The Blazing Star

Summer 2008, Volume 9, Issue 3

Newsletter of the North American Native Plant Society

Native Plant to Know

Alabama snow-wreath

Neviusia alabamensis

by Kevin Kavanagh

In his *Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses*, Michael Dirr describes Alabama snow-wreath as "a novelty item for the plantsman who wants something different" and "a great plant with which to stump your plant material friends."

Some plants are a rare find. For that reason alone they are highly sought after by gardening enthusiasts and naturalists. Add to that some quirky botanical feature and a plant increases its appeal yet another notch. Alabama snow-wreath (*Neviusia alabamensis*) has all this and more.

Alabama snow-wreath is a medium-sized shrub of the Rose family (Rosaceae) and the only member of its genus in North America. It was first identified in 1858 from plants growing on a series of bluffs where the North River and the Black Warrior River connect in Tuscaloosa, Alabama. The discovery was made by the Reverend Reuben Denton Nevius, in whose honour the genus was named.

In structure, *N. alabamensis* has a branching habit that is strongly arching to about 1.5 metres (five feet) high at maturity. The plant is stoloniferous and, with time, it will develop an equally wide spread and form a small colony. The small deciduous leaves are arranged alternately, have double serration and, unfortunately, little fall colour. In northern gardens, the plant tends to remain green well into November when leaves are finally frozen off the plant by hard frosts.

When in full flower in mid-spring, the mounding branches resemble winter wreaths covered in powdery light snow. This unusual appearance has been variously reported by gardening authorities as light and airy, fluffy or even quirky! The effect is produced by the prominent, dense clusters of soft, white or cream-coloured stamens as the flowers, growing on a cyme, have no petals. Some authorities uncharitably call the plant scraggly. To keep it in good shape, prune after flowering, removing older and dead wood at the base.

In its natural environment, *N. alabamensis* is restricted in distribution, with scattered occurrences in only six southern U.S. states. In three states (Alabama, Georgia and Tennessee) it is listed as a

illustration by Brigitte Granton

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The *Blazing Star* is . . .

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The North American Native Plant Society is dedicated to the study, conservation, cultivation and restoration of North America's native flora.

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Letter From The Presidents

Political agendas and rhetoric constantly focus on carbon offsets. What a wonderful opportunity we have to contribute! Creating and restoring native habitats improves water, air and soil for all living things, and in turn reduces our E footprint. Native plant landscaping is becoming part of the mainstream as its inclusion in building site design contributes to a LEED (Leadership in Energy and Environmental Design) credit. Many municipal and other government departments are now requiring their building projects to have LEED certification. See www.cagbc.org.

NANPS is initiating and organizing events that will continue to contribute to information sharing and the strengthening of our mandate. We begin this fall with a September 20th excursion to the Arthur Langford Conservation Area near Lake Erie. We are very fortunate to have two native plant experts, Mary Gartshore and Peter Carson, to guide and inform our exploration of these amazing Carolinian old growth forests. We are putting the finishing touches to an exciting and informative Speakers Series for 2008-9 at the Toronto Botanical Gardens. Some of the featured speakers are Paul Heydon, Martin Galloway, Charles Kinsley, Ken Parker, and Dr. Laurence Packer.

Also, our Website is being dramatically redesigned and rewritten, and should be running by late September. Doug Counter is coordinating and integrating the design component, with Heather Hilliard busy doing the rewrite. Charles Iscove, our tech advisor (and board member), is pulling it all together. Our goal is to have a website that allows NANPS to communicate more effectively with its members. Check it out at www.nanps.org!

Plan to attend our AGM on October 18th at the Toronto Botanical Gardens. (See website and below for more details.)

NANPS still needs volunteers to help take a more active role in the day-to-day running of the organization, special events and committees. We have ideas, but alas, not enough people and people hours to achieve our goals and make a bigger difference. As a not-for-profit charitable organization we especially need volunteers to write grant applications, solicit funds from corporate sponsors and coordinate volunteers. Does any of this strike a chord with you? Please contact us or step forward at our AGM. Be part of that change you wish to see in our world…

Miriam Henriques and Harold Smith

Excursion To Arthur Langford Nature Reserve

SATURDAY, SEPTEMBER 20, 2008
A rare opportunity to visit ecologically rich Carolinian forest and wetlands in Norfolk County guided by Peter Carson and Mary Gartshore of Pterophylla Native Plant Nursery. The full-day tour covers the Arthur Langford Nature Reserve and Jackson Gunn Old Growth Forest and Restoration Site. Bus leaves Wilson Subway Station parking lot at 8AM sharp. $58 for NANPS members/$68 non-members/$35 student special. To order tickets: excursions@nanps.org, voicemail 416-631-4438. Details: http://www.nanps.org/pdfs/20080920-excursion.pdf.

NANPS Annual General Meeting

SATURDAY, OCTOBER 18, 2008 – NOON TO 4PM
TORONTO BOTANICAL GARDENS
SOUTHWEST CORNER OF LAWRENCE AND LESLIE
TORONTO, ONTARIO
This year's theme is the **Role of Native Plants in Water Conservation** featuring RiverSides, a non-profit group dedicated to creating RiverSafe communities by reducing runoff pollution from individual properties through education and helping people make the connection between personal action and healthy rivers.

