



SER Ontario News

Society for Ecological Restoration
Ontario Chapter

...with the generous support of Niagara College

Volume 9, Issue 1

A Little Setback in Reforestation Is All Part of the Game

By Dan Gregory

Anyone who has been engaged in woodland restoration or reforestation for any length of time ultimately (but typically sooner than later) comes to fathom that herbivores really like hardwood tree seedlings. This is not an earth-shaking or novel observation: there's quite a lineage of literature on the subject. Crouch (1976) and Radvanyi (1987) concluded that many mammals (including deer, rabbits, woodchucks) cause mortality and slower growth of trees in a wide range of environments by various means, including browsing and clipping. Effects are not confined to plantations, but rather are common in a many vegetation types and are a natural consequence of plant-wildlife relationships (Bazzaz 1996). Deer browsing impacts on natural systems may be significant under certain circumstances, particularly with respect to recruitment of woody species (Opperman and Merenlender 2000), and can be especially acute when deer populations numbers are high (Haig et al. 1991). So, because it's the dead of winter - a time for drifting through previous summers' data accumulations - and because I have nothing else to talk about, I thought I would add one more example to the long list of herbivore impacted sites.

A couple of years ago I conducted an assessment of a large old field that had been planted with rows of green ash, black walnut, and eastern cottonwood at Ontario Power Generation's Lambton Generating Station. The planting had been undertaken as part of the stations's biodiversity action plan and habitat enhancement program, which stem from OPG's Biodiversity Policy, and was intended to extend woodland cover on the station's property. The seedlings were originally less than 1.0 metre tall, and planted in rows about 1.5 m apart, but did not appear to have produced much growth over the intervening years. As a result, I was asked to offer an opinion as to why.

For the purposes of collecting long term information on the overall success and speed of this reforestation, I established permanent

(Continued on page 2)

Inside this issue:

<i>New Restoration Workshops</i>	3
<i>SER Restoration Weekend Announcement</i>	3
<i>Restoration News from Northern Ontario</i>	5
<i>Exotic Insect Forum</i>	5

Executive

Dale Leadbeater	Chair
Al Unwin	Vice Chair
Margaret Stalker	Communications Officer
Dan Gregory	Treasurer
Silvia Stobl	Past Chair

Directors

Teresa Bosco	Education
Jen Shragge	Fundraising
Stephen Smith	Field Trips
Jeremy Lundholm	Newsletter Editor
Michael White	Promotions

Project Positions & Sub-Committees

Policy Committee:

Donna Havinga

Elections Coordinate

Margaret Stalker

Native Plant Directory Coordinator:

Barb Boysen

Web Page Manager: Margot Ursic

Setbacks in Forest Restoration continued..

plots (in the fall of 2000) containing various combinations of tree seedlings, and measured total heights and lengths of the current year's growth, and documented the overall growth habits of each tree seedling within the plots. I checked the plots in the spring of 2001 and gathered the same array of quantitative data later that fall.

The survey results indicated that the current year's growth (in both 2000 and 2001) on virtually all of the seedlings had been generated from lateral buds rather than from the terminal buds, which had almost universally been clipped: the exceptions were a few cottonwoods that had grown to about 2.0 m tall. Regardless, all specimens exhibited a multi-branched or bushy growth form, especially lower on the stem, further indicating abundant resprouting from lateral buds. In a few instances, specimens were also double- to multi-stemmed. The total heights and lengths of the current year's growths varied widely, both within and among species. The cottonwood were distinctly larger on average, with some specimens having reached 2.0 m in height. Conversely, the green ash seedlings were consistently short, ranging mainly between 0.60 to 0.90 m tall: in some instances, ash specimens were actually shorter in 2001 than they were in 2000. The black walnut were similarly stunted.

Successes and failures of hardwood plantations in southern Ontario and elsewhere in Canada have been the subject of considerable attention and scientific analysis. While site preparation has been identified as an important component of the seedling establishment process, rates of post-planting hardwood survivorship and mortality have commonly been linked to the degree of competition between seedlings and herbaceous ground covers (von Althen 1981, 1985, and 1990). Von Althen (1985), for example, noted direct reductions in survivorship and growth in white ash due to competition from forbs and grasses, and recommended weed control to improve planting success. He suggested that a secondary effect of herbaceous competitor control is removal of ground covers conducive to small mammals, which are known to browse young seedlings. Accordingly, one of the management approaches implemented at the Lambton site in an attempt to improve the hardwood growth consisted of discing between the rows of planted trees so as to reduce goldenrod and brome grass cover.

