The Ecology of the Draper Site

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The Draper site is located on the edge of the valley carved by the west branch of Duffin Creek as it flows from the heights of the Oak Ridges moraine to the north shore of Lake Ontario, a distance of some twenty miles. In terms of political boundaries, it is found within Pickering Tp., Ontario County; in terms of ecological boundaries it is found within an area of mixed deciduous and coniferous forest, of Grey-Brown Podsolic soils, and of a climate moderated by Lake Ontario. It is also an area which has been greatly altered – in appearance, in the distribution of the natural faunas and floras, in conditions of microclimate – by the activities of settlers, especially since the start of the 19th century.

These changes have not extended to the macroclimate of the township. Macroclimate is largely uninfluenced by such small-scale activities, and it is as a result of the interplay of broader atmospheric factors that the climate today closely resembles that of 500 years ago, or so it is thought.

Table 1 provides a summary of the climatic conditions in the vicinity of the Draper site. For comparative purposes, it provides similar data for historic Huronia, described as an area centring around latitude 44.5°W, extending 20 to 25 leagues east–west and 7 to 8 leagues north–south (Tooker 1968: 11–12). As can be seen, temperatures are higher and the growing season is longer in Pickering Tp., but precipitation is generally greater in Huronia – an advantage when one considers the preference of the Huron for light, sandy and thus droughty soils.

Table 1 Climatic comparison of Pickering Tp. and 'Huronia' (Weber & Hoffman N.D. 13–20)

	Pickering Tp.	Huronia
annual mean daily temp.	44–46°F	42–44°F
mean daily July temp.	68–70°F	64–68°F
mean annual growing degree days	3400–3600	2800–3200
start of growing season (av. temp. >42°F)	April 10–15	April 15–20
mean date of 1st fall occurrence of 32°F	Oct. 5–15	Sept. 20–Oct.10
mean annual precip.	32 in.	35–40 in.
mean May–Sept. precip.	14–15 in.	14–16 in.

The soils in both Huronia and Pickering Tp. belong largely to the Grey-Brown Podsolic Great Group. In the latter area, the parent materials are predominantly glacial tills derived from the soft calcarous bedrock: the black utica shale.

Converging in the immediate vicinity of the Draper site are three loamy soils, in addition to the alluvial bottomlands of the creek (see Map p. 49). To the north and east is the Peel Clay Loam, a stone-free, imperfectly drained but fertile soil developed from lacustrine deposits overlying clay till. It has been described as "one of the best agricultural soils in the county" (Olding et al, 1973: 45), but it is fairly heavy. Thus, employing basic horticultural technology, it is likely that the Huron would prefer to use the other two soils found in the area, which are also loams and which are both lighter than the Peel.

To the south and east is the Brighton Sandy Loam, derived from outwash sands and gravels. It is light and well-drained, tending to be droughty in summer – specifically the type of soil which the Huron were purported to prefer. This soil is, however, low in organic material and its fertility is rapidly exhausted, which would, in the case of Huronian agriculture, necessitate a shift to other soils in the area within a few years of initial clearage.

This shift would probably be to the third soil of extensive distribution – the Milliken Loam, a fertile, well-drained, somewhat heavy soil derived from calcareous till which lies to the west of the site. It is possible that this soil type was tilled from the time of initial settlement, or if not, that it subsequently was of prime importance to the Hurons of the Draper site, since the settlement is located on the west side of the creek adjacent to the area covered by this soil. Indeed, the White site is located on Milliken loam.

The long growing season in this part of Ontario would compensate for the tendency of this rather heavy soil to retain water and thus resist warming in the spring, a factor which can be crucial to maize agriculture.

The soils and climate support a natural vegetation classified by Braun (1950) as the Great Lakes section of the Hemlock-White Pine-Northern Hardwoods region, Great Lakes–St. Lawrence Division. This forest region extends from northern Minnesota and south-eastern Manitoba through the upper Great Lakes area and east into New-

foundland. It is comprised of a number of different communities, the exact composition of which depends upon edaphic and microclimatic conditions, but which contain species common to both the Beech-maple forests found to the south, and the more northern boreal forest.

A climax forest in the area of the Draper site would consist of broad-leaved species such as sugar maple, red maple, basswood, and white elm with lesser amounts of beech, oak, ash, hickory and butternut. Common conifers include eastern hemlock, and white cedar with some fir and white pine in some locations. The vegetation of the understory and ground layers would be diverse and abundant, much more so than under a canopy dominated by conifers.

