NATURALISTIC LANDSCAPING

WHAT IS NATURALISTIC LANDSCAPING?

It is a way of landscaping that endeavours to restore a natural ecosystem using native plants which in turn will encourage the growth of native animal communities: i.e. landscaping that maximizes native biodiversity on a given site.

WHY THE CHANGE IN APPROACH TO LANDSCAPING?

Traditional landscaping involves:

- the use of insecticides, herbicides and fertilizers
- the use of piped water
- exotic and hybrid plants
- intensive labour
- high cost

Because of the concern for our environment and the high cost of maintaining traditional landscaping, the University of Toronto has adopted an Integrated Pest Management (IPM) program to develop throughout the campus a landscape which will either eliminate or minimize the elements inherent in traditional landscaping: the objective is to achieve a low-maintenance, almost self-sustaining, landscape.

*** As a member of a university that emphasizes the responsibility of all of its members to society, the Department of Zoology has prepared a plan to use the grounds of the Ramsay Wright Zoological Laboratories as an experimental site for the naturalistic landscaping. The proposed plan incorporates "MAPLE-BEECH FOREST" as a model for the landscaping.**

WHY WAS THE MAPLE-BEECH MODEL CHOSEN?

Toronto is situated in an area where, under natural conditions, sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) tend to be the dominant trees. Historical accounts (e.g. documents of surveyors and farmers) support this. Distribution maps of natural vegetation include the city in the "maple-beech forest" region.

The maple-beech ecosystem has evolved over thousands of years, adapting itself to the local light, temperature, soil, climate, pollinators, predators and diseases. Although these conditions have been altered first by the settlement of Europeans who cleared the land for farming and then by the subsequent emergence and development of the city, there still are pockets of healthy maple-beech forest areas in the City of Toronto (e.g. Humber River, Don River). Since the maple-beech forest is optimally adapted to the area, it is a logical choice as a model for the naturalistic landscaping at the experimental site.

The model also complements other naturalistic landscaping such as "prairie," "Carolinian" and "boreal" models that have already been used in other parts of the campus.

WHAT ARE THE PLANS FOR THE EXPERIMENTAL SITE?

As a first step in our landscaping project, plants were rescued from an area designated as a new housing development. These plants were planted in the southeast corner, a southern exposure, of the ground. Three codominant trees were planted: shagbark hickory, American basswood and yellow birch.

The actual task of designing the experimental site has been made into a project assignment for a group of landscape architecture students. Elements of their design will be selected for the final decision of the landscaping.

The Department of Zoology would like to thank the efforts of the following people from the Program in Landscape Architecture.

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WHAT WILL BE GAINED FROM THIS MAPLE-FOREST LANDSCAPE?

- improvement of environment
- provides a relaxing place for people
- provides educational opportunites to the university community and the public

DISTRIBUTION MAP OF THE MAPLE-BEECH FOREST

The map below shows the distribution of the "maple-beech forest."

....-Maple Forest: explanation

To get you familiar with the garden, we'd like to highlight a few plants which, tho' may not be in flower, tell interesting stories:

A. In the fall, **Pokeweed** (***Phytolacca americana***) is identified by its dark purple berries present in drooping clusters.

Recently, the **antiviral properties** of Pokeweed have been investigated. This activity appears to be due to a ribosomal inactivating protein (RIP) type I which cleaves conserved ribosomal RNA sequences, inhibiting protein synthesis.

Warning: All parts of the plant are poisonous, through leaves are eaten as a spring green, after cooking with 2 changes of water (*I wouldn't try it ...*). The plant juice also causes dermatitis. The berry juice was used as a dye by early colonists and used to improve cheap wine (*Like I said, I wouldn't try it ...*).

B. The beautiful and distinctive flower of **Jewelweed** (***Impatiens capensis***) is formed from fused petals and sepals and hangs precariously from a long, narrow pedicel. In order to ensure that **only** bees (pollinators) visit the flower, the nectar is produced by special glands at the tip of the narrow tubular spur. The opening of the flower has a landing platform to accommodate the bees, whose long proboscis (tongue) is just long enough for it to reach the nectar.

As the bee enters the flower, the anthers are situated so that they rub against the back of the bee. A day later, the wilted anther falls off, exposing the receptive stigma. Newly arriving bees, coated with pollen, pollinate the flower.

