COMMENTS ON THE FEASIBILITY STUDY OF THE NEW YORK POWER AUTHORITY, 2008

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COMMENTS ON EXECUTIVE SUMMARY

The use of the word "feasible" in the context of native plant protection and restoration seems curious when it is understood that the mandate of the legislation establishing the "first state park in the nation," i.e., the Niagara Reservation (including Goat Island), in the decade of 1880 was (and still is) to protect and restore areas adjacent to the cataract and Niagara river to a pristine or natural state. The term "Reservation" in the 1880's specifically meant and still means "reserved from development," perhaps related to the same term applied to territory "reserved" for Native American populations with all the implication of "sovereign territory," that is, a territory aloof from involvement by local or other government use and allowed to remain subject to "laws of nature" rather than "laws of society."

That the Power Authority has provided a document alleging that it will conduct itself in opposition to the mandate of the New York State Department of Parks, etc., at the Niagara Reservation and other New York State Park entities along the Niagara River seems unsupportable. This document seems to imply that the Niagara Reservation and other State Parks entities are functionally maintained by the Power Authority. The absence of involvement of State Park's scientists (if any) or employees of that department seems strange in a report regarding stewardship of native plants and animals under Park's custodial and legal mandate. There is no indication that State Parks accedes or acceded to the objectives, methodology and conclusions of the NYPA feasibility report. There is no attempt to define the boundaries between property studied under the ownership of NYPA and State Parks or other entities such as the various bridge areas under private ownership in the area of the gorge.

Peer reviewed literature presented as adequate to support the conclusions in this report appears to be overly general, and only some five out of all the bibliographic citation seem relevant, but too general to provide an adequate assessment to support the claims regarding feasibility of protection and restoration at Niagara. In fact, there seems to be an avoidance to explore the extensive scientific literature available regarding established habitat restoration techniques generated since the 1980's at least, or to consult with entities with staff who have successfully dealt with protection and restoration mandates.

The word "knowledgeable" has been used to suggest that discussions with individuals possessing this characteristic were adequate to support the objectives, methodology and

conclusions of this report, but no criteria were stated such that one can determine whether the "knowledge" was adequate. It appears that study of the entire area under the stated geographic scope involved only two months (May and September) during one growing season, and that this somehow sufficed to gather adequate information to sufficiently describe the vegetation assessed in support of the report's conclusions.

It is curious that the removal and control of non-native plant species, an ordinary activity common to homeowners, public property maintenance, agricultural and horticultural activities is considered to be only of "potential" feasibility by the Power Authority.

It is also curious that commercial nurseries are sought to perform the fundamental duty of NYPA (and State Parks) in providing facilities and expertise in restoring native plant populations. It is as though both agencies, which absorb public tax revenue and significant amounts of commercial revenue from the operation the properties over which they are required to exercise natural history stewardship for the benefit of New York State residents, at least, are suggesting that there is some financial limitation on their ability to fulfill their public mandates.

There is also the implication that anything "long-term" regarding protection and restoration is some sort of handicap when State Parks has had this mandate for over a century and expects to continue this on into the foreseeable future. There is also the implication that the Power Authority, which is essentially the sole property owner for the Niagara River gorge, eastern shore, has neither the time or money to exercise natural history stewardship over the natural resources of this internationally significant property.

One conclusion, that community-level native plant restoration throughout the gorge is not feasible due to the length of the gorge and its lack of accessibility, although the only seemingly inaccessible area is the area from the top of the talus to the edge of the dolomite caprock. Why this area is inaccessible when workmen are routinely seen on both aspects of the Niagara gorge engaged in various activities such as sapping and other gorge wall maintenance. It would appear that if NYPA, perhaps jointly with State Parks, were to engage on permanent staff a small team of professionals who would undertake natural plant custodial remedies, including rapelling, from time to time to implement a protocol along the caprock face, there would be no problem whatsoever in treating areas considered "inaccessible."

Such areas might also be considered "dangerous" to staff, but this objection would seem shallow since NYPA routinely employs workmen in some of the most hazardous occupations involving work within the forebay and in association with the active turbines and electric power generating equipment.

The idea that something "long-term" is objectionable seems odd, when State Parks and more recently historically the Power Authority have had this mandate for decades if not for a century or more. The license to generate power at the Niagara facility itself is of a fifty year duration and maintenance of a staff to implement the license is considered integral to the operation. Stewardship of the natural history resources, in partnership with State Parks, which seems to be happening anyway, should be integral to the operation of NYPA facilities along the gorge that it owns, and appropriate and relevant permanent staffing is to be expected.