The present vegetation cover in Pickering Township is not climactic in most areas. Agricultural and lumbering activities, and urban expansion have greatly reduced the area covered by the natural vegetation, which is in many locations confined to stream valleys and woodlots, and which is generally in a disturbed, successional state. Despite such modifications, and the spread of introduced and ruderal species, there have been no, or at least few, actual eliminations of plant species from Ontario.

Thus a survey of the species found on the Draper site consists largely of species present at the time of the prehistoric settlement. The species list reproduced in Appendix A: gives both Latin and common taxons, and occasionally Huron names of the plants found, describes the on-site location (i.e., bottomland, valley slope, or the terrace above the valley), the point of origin of the species, and indicates use, if any, by the Huron. This list is neither complete for the site – since many of the sedges and grasses, and some of the introduced species found were omitted – nor for the general area, since some species known to occur in nearby woods were not present on the site. Among these latter were Sanguinaria or bloodroot, Helianthus tuberosus (Jerusalem artichoke), and Mediola virginiana (Indian cucumber root), all of which were important to the Huron.

This does not necessarily reflect past distributions, and in any case it is probable that the Huron gathered foodstuffs over an area extending beyond the immediate boundaries of the site. They may have travelled almost as far south in their gathering as the north shore of Lake Ontario, where *Juglans nigra*, the black walnut, is found today.[1]

The wild foodstuffs available to the Draper settlement would have been determined by the successional status of the vegetation. If the site had supported a climax vegetation upon settlement, then useful tree species found in abundance would have included sugar maple, basswood, hemlock, and beech. In lesser quantities, and often confined to specialized habitats, such as the water's edge, White cedar, Willows, and Elders, Elm, Oak, Ash, Butternut, Hickory and cherry would have been found. The uses of such plants have been well documented elsewhere.

Occurring naturally in the understory would have been scattered clumps of plants the common names of which often refer to their status as food sources – may apples, strawberries, wild cucumber, Indian turnip, wild grapes and gooseberries, as well as bloodroot (prized as a dye), and the sensitive fern, *Onoclea sensibilis* (the tightly coiled fiddleheads of which are edible). Raspberries, blackberries and staghorn sumac would be found in natural clearings throughout the forest. Such distributions of the edible plants mean that much effort would be required to locate and gather the fruits, nuts, etc., and that care would have to be taken to ensure that known patches did not become exhausted. The uncultivated nature of these foodstuffs also suggests that the Huron would have to compete with the wildlife in their gathering.

If the settlement had been built in an area already somewhat disturbed, then the proportions and quantities of some of the useable species would have been somewhat different – the canopy containing somewhat more basswood and less sugar maple, and the understory perhaps containing more shrub-like cherry trees, raspberry and the like. The Huronian agricultural practice of clearing and subsequently abandoning fields would increase the area of disturbance and thus the habitat suitable for cherries (notably *Prunus virginiana*), hawthorns, staghorn sumac, raspberries and blackberries.

It is difficult to estimate actual amounts of gatherable foods available to the people of the Draper site. Although in terms of climate, pedology, and individual species found, the site at present differs little from the site at the time of prehistoric occupation, changes in the extent and nature of the vegetation cover, and in the relative abundances of the species make it unreasonable to assume that the present relative percentages of the species can be equated with those of the past. Relatively undisturbed and extensive woodlots elsewhere in the township may provide models for a reconstruction of the plant cover, but these remain to a large extent theoretical especially when the problem under consideration is as specific as the number of raspberry bushes in an acre.

Whatever the quantities, there would be some wild foods available throughout the year. Fruits and nuts generally ripen in summer or autumn. Young shoots and buds are most palatable in spring and early summer. Even in

[1] Wood charcoal of black walnut has been found at both Draper and White, which probably indicates a wider distribution of this species during Late Ontario Iroquois times – see King and Crawford, this volume.

winter, the tender inner bark of certain trees and the seed clusters of the staghorn sumac are available to supplement other food supplies.

The wildlife supported by this vegetation is diverse, though it is less varied and abundant than in the past. This is true not only of terrestrial but also riverine communities. In 1972, sampling carried out on the east branch of Duffin Creek turned up rainbow trout (introduced), white suckers, smallmouth bass, pumpkinseeds, assorted darters and minnows, dace, common shiners and creek chub. From a sampling site near the mouth, brown bullhead, yellow perch, largemouth bass, rock bass and one battered northern pike were also recovered. None of these specimens was very large, nor were the species other than minnows and darters very abundant. Yet within historical record this creek was rich in fish; salmonid species, including a variety of Atlantic salmon were abundant in Lake Ontario, and in the streams which flow into its north shore.