However, the above measure is not so straightforward. Von Althen and Nolan (1988) found that mowing between planted rows of black walnut and white pine improved survivorship of the walnut, but not its growth. They concluded that reduction of ground cover adversely affected soil moisture, making it too dry for walnuts. Further, Gordon, Simpson, and Williams (1995) determined that, whereas weed competition control benefits tree seedlings in one way, it also makes them susceptible to larger herbivorous species, such as deer.

Clearly, the results of the assessment at the Lambton site - notably the frequency of terminal bud clipping, degree of lateral bud resprouting, and resprouting from roots - indicated that heavy browsing by deer was, and continues to be, the main limitation to the reforestation effort. Although browsing caused limited apparent tree mortality, the green ash in particular were being constantly set back. Observations in the spring and fall of 2001 also showed that browsing had occurred on some specimens both during winter as well as the following growing season.

During the course of floral and faunal surveys conducted for the station in 2000 and 2001, I frequently saw white-tailed deer, commonly in groups of four up to eight, and their tracks and scat were in evidence in a wide range of vegetation cover types, all of which indicated a robust deer population at this locality. I also recurrently observed some of the other known culprits - cottontails and meadow voles - so it came as no surprise that the planted hardwood seedlings showed the characteristic signs of

(Continued on page 4)

ANNOUNCING ...

2003 Ecological restoration "Spring break" seminars
Two Florida seminars in March that are part of the Eagle Hill seminar series that is co-sponsored by the Society for Ecological Restoration

Freshwater Wetland and Upland Restoration in the Southeastern Coastal Plain

Participants in this seminar will learn methods and strategies for restoring longleaf pinelands, wet prairies, marshes, forested wetlands, and scrub in the southeastern coastal plain. The seminar is specifically designed for restoration practitioners with interests in working in this region and is presented over an intensive 4 day period. Native seed collection/handling and control of exotic species are emphasized. Restoration principles are reviewed. Essential steps are presented for conducting restoration projects from start to finish. The implementation of restoration plans within a mitigation context is discussed. A one-day field trip characterizes ecosystems, their disturbance, and their restoration.

André Clewell and Nancy Bissett
Camp Helen State Park, Panama City Beach, FL
Nearest major airport = Tallahassee, 120 miles from Panama City
March 4 - 7; 4 days, \$700

Applied Ecological Restoration: Introduction and Overview

Participants in this seminar will learn underlying concepts and step-by-step practical details in developing and carrying out restoration plans in general. The seminar serves as a broad introduction to the rapidly developing field of ecological restoration and has broad applicability in other regions of the country, from eastern Canada through the southeastern United States. It is presented over an intensive 4 day period. Discussions will focus on plant sources, soil renovation, seeding concepts, natural materials use, and exotic invasive species. Participants will work with three dimensional, hands-on models of sites and problem areas. A field trip component is planned. The emphasis will be on planning workable, reliable, and affordable restoration plans for several different environments.

John Munro
Camp Helen State Park, Panama City Beach, FL
Nearest major airport = Tallahassee, 120 miles from Panama City
March 5 - 8; 4 days, \$700

For more information, please contact ...

Humboldt Institute
PO Box 9, 59 Eagle Hill Road
Steuben, ME 04680-0009
Phone: 207-546-2821
FAX: 207-546-3042
office@eaglehill.us
<http://www.eaglehill.us/egeninf.html>

SER RESTORATION WEEKEND

The 2003 SER Restoration Weekend will be held May 17-18 so mark your calendars. We will post more detailed information in the spring newsletter and on our website: www.ecologyart.com (under volunteers).

Yours in Conservation
Paul and Darleen

Setbacks in Forest Restoration continued..

past and current browsing.

It is likely inevitable that the hardwood plantation at the Lambton site will continue to be grazed and suppressed by herbivores, particularly white-tailed deer. Henigman (2002) noted that deer generally browse tree seedlings that are shorter than 1.75 m, which is consistent with the observations at Lambton: the only seedlings that appear to have escaped the browsing effects are the cottonwoods that have reached 2.0 m, but the rest of the specimens that are still in easy reach continue to exhibit the signs.