The claim that "long-term, dedicated and cooperative" effort is questionable with regard to the custodial role seems false if one considers that functionally operational ecosystems are self-maintaining if successfully implemented, and the control of noxious or invasive alien species is no more onerous than staff hired to collect litter, a perpetual crop occurring daily and yearly. Once the "mother" populations of noxious weeds are carefully eliminated according to many protocols that could be consulted in the literature and among agencies, institutions and private individuals, the individual elimination of new individuals ongoing as the seed bank is depleted of these species through time, is no more arduous than litter control.

The notion that "long term commitment" is a new concept seems curious when the laws that established the State Parks along the river established such a commitment a century ago. It is as essential to the legitimacy of State Parks as the state-sanctioned monopoly of generating power at Niagara is to NYPA.

I see no legitimate conclusion based on the thought represented in this report, that the protection and restoration of the entire ecology of the Niagara River Gorge and vicinity is not feasible. It should be undertaken immediately and with enthusiasm.

GENERAL NOTES

On Table 4.0-1 Potential Protection or Restoration Measures and Their Feasibility, pp 32 - 34:

1. State Nursery and Botanical Staff.

My understanding is that New York State Parks will receive several millions of dollars a year from NYPA for the next 50 years to be dedicated solely to the Niagara Reservation, DeVeaux State Park-Whirlpool State Park, Devil's Hole, and Artpark.

My understanding is also that the electric rates were raised on the purchasers of hydroelectric power generated by NYPA to pay the costs of the relicensing process, and that NYPA has abundant revenues to spend on ameliorations to land taken out of the public sector for its use in the generation of power.

I fail to understand why, given the significance of the biology of the Niagara River gorge and its environment on both sides of the Niagara River and especially State Park's mandate to preserve and protect and restore the ecology of land within its parks, for which taxes have been spent for over a century, that there is not dedicated staff and facilities by both agencies to implement these agendas. Failure to do so seems like a failure to comply with their legal and publicly perceived mandate with the result that public funds are mistakenly disbursed to the very processes (development) that they are legally prohibited or constrained from doing.

The fact that such staff and facilities do not exist at Niagara is the critical reason why the significant biology of the area has degenerated, as without such resources it is and has been impossible to fulfill the promise these agencies were meant to effect.

2. The idea that the custodial role of both agencies can be farmed out to commercial nurseries and environmental firms devoted to and dependent on their contractual relationship with NYPA and State Parks suggests an abandonment of the government role requiring staff and facilities for success. Could it be that monies dedicated through State income tax revenues are being used instead to refurbish roads, parking lots, expand restaurants, inappropriate horticultural emplacements and other quasi-development initiatives on State land at Niagara.

3. Inappropriate use of horticulturalists and landscape architects.

Not addressed in this report is the dedicated and inappropriate use of landscape architects to address the protection and preservation of the native ecosystems, something outside of the competency of these professionals. It is presumed that the precedent for this inappropriate hiring is based on the use of Fredrick Law Olmsted and Calvert Vaux to create the initial planning for implementation of the laws raised to establish the Niagara Reservation.

Both men, of course, were incompetent to implement the intent of the law for the simple reason that not even the professional science of botany at the time was adequate at the time these men prepared their reports, much less the science of ecology, and later the formal discipline of ecological restoration.

Olmsted himself, after having tried to develop a working plan to protect Yellowstone in California, which he abandoned, had no previous experience with native ecosystem protection and certainly nothing subsequent, until asked to provide a guideline mostly for human traffic and to prevent people from trampling and destroying Goat Island, but not particularly for planning restoration.

That a botanist was required to implement the State's revolutionary "reservation" mandate may be seen in the Commissioner's employment of David F. Day, lawyer, botanist, and president of the Buffalo Society of Natural Sciences, to provide a catalogue of species of plants growing spontaneously on both sides of the Niagara River (gorge) and vicinity to be used as a guide by the Commissioners in authentic habitat restoration.

Even Andrew Haswell Green, the second president of the Commissioners at Niagara, dismissed Olmsted's further involvement at Niagara, probably due to Olmsted's industrialist professional connections, and began his own restoration plan, using the excellent guidance of old photographs and other images to provide a help to restore the indigenous landscape at the cataracts.

What are needed at Niagara are staff botanist(s), ecologist(s), established landscape restoration specialists, and plant conservation professionals on the payrolls of State Parks and NYPA. Perhaps the Department of Transportation, which manages an extremely large portion of the Niagara landscape along the upper and lower rivers, would provide considerable benefit to the State were it to develop a bureau within its department to handle sensitive protection and restoration issues within its highway landscape mandate.

4. On page five of this report a reference is made to some 30 million visitors annually experiencing Niagara Falls collectively on both sides of the river. "This high degree of human activity and

environmental modification has affected the local species composition; vegetation currently includes many alien invasive species." There is no correlation in my experience between the 30 million visitors who, on the main, are well-behaved and not very imaginative and who keep to the asphalted paths and facilities accorded to them.