Widespread clearage of land leading to siltation, groundwater withdrawals leading to a drop in the water level, and the construction of sawmills on these creeks all contributed to the destruction of the spawning grounds. Subsequent activities further diminished the fauna of the creek itself, though many species have survived. Frogs, crayfish and freshwater clams, reported to have been eaten by the Huron in times of scarcity, are still found.

The terrestrial fauna have also been affected by the changes wrought upon the landscape. A list of all the animals and birds found within this area is beyond the scope and purpose of this paper. It is sufficient perhaps to mention that songbirds and gamebirds, raccoons, fox, woodchuck, hares, skunks and white tailed deer are presently relatively common, and that early reports describe an abundance of ermine, weasels, mink, black bears, beaver and porcupines, though these are now rarely seen.

Totally eliminated from the area within historical record have been lynx, cougar (disappearing circa 1860), moose, marten, fishers, timber-wolves, and wolverines, the latter disappearing circa 1900, though never very abundant (Peterson 1966). This suggests that the Draper Huron would have had a varied supply of game, and also suggests that extrapolating from present faunal populations and distributions to those of the past is even more difficult and unsatisfactory than in the case of the flora, unless one relies heavily on early records.

Not only have some species been eliminated altogether, but others have decreased or increased greatly in number since the first influx of European settlement. An example of this latter is the white-tailed deer, which is more widespread and probably more abundant at present.

This makes it difficult to estimate the size of deer populations once found in Pickering Tp. Even estimating present deer populations is difficult. Although the Ontario government has set up a system of land capability classifications for ungulates, the areas are classified according to potential though not actual carrying capacities – that is, their suitability if they were managed for ungulate production.

The classes range from 1, having no significant (natural) limitation to production and thus a high capability, to class 8, denoting urban areas. The Draper site is within a class 1 area, and surrounded by class 2 (slightly limited) lands. To the east are more class 1 areas (Fig. 1).

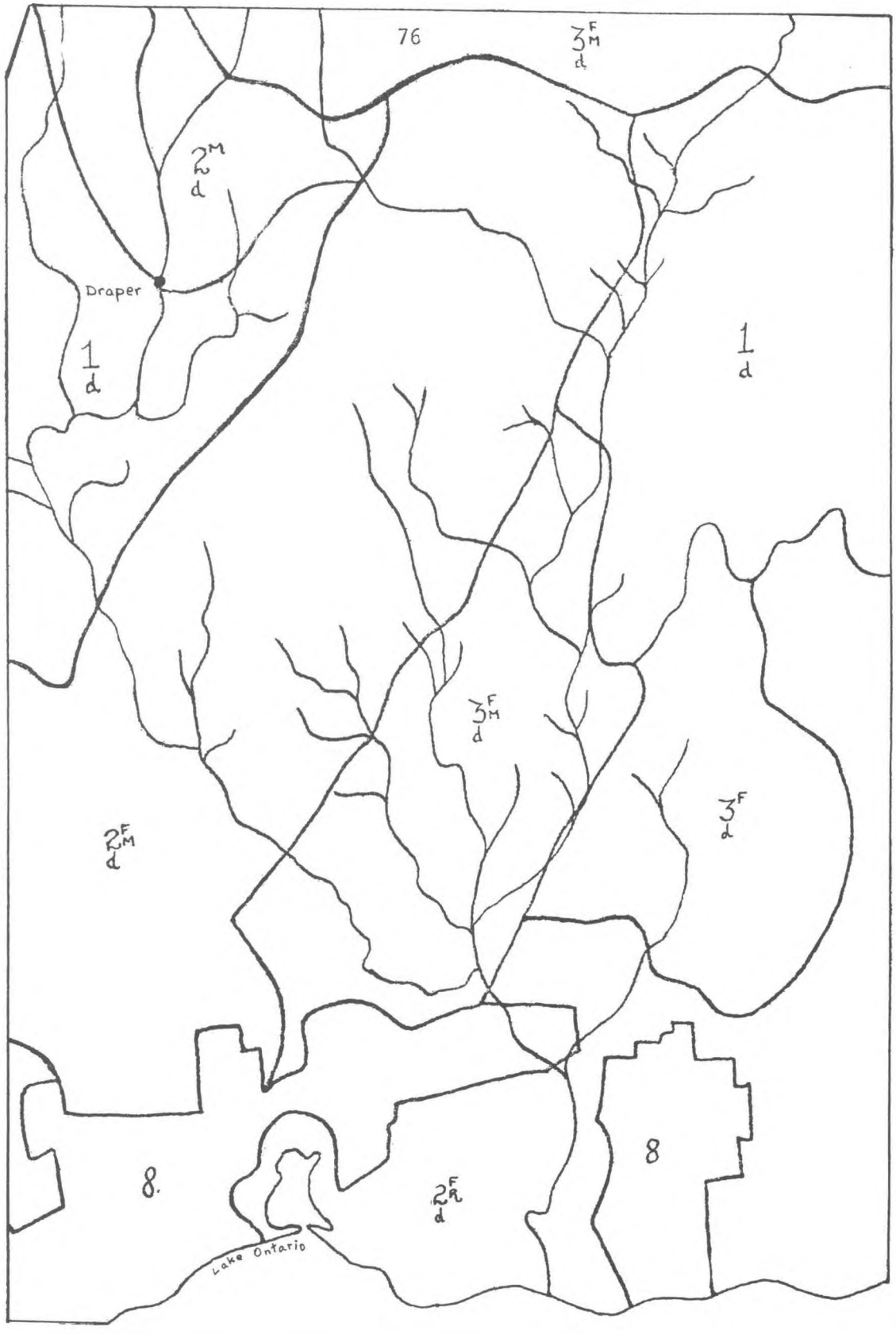
A similar system of classification in Saskatchewan suggested that classes 1 and 2 can support more than 20 ungulates per sq. mi. under optimal conditions, while class 3 could support 13 to 20 per sq. mile. Unfortunately, this survey was carried out in an area not wholly analogous to the Draper site – aspen grove vegetation within the boreal forest, interspersed with grassland, and includes species other than the white-tailed deer, which does not feed on grasses. "Optimal" conditions are not described.