Opperman and Merenlender (2000) concluded that woody species recovery in heavily-grazed areas can be improved by excluding deer, typically with high fences; however, this is often not practical (or economical) in the context of other site management requirements and priorities. Crouch (1976) indicated that spraying trees with chemical repellents may provide some success against herbivores, but this approach has not been tested at the Lambton site.

King and Keeland (1999) noted that it may take up to 60 years or more for plantations to attain the requisite structural and functional attributes for benefiting wildlife, even if tree seedling survival is on the order of 100%. So, in the final analysis, given that herbivore-plant interactions are part and parcel of natural area restoration, the reforestation exercise at the Lambton site will not only be a long term prospect, but very likely an exercise in patience and tolerance too.

References

- Bazzaz, F.A. 1996. **Plants in Changing Environments: Linking Physiological, Population, and Community Ecology**. Cambridge University Press, Cambridge, England. 320 pp.
- Couch, G.L. 1976. **Wild animal damage to forests in the United States and Canada**. . U.S. Department of Agriculture. XVI IUFRO World Congress Proceedings, Norway 1976: 468-478.
- Gordon, A.M., J.A. Simpson, and P.A. Williams. 1995. **Six-year response of red oak seedlings planted under a shelterwood in central Ontario**. Can. J. For. Res. 25:603-613.
- Haig, R.A., J.D. Nolan, and .F. W. von Althen (compilers). 1991. **Summary of the Proceedings of the Hardwood Establishment and Management Symposium** . For. Can. (Ont. Reg.) and Ontario Ministry of Natural Resources (London Ont.). Joint Report No. 16.
- Henigman, J. 2002. Deer browse protection. Canadian Silviculture. Fall: 25-28.
- King, S.L., and B.D. Keeland. 1999. **Evaluation of reforestation in the lower Mississippi River alluvial valley**. Restoration Ecology 7:348-359.
- Opperman, J.J., and A.M. Merenlender. 2000. **Deer herbivory as an ecological constraint to restoration of degraded riparian corridors** . Restoration Ecology 8:41-47.
- Radvanyi, A. 1987. **Snowshoe hares and forest plantations: a literature review and problem analysis** . Northern Forestry Centre, Can. For. Serv. Inf. Rep. NOR-X-290.
- Smith, H.L., and P.L. Verkruysse. 1983. **The White-tailed Deer in Ontario: Its Ecology and Management**. Ontario Ministry of Natural Resources, Wildlife Branch. 35 pp.
- von Althen, F.W. 1981. **Site preparation and post-planting weed control in hardwood afforestation: white ash, black walnut, basswood, silver maple, hybrid poplar** . Can. For. Serv., Sault Ste. Marie., Ont. Report 0-X-325.
- von Althen, F.W. 1985. **Spacing trials in black walnut, white ash and silver maple plantations** . For. Can., Ont. Reg., Sault Ste. Marie, Ont. Inf. Rep. 0-X-365. 14 pp.
- von Althen, F.W. 1990. **Sowing and planting shagbark hickory and bitternut hickories on former farmland in southern Ontario** . For. Can., Ont. Reg., Sault Ste. Marie, Ont. Inf. Rep. 0-X-403. 11 pp.
- von Althen, F.W. 1988. **Performance of black walnut-white pine plantations in southwestern Ontario**. Gov't. Of Can., Can. For. Serv., Sault Ste. Marie, Ont. Joint Rep. No. 13. 30 pp.

Restoration News from Northern Ontario

Two New Appointments

1. As the newly appointed Co-ordinator of Environmental Initiatives, Economic Development and Planning Services, Dr. Paul Monet will take over the coordination of the City of Greater Sudbury's Land Reclamation Program. Stephen has a B.Sc.(Agr.) in Wildlife Management and an M.Sc. Plant Science (Horticulture), both from McGill University, an M.L.A. in Landscape Architecture from the University of Guelph and a Ph.D. in Biology and Planning from the University of Waterloo. His strategic plans for the Sudbury Land Reclamation Program include an increased emphasis in improving biodiversity on revegetated land, and taking a watershed approach to landscape reclamation.

2. Marc Dubé, the newly appointed Mill Manager at St. Mary's Paper in Sault Ste. Marie is working with ULERN (the Upper Lakes Environmental Research Network) on the feasibility of using paper mill biosolids as an aid in the establishment of vegetation on northern Ontario's approximately 200 abandoned gravel pits.

thanks to Keith Winterhalder for keeping us posted...

