



MEMORANDUM OF AGREEMENT

FROM: Zoology Department Landscape Committee

TO: Design Team, Program of Landscape Architecture, U. of T.

DATE: January 17, 1995

RE: Basic required components of landscape design for Zoology Dept. grounds  
25 Harbord St., Toronto, Ontario.

The five landscape objectives are listed in the appended proposal of May 22/94. Subsequent detailed requirements were listed in correspondence to the Landscape Program on July 15 and Oct. 5, 1994. The Zoo. Dept. Landscape Committee has viewed several times all designs from the Program of Landscape Architecture. As well we have examined numerous outside campus naturalistic landscaping projects and we have now agreed that the following components must be incorporated into our final landscape plan to be submitted to Simcoe Hall for funding:

- 1) The design will incorporate the five landscape objectives of our proposal of May 22, 1994.
- 2) Some earthen berming will be present to maximize micro-climate sites for local biota, to maximize pedestrian viewing, to guide walkers, to minimize salt introduction and noise, to facilitate drainage where desired.
- 3) The project will use only native species of plants as outlined in our proposal.
- 4) Southern Ontario glacial erratic boulders will be sparingly placed as visual accents and as sites of micro-climate.
- 5) Walkways to be meandering, naturalistic in appearance and utilitarian for pedestrian and emergency vehicle access.
- 6) Seating to be discreet and naturalistic in appearance. (cf. Earth Sciences).
- 7) Electrical lighting to be discreet, but effective for public safety. " " .
- 8) The design and planting will encourage wildlife, esp.: bird, mammal, insects.
- 9) Zones A, B, and C should be visually and ecologically integrated. As well the final design will be visually complimentary to the adjoining grounds and buildings, eg.: Robarts Library, Whitney Hall, etcetera.
- 10) A vernal pool or permanent pond will be on site C and serviced by roof run off and rainwater.
- 11) The circular island maple/beech planting with boulders to be retained as integral part of design. Path and border modifications are possible.
- 12) Small nursery to be present on site C. Probably on west side of site.
- 13) Native woody vines to be used against blank walls. Species, wild grape, etc.

# PROPOSAL FOR THE NATURALISTIC LANDSCAPING OF THE ZOOLOGY DEPARTMENT GROUNDS, UNIVERSITY OF TORONTO, 25 HARBORD ST., TORONTO, ONTARIO

*prepared by RWZL Landscape Committee May 22, 1994*

## BACKGROUND

In 1993 the University of Toronto adopted an integrated pest management program, (IPM). The goal of this program is to achieve an ecologically balanced campus within 5 years. A central component of the program is to introduce a campus wide landscape which is pesticide free, low on water usage and less labour intensive - in short an almost self sustaining landscape.

Toward this end, the Chairman of the Zoology Department, struck a Departmental committee in June 1993, to draft and implement a plan to bring the Department's grounds into line with the goals of the (IPM) plan.

As well, in March 1994, the Business Board of U. of T. approved the University Environmental Protection Policy (UEPP), in which the primary emphasis is that all members of the University community have a responsibility to society to minimize impacts on the environment and to conserve and wisely use our natural resources.

The landscaping project can also be viewed in a global context in that Canada is a signatory to an international convention in Rio de Janeiro, that has pledged our country to devise a 'national biodiversity strategy'. Naturalistic landscaping or restoration ecology will maximize biodiversity on a given site.

With the goals of (IPM),(UEPP) and the Earth Summit Conference in Rio, in mind, the RWZL Landscape Committee has prepared this proposal for landscaping the grounds of our Department.

## LANDSCAPE OBJECTIVES

- 1) To implement the goals of (IPM), (UEPP) and the 'national biodiversity strategy'.
- 2) To provide opportunities for the University community and the public to experience and learn about native plant and animal communities.
- 3) To link the landscape with other naturalistic landscapes on campus eg. Earth Sciences Center (prairie, Carolinian and boreal landscapes) and beyond, eg. Rosedale and Nordheimer ravines, Don Valley and Casa Loma grounds, via an island corridor by which birds, insects and pollen may travel.
- 4) To involve the University community and public in the appreciation, implementation and maintenance of the landscape.
- 5) To construct a landscape ecosystem based upon the maple/beech forest model. The landscape design will incorporate accessibility and safety for the public.

## PREPARATION

In the last 10 months members of the Committee have viewed 6 naturalistic landscapes in downtown Toronto, viz: Earth Sciences Center (U. of T.), Ecology Park, Energy Probe, Queen's Park (Macdonald Block), Bay-Adelaide Parkette, and Casa Loma native plant garden. The strengths and weaknesses of each were noted and assessed.