Rather than attempt to estimate deer populations, it is wiser to state simply that while such populations undoubtedly vary from year to year, dependent upon conditions of climate, forage and predation, the Draper site is now and was, perhaps, in the past a favourable area for white-tailed deer. The natural vegetation, where it does occur, is of a type favored by the deer as browse, and stands of hemlock and cedar provide winter shelter – acting as shelterbelts, keeping the snow from the ground and thus allowing the animals to move freely.

In the past, brushy valley bottoms and clearings within deep woods were the preferred habitats, but the deer adapted rapidly to lightly settled areas where they were protected somewhat from wolves, and where fields would provide brush, when fallow, and the remains of crops as fodder. This change in habitat was noted as European settlement spread, but may have occurred on a smaller scale with the development and spread of Huronian agriculture. Land clearance followed by abandonment and shifting of village sites would have created areas of secondary growth, which in turn would favor an increase in deer populations. This increase would, of course, be limited by climatic conditions, and limited or even masked by hunting pressures.

In summation, the present ecology of the Draper site has been much modified by post-European settlement, while retaining points of similarity to the past. The climate, pedology, geology and basic structure of the area have remained much the same, and native species of plants and animals have found refuges in ravines and woodlots, suggesting that the potentials and capabilities of the land are very similar to the past.

From these points of similarity, one can infer a prehistoric vegetation cover very much like the climax forest which could be supported at present, but interrupted and



Class 1—no significant limitations to ungulate production
Class 2—very slight limitations to ungulate production
Class 3—slight limitations to ungulate production
Class 8—heavily urbanized areas

d— white-tailed deer
F—limitations due to lack of nutrients in the soil
M—soil moisture limiting—either excessive or deficient
R—limitation due to restriction of rooting zone by bedrock or other impervious layers

Fig. 1 Land Capability Classification for Ungulates

returned to a successional state in the areas of Huronian settlement, as a result of their agricultural practices. Thus, as a "by-product" of their agricultural technology, they opened areas within the forest to secondary succession, which probably resulted in an increase in certain of their wild foods. In addition to these vegetable foods, the environment was probably rich in aquatic and terrestrial life – more so than could be deduced from the present fauna alone.

The site, therefore, was favorable in terms of soils, food and water supply, and climate (though precipitation might have sometimes been limiting in maize agriculture). All the same, it was not unique. The Huron would have found similar conditions in other areas along the north shore of Lake Ontario, and to the south and west.