It is not they, but the government and quasi-government agencies responsible for stewardship of the biota that are responsible for the loss of habitat, ecosystem degradation and infestation of alien species. Visitors do not cut down forests to put a huge paved parking lot on Goat Island in the middle of one of the most highly diverse habitats on that unfortunate area. They do not drop fill on the exposed riverbed along that island's south side, landscape it to lawn, and fake the species that once grew there by planting exotic look-alikes (species of *Cornus*) that have escaped into the lower talus slopes.

Visitors are not responsible for the lawns, or the inappropriate daffodil plantations at the expense of native spring wildflowers once lavish in the central woods. So, too, the exotic trees that infest the Goat Island disturbed areas: the ring of *Robinia pseudoacacia* (Black Locust) that was planted on the island's margins instead of the native Hickories and Birches, the escaping Honey Locust (*Gleditsia pseudacantha*), the exotic evergreens, the dense stand of Buckthorn (*Rhamnus cathartica*), one of the most seriously infesting shrub species all along the upstream gorge planted in a cluster near the Terrapin Point Restaurant and now of great maturity, contributing to the rain of seed into the water and the airways by birds, was not planted by tourists. Such shrubs and exotic Locust trees were also planted at Whirlpool State Park, contributing to noxious stands in all areas.

Along the Niagara gorge, tourists did not plant the *Lonicera tartarica* and *L. morrowii* (Honeysuckles) that are now the classic invasive shrubs in ecosystems west of the Mississippi to decorate the picnic tables at DeVeaux stairs where these shrubs are massively established. Tourists did not plant the dense stands of *Crataegus phoenicolasius* in the old plantings isolated on the caprock in the old sections of Devil's Hole now sectioned off and inaccessible by the access road down to the power generating station of the Power Authority.

The *Ligustrum vulgaris* (Privet) choking and destroying the First Sister Island originated by plantings by the administration, and also the *Lonicera*, in an attempt to sweeten the experience of visitors with a garden-like aspect - completely contrary to the mandate to protect and restore.

Nor on the Canadian side were tourists responsible for planting the now mature *Betula glutinosa* that can be seen rapidly colonizing the River shoreline on both sides of the river, establishing itself on the wet shores all around Buckhorn Island State Park.

No botanist-ecologist specialist was at hand to ban the establishment of such species, to monitor their population dynamics or to remove them should they prove a threat to the native plant communities.

The profound trouble now in Burntship Creek at Buckhorn Island State Park with *Phragmites* establishing itself to the west of Interstate-90 may have been avoided had there been a staff biologist to see the *Phragmites* runners crossing the new asphalt road laid down separating the

west from the east portion of the creek under the Interstate when they could have been cut. Now *Phragmites* is overwhelming the marsh to the east of the espressway, appearing to be unstoppable.

Visitors in their millions, a view that seems to fascinate the Parks Department, are not responsible for the failure of these agencies to fulfill their primary environmental mandates.

It is implied in this document that alien invasives, for example, generally "happen." Examination of the worst areas of infestation reveals a horticultural planting scheme at its core.

Within the restoration mandate, visitors are merely required to be safe and with a degree of comfort (otherwise they tend to destroy the landscape in various ways to find relief, such as visitors offloading from buses where they have been cooped up, charging off to the view of the River from the Third Sister Island, whose vegetation at the center has been completely stripped down to the bedrock, shiny and smooth from decades of shoe-leather abrasion.

I think the Three Sisters Islands should be off-limits for a while during restoration, and an easily dismantled boardwalk with inconspicuous viewing towers should be built over the shallow water in the riparian habitat created (from water diversion) just downstream from the Islands.

5. There has been quite an issue recently regarding the genetic continuity of populations endemic to the Niagara ecosystems and what protocol, if any, is to be used in a plan for protection and restoration of Niagara plant species. My opinion is that this issue should be taken on a case by case (species by species) issue, but the following notes might be taken:

a. Care must be taken to avoid an example such as presently at Luna Island, which is surrounded by (since the center has been allowed to be completely vacant) plants of the same species, but patently derived from horticultural varieties, such as the Virginia Creeper, one of Niagara's most common vines, that covers part of its banks.

b. A State nursery facility and staff trained in plant conservation is essential and always has been necessary to fulfill the mandate of State Parks (and NYPA) to protect and restore the landscape they have allowed to deteriorate.

c. Genetic identity and genetic approximation should be professionally studied using sources of expertise in this issue to uncover the degree of precision required to ensure continuity of the impressive plant communities actually and historically present at Niagara.

For example, some rare species that have been exterminated, such as *Hypericum kalmianum*, probably derived from Ontario populations, where the species is not reported as rare. It is in Ontario that material should be found to reestablish populations in their old sites.