The Committee invited a speaker to address the Department on a similar project undertaken 5 years ago at the University of Waterloo. Larry Lamb the co-ordinator of this landscaping project presented a slide-lecture on the creation of the Robert Starbird Dorney Ecology Garden and provided us with literature on this garden and the Gosling Wildlife Garden at the University of Guelph.

After studying these examples and reviewing the ecological shortcomings of traditional landscaping, with its annual reliance upon synthetic biocides, extra fertilizers, piped water, exotic and hybrid plants, as well as intensive labour and high costs, the Committee recommends an alternate model of landscaping based upon our own bioregional maple/beech forest ecosystem.

## WHICH LANDSCAPE MODEL?

According to Scoggan<sup>1</sup>, Toronto is situated in the Great Lakes-St. Lawrence Forest Floral



Region. Under natural conditions the dominant climax trees in this region tend to be sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) on most mesic, flat sites. The associated species of native trees, shrubs, vines and herbs are documented in Scoggan's *Flora of Canada*. More specific plant and animal inventories are available from wild areas within 2 kilometers of the RWZL. The Toronto Field Naturalists Club has compiled inventories for the Cedarvale Park and Rosedale Ravine.

This floral region, sometimes referred to as the maple/beech forest is especially well known to many of the public and much of the world for its vast and colourful display of spring wildflowers, maple syrup production and later, the brilliant show of fall leaves, especially the maples, ashes, black cherry and birches.

To most of us living in Toronto, the maple/beech woodlot is the quintessential southern Ontario forest, as it represents a sense of place or home base in our memories. It was, in fact, the dominant forest cover in the Toronto region prior to clearing for European agriculture and habitation.

Various historical accounts confirm this forest type to be the natural vegetation in this area prior to settlement by Europeans. In 1851 W.H. Smith recorded the forest he saw in Etobicoke (Metro Toronto).

*The original forest was predominately hardwood and covered the whole watershed. The trees were large and widely spaced and rose to a height of fifty feet or more without a limb. The interior of the woods was dim and cool, with hardly any underbrush, but with a deep covering of duff over the forest floor. On the dry level land, maple with its associate beech, and in some sections basswood, was dominant.*<sup>2</sup>

The maple/beech ecosystem has evolved in the Toronto region over thousands of years and has adapted itself to the ambient light, soils, climate, moisture, diseases, predators and pollinators. With the emergence of the concretized city, all of these factors have been altered, especially air and water quality and quantity. However remnant pockets of maple/beech forest still exist relatively intact and healthy throughout Metro Toronto and such a model still seems optimally adapted to Toronto's level, mesic sites which require landscaping.

## DESCRIPTION OF SITE

The proposed restoration landscaping of the grounds of the Zoology Department, U. of Toronto includes three separate sites abutting three different sides of the building. These are labelled on the attached plan as zone A, zone B and zone C.

### ZONE A

Measures approx. 35m x 67m and has a primarily northern exposure. It is the largest of the three sites, the most visible and the most heavily travelled by pedestrians. The main entrance to the Zoology Dept. is through this site. This should be the first site to be landscaped as it will tell passersby what is happening.

A good number of native trees exist on this site and will serve as foundation plantings for future landscaping. These species are components of the maple/beech model and will compliment ecologically and aesthetically the new landscape. Species to be retained on site are: 4 ironwood trees, 4 groves of serviceberries and a hedge of 22 white cedars. The exotics and non-natives on this site include: 11 Norway maples, 7 crabapples, 3 European birches, 1 black locust and various shrubs. These species are incompatible visually, ecologically and educationally with the maple/beech model and should be phased out as quickly and diplomatically as possible. The method and agenda for exotic species phase-out should be agreeable to all parties concerned.

### ZONE B

Measures approx. 12m x 24m and is the smallest of the 3 sites. It is located at the southwest corner of Zoology and presently contains 2 Bradford pear trees, 1 European beech and 1 Norway maple which is partially diseased. The Norway maple should be removed to allow sufficient moisture and nutrients to become available to subsequent plantings. The massive seedling crop of Norway maples has a smothering effect on most native seedlings and it would be counterproductive to attempt any plantings within the immediate vicinity of this species.<sup>3</sup> As the Bradford pear trees are infertile,

neither seedlings, nor fruit will compete with a native planting. Rather the 'nursing' nature of these trees in providing temperature, moisture and wind amelioration is to be appreciated and retention is warranted. The same holds true for the European beech. These exotic trees could be phased out as the maple/beech ecosystem becomes established.

## ZONE C

Measures approx. 15m x 34m and is the second largest of the three sites. It is located to the southeast of the Zoology building and exists in relative seclusion from vehicular and pedestrian traffic. There are four mature white ash and six mature crabapples on the site. They should all be retained as part of the future landscape. The ashes are a natural part of the maple/beech ecosystem and the crabapples will serve as an effective 'nurse' crop for native plantings. As this site receives considerably more sunlight than zone A, it is advisable to plant tree species from the maple/beech model which are more favourable to increased light levels, viz: basswood, shagbark hickory, yellow birch. This site has considerably potential as a relaxation area with benches, etc. It is more secluded than zones A and B.