APPENDIX A

SPECIES LIST – DRAPER SITE – AUGUST, 1973

* introduced species

species recorded as having been used by the Huron

EQUISETACEAE:

Equisetum hyemale L.—scouring rush, found on valley slope

Equisetum pratense Ehrh.—horsetail found on the bottomlands, valley slope and terrace

Equisetum sylvaticum L.—horsetail found on the bottomland

POLYPODIACEA

Adiantum pedatum L.—Maidenhair fern, found in the woodland on the valley slope

Athyrium filix-feminia (L.) Roth —Lady fern; valley slope

Cystopteris bulbifera (L.) Berh.—Bulbet bladder fern; valley slope and bottomland

Dryopteris austriaca var. spinulosa (Mull.) Fiori.—spinulose shield fern; valley slope

D. austriaca var. intermedia (Muhl.) Morton—Fancy-fern; valley slope

Matteucia Struthiopteris (L.) Todaro.—Ostrich fern; bottomland and slope

\# *Onoclea sensibilis L.*—Sensitive fern; bottomland

Polystichum acrostichiodes (Michx.) Schott.—Christmas fern; valley slope

PINACEAE:

Pinus banksiana Lamb.—Jack pine; above the river valley; species found naturally further to the north, introduced into this area

\# *Pinus strobus L.*—White pine; found above the river valley; the pitch from dead pines was mixed with bees wax and used as a sort of chewing gum, to quench thirst

\# *Tsuga canadensis (L.) Carr.*—eastern hemlock; bottomlands, valley slope and terrace above the valley; decoctions of hemlock bark and roots, and alder bark, used to color spoons and other wooden articles a deep red

CUPRESSACEAE:

\# *Thuja occidentalis L.*—White cedar; valley bottom, slope and top; called "asquata" by the Huron (Tooker, 1967), sheets of the bark were used as shields, and in the construction of dwellings.

TYPHACEAE:

\# *Typha latifolia L.*—Common or Broad-leaved cattail; found at the edge of the creek; the inner rootstalk of the young shoot is edible in spring and summer and can be used along with the pollen, to produce a type of flour

ALISMATACEAE:

\# *Sagittaria cuneata Sheldon*—Native arum-leaved arrowhead; found growing in the creek; the bulbs were used extensively throughout North America as a food staple

\# *S. latifolia Willd.*— Broad leaved arrowhead; found in the creek

POACEAE, formerly GRAMINEAE:

* *Agrostis tenuis Sibth.*—Rhode Island bent; bottomland

\# *Elymus virginicus L.*—Wild rye; found on the valley slope and bottomland; the rootstock of a related species, *E. canadensis L.*, was used by the Iroquois in the preparation of a special liquid in which corn kernels were soaked before planting

Festuca sp.—Fescue; valley slope

Glyceria granuds S. Wats.—Manna grass; bottomland

Glyceria striata (Lam.) Hitchc.—found in the bottomlands

Phalaris arundinacea L.—Reed canary grass; bottomland

* *Phleum pratense L.*—Timothy; bottomland and valley top

CYPERACEAE:

Carex bebbii Olney—sedge; bottomland

Carex retrorsa Schw.—sedge; bottomland

Carex spp.—sedges; valley slope

Scirpus atrovirens Willd.—Bullrush; bottomland and valley top

Scirpus rubrotinctus Fern.—found in the valley bottom

ARACEAE:

\# *Arisaema triphyllum L.*—Jack-in-the-pulpit, Indian turnip; bottomland and slope; called "ooxrat" by the Huron (Tooker, p. 85), the root was cooked and made into a snuff used to treat catarrh, to clear the complexion, and to purge phlegm in the elderly

LILIACEAE:

Maianthemum canadense Desf.—Wild lily of the valley; valley slope and top

Smilax herbacea L.—Carrionflower; found above the valley

Trillium grandiflorum (Michx.) Salisb.—Trillium; valley slope

ORCHIDACEAE:

* *Epipactis helleborine (L.) Cranz.* — Broad Helleborine; found in the valley bottom, slope and top

SALICACEAE:

Populus balsamifera L.—Balsam poplar; valley slope

Populus grandidentata Michx.—Largetooth aspen; valley slope

Populus tremuloides Michx.—Quaking aspen; valley slope and top

\# *Salix sp.*—Willow; found on the valley slope; the light, dry wood was preferred for fires, the bark could be eaten raw

BETULACEAE:

Ostrya virginiana (Mill.) Willd.—Hop-hornbeam, Ironwood, Deerwood; found above the valley

FAGACEAE:

\# *Fagus grandifolia Ehrh.*—beech; valley slope and top; the beech nuts were gathered and eaten