Species that are not rare can be grown from native populations according to widely established protocols for plant conservation from wild populations systematically made by Parks staff that easily grow in adjacent woodlands or upstream or downstream along the river. Especially the wedding of Ontario and New York populations is possible - for example the Hickories growing along the gorge rim from Devil's Hole to DeVeaux steps are rare in Ontario, indeed in all of

Canada. These populations form half of a genetic pair located on the opposite side of the river - such as the *Quercus muhlenbergii* at Wintergreen Flats above Niagara Glen and their sister trees in Whirlpool State Park.

Everywhere possible it is important to identify and terminate disturbance to that plant populations can naturally reach their natural extension - such as the rare Asters at Whirlpool that are limited by mowing.

6. The boundaries of the State Parks along the rim of the gorge should be expanded or transferred out of NYPA ownership back into the State Parks system. According to old Conservation Department Reports, originally the entire gorge was appropriated into State Parks and the very next year the gorge sections were transferred into the initial department that evolved into what is now NYPA.

Parks such as Whirlpool State Park and Devil's Hole unfortunately are situated directly on some of the most significant biological resources along the gorge (USA). To focus public exposure to such limited areas is to subject these areas to too much risk of recreational degradation.

THE ISSUE OF RARE PLANTS AT NIAGARA

One of my papers that NYPA does not cite in their report is:

Eckel, P. M. 2004. Preliminary Review of the Rare Plants of the Niagara River Gorge, U.S.A. and Canada. originally published in Clintonia 6 (2, Supplement): pp. 1-8 1991. See also: http://www.mobot.org/plantscience/ResBot/niag/Misc/PrelimReview-Clintonia2.htm

If you calculate that the surface area of the Niagara River gorge (see the above paper for details) is less than two square miles, it is rather stunning that in such a small area no less than 1,272 species of vascular plants have been known to occur at one time or another. This is compared to 1280 species for the 1313 square miles of Cattaraugus County, and 1598 species for the entire Niagara Frontier Region, an area of 7,850 square miles. This does not include all the other interesting organisms, such as bryophytes, algae and fungi that are known or have been known to occur there.

It is astonishing that such diversity has been represented in the NYPA report based only on a handful of transects made during two months of the growing season. Also that such little staff and facilities monies have been contributed by the State of New York to a proposal to protect the processes and substrates and populations that have given rise to such an extraordinary diversity of living plants.

I will not go into the details of the paper I have cited above, but will confine myself to the list of rare species provided by NYPA and the populations of which I examined during the five or so years the Power Authority spent in preparing its submission to FERC for relicensing.

1. *Carex garberi* Elk Sedge and *Lysimachia quadriflora*, Four-flowered loosestrife.

Both these species grow in proximity to one another on the Niagara Reservation. During the years of the scoping sessions, State Parks experienced a shift of staff in response to one administration in Albany shifting into another. When this happened, a number of unfortunate events occurred in State Parks along the Niagara River. Various initiatives had been undertaken on the Reservation to "restore" it, some of which were successful and a pleasure to witness, but others were more disturbing. Under the guise of protecting sensitive areas, certain parts of the park were blocked from visits by the public. The area where both these rare taxa occur(ed) had benefited from visitors trampling the growth at the water's edge. The policy of restricting public access, usually beneficial to plant community recovery, proved disastrous to these species - exterminating one (*Lysimachia quadriflora*). The remaining population of *Carex garberi* seen grew in a trough among tall *Calamagrostis* grass that had remained from the previous year. It was clear that in very little time, the *Carex* would be under extreme stress, much like the *Lysimachia* had been.

It was curious to me at the time that the restoration exterminated one population of rare plants and threatened another although the administration had copies of a report I submitted around 1990 detailing the location of these plants. The new Parks policing program that had been put in place in that year was so aggressive toward me examining these populations (marked off-bounds by signs) that I had to remove myself quickly! The prevention of public view in this area was strictly enforced, although it now no longer is, and I am not sure what the point was in blocking access at that point in time.

2. *Gentianopsis virgata*. Lesser fringed gentian. Historically there were large and beautiful populations of this species at Terrapin Point, now buried under fill to cover the results of dewatering due to diversion at the edge of the Canadian Falls. These populations had been severely reduced to a few individuals on a little ledge walled off from the public and irrigated from spray and water going over the brink. I first noticed this species because of its exotic and lovely blue color (the only color like it in the area is *Lobelia syphilitica* at the Three Sisters just upstream). One could spot this species growing at the edge of the caprock at this site.

I have since returned to this site during its period of flowering and have not seen it in bloom or its foliage. Other populations of this species were recently known and seen by myself and colleagues in the tumultuous spray in the Luna Island fall where the "Cave of the Winds" catwalk construction was rebuilt. Recent revisits to the Cave of the Winds during its flowering period resulted in no plants seen.