This arrangement discourages insects which cannot fly or do not have a proboscis long enough to reach the nectar. However, some insects "circumvent the system" by biting a hole in the tip of the spur in order to reach the nectar.

The seed dispersal mechanism of the jewelweed has earned it the nickname of "**touch-me-not**". The seeds are packaged in tight units which explode, scattering seeds, at the slightest touch.

C. Despite being one of the dominant plant groups 300 million years ago, today Horsetails are represented by only one genus, ***Equisetum***, which is present in our garden. A close look shows that the Horsetails have prominent parallel ridges along their stems. You also may notice brownish-black scale-like structures (leaves) pressed against the stem. The internal structure of the stem is largely hollow with many secondary canals, allowing gases to diffuse through.

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D. The garden has three different types of "Solomon's Seal" - all members of the Lily family. **"True" Solomon's Seal** (***Polygonatum biflorum***) gets its name because the rhizome (rootstalk) is jointed and if the leaf stalk breaks away, it leaves a distinctive scar said to resemble the official seal of King Solomon (*Take our word for it* ...). At this time of year, one should be able to recognize this plant by its globular, blue-black berries.

False Solomon's Seal (***Smilacina racemosa***) is differentiated from Solomon's Seal (Polygonatum spp) by their flowers (May-July). The flowers of False Solomon's Seal appear as a small cream-coloured flowers in terminal clusters. True Solomon's Seal has greenish-white, bell-like flowers which hang in pairs from the leaf axils.

One can spot the False Solomon's Seal by its berries which are green, at first, divided with bright red lines and finally become a translucent ruby-red.

Our garden also has **Starry Solomon's Seal** (***Smilacina stellata***) which has up to 20 flowers, each appearing as a dainty white 6-pointed star (~6 mm wide). The berries will appear as black with red stripes, eventually turning dark red.

....-Maple Forest: explanation

To get you familiar with the garden, we'd like to highlight three plants which tho' may not be in flower tell interesting stories:

A. Pokeweed (Phytolacca americana)

In the fall, pokeweed is identified by its dark purple berries present in drooping clusters. Pokeweed has recently "hit" the literature because it contains type I ribosomal inhibitory proteins (RIP) which have been shown to have potent antiviral effects.

Warning: All parts are poisonous, through leaves are eaten as a spring green, after cooking with 2 changes of water (*I wouldn't try it ...*). The plant juice also causes dermatitis. The berry juice was used as dye by early colonists and used to improve cheap wine (*Like I said, I wouldn't try it ...*).

B. Jewelweed (Impatiens capensis)

The beautiful and distinctive flower of this common forest bush is formed from fused petals and sepals and hangs precariously from a long, narrow pedicel. In order to ensure that **only** bees (pollinators) visit the flower, the nectar is produced by special glands at the tip of the narrow tubular spur. The opening of the flower has a landing platform to accommodate the bees, whose long proboscis (tongue) is just long enough for it to reach the nectar.

As the bee enters the flower, the anthers are situated so that they rub against the back of the bee. A day later, the wilted anther falls off exposing the receptive stigma. Newly arriving bees, coated with pollen, pollinate the flower.

This arrangement discourages insects which cannot fly or do not have a proboscis long enough to reach the nectar. However, some insects "circumvent the system" by biting a hole in the tip of the spur in order to reach the nectar.

The seed dispersal mechanism of the jewelweed has earned it the alternate nickname of "touch-me-not". The seeds are packaged in tight units which explode, scattering seeds, at the slightest touch.

C. The garden has three different types of "Solomon's Seal" - all members of the Lily family.

"True" Solomon Seal (Polygonatum biflorum)

Gets its name because the rhizome (rootstalk) is jointed and if the leaf stalk breaks away, it leaves a distinctive scar said to resemble the official seal of King Solomon (*Take our word for it ...*). At this time of year, one should be able to recognize this plant by its globular, blue-black berries,

False Solomon's Seal (Smilacina racemosa)

Differentiated from Solomon's Seal (Polygonatum spp) by their flowers (May-July). The flowers of False Solomon's Seal appear as a small cream-coloured flowers in terminal clusters. True Solomon's Seal has greenish-white, bell-like flowers which hang in pairs from the leaf axils.

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Our garden also has **Starry Solomon's Seal (Smilacina stellata)** which has up to 20 flowers, each appearing as a dainty white 6-pointed star (~6 mm wide). The berries will appear as black with red stripes and eventually blackish-red.