The Deliciously Lovely Waterleaf

by Dagmar Baur

Some years ago I wanted to find a native groundcover for a densely shaded part of the Bain Co-op garden in east Toronto. I was looking for a plant that spread easily and looked attractive under larger plants such as red baneberry (*Actaea rubra*), Solomon's seal (*Polygonatum biflorum*) or the imposing black cohosh (*Cimicifuga racemosa*). A Virginia waterleaf (*Hydrophyllum virginianum*) came my way from gardener Helen Mills who likely bought her original plant at the NANPS Plant Sale. My waterleaf soon prospered.

I enjoy the mauve and white flowers clustered in loose cymes; I love how the stamens and stigmas protruded delicately out of each bell. These flowers are perfect in that they have both male and female organs. In Toronto they poke their heads out in late May to June from large fountains of deeply divided leaves with five to seven lobes. The plants spread by seeds and rhizomes. They also have soft and mysterious little burr-like pods before they burst into delicate bloom during their summer journey. Best of all they require little care besides watering and judicious removals (the latter to allow breathing room for other plants).

I couldn't remember seeing Virginia waterleaf plants in the forest, but once I got to know them in our garden over several seasons I noticed them in wet places, on woodland edges, or spreading in large colonies in the dappled shade of mature trees. (I'm happy the waterleaf is still to be found in our forests because it is endangered in many places in North America.)

There are many names for waterleaf in Timothy Coffey's book *The History and Folklore of North American Wildflowers* which make reference to its habitat, appearance and uses: brook flower, burr flower, Indian salad, Shawnee lettuce and John's cabbage. The Latin name *Hydrophyllum* means waterleaf.

Those colourful names intrigued me and I wanted to know more. I had grown up on weeds in post-World War II Germany and was not afraid to sample new foods. I learned that the green leaves are edible, in fact, quite tasty. The *Edible Wild Plants* guide in the Peterson Field Guides series suggests cooking waterleaf green. It says that the young leaves (picked before the flowers appear) "are excellent boiled five-10 minutes in one or two changes of water and served with vinegar." In my experience, the young leaves are also excellent – succulent and delicious – when served raw. Hence the name Indian salad. I also like to steam them briefly or stir-fry gently, adding soya sauce, toasted sesame seeds and a dash of balsamic vinegar. YUM!

Photo courtesy Darcie McKelvey

This is how Virginia waterleaf looks at the end of July.

I even have a system worked out for thinning them. I cut off the leaves from plants intended for removal and cook them. Later I remove the root & some young stems and pot them up. I let them stand for a few weeks and let them grow in. Then my waterleaf offspring are happily adopted out to other gardens.

One of my favorite wildcrafting books is "Wildman" Steve Brill's book *Identifying and Harvesting Edible and Medicinal Plants in Wild (and not so Wild) Places*, published by Hearst Books. The book guides you through the seasons of edible plants, has lovely drawings and sensible instructions like: "Hairless species' young leaves [of waterleaf] are good in salads when they first come up in early spring. All varieties make a nice steamed vegetable or soup. The flavor is like parsley, only more delicate."

The mature waterleaf has a bitter flavour, hinting at its medicinal qualities. First Nations used root tea as an astringent to treat diarrhea and dysentery, and they chewed the roots when they had cracked lips and mouth sores, according to Peterson. The bitterness in the mature leaves isn't noticeable after they've been boiled.

Waterleaf is an easy plant to grow. Most books say that it loves rich soil, wet places and shade, but gardeners have reported that it adapts to sand, clay and sunny places too (although it tends to wilt in the heat of the day).

There is one downside. Slugs love waterleaf too. I am at war with the slugs. My weapons are dried egg-shells and beer for Viking Slug funerals (both to kill them and to celebrate with afterwards).

My waterleaf comes from a distinguished family of 22 genera, 275 species of herbs and shrubs – many edible, many medicinal. Large-leaved waterleaf (*Hydrophyllum*

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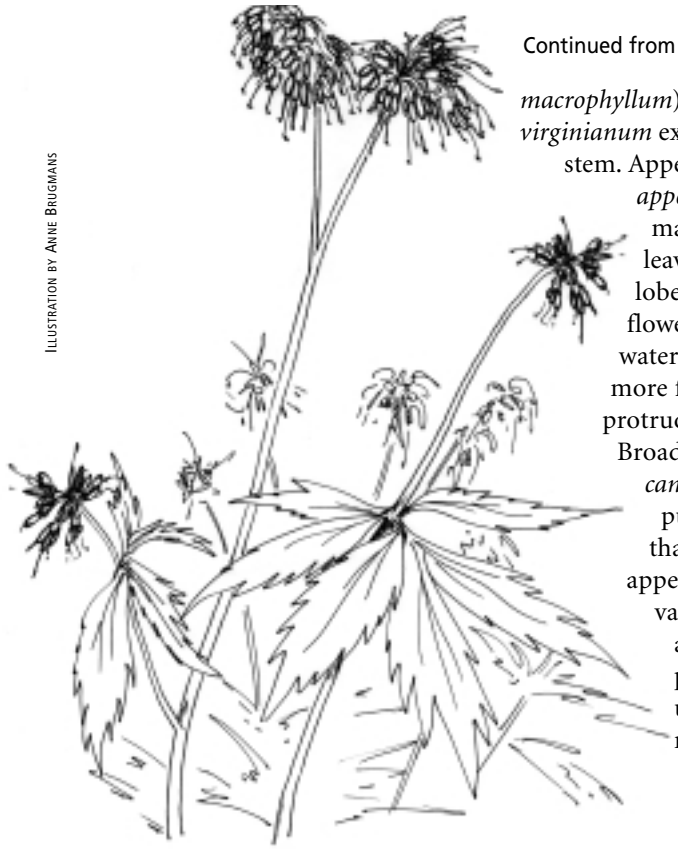