Additional specimens were known to grow along the horizontal shelving in the cliff rock at the base of Goat Island, now home at one point to seething carpets of breeding gulls. Although two visits were made to the base of Goat Island rather early in the growing season several years ago, no plants were seen. If these plants have disappeared, then they have done so in the past decade.

3. *Iris virginica* var. *shrevei*, the Southern blueflag, appears to reach the extreme southeastern limits of its range along the Niagara River, occurring on the Niagara Reservation and in Buckhorn Island State Park. The populations I've seen appear immune to manipulation and are apparently under no threat.

4. *Liatris cylindracea,* Blazing Star. Although in the NYPA report the details of the location are removed in order to avoid interest in the public picking, trampling, or accidentally or deliberately abusing populations of rare plants, I was stunned to see, in one of the informative plaques along the new trails recently built by NYPA, State Parks and the Federal Dept. of the Interior, amid pictures of birds and commonly seen shrubs and flowers to be met with along the gorge walk, a full color display with description and discussion of this species! It has a distinctive and vibrant color, especially in the time of year in which it flowers and the only population that still exists is one or two stems exactly along the hiking path - indeed, one stem of the last population I saw was laying out on the trampled earth in the path, ready to be decapitated by a misstep.

Why NYPA, State Parks and Interior should want to advertise to the hiking public this striking plant, and which I believe the only population in New York State, in effect encouraging them to "pick, trample, accidentally or deliberately abuse" this fragile population mystified me. Some of these rare plants in the gorge only occur there due to the seed rain: their original populations were above along the gorge crest at the unmown margins of the parkland above. Those rim populations, together with such interesting species as *Aster ptarmicoides* and *Asclepias incarnata*, have been eliminated since I started working on the gorge over 20 years ago. They occur now down below beside the new hiking paths.

5. *Oligoneuron ohioense*. Ohio goldenrod. I was delighted to have found this plant for the first time after the first discovery a century ago on a fragile perch over a new substrate for plants that has not yet been described for the Niagara gorge, and perhaps for the State, as it is not recorded in the Plant Communities of New York State. The year after I found this plant there had been unusual rainfall such that the level of the Niagara River was exceptionally high (one had to wade through water nearly waist deep whereas the previous year the beach was walkable). The Jetboat concession roared past me at (possibly) 20 minute intervals creating a wake to either Canadian or American shores, knocking me about in the water. I also noted that piers attached to private properties had been damaged by the high water and the relentless wakes, but most unfortunate of all, the station of this long-forgotten plant had collapsed into the churning water, because the thin deposit of limestone on which it grew had gradually become worked loose from its substrate and collapsed into the river.

I understand creating such wakes is illegal in New York State. Not only was the rare plant drowned, but its unusual substrate was as well.

Furthermore, the soft Queenston Shale layer was dissolving into the high waters, rendering them a bloody red color as the moving water undercut the banks. The fishing platforms along the banks in Artpark, recently built by NYPA, Parks and Interior with public money were literally dissolving into the water in the wake formed by these jetboats. The naked and exposed shale could also be seen across the river on the Canadian side.

For the sake of this Goldenrod's future in New York State, exposed to damage by a commercial venue such as the Jetboat, it is important to speculate on the impact of shorewater turbulence on this population and its delicate substrate (not to mention the regular and orderly generation of hydroelectric power).

There are NYNHP delisting issues here with this species, but my notes are not immediately available to pursue this.

Apropos of this: the water level in the Niagara River goes up and down radically based on overall annual rainfall upstream in the Great Lakes. For example, this year (2008) is characterized by heavy rainfall such that one might expect high water levels, as occurred when the Jetboats had such a devastating effect on the Queenston Shale. Drought or low rainfall in 2007 caused severe recession of water levels in the Great Lakes, especially in Lake Superior. Water levels receded in all the lakes, but curiously Lake Erie, the shallowest, suffered the least from this effect (three inches). Lake Erie is crucial to provide ready and consistent water to the Niagara River for constant hydroelectric power generation for both Ontario Hydro and NYPA. In the book The Great Lakes Water Wars by Peter Annin the curious remark is made that there are two scenarios for prediction of water levels in the future (perhaps or primarily due to global warming): one is that water levels go down (bad for power at Niagara), the other is that there is excess precipitation and levels stay high (good for power at Niagara).

It seems that these two alternating scenarios of high and low water might be explained (according to a Buffalo meterologist) as due to the same causes that allow Buffalo to be swamped by snow one year, and the next the snow blankets Albany. Rain and drought appear to be caused by shifts in the Jet Stream, based on whether it enters the country southward near Los Angeles or northward in the area of Portland or Seattle. The snow explanation was given to me by a Buffalo meterologist of the Federal Government but I don't see why this explanation does not apply to rainfall patterns as well, that is, probably weather patterns in the Pacific are determining snowfall and rainfall in a broad swath over the Great Lakes - with relative impacts on the consistency of water level availability in Lake Erie that controls River levels at Niagara.