## LABOUR

Initial planting of large caliper trees will be by the experienced grounds staff. Subsequent plantings of shrubs, herbs grasses and sedges will be by the RWZL Landscape Committee and volunteers. Future seedlings will be grown in the Zoology greenhouse and transplanted to the site by Zoology staff. An agreement on jobs, costs, agenda, will be worked out among the parties involved.

## COSTS

Approximately \$100,000 should cover the entire cost of the project, with roughly \$25,000 for caliper size trees, \$50,000 (cost contingent upon winning landscape design), for walks, benches, materials and \$10,000 for herbaceous and shrubby underplantings. \$10,000 for education, eg. signage, speakers on ecological restoration, video, brochures. \$5,000 is allotted for incidentals.

## IMPLEMENTATION

- 1) It is the intention of the Committee to implement this proposal in 1994.
- 2) The Committee will present this proposal to the U. of T. Office of the Assistant Vice President (Planning), Ms Elizabeth Sisam, Simcoe Hall, for approval and financing of the project.
- 3) Professor Ed Fife, Chairman of the U. of T. School of Landscape Architecture will be given a copy of this proposal and asked to invite students and staff to submit landscape design plans to the RWZL Landscape Committee. We will seek funds to award a cash prize, for the winning design, to be determined by the Landscape Committee.
- 4) When approval for project is received from the Planning Office, the Committee will immediately strike a detailed agenda for jobs, budget and time frame.
- 5) The Committee will host a meeting to discuss in detail assistance with the project from interested groups. Representatives will be:

Facilities & Services	Scott Olan	978-4744
Landscape Architecture	Ed Fife	978-6788
Metro Parks	Frank Kershaw	233-7472
Toronto Parks	Carol Walker Gayle	392-6641
Facilities & Service	Jack Funk	978-2362
Canadian Wildflower Society	Terry Fahey	466-3255
Botany Dept	Dave Wedin	978-5807
Toronto Field Naturalists	Helen Juhola	968-6255

- 6) Zoology Dept. Audio-Visual staff will document the entire landscaping project on video as an educational tool for other groups on campus and in the community that may be contemplating a



naturalistic landscaping project.

## COMMON PLANT SPECIES OF THE MAPLE/BEECH MODEL TO BE CONSIDERED FOR PLANTING

### Great Lakes-St. Lawrence Forest Floral Region

This region (the greater part of the Canadian Biotic Province of Dice 1943) includes northern New Brunswick, parts of the coastal region of the Gaspé Peninsula, southern Quebec, southern Ontario (except for the Carolinian Floral Region in the extreme south), and the extreme southeastern corner of Manitoba, together with an enclave around Lac Saint-Jean, Quebec, where the topography is strikingly like that of the St. Lawrence and Richelieu River lowlands. Temperatures are moderate but rainfall is generally somewhat less than in the Acadian Forest Floral Region.

Sugar maple (*Acer saccharum*), red maple (*A. rubrum*), striped maple (*A. pensylvanicum*), red oak (*Quercus rubra*), red ash (*Fraxinus pennsylvanica*), black ash (*F. nigra*), American elm (*Ulmus americana*), yellow birch (*Betula lutea*), wire birch (*B. populifolia*), and largetoothed aspen (*Populus grandidentata*) occur in the Gaspé Peninsula (the northeasternmost part of the Region), and beech (*Fagus grandifolia*) just enters the extreme southwestern part of the Peninsula. Red spruce (*Picea rubens*), cottonwood (*Populus deltoides*), bur oak (*Quercus macrocarpa*), white ash (*Fraxinus americana*), butternut (*Juglans cinerea*), and basswood (*Tilia americana*) extend northwards to about the latitude of Quebec City. However, the following drop out at about the latitudes of Ottawa and Montreal, or sooner: black walnut (*Juglans nigra*), shagbark-hickory (*Carya ovata*), bitternut (*C. cordiformis*), white oak (*Quercus alba*), swamp-white oak (*Q. bicolor*), yellow oak (*Q. prinoides*), slippery elm (*Ulmus rubra*), rock elm (*U. thomasi*), hackberry (*Celtis occidentalis*), sweet birch (*Betula lenta*), and blue beech (*Carpinus caroliniana*). Extensive stands of conifers also occur, but chiefly in areas transitional to the Boreal Forest Region. However, the eastern hemlock (*Tsuga canadensis*) and eastern white cedar (*Thuja occidentalis*) have their main distribution in Canada in this region. The following shrubs or small trees occur more or less throughout the region: Canada yew (*Taxus canadensis*), sweet gale (*Myrica gale*), beaked hazel (*Corylus cornuta*), swamp-birch (*Betula pumila*), speckled alder (*Alnus rugosa*), green alder (*A. crispa*), currants and gooseberries (*Ribes*), witch-hazel (*Hamamelis virginiana*), spiraeas (*Spiraea*), juneberries (*Amelanchier*), hawthorns (*Crataegus*), raspberries and blackberries (*Rubus*), wild plum (*Prunus americana*), Canada plum (*P. nigra*), pin-cherry (*P. pensylvanica*), choke-cherry (*P. virginiana*), black cherry (*P. serotina*), prickly ash (*Zanthoxylum americanum*), staghorn-sumac (*Rhus typhina*), mountain-holly (*Nemopanthus mucronata*), climbing bittersweet (*Celastrus scandens*), bladdernut (*Staphylea trifolia*), buckthorn (*Rhamnus alnifolia*), New Jersey tea (*Ceanothus americanus* and *C. ovatus*), leatherwood (*Dirca palustris*), buffalo-berry (*Shepherdia canadensis*), bush-honeysuckle (*Diervilla lonicera*), honeysuckles (*Lonicera*), snowberry (*Symphoricarpos albus*), and viburnums (*Viburnum*).