Illustration by Anne Brugmans

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macrophyllum) resembles *H. virginianum* except for the fuzzy stem. Appendaged waterleaf (*H. appendiculatum*) has maple-like elongated leaves with five to seven lobes and lavender flowers. (Virginia waterleaf's flowers look more frothy with their protruding stamens.) Broad-leaved waterleaf (*H. canadense*) has white or purplish flowers with that same frothy appearance. The latter variety is endangered and should not be picked for eating unless you've got mounds of them in your garden. (And if that's the case, please pass on their offspring to be fruitful and multiply.)

It's little wonder that I am so charmed by the multi-talented waterleaf. It is lovely to look at, useful as an edible and a medicinal, easy-care, shade-tolerant and not fussy about soil. Waterleaf contributes its lovely greens, delicate colours and abundance to our gardens and our dinner-plates. I give it 4.5 stars out of five.

Dagmar Baur is a community gardener and writer. She grows heritage vegetables and native plants, and offers workshops on edible weeds and wild plants. Her gardens, which can be viewed at 100bain.com or www.treetours.to/bain-coop, were honoured with the NANPS Community Garden Award in 2007.

Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens
By Douglas W. Tallamy
Portland: Timber Press, 2007
ISBN 978-0-88192-854-9
Hardcover, 288 pages

I can just imagine the marketing meeting at Timber Press when it came time to discuss the subtitle for Douglas Tallamy's amazing book, *Bringing Nature Home*. An accurate subtitle would have been something like "Plant Suburbia with Insect-Friendly Native Species." But I suspect that the publisher was allergic to any mention of the word "insects"; the subtitle is the cozier sounding "How Native Plants Sustain Wildlife in Our Gardens." I'm all in favour of minor misrepresentation if it means that more people will read this important book. And it's not really misrepresentation anyway—as Tallamy argues (passionately, exhaustively, convincingly), wildlife is sustained by the all-important herbivores—the insects--at the lowest levels of the food chain, and if we want wildlife, we need to plant species that feed insects.

Insects are a hard sell, particularly for gardeners. We may be willing to allow some larvae to nibble away on plant leaves, but only if they turn into butterflies. Tallamy, however, encourages us to take a broader view: "a large percentage of the world's fauna depends entirely on insects to access the energy stored in plants." Insects eat the plants and then become food themselves for creatures higher up the food chain. As Tallamy puts it, "I cannot overemphasize how important insect herbivores are to the health of all terrestrial ecosystems."

Another possible subtitle for this book would have been something like "Why Alien Plants Just Don't Cut It." This is where Tallamy has made his most major contribution in a book chock full of major contributions. With simple, clear logic, he shows the fallacy of the argument that non-native plants contribute to biodiversity, an argument that any native plant proponent has probably heard numerous times. The problem Tallamy points out is that a numeric accounting (saying, for example, that the 5,000 non-native plant species currently inhabiting the natural areas of North America increase biodiversity) doesn't take into account these plants' lack of any *functional* contribution to the ecosystem. Focusing on the food-for-insects angle, for example, Tallamy shows that the non-native additions to our flora do virtually nothing in terms of providing food for native insects. He cautions that few researchers are compiling the data, but his summary of the research to date is compelling–for species after species, he enumerates the few native insects that feed on non-native plants (which he calls "alien" throughout), and compares it with the dozens or hundreds that feed on these same plants in their home range. The implication is clear: most insect herbivores can only eat plants with which they share an evolutionary history.

There's another side to this that will gladden the heart of any native plant proponent who has been enmeshed in endless arguments about what constitutes a native plant. Many have been challenged with the question, "if a plant has been here for hundreds of years and has naturalized in the wild, why shouldn't it be considered native?" Tallamy has a refreshing (and refreshingly simple) take on this: "When 'native' and 'alien' are defined in terms of the presence or absence of historical evolutionary relationships, the confusion over these concepts disappears." Thus, a plant is native when it has evolved to interact with the whole complex system, when it contributes to this functioning web of relationships. In other words, sure European buckthorn (*Rhamnus cathartica*) berries feed the birds, but this non-native (and invasive) plant does little in the way of supporting insects, which most birds depend on for protein and fat. Like most alien plants, the non-native buckthorn has yet to evolve into ecosystem usefulness in its new home, to become "native" in any meaningful sense.