7. *Pellaea glabella*, the Smooth cliff brake. This species occurs completely along NYPA property and is not in any danger of extirpation that I could see, as long as these plants stay put.

However, some individuals of this species were found by me at Whirlpool State Park in a vuggy limestone boulder at the southern end of the park. When I returned a year later, these ferns had been scoured out of the vugs or depressions in this rock. I mentioned this to agents of the New York Natural Heritage Program (NYNHP). That this Park has been subject to extremes of environmental manipulation will be discussed below.

8. *Poa sylvestris*, Woodland bluegrass. This is a species I found near Lewiston but I have not been able locate the exact site since. It looks so much like its close relative, the extremely common *Poa pratensis*, or Kentucky Bluegrass, that it would take an extremely careful search all over the Artpark area between Lewiston and the power generating facility both above and below the High Bank to find it again.

9. *Physocarpus opulifolius* var. *intermedius*, Ninebark, was a suprise to see restored to the list of species recognized by NYNHP as rare for the State because before the relicensing process began some five years ago, the agency (NYNHP) asked me my opinion whether this variety should be recognized as rare due to the fact that it was only the pubescence on the fruiting capsule that

created a taxonomic distinction. I said that was good enough, and cited various reasons. Apparently the variety was removed from the list of rarities just as scoping sessions began.

There was an unfortunate consequence of this. When the new administration of State Parks replaced the previous one at about this time, a curious thing happened. All the vegetation was catastrophically cut to the ground at Devil's Hole around the public rest station there above the stairs. Even a beautiful and very old specimen of Cornelian Cherry with its beautiful red fruits - all clear-cut.

I was searching for specimens of an introduced species, *Acer ginnala,* that I had remembered growing in the thickets around the eastern meadow on Goat Island and had returned to seek it out again, to confirm its occurrence in New York State, when I was stunned that all the Ninebark thickets had been catastrophically cut down, just as at Devil's Hole. The old vegetation around the Horse Barns had also been cut.

At Whirlpool State Park there is an old-growth forest (with its understory cut down). It is an extension of the untouched old growth forest across the Robert Moses Parkway, half of which is now in DeVeaux State Park and I had dreams of reconnecting the two woods and restoring the characteristic undergrowth.

At the same time all the plant removal was undertaken, these old trees all had orange marks on their trunks. This is a sign the trees are to be cut down. I witnessed the same thing on the old trees presently in DeVeaux woods in the late 1980's. The mark indicated the trees were to be cut down. I at that time protested to Lisa Aug, a reporter for the Niagara Falls Gazette, and the trees were spared. Later, Bruce Kershner seems to have been instrumental in having the DeVeaux woods put into the State Parks system and the trees seem now to be protected, except that most of the woods, it has been discovered, lies on Robert Moses (i.e. NYPA) property and not State Parks.

After protesting to State Parks about the orange marks, I was assured the marks meant something else and they were allowed to fade in time and the trees were uncut (their canopy still remains).

However, the old stone steps leading down to the river's edge at the north end of the Park, and which were lined with a distinctive vegetation of shrubs and small trees, but especially a rare and beautiful bryophyte vegetation (mosses and liverworts), had been butchered. All shrubs were cut down, presumably to provide views, from the top of the steps to the bottom.

In completion, at the base of the steps, which passed lovely old concrete picnic tables choked with exotic and ancient plantings of *Lonicera tartarica*, where the new pathing system of NYPA, Parks and Interior passed, there had been a very tall and dense thicket of *Physocarpus opulifolius* var. *intermedius*. It was breathtaking - taller than a man's height. A tunnel had to be cut through it going upstream from the steps to the whirlpool. After delisting, the whole population was cut to the ground - only a few shrubs here and there along the path. I have photographs of the stumps. Also of the young plants of *Lonicera* growing out of the ground to replace this exotic and distinctive shrub species.

Hence, my surprise at seeing *Physocarpus opulifolius*. var. *intermedius* restored to rare status in the present NYPA report.

10. *Zigadenus elegans* subsp. *glaucus*, Mountain death camas, grew in seeps in association with the DeVeaux steps. This population has been exterminated (there were only a few plants). I had first picked one as a voucher for my initial study of the plants of the Niagara River gorge. Unfortunately the rest were plundered by colleagues at the beginning of their careers as specialists in the field of rare plants.

11. The last species is *Aster oolentangiense* (*Symphyotrichum oolentangiense* var. *oolentangiense*).

Perhaps the strangest of the habitat manipulations at Whirlpool State Park during the relicensing process involves this plant, the only population known for the State.