Consisting chiefly of broad-leaved trees, this region provides too much shade during the summer months for a dense ground cover of smaller plants. However, before the leaves of the trees have expanded in the spring, a remarkably colourful and interesting flora appears. It is composed of plants able to complete their life cycle in the relatively short period of available sunlight before the trees come into full foliage and to store up reserves, chiefly in underground organs such as bulbs, tubers, or rootstocks, for an early start on the next season's growth. Such spring flowers include Jack-in-the-pulpit (*Arisaema atrorubens*), wild ginger (*Asarum canadense*), spring-beauty (*Claytonia caroliniana*), hepaticas (*Hepatica americana* and *H. acutiloba*), blue cohosh (*Caulophyllum thalictroides*), may-apple (*Podophyllum peltatum*), bloodroot (*Sanguinaria canadensis*), Dutchman's breeches (*Dicentra cucullaria*), squirrel-corn (*D. canadensis*), false miterwort (*Tiarella cordifolia*), coolwort (*Mitella diphylla*), barren strawberry (*Waldsteinia fragarioides*), dwarf ginseng (*Panax trifolius*), and several members of the Lily Family such as bellworts (*Uvularia*), dog's-tooth-violet (*Erythronium americanum*), Solomon's-seal (*Polygonatum*), false Solomon's-seal (*Smilacina racemosa*), Indian cucumber-root (*Medeola virginiana*), and trilliums (*trillium*). To people living in the Region, the annual thrill of the first foray into the awakening woods helps to compensate for the bleak winter months. Another attraction of the region is the blaze of colour before leaf-fall in the autumn which transforms the landscape into one of the most breath-taking spectacles in the world. Mixed with the greens of the conifers are the yellows, reds and scarlets of the maples and the browns of the oaks and beeches — a favourite landscape of the artist.<sup>4</sup>

## RWZL LANDSCAPE COMMITTEE 1993-94

Rufus Churcher	978-3511
Jim Hodgins (Chair)	978-5246
Janet Mannone	978-8879
Steve Smith	978-5303
Pat Williams	978-3473
Ann Zimmerman	978-3475

## CONSULTANTS

Ed Fife	Landscape Architecture	978-6788
Phil Garment	Facilities & Services	978-2314
Nancy Dengler	Arbor Committee	978- <sup>3</sup> 536
Ron Pansino	Fac. & Services	978-2329
Scott Oian	Fac. & Services	978-4744
Jack Funk	Fac. & Services	978-2362
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Steve Cooper	Zoology audio/visual	978-6450
Helen Juhola	Toronto Field Naturalists	968-6255
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Niki Vecchiola	volunteer	83 Roseneath Gardens, Toronto M6C 3X5

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OPRIG

## REFERENCES

1. Scoggan, H.J. 1978. *Flora of Canada*. National Museum of Natural Sciences, Ottawa. pp. 29-30.
2. Allen, R.T. 1970. *The Illustrated Natural History of Canada / The Great Lakes*. Natural Science of Canada, Ltd. Toronto. p. 69.
3. Webb, S.L. and C.K. Kaunzinger. 1993. Biological invasion of the Drew University (New Jersey) Forest Preserve by Norway maple *Acer platanoides* L. *Bulletin of the Torrey Botanical Club* 120: 343-349.
4. Scoggan, H.J. 1978. *Flora of Canada*. pp. 29-30.

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ZONE A

ZONE B