Despite the potentially depressing nature of Tallamy's message, the book is strangely hopeful. Yes, the landscapes of North America have been transformed to the point that few places could be considered "wild." But suburban ecosystems offer a huge opportunity, and likewise an important role, for gardeners. If native plants are being decimated in the wild, if non-native plants now form a large component of our "wild" flora, then we can and should plant natives in our gardens because we "can no longer rely on natural areas alone to provide food and shelter for biodiversity."

This is one of those life-changing books that has the power and persuasiveness and scientific credibility to transform our actions and our landscapes. Highly recommended.

Review by Lorraine Johnson, editor of the recently published collection of essays The Natural Treasures of Carolinian Canada.

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The Natural Treasures of Carolinian Canada
Edited by Lorraine Johnson
Halifax: James Lorimer & Company, 2007
ISBN 10: 1-55028-990-X and
ISBN 13: 978-1-55028-990-9
Paperback, $34.95, 160 pages

"Discovering the rich natural diversity of Ontario's Southwestern heartland" is the aim of this glossy, soft-cover book. In fact, it does so very nicely. The book's three parts cover plants, animals and caring for them. A map at the front of the book shows "Carolinian Canada Signature Sites".

The person who has an interest in nature, with some experience (for example, has been on a field trip or two or recognizes a bloodroot, *Sanguinaria canadensis*), and a keen desire to know more, would be the ideal reader for this book. The chapters are written by experts, one chapter per writer. These folks know their material, and their prose paints pictures that enchant. The many photos complement the writing very nicely. If I were browsing in a bookstore and picked up a book with a lady's-slipper orchid (*Cypripedium* spp.) photo on the front and back covers, and the flower of the most glorious tree in the province, the tulip tree (*Liriodendron tulipifera*), also on the back cover, plunk!, down would go my money and the book would be mine. If you feel the same, your money will be well-spent.

Plants I know pretty well. But fish, butterflies and moths, newts, skinks and snakes I do not. The book gives a concise overview so that we not only know more, but come to appreciate these creatures. Sadly, snakes need all the good press they can get, and get it here they do.

The Natural Treasures of Carolinian Canada amply covers the natural history of the region. What we invaders from the Old World did to Nature is appalling. The book expresses some hope, describing regions where tree cover has actually increased, where landowners are heeding the call and working with Nature, putting their land under stewardship programs. Mind you, we have a long way to go. And with invasives such as garlic mustard (*Alliaria petiolata*), zebra mussels, the Emerald Ash Borer coming at us in waves, whatever optimism we can muster needs to be tempered with a good dose of reality.

As I look back 25 years to when the Carolinian bug first bit me, I can only think how much a book such as this one would have helped.

Review by Tom Atkinson

Wildlife Waystations

by Maryann Whitman

Bumblebees are among the most important pollinators of temperate-zone plants – in the wild, in the garden, in the field and even in the greenhouse. There are 54 species of the genus *Bombus* native to North America, and they likely pollinate our earliest and latest blooming native plants. Several of the *Bombus* species use "sonification" to pollinate flowers. The bee grasps the flower in question, wraps its body under the anthers (pollen-bearing structures) and vibrates its strong flight muscles to cause the flower to spill its pollen. Bumblebees can use this sonification skill whenever and wherever. They don't have to fiddle around looking for access to pollen like honey bees but can go straight to business. Thus they are able to pollinate hundreds more flowers per hour than honey bees. All we need to give them is undisturbed habitat.

Bumblebees die off in the fall except for the queen. She hibernates in an underground chamber until mid to late April and then emerges, ravenous. In my garden in southeast Michigan she would find spicebush (*Lindera benzoin*), American plum (*Prunus americana*), serviceberry (*Amelanchier laevis*), native crabapple (*Malus coronaria*), marsh marigold (*Calthra palustris*), cranesbill geranium or wild geranium (*Geranium maculatum*), golden Alexanders (*Zizia aptera*) and violets (*Viola* spp.). When she finds them she drinks her fill, using her long, curled tongue as a straw.

Plant such a variety of natives that something is blooming in every season, from snow-melt to snow-fall. The nectar and pollen in these blossoms may be saving someone's life.

For a list of what blooms when visit www.arboretum.harvard.edu/plants/bloom.html#bottom.

*Bumblebee feeding on a marsh marigold (*Caltha palustris*).*

ILLUSTRATION BY ANNE BRUGMANS

Excerpted from Humblebee bumblebee *by Maryann Whitman,* Wild Ones Journal*, March/April issue 2007. Complete article available at http://www.for-wild.org/download/ .*

Rhode Island's Coastal Habitats

by Hope Leeson

Tides punctuate a daily rhythm for coastal plant communities. In Rhode Island, tidal fluctuation occurs twice daily, with changes ranging from 2.5 to six feet (75 to 1.75 metres) in height. Storm surges bring saltwater farther inland affecting those plants growing within the transitional area between coastal and terrestrial habitats.

Rhode Island has many diverse coastal habitats. Communities include wave-pounded sand beaches with maritime dunes, bedrock outcroppings and coastal bluffs, as well as calm intertidal marshes, rivers and brackish coastal ponds.

