of the Prairies. Kelly Kindscher. University Press of Kansas 1992
A Field Guide to Medicinal Plants and Herbs. Steve Foster and James Duke. Houghton Mifflin 2000

Edible Wild Plants and Herbs. Alan M. Cvancara. Ragged Mountain Press 2001
Handbook of Edible Weeds. James Duke. CRC Press 1992

HIGH PARK
Stewards

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Nature