As I mentioned above, almost the first act I made beginning my Niagara study in the later 1980's was met with the intent to cut down the old growth trees at DeVeaux, which appears to have been successfully halted by a front page report in the Niagara Gazette protesting this. Then, nearly 20 years later, again I intervened in what appears to have been an intention to cut down the old trees across the Parkway in Whirlpool State Park. In what I thought was a united effort at Goat Island and Whirlpool State Park to improve the botany of these Parks, habitat manipulation occurred involving a "no mow" policy in the southern section of Whirlpool Park where the tree canopy was absent. Grasses grew nearly to the height of a man, but it was mostly *Dactylus glomerata* (Orchard Grass), an alien specie. However, specimens of this rare *Aster* also grew there, near the rock where the rare fern had been removed. The tall grasses could easily have shaded out the Aster, and maybe they did, as I could not return to the station.

To my delight, the no-mow routine worked under the canopy of the woods on their southern margin, and all sorts of native plants that had been restricted to the bases of trees to escape the blades had sprung up - including the rare *Aster*, expanding its population.

Unfortunately, when the adjacent DeVeaux College was added to the State Parks, and the Commissioner of State Parks staged a happy event to celebrate, Parks did a strange thing, considering the value of the natural environment along the gorge - DOT with State Parks established a Wildflower planting (Wildflowers from a Can) on the medium and adjacent Parks areas where all sorts of alien weeds sprang up. They also established, inexplicably, two oval areas in the lawns that divided the upstream and downstream woods at DeVeaux (upstream belongs to NYPA as well as half of the downstream section). In these oval areas "wildflowers" were allowed to grow which over several years have morphed into a dense population of invasive weeds, including young trees of Black Locust (*Robinia pseudoacacia*) and Honey Locust (*Gleditsia triacanta* - the thorny variety, even (not *inermis*)). Why these bizarre communities of alien species were established here, and the habitats so manipulated has not been explained to my knowledge.

One happy consequence is that the rare *Aster* grew tall and robust at the margins of these new weed forests - but at the expense of environmental havoc.

The tragic thing is, the "no-mow" grass meadow has since been cut down (with no explanation and no great loss as far as I could see, except for the possible extirpation of the *Aster* at the south end), but mowing had been resumed under the trees as well. I was stunned to note the blades of the mower had been lowered so far that the ground had been gouged. Not only were the native species flourishing there cut down, including the rare *Aster*, but erosion has set in, washing out the topsoil where they had been established. Species that had been unique to the Whirlpool State Park area appear to be being systematically exterminated.

To give some suggestion where all this appears to be leading involves manipulation of the Robert Moses Parkway. By some strange and apparent concession to parkway removal initiatives by various local groups, one of the two, two-lane segments of the Parkway has been covered with a new coat of blacktop. Ostensibly, this roadway was to be for walking, jogging, biking, hiking, but not for cars. These were allowed to run at reduced speeds on old and cracked concrete-surfaced lanes. The suggestion seemed to be that these lanes would be removed and the fresh nice blacktopped lanes left for anything but automobiles. Could there be some other reason for this policy toward highway lanes?

The old, historic buildings of the DeVeaux campus and its magnificent campus that constitute the new DeVeaux State Park were recently involved in a movement to convert the old school to a school of native landscape design, with the intention of using native plant material from the Niagara area. State Parks was enthusiastically involved in this proposal. During formulation of the proposal, individuals attempted to change the plan, consistent with environmental integrity with the native gorge, to one where a portion of the grounds was to be excavated to create two (reflecting?) pools. Perhaps in those two ovals where the weed forest was established and is being allowed to flourish! Indicating that the "pool" idea has already been adopted when the Park was newly initiated into the system. Individuals promoting redesigning the Whirlpool-DeVeaux area into something more developed made declarations that "you can never put back nature the way it was" so, why bother? A strange declaration for persons proposing a school for native landscaping.

The final suggestion from someone else involved in the "school" idea was to put in a light-rail system along the part of the Robert Moses Parkway that has not been covered with fresh, new blacktop.

If the rail system followed the entire parkway, it would link the gambling casino in the City of Niagara Falls and the entertainment complex run by State Parks at Artpark in Lewiston. Cutting forests down in Whirlpool State Park and DeVeaux would clear the way for a nice railroad stop where tourists (part of the 30 million who destroy the vegetation every year!) could stop to look at the gorge scenery and perhaps dine and select souvenirs. Parks has already dumped a wide swath of wood chippings as a "path" through the old growth on the DeVeaux State Parks side of the old growth forest, effectively burying whatever plants grew there, perhaps the beautiful *Conopholis* and Jack-in-the-Pulpit.

The establishment of DeVeaux State Park was thought by the late Bruce Kerschner to have been achieved due to his relentless efforts to protect old growth forest in New York State. However, I have found this somewhat curious as most of the old growth does not occur in the new State Park at all. It is on NYPA property adjacent to the Parkway and thus independent of State

Parks stewardship. So Bruce could not have used the old growth as an argument. DeVeaux woods was probably established to connect with Whirlpool State Park to create a tourist stop for a light rail emplacement, and the forest and rare plants have nothing to do with it except as obstacles.