At its seaward extent, the beach strand is the most dynamic of all coastal habitats. The forces of storm-driven and wind-generated waves are incomparable. The beach face constantly changes as winter storms remove sand, exposing underlying cobbles, and summer tranquility allows sand to accumulate and contribute to the formation of dunes. Onshore winds continually move sand over land via the process of saltation. Sand particles are carried in the wind and deposited, causing additional particles to bounce up and be caught by air currents. Debris deposited at the levels of extreme high tides forms an obstacle to the landward march. Moisture and nutrients held within the pile promote the germination of annual, salt tolerant species, such as American sea-rocket (*Cakile edentula*), and the state threatened (and globally rare) seaside knotweed (*Polygonum glaucum*). Both of these fore-dune colonizers are low-growing, succulent-leaved plants. Their roots bind to the coarse sand particles, stabilizing the substrate. Quick germination and annual growth ensure that populations will survive from year to year somewhere along the beach front.

Photograph by Hope Leeson

Seaside plantain

Over time, as sand height grows, perennial plants such as American beach grass (*Ammophila breviligulata*) and seabeach sandwort (*Honckenya peploides*) (considered a state species of concern) can become established. These species are taller (about 21 inches, or 55 centimetres), with greater horizontal coverage. The above ground portions of the plants affect wind speed, allowing suspended sand particles to settle between their leaves. *Ammophila*, which means 'sand loving', grows colonially through the expansion of horizontal rhizomes. Its survival is dependent on the continued accumulation of sand. *Honckenya* has small succulent leaves, and also establishes itself over a broad area through rhizomes and runners.

As with plants of desert habitats, primary dune species are physiologically adapted to conserve water and to reduce the effects of abrasion by wind-blown sand particles. Succulent leaves are common; like those of sea rocket and *Honckenya*. Species such as *Ammophila* have leaves with high amounts of lignin which increases resistance to sand abrasion.

Gradually, as dune height increases, a more sheltered environment is created. Wind velocity decreases and soil stability increases. However, the reduction of wind along the surface also results in an increase in the effects of solar radiation. In addition to *Ammophila*, plants forming the dune community are low growing with small hairy leaves, such as wooly hudsonia (*Hudsonia tomentosa*) and the introduced beach wormwood (*Artemisia stelleriana*). Succulent-leaved herbs, such as seaside goldenrod (*Solidago sempervirens*) and the vines of beach pea (*Lathyrus maritima* var. *japonicus*) and orach (*Atriplex prostrata*), spread out across the ground in the relative shade of adjacent plants. Foliar coverage of the soil cools the surface temperature and conserves soil moisture. Sand particles are mainly comprised of quartz, silica and magnetite, and are highly acidic with little organic matter. With the exception of plants of the family Brassicaceae, most dune species are dependent on mycorrhizal associations to gain nutrients from the soil. Beach pea, being a member of the family Fabaceae, improves soil conditions by fixing nitrogen from the atmosphere.

As the dune progresses landward, organic matter increases in the soil composition. Shrubs, such as eastern red cedar (*Juniperus virginiana*), winged sumac (*Rhus copallinum*), and poison-ivy (*Toxicodendron radicans*),

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and switch grass (*Panicum virgatum*) become common elements of the community. The effects of wind and salt spray, while diminished in their effect upon the substrate, still affect the above ground portions of the plants. Much like woody alpine species, vertical growth is slowed, as is growth facing the prevailing sea breezes; the effect being that of stunted trees reaching toward the land.

Dune surface elevation eventually intercepts the water table and the plant community becomes that of a brackish marsh fringing a coastal pond. The soil remains composed largely of sand. True salt marshes develop along intertidal waters, where the outflow of inland rivers slows allowing sediment to settle and accumulate.

Intertidal marshes extend along the entire east coast of the United States. Cold northeast winters contribute to the development of estuarine marsh soils through the formation of peat. As a result of the scouring of sediment from bedrock surfaces, which occurred during the last period of glaciation, sediment depths in estuarine marshes in Rhode Island are relatively shallow. Peat depths range from less than two feet to three feet (.6 to one metre), with exceptional depths of six feet (two metres) in the northeastern part of the state.

Typically, vegetative growth patterns across a saltmarsh follow changes in physical environmental factors. Areas of marsh closest to intertidal waters are subject to twice daily flooding and exposure, and are described as 'low marsh'. Beyond the reach of daily flooding, the marsh is described as 'high marsh'. Tidal inundation remains a factor, but ranges from 24 days out of the lunar cycle to two, along the uppermost edge of the marsh. Across the continuum, salinity concentrations can range from brackish to that of sea water (as well as to highly saturated). With the exception of areas that interface directly with intertidal waters, the waterlogged soils are without oxygen. Despite these harsh conditions, vascular plants cover most of the available space across the marsh surface.

Photograph by Hope Leeson

Maritime dune community, Little Compton, Rhode Island

The plant most tolerant of the conditions is smooth cordgrass (*Spartina alterniflora*). The species is a fast colonizer, with extensive rhizomes that serve to aerate the soil. To aid in the delivery of oxygen to the plant colony, *Spartina alterniflora* has well developed aerenchyma, or passageways, within the vascular system which carry oxygen from the leaf surface to the roots. Along the water's edge, where oxygen levels are highest, smooth cordgrass can grow three to six feet (one to two metres) in height. However, immediately back from this point, soil drainage and soil oxygen are greatly reduced and *S. alterniflora* height is considerably less.