\# *Quercus bicolor Willd.*—Swamp white oak; valley slope; during times of shortage, the inner bark and acorns of *Quercus* spp. were used as food by the Huron (largely *Q. alba; Q. bicolor* is not known to have been used, but produces edible acorns)

ULMACEAE:

\# *Ulmus americana L.*—White or American elm; valley slope; the bark of this tree was used in the construction of dwellings

\# *Ulmus rubra Muhl.*—slippery or red elm; valley slope and top; elm bark from a number of species was used to seal the tops of above-ground storage bins, after being seasoned over the summer, and was used for making planting baskets

URTICACEAE:

Boehmeria cylindrica (L.) Sw.—False nettle; bottomland

* *Urtica dioica L.*— Stinging or Great nettle; valley slope and bottom

ARISTOLOCHIACEAE:

Asarum canadense L.—Wild ginger; valley slope

POLYGONACEAE:

Polygonum hydropiperoides Michx. Smartweed; valley bottom

* *Rumex crispus L.*—Sour Dock; valley slope and top; recorded as having been used as a food in historic times

* *Rumex obtusifolius L.*—Bitter Dock; valley slope and bottom

RANUNCULACEAE:

Actaea alba (L.) Mill.—Doll's Eyes, White-fruited baneberry; valley slope and top

Actaea rubra (Ait.) Willd.—Red-fruited baneberry; valley slope and top

Anemone canadensis L.—Anemone, Windflower; valley bottom, slope and top

Anemone virginiana L.—found on the valley slope

Caltha palustris L.—Marsh marigold; bottomland

Clematis virginiana L.—Virginia Virgin's Bower; bottomland

Hepatica acutiloba D.C.—Hepatica; valley slope

* *Ranunculus acris L.* Tall or Meadow buttercup; valley bottom and top

Ranunculus septentrionalis Poir.—Swamp or Marsh buttercup; bottomland

Thalictrum dioicum L.—Meadow rue; valley slope and top

Thalictrum revolutum D.C.—Waxy meadow rue; valley bottom

BERBERIDACEAE:

Caulophyllum thalictroides (L.) Michx.—Blue Gohosh; valley bottom, slope and top

Podophyllum peltatum L.—May apple; valley slope and top; the fruit was eaten, and was also used by the Onondages to produce a decoction in which corn seeds were soaked to ensure good growth. It is not known if any herbs were added to this decoction

CRUCIFERAE:

* *Barbarea vulgaris R.*—Yellow rocket or Cress; valley bottom

SAXIFRAGACEAE:

\# *Ribes cynosbati L.* — Dogberry, Wild gooseberry; valley bottom and slope; the fruit is edible

\# *Ribes hudsonianum Richards*—Wild black currant; valley bottom; the fruit is edible

Tiarella cordifolia L.—Foam Flower; bottomland and valley slope

ROSACEAE:

Agrimonia gryposepala Willd.—Agrimony; valley bottom and slope

\# *Crataegus* spp.—Hawthorns; found on the valley slope and top; those found on the site may be introduced species, but *Crataegus* species are also native to the area; the haws are edible

\# *Fragaria virginiana Duchesne*—Wild strawberry; valley slope, bottom and top; the fruit was dried for winter use in cornbread and sagamite

Geum canadense Jacq.—Avens; valley bottom, slope and top

Physocarpus opulifolius (L.) Maxim.—Ninebark, a shrub; found in the valley bottom

* *Potentilla recta L.*—Cinquefoil; valley bottom, slope and top

\# *Prunus nigra Ait.*—Canada plum; valley bottom; the fruit is edible

\# *Prunus serotina Ehrh.*—Wild cherry; valley slope and top; the cherries were eaten. The bark of *Prunus* combined with that of the ash, spruce and hemlock trees was boiled to produce a liquid with which the body was washed to end epidemics

\# *Prunus virginiana L.*—Chokecherry; valley bottom, slope and top

\# *Rubus allegheniensis Porter*—Common Blackberry; found above the valley; the fruit was often dried for use

\# *Rubus occidentalis L.*—Black Raspberry; valley slope and top; the fruit was dried for use in cornbread, sagamite, etc., and was also eaten to quench thirst

ROSACEAE (cont'd)

Rubus strigosus Michx.—Red Raspberry; valley bottom, slope and top

FABACEAE:

Amphicarpa bracteata (L.) Fern.—Hog peanut; found above the valley

* *Medicago lupulina L.*—Black or Hop Medick; valley top

* *Trifolium hybridum L.* — Alsike or Alsatian Clover; bottomland

Trifolium sp.—possibly *T. Dubium Sibth.*, Least Hop-clover or Hop-Trefoil, introduced from Europe; found in the valley bottom