New Threat to North American Hardwood Forests?

Potential Impact of Exotic Wood-Boring Insects on Forest Ecosystems and Forest-Based Economies

Forum and Workshop

February 27 and 28, 2003

*Global Institute of Sustainable Forestry
Yale School of Forestry and Environmental Studies
New Haven, Connecticut*

Is the Asian Longhorned Beetle (ALB) a serious threat to our hardwood forests and forest-based economies? What preemptive steps can the forestry and forest landowner communities take to contain or otherwise reduce the risk of severe ALB invasions? What lessons can be learned from the recent outbreak of another exotic beetle, the Emerald Ash Borer, in Michigan and Ontario?

Join us for a forum and workshop to explore these questions and develop strategies to deal with a potential invasion of ALB into hardwood forests. We will begin with a panel of leading scientists who will present the latest information about this exotic, invasive pest, which is wreaking havoc on urban trees of New York and Chicago. Following the panel will be a workshop, a facilitated dialogue, about strategies for risk reduction in the event that current control efforts fail to keep ALB from spreading beyond urban areas.

Forum	February 27 4:30 to 6:30 Sage-Bowers Auditorium, 205 Prospect Street
Workshop	February 28 8:30 to 2:00 Marsh Hall, 360 Prospect Street

The forum is free and open to the public. No registration is required. If you would like to participate in the workshop, please contact Page Bertelsen at 203.432.5117 or yff@yale.edu. Information about traveling to New Haven, lodging, and directions to the School can be found on <http://www.yale.edu/forestry/about/travel.html>



Society for Ecological Restoration
Ontario Chapter
...with the generous support of Niagara College

*Committed to promoting the greater
understanding and good practice in all aspects of
habitat and ecosystem repair and management*

Affiliations

- Carolinian Canada
- Forest Gene Conservation Association (FGC)
- Ontario Tallgrass and Prairie Association

Ecological Outlook

Landscape, ecology & environmental services since 1990



- Landscape planning, architecture, construction
- Ecological restoration, naturalization, bioengineering
- Management plans, maintenance plans
- Ecological surveys, monitoring, permitting
- Facilitation, conflict mediation
- Education, communications, research

Donna Havinga MES, Jean-Marc Daigle MES, OALA

Box 93, Schomberg, Ontario L0G 1T0
ph 905-939-8498 fax 905-939-7044 eoutlook@ican.net

c/o Centre for Environmental
Training
Niagara College
Glendale Campus
135 Taylor Rd., R.R.#4
Niagara-on-the-Lake, Ontario
L0S 1J0

T: (905) 641-2252 ext. 6494
Email: info@serontario.org

Visit our website at
www.serontario.org!

PRODUCERS OF NATIVE TREES, SHRUBS, GRASSES AND FLOWERS
(PLANTS AND SEEDS) SOUTHERN ONTARIO ECOTYPE



PTEROPHYLLA

MARY E. GARISHORE, PETER J. CARSON
R.R.# 1, WALSINGHAM, ONTARIO
N0E 1X0, CANADA

ph: 1-519-586-3985
E-MAIL GARTCAR@KWIC.COM FAX: 1-519-586-2926

Acorus Restoration

Native Plants and Seed for Wetland
Meadow, Prairie and Woodland
Planting Design and Installation
Ecological Consultation



Contact: Paul Morris and Darleen Degriek
RR# 1, Walsingham, Ontario, N0E 1X0
Tel (519) 586-2603 Fax: 586-2447
E-mail: info@ecologyart.com Web: www.ecologyart.com

**otter valley
native plants**



Gail Rhynard

- Plants for Naturalizing and Restoration
- Native Plants of Southern Ontario
- Prairie and Meadow Wild Flowers and Grasses.
- Contract Growing

P.O. Box 31, R.R. #1
Eden Ontario, N0J 1H0

(519) 866-5639

Urban Forest Associates

Ecological Restoration and Management

Stephen Smith
Forester

331 Linsmore Cr. Toronto, ON M4J 4M1
Phone/Fax: (416) 423-3387

If you would like to advertise here please contact Jeremy Lundholm at (519) 824-4120 ext. 6008 or jlundhol@uoguelph.ca