High marsh community is dominated by salt-meadow cordgrass (*Spartina patens*), with in-rolled leaves which shield the stomata from hot sun. Succulent-leaved species such as sea lavender (*Limonium carolinianum*) and seaside plantain (*Plantago maritima*) can be found interspersed within the upper margins of the *S. patens* colony. Spike-grass (*Distichlis spicata*), with its sharp-tipped tillers, colonizes areas where winter storms have piled decaying organic material, causing the death of underlying vegetation. As material decays, or is washed away, the peat surface is exposed to solar radiation. Evaporation of water leaves behind highly concentrated salt deposits. The colonial growth habit of *Distichlis* allows fresh water to be supplied to pioneering portions of the plant, enabling the species' survival. A second colonizer of temporary salt pannes is a small succulent plant known as perennial glasswort (*Sarcocornia perennis*). This species can often be found scattered among stands of *Distichlis* or *S. patens*, but thrives in the open, highly saline micro-habitat of the salt panne. The species provides an excellent example of adaptations to the environmental factors of salt and intense solar radiation. *Sarcocornia* has no true leaves. The stems are succulent, with leaves of reduced scales. Both stem and scales are photosynthetic. Close examination of the stem reveals salt crystals exuded to the surface by the plant's vascular system.

Daily tidal inundation and the shelter of intertidal plant communities provide valuable habitat for fish and shellfish resources. The abundance of coastal habitat found in the 1,776 square miles (2,858 square kilometres) that make up Rhode Island is reflected in our moniker, The Ocean State.

Hope Leeson is a consulting field botanist in Rhode Island. She also enjoys teaching a summer course in Field Botany and Taxonomy at the University of Rhode Island.

Ontario's Historical Pine Forest

by Michael Henry

The year is 1615. Samuel de Champlain, Etienne Brulé, and 10 Huron are travelling up the Ottawa River by canoe, into a territory largely unknown to Europeans. Not far to the north, at the headwaters of the Ottawa, a seed germinates in a forest gap and grows into a tiny white pine (*Pinus strobus*) seedling. As Champlain and his party turn west and head to Georgian Bay, the seedling soaks up the sun and begins to grow. Over the next 400 years it will survive forest fires, windstorms, drought and flood years, and finally in 1989 it will be spared from the chainsaw by mass demonstrations and the arrest of 344 peaceful protestors on Red Squirrel Road, in Temagami.

And so this tree still stands. When Samuel de Champlain died in 1635, it was a tall sapling, and by the time the British defeated the French in 1760, it was a mature tree as large as most trees we see today. It was an impressive tree by the time the first raft of logs was floated down the Ottawa River in 1806, marking the beginning of the great timber trade and the founding of what would later become Canada's capital, Ottawa. When most of the old-growth forests along the Ottawa and its tributaries had been exhausted by the early 1900s, the white pine was nearly 300 years old. But that age in equivalent human years would amount to about 60 years – a white pine can live for at least 500 years.

Because of that, we'll never in our lifetimes see forests such as some that were cut in Ontario during the 1800s. One of the largest trees reliably documented in Ontario was cut in 1862. It was over two metres (about seven feet) in diameter and 67 metres (220 feet) tall, or about 20 stories, and the first branch was more than 10 stories above the ground—higher than the tops of most pine trees today. This tree contained enough wood to build six modern three-bedroom bungalows. It was said that near the shores of Lake Erie, the larger pines often reached 60 metres (200 feet) in height and over 150 centimetres (five feet) in diameter. Tallies of logs that were rafted down the Ottawa River in the early- to mid-1800s show that the average log came from a tree that was almost one metre (three feet) in diameter, and it was not rare to find logs that were 20 metres (65 feet) long and close to one metre in diameter at the small end.

There are few descriptions of the forests themselves, but in 1884, Samuel Thompson described a pine forest near Barrie:

> The forest consisted of [red] (*Pinus resinosa*) and white pine, almost unmixed with any other timber. There is something majestic in these vast and thickly-set labyrinths of brown columnar stems averaging 150 feet (45 metres) in height, perhaps, and from one to five (30-150 centimetres) in thickness, making a traveller feel somewhat like a Lilliputian Gulliver in a field of Brobdignagian wheat. It is singular to observe the effect of an occasional gust of wind in such situations. It may not even fan your cheek; but you hear a low surging sound, like the moaning of breakers in a calm sea, which gradually increases to a loud boisterous roar, still seemingly at a great distance; the branches remain in perfect repose, you can discover no evidence of a stirring breeze, till, looking perpendicularly upwards, you are astonished to see some patriarchal giant close at hand - six yards (5.5 metres) around and 60 (55 metres) high - which alone has caught the breeze, waving its huge fantastic arms wildly at a dizzy height above your head.

Few, if any, such forests remain in Ontario, even though by all accounts they were once common. So, what happened to them?

> The sack of the largest and wealthiest of medieval cities could have been but a bagatelle compared with the sack of the North American forest.
> *—A.R.M. Lower, historian*

It was Napolean Bonaparte who started the whole thing. The British Navy always had an eye on the largest white pines in the New World as masts for their tall ships, but beyond that, it was scarcely worth shipping something as heavy and bulky as wood across the Atlantic Ocean. Napolean changed that by cutting off the British supply of Baltic timber, making Britain painfully aware of its vulnerability. In the early 1800s, Britain imposed high tariffs against the closer, easier, but more vulnerable supplies of European wood, favouring exports from North America instead. As a result, exports of timber from British North America to England jumped from 22,000 tonnes in 1802 to 340,000 tonnes in 1819. Logs were labouriously squared off with axes so that they could easily be stacked in the ships' holds.