12. *Potamogeton alpinus*, Northern pondweed, grows or grew in the Niagara River between Frog (Motor, Pirate's) Island and Strawberry Island. Recently there was a proposal by NYPA to manipulate this station in the Niagara River for a kind of "habitat improvement" that would, if implemented, conceivably wipe out this rare aquatic plant.

13. Never has there been mention of the species of rare bryophytes for New York State, posted on the NYNHP website. Many of these species occur in the Niagara Gorge, including many along the DeVeaux steps and other areas targeted with catastrophic cutting, even though I have placed on a Web site an extensive list of moss and hepatic specimens collected by myself and colleagues, and which are housed in the research collections of the Buffalo Museum of Science. It is at Niagara Glen that these humble organisms seems to be the focus of systematic eradication from the lovely boulder fields in the Glen. The Parks Commission has permitted a strange "recreation" having to do with climbing the boulders and carrying a kind of large pillow with you, a practice that effectively strips the boulder surfaces of their bryophyte and other cryptogamic vegetation. See http://www.mobot.org/plantscience/ResBot/Niag/Repr/IndexCrypt.htm and http://www.mobot.org/plantscience/ResBot/Flor/CryptogNiagara.htm for a list.

CONCLUSION

I am deeply disturbed by the systematic loss, if not targeting of plants specified as rare, threatened and endangered in New York State at Niagara Falls. I see and could detail similar manipulation by the Niagara Parks Commission in the Niagara Glen area across the river in Canada, especially, as in the information plaque for *Liatris* on the American side, and the exposure of the location and significance of an Ontario rare shrub, the Deerberry (*Vaccineum stamineum*). During the past decade or so, there is evidence throughout the public lands along the Niagara River, especially on the American side, of environmental manipulation so as to ensure that the Niagara vegetation is too degraded to preserve.

I see no scientific reason, even with the apparently systematic degradation of a century and a decade, that the plant communities cannot be restored. There is nothing in the NYPA report to convince me that there is any reason to abandon the initiatives or mandates to protect and restore the Niagara environment. So long as there is a seed and a scoop of dirt, there is the beginning of a restoration and preservation. Plants may be removed, but the processes cannot. The genetic ancestry out of which the Niagara flora evolved exists throughout the flora and within its periphery, and within the plant populations out of which those that occur or occurred at Niagara came to be.

The Niagara flora is not and never was a static thing, but has been always in a state of flux.

Niagara, due to its anomalous and extraordinary hydrologic character has routinely, since its existence was first discovered by Europeans in the throes of their Industrial Revolution and expansion, been host to utopian schemes - the Echota neighborhood is one example, real estate schemes across the river in Canada facing the cataracts, and others. Always such schemes are

shrouded in secrecy for one reason or another. Robert Moses wrote how hellish it was to implement the Power Authority at Niagara and Massena due to the requirement for public disclosure.

Were I to speculate, I would say that the recent relicensing process is inappropriately embedded in a utopian scheme, one first attempted in 1885 on a more limited scale, that includes the entire Great Lakes, a scheme in which the capture of enormous volumes of water in the Saint Claire River to maintain an equable level in Lake Erie is vital to continuous power generation. That NYPA has relatively recently involved itself with a consortium to dominate the water resources of the Canadian Province of Labrador, but was defeated by the objections of the native peoples of the region, lends credence to the scope of their endeavors. Dredging the Saint Claire River recently (1964) seems to correspond nicely with the onset of power generating operations by the NYPA at Niagara, although the river had also been dredged earlier. Providing a focus on restricting the water diversion into the Chicago Sanitary Canal during recent discussions of the Great Lakes Governors was probably more a diversion from the more interesting issue of Saint Claire River dredging. This year (2008) is water rich and the greatly fallen 2007 Lake Superior levels have risen, obscuring the true impact of diversion out of the Saint Claire on the upper lakes Superior, Huron and Michigan, and the unfortunate Georgian Bay during 2007. With inevitable changes in the jet stream causing drought, however, problems with artificially lower water levels in the upper Great Lakes that support Lake Erie levels will probably reoccur and the controversy will come before the public once more. See also: P. M. Eckel, 2005, Some Potential Impacts of Conditions in the Saint Clair River on NYPA Relicensing, Lake Erie, and the Niagara River
http://www.mobot.org/plantscience/resbot/Niag/LakeLevels/StClairRiver.htm

Of additional general application, see P. M. Eckel, 2004, Some Preliminary Proposals for Relicensing Settlement: Amended July 22, 2004, at
http://www.mobot.org/plantscience/ResBot/niag/Proposal/MeetingProposals.htm