OXALIDACEAE:

Oxalis europaea Jord.—*O. stricta L.*, *Xanthoxalis stricta L.*, commonly wood-sorrel or sheep sorrel, probably native; valley slope

Oaxlus sp.—found on the valley slope

GERANIACEAE:

* *Geranium robertianum L.* —Herb-Robert; bottomland

Geranium sp.— found on the valley slope

ANACARDIACEAE:

Rhus radicans L.—Poison ivy; valley bottom and slope

Rhus typhina L.—Staghorn Sumac; valley top; the seed clusters were collected in autumn and winter, and boiled to produce a beverage

ACERACEAE:

Acer sp. hybrid—Maple tree; found on valley slope

Acer negundo L. — Boxelder, a native tree species but one which is generally not found in this area — a single immature specimen was found on the bottomland

Acer rubrum L.—Red or Soft Maple; valley slope and top; the burls were used to make bowls, and the bark could be dried and crushed to make a type of bread

Acer saccharum Marsh.—Sugar Maple; valley bottom, slope, and top; the bark was sometimes used to make a type of bread, and maple sugar was used to sweeten bread, the parched corn flour that was eaten while travelling, and soups

BALSAMINACEAE:

Impatiens biflora Willd.—Touch-me-not, Jewel-weed; valley bottom and slope

RHAMNACEAE:

* *Rhamnus catharticus L.*—Buckthorn, a small tree or shrub; valley slope

VITACEAE:

Parthenocissus quinquefolia (L.) Planch.—Virginia creeper; valley bottom, slope and top

Vitis riparia Michx.—Riverside of Sweet-scented grape; valley bottom and slope; the young shoots were eaten, unpeeled

TILIACEAE:

Tilia americana L.—Basswood, Linden; valley bottom, slope and top; the wood of this tree was favoured for making spoons. The leaves were used to line pans in which corn and pumpkin bread were baked, and to wrap squash which were then baked. The bark was boiled to produce hemp, used as rope, bandages, and thread in place of moose sinew, and the buds and inner bark were chewed to quench thirst and as a form of chewing gum

HYPERICACEAE:

* *Hypericum perforatum L.*—St. John's Wort; valley slope

VIOLACEAE:

Viola canadensis L.—Canada violet; valley slope

Viola septentrionalis Greene.—violet; valley slope

Viola spp.—found on the valley bottom, slope and top

ONAGRACEAE:

Circaea alpina L.—Enchanter's nightshade; valley slope

Circaea lutetiana L.—or *C. quadrisulcata (Maxim.) French & Sav.*, commonly Enchanter's nightshade; valley bottom, slope and top

Epilobium ciliatum Raf.—Willow-herb; bottomland

* *Epilobium hirsutum L.*—Great Hairy Willow-herb; bottomland

AMMIACEAE, formerly UMBELLIFERAE:

* *Deucus carota L.*—Wild carrot; found in disturbed portions of the bottomland and above the valley

Hydrocotyle americana L.—American Marsh-pennywort; bottomland

CORNACEAE:

Cornus alternifolia L.f.—Alternate-leaved Dogwood; a shrub found on the valley bottom and slope

Cornus stolonifera Michx.—Red Osier, Cornel or Dogwood; valley bottom and top

PRIMULACEAE:

* *Lysimachia nummularia L.* — Moneypenny; valley slope and bottom

Steironema ciliatum (L.) Raf.—or *Lysimachia ciliatum L.*, commonly Loosestrife; found above the valley

OLEACEAE:

Fraxinus americana L.—White ash; valley slope; the wood of this tree was used for making spoons

Fraxinus pennsylvanica Marsh.—Red, Green, Blue or Black ash; valley slope; a favorite Iroquois basketry material

APOCYNACEAE:

Apocynum androsaemilfolium L.—Dogbane; bottomland; this, and the related species *A. Cannabinum L.* and *A. sibiricum Jacq.*, were used for hemp

ASCLEPIADACEAE:

Asclepias purpurascens L.—Milkweed; bottomland

Asclepias syriaca L.—Common Milkweed; valley bottom, slope, and top

* *Cyanchum nigrum (L.) Pers.*—Black Swallow-wort; valley top

HYDROPHYLLACEAE:

Hydrophyllum virginianum L.—Waterleaf; valley slope and top

BORAGINACEAE:

* *Cynoglossum officinale L.*—Hound's Tongue; above the valley

* *Lithospermum officinale L.*—Cromwell; valley bottom, slope and top

Lithospermum sp.— found above the valley

Myosotis laxa Lehm.—Forget-me-not; bottomland

* *Symphytum asperum Lepechin*—Comfrey; found in the valley bottom

VERBENACEAE:

Verbena hastata L.—Vervain; bottomland and valley top

Verbena urticifolia L.—nettle-leaved Vervain; valley bottom and slope

LAMIACEAE, formerly LABIATAE:

Lycopus americanus Muhl.—Water-Horehound; bottomland

Mentha arvensis L.—mint; bottomland; it was not determined if this was the native var. glabrata (benth.) Fern. or the introduced var. arvensis

Prunella vulgaris L.—Selfheal, Dragonhead; found on the valley slope, top, and bottom; a circumboreal species

SOLANACEAE:

* *Solanum dulcamara L.* — Bittersweet, a shrubby perennial; valley bottomland, slope and top

* *Solanum nigrum L.*—Black, Deadly or Garden Nightshade; valley top

SCROPHULARIACEAE:

* *Verbascum thapsus L.* — Mullein; found at the top of the valley

PLANTAGINACEAE:

* *Plantago major L.*—Plantain; bottomland and valley slope; may be native to certain parts of North America

Plantago Rugelii Decne.—Plantain; valley slope

RUBIACEAE:

Galium spp.—Bedstraw, Cleavers; found in the valley bottom

CAPRIFOLIACEAE:

\# *Sambucus canadensis L.*—Common Elder; valley bottomland; dried elderberries were incorporated into cornbread. Elderberries were an ingredient along with may apples in the decoction used by the Onondaga to ensure the good growth of the seed corn (see *Podophyllum*, the may apple, above)

CAPRIFOLIACEAE: (cont'd)

\# *Sambucus pubens Michx.*—Red-berried Elder, a shrub; bottomland

\# *Viburnum lentago L.*—Sweet Viburnum, Sheepberry, Nannyberry; terrace above the valley; the fruit of this tall shrub is edible

\# *Viburnum opulus var. americanum Ait.* —Nannyberry; bottomland; the fruit is edible

CUCURBITACEAE:

\# *Echinocystus lobata (Michx.) T. & G.*—Balsam apple, Wild cucumber; bottomland and valley slope

ASTERACEA:

Achillea millefolium L.— Yarrow; valley bottom, slope and top; probably native since the introduced variety is rare

* *Arctium minus Schk.*—Common Burdock; valley bottom slope, top

Aster ericoides L.—aster; found above the valley

Aster novae-angliae L.—New England Aster; above the valley

Aster novi-belgii L.—aster; found above the valley

Bidens vulgata Greene.—Beggar's ticks; bottomland

* *Carduus crispus L.*—curly-leaved thistle; above the river valley

* *Chrysanthemum leucanthemum L.* —Ox-eye Daisy; bottomland

* *Cichorium intybus L.*—Chicory; above the valley

* *Cirsium arvens (L.)* Scop.—Creeping thistle; above the valley

Cirsium discolor (Muhl.) Spreng. —found on the valley bottom

* *Cirsium vulgare (Savi) Tenore.*—Bull thistle; bottomland

Erigeron philadelphicus L.—Daisy, Fleabane; bottomland

Eupatorium maculatum L.—Spotted Joe-Pye weed; valley bottom and top

Eupatorium perfoliatum L.—Boneset; bottomland

Eupatorium purpurem L.—Joe-Pye weed; bottomland

Eupatorium sp.—Joe-Pye weed; valley slope

Hieracium spp.—Hawkweeds; valley slope and top

* *Inula helenium L.* — Elecampane; bottomland and above the valley

Solidago altissima L.—formerly *S. Canadensis var. scabra (Muhl.) T. & G.*, commonly Tall or Double Goldenrod; valley top

Solidago caesia L.—Goldenrod; found in the bottomland area

Solidago canadensis L.—Canada Goldenrod; valley bottom, slope and top

Solidago flexicaulis L.—Zig-Zag Goldenrod; valley slope

Solidago rugosa Mill.—Wrinkle-leaved Goldenrod; bottomland

* *Sonchus arvensis L.*—Sow-thistle; above the valley

* *Taraxacum officinale Weber*—Common Dandelion; found on the valley bottom, slope, and top

* *Tragopogon pratensis L.*—Goat's beard; found above the valley

* *Tragopogon* sp.—Goat's beard; valley slope and top

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