These "square timbers" were the main product of Ontario's forests for the better part of the 19th century, but there were problems with them. For one thing, you needed an enormous tree to make a square timber, and these gradually became scarce. Figure that to make a square timber that was consistently 24 inches (61 centimetres) to a side, you needed a log that was about 34 inches (85 centimetres) in diameter at its small end. Since square timbers were typically 12 to 18 metres (40 to 60 feet) in length, there are now very few white pines left standing anywhere large enough to make such a square timber. But in peak years during the mid 1800s, nearly half a million square timbers each year were

rafted down the Ottawa River, many of these squared to 24 inches to a side, and never to less than 12 inches (30 centimetres) to a side.

The other problem with squaring was that a great deal of wood was wasted, simply left to rot in the forest. Samuel Strickland described the process of squaring a timber as he witnessed it in 1853: "One man cuts a row of notches as deep into the side of the tree as the line-mark will allow, or nearly so, between two and three feet (60 and 90 centimetres) apart; a second splits the blocks off between the notches; and the third scores the rough surface, taking care not to cut too deep. The hewer then follows with his broad axe, and cleans off the inequalities left by the scorers." Making a square timber was not an easy job, and few people today would have the skill with an axe to make one. They were still being made even into the 20th century, but from the 1860s on square timbers were gradually phased out and logs went directly to the mills. Both logs and lumber were increasingly exported south of the border instead of overseas.

However it was packaged and sold, pine was the lumber of choice for over a century, and white and red pine trees were sought out and cut down wherever they grew in a way that few other tree species ever were. This was partly because of the unique combination of lightness and strength (bear in mind that old-growth pine are a little denser and harder than today's second growth forest), partly because of their great size, and also because the wood was clear of knots. This trade in pine was one of the economic mainstays of the province, in some years of the early 1800s making up three-quarters of all exports, and remaining one of the most important exports throughout the 1800s. Of course, over time these forests were depleted.

As early as 1871, Prime Minister John A. Macdonald observed in a letter: "The sight of immense masses of timber passing my windows every morning constantly suggests to my mind the absolute necessity there is for looking into the future of this great trade. We are recklessly destroying the timber of Canada, and there is scarcely a possibility of replacing it." Lumbering throughout the 19th century and into the 20th followed a sort of "wild west" frontier mentality that began with settlement of southern Ontario in the late 1700s, and with the founding of Bytown (later renamed Ottawa) in 1801. Our national capital was originally a lumber town, with nine sawmills operating in its peak years. As the good pine nearby was exhausted, lumbermen soon started moving upriver and inland. Lumbering had reached what is now Algonquin Park by the 1830s, and much of the wood that Prime Minister Macdonald saw floating by his office window in 1871 might have been coming from the rivers flowing out of Algonquin Park, as well as the Mattawa River, the Montreal River in Temagami, and from the Quebec tributaries of the Ottawa. But for most of these areas, as Macdonald predicted, the end was already in sight.

Through much of the 19th century, logs were almost always transported by water, driven on the spring floods down creeks and then rafted down the larger rivers, a difficult and dangerous job. But by the late 1800s, much of the old-growth forest in Ontario that was

Photo Credit: E.J.Zavitz. Archives Of Ontario I0027924

The Highland Grove, one of the best white pine groves still standing in Algonquin Park in 1913, was one of the few such forests to be photographed in Ontario. The grove was apparently logged after photographs were taken.

water accessible had been exhausted, and railways became an important means of accessing and shipping the more land-locked pine timber. For instance, in 1875, the railway arrived at what would soon become the town of Midland on Georgian Bay. By 1882, there were six sawmills working there, and over the next few decades it would become one of Ontario's most important mill towns, second only to Ottawa. The same story was repeated to a smaller degree in Parry Sound and other communities around Georgian Bay, and in Peterborough, Huntsville, and Bracebridge, among others. Towns on the shores of the Great Lakes, such as Port Dover, Oakville, Whitby, Cobourg, Port Hope, Trenton, and Belleville became important ports for shipping white pine lumber. Even though the pine was often exhausted within a few decades, the railways and the towns remained after this second wave of logging.

By 1900, old-growth remnants were scattered across the province, but the last large stands were mostly found on the north shore of Lake Huron and especially in the Temagami region. Then, at the turn of the century, the pattern of the last 100 years began to change. In the face of obvious scarcity of good pine, and with concern growing for the future of the resource, a system of forest reserves was created with the aim of promoting long-term management. The only one that still contained substantial old-growth forest was the Temagami Forest Reserve, which at the time, the *Globe and Mail* reported was "one of the finest timber districts in the province, having an abundance of white and red pine in virgin forest." The principal aim of the forest reserves was sustainable forest management, and in Temagami it would turn out to be largely a failure. Old-growth forest that was commonly 200-300 years old or more was mostly logged in a 50-year period between 1940 and 1990. The protests on Red Squirrel Road in 1989 saved one of the last remnants of old-growth forest in Temagami, which also would have been gone within a few more years of cutting.

Arguably, the 1989 protests can trace their beginning to a time when Samuel de Champlain was paddling his canoe up the Ottawa River in 1615, and they will have achieved their fruition in another 400 years when a seedling now growing in the Obabika stand achieves its final old age. It is only on that time scale of centuries that old-growth white and red pine forests can truly be understood.

Michael Henry is an ecologist with the non-profit organization Ancient Forest Exploration & Research. He spent more than a decade studying and educating about old-growth pine forests in central Ontario. This article is excerpted from the book Ontario's Old-Growth Forests *(co-authored with Peter Quinby), which will be published in spring 2009 by Fitzhenry and Whiteside Publishing. More information available at www.oldgrowth.ca.*

Calendar of Events

August 27 – September 14, 2008
Nature In Toronto Through The Eyes Of The Artist
Papermill Art Gallery, Todmorden Mills Heritage Museum and Arts Centre
Toronto, Ontario
The Toronto Field Naturalists is hosting a Nature Art Exhibit/Sale to celebrate its 85th anniversary. Visit www.torontofieldnaturalists.org for details. Admission is free. Artists will be available to discuss their work.

September 20, 2008
NANPS Excursion To Arthur Langford Nature Reserve
Norfolk County, Ontario
For details and ticket information: http://www.nanps.org/pdfs/20080920-excursion.pdf.

September 21, 2008
VSP Native Plant Sale And Rare Plants Book Sale
Toronto, Ontario
Sales take place from 10:30AM to 1:30PM. E-mail vsp@highpark.org.

September 28 – October 1, 2008
Invasive And Exotic Plant Eradication And Plant Community Restoration
Steuben, Maine
The last 2008 Botany Seminar at the Humboldt Institute. For a description of the seminar visit www.eaglehill.us/mssemdes.html or e-mail office@eaglehill.us.

October 5 and November 2, 2008
Buckthorn Cutting Along Howard Park Blvd
Toronto, Ontario
For more info: vsp@highpark.org.

October 7-10, 2008
Eastern Native Grass Symposium
Columbia, South Carolina
Visit www.scnpa.org/engs.html.

October 18, 2008
NANPS Annual General Meeting
Toronto, Ontario
Visit www.nanps.org for details.

October 19 and November 16, 2008
High Park Work Days
Toronto, Ontario
Fence repair, trail work and seed collection: vsp@highpark.org.

October 23 – 25, 2008
Carolinian Canada Forum 2008
London, Ontario
Presented by Carolinian Canada Coalition and the Ontario Land Trust Alliance. Contact conference @carolinian.org or 519-433-7077.

Continued from page 1

threatened plant. Any plant with the State name of Alabama as a part of its moniker would seem a poor fit for a garden north of the Mason-Dixon Line, let alone southern Canada. Yet Alabama snow-wreath has proven it can perform as well in USDA zone 5 as many of its hardy Yankee and Canadian garden mates. With winter protection, it has even succeeded in USDA zone 4b.

Alabama snow-wreath will grow in either part shade or full sun, although flowering tends to be much more profuse in sunny locations. I planted my original specimen in rather heavy shade and while it did flower, the plant languished until it was transplanted to its current sunny location. Although it will tolerate dryness, its performance is much superior with adequate moisture, provided that drainage is good. Not surprisingly, these cultural requirements parallel the conditions on bluffs in the southeastern U.S. where the shrub is naturally found. Overall, I have found this to be a remarkably adaptable and easy-to-grow plant, surviving where many other woodland species have not.

In both southern Ontario gardens where I have grown Alabama snow-wreath it has been reliably hardy to -26C (-15F) with no protection. Over the past decade, it has twice survived -29C (-20F) with minor tip dieback but recovered quickly in the spring. The plant has produced at least some flowers every year since I have grown it and more recently, as it matured, it has put on some fine spring displays.

N. alabamensis can be propagated by division or from cuttings. At my nursery, divisions of the parent plant are collected, potted up in a professional growing mix in the autumn and overwintered in a cool temperate greenhouse. By early spring, these divisions are generally well rooted and leafed out; then they are hardened off outdoors.

This shrub should be part of a mixed border or woodland edge; its subtle qualities do not make it a good stand-alone specimen. The plant has limited wildlife value, although herbivores find my specimens to be a treat in winter. Some protection from browse is necessary where rabbits and deer abound. Otherwise, it has been a great addition to my garden and its identification has stumped many of my gardening and naturalist friends!

Kevin Kavanagh divides his time between running South Coast Gardens, a small nursery and landscape design business specializing in native and subtropical plants near St. Williams, Ontario (e-mail: southcoast@explornet.com), and the Nature Conservancy of Canada where he is the National Manager for Land Stewardship.

SUMMER 2008 QUIZ

Question # 1:

Name six native plants from any region in North America with the word "blue" in their name. For added excitement, name their genus and species, if appropriate.

Question #2:

Think of six native plants whose name incorporates the name of a bird, reptile, mammal, fish or insect. And give the Latin name as well.

Look for the answers at www.nanps.org.

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