



Native Plant News

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Summer 2008

New waterlily species surfaces

By CHET NEUFELD
NPSS executive director

It is not often that a new plant species is discovered anywhere in the world, and the chances are even slimmer in North America where most of the native plant life has been documented and described in detail.

So, you can imagine my surprise when Dr. Rob Wright of the Saskatchewan Parks Service forwarded an e-mail to me proclaiming that a new plant species had been found right here in Saskatchewan!

At first I thought that it must be some tiny, obscure species, but upon reading further I discovered that it was a large, showy hybrid waterlily.

Although recently confirmed as a new species, the story of this previously undescribed water lily goes back more than a decade for Dr. John Wiersema, the American botanist who confirmed the new hybrid species of water lily. He wrote a detailed scientific account of the discovery that I've condensed here for the *Native Plant News*.

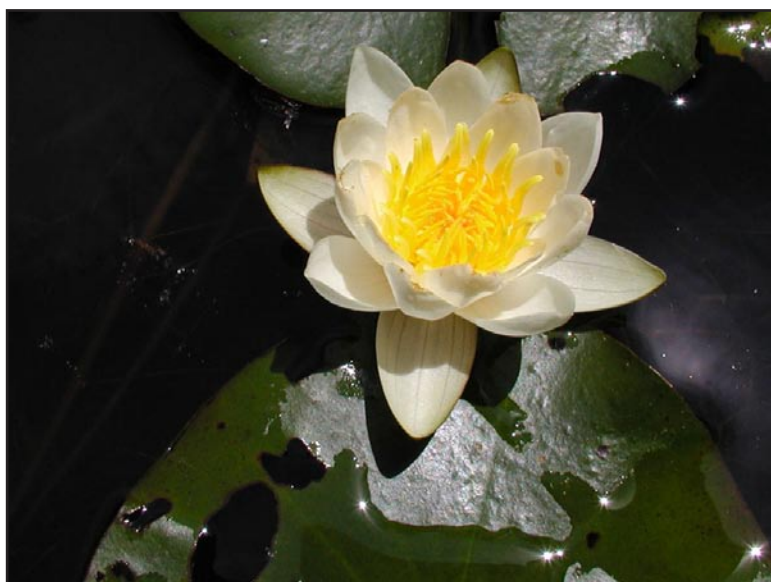


PHOTO BY BARRE HELLQUIST

The flower of Saskatchewan's newly discovered waterlily species.



PHOTO BY ROB WRIGHT

Dr. John Wiersema at Egg Lake in August 2007.

In the early 1990's, he was charged with compiling the *Nymphaea*, or waterlily genus for the *Flora of North America*.

Dr. Wiersema writes, "Lacking familiarity with this genus over much of northern North America, save in my home state of Michigan, I pursued additional fieldwork and solicited numerous herbarium collections for study, including those of all national and provincial Canadian herbaria." He says that "the herbarium study revealed two boreal elements that had not previously been distinguished by any American Flora. On closer inspection these are readily separated using both foliar and floral characters. ... In North America both species are largely confined to Canada, with the circumboreal *Nymphaea tetragona* known from only one extirpated U.S. population and the endemic North American *Nymphaea leibergii* barely entering the northern reaches of six U.S. states.

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Native Plant News is a quarterly publication of the Native Plant Society of Saskatchewan (NPSS) and is one of the benefits of membership. Members are invited to submit articles, news, views, photographs and comments. Views expressed by the authors are not necessarily those of the NPSS.

Submission Deadlines:

Winter Issue: November 15

Spring Issue: March 1

Summer Issue: June 1

Fall Issue: September 1

Membership Dues (Year End November 30th)

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Board Member Profile: Donald Fontaine

Donald Fontaine is a Rangeland Specialist with the Lands Branch of Saskatchewan Agriculture and has been conducting inventories on provincial crown rangelands since 1979.



He obtained a BA in geography from the University of Alberta in 1975 and BSA from the University of Saskatchewan in 1979.

Donald's interest in rangelands became serious when working out of the Swift Current office. Working in the southwest provided many opportunities to work on large tracts of undisturbed native prairie and appreciate all they have to offer.

Having the opportunity to be associated with NPSS is a way to keep in touch with others who share an appreciation for the native rangelands. Donald also holds memberships in the Society for Range Management and the Saskatchewan Institute of Agrologists. He is also actively involved in a mixed farm operation along with two brothers and enjoys hunting, travelling and photography. *

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NPSS booth making its rounds

By *CHET NEUFELD*
NPSS executive director

Thanks to the Invasive Alien Species Partnership Program and Ecoaction, we were able to give our display booth a facelift over the winter.

The NPSS has always had an informative booth, but it was time for some updating not only to freshen things up but also to reflect the new directions taken by the organization.

The new booth now includes panels on invasive plants in Saskatchewan, as well as stunning photos of natural landscapes throughout the province. Another new feature is the incorporation of an LCD projector and portable screen so that PowerPoint presentations or photos can be put on a continuous loop for passersby.

The NPSS booth has always been quite the traveler and this year has been no different – with the booth attending four events: one in Saskatoon, two in Regina and one in Swift Current. By far, the largest audience was at its debut at Gardenscape in Saskatoon held on March 28-30. This year's Gardenscape attendance broke previous records for



PHOTO BY CHET NEUFELD

The NPSS shows off its newest display booth at Gardenscape this spring.

single day and three day totals, with approximately 30,000 people attending the event.

The booth will continue to travel to events across the province for the rest of 2008. If you wish to have the booth at your event, please contact me at 668-3940 or info@npss.sk.ca.

As well, the NPSS would like to send a big thankyou to Robin and Arlene Karpan for the use of their eye-catching images of Saskatchewan for our booth. To see more of their photos and books, or for information on ordering, please visit their website at: <http://www.parklandpublishing.com>. 🌱

Grow your own prairie garden

By *SARAH VINGE*
NPSS member

Have you ever wanted to start a native prairie garden in your own backyard, but didn't know how start or to make it happen?

A new publication on landscaping with native plants is now available to help you get started. The guide is an excellent introduction to the realm of growing native plants in your yard. Its goal is to promote awareness of the benefits of incorporating native plants into your landscape design, and to serve as a starting point for your own native prairie garden.

The guide details the benefits of landscaping with native plants, as well as providing information on site preparation and planning, choosing the right species, planting and maintenance. It also provides general information on

good candidate species with which to start.

If you've thought about planting a native garden in the past, but were discouraged with the lack of availability of retailers and resources, this guide will give you the information you need to get that project in motion.

The publication lists resources to help you find native plant stock for many different species.

Native plant propagation and sale is slowly becoming more common as more and more people become interested in recapturing the prairie in their own backyards.

For more information, contact Malin Hansen at malin.hansen@uregina.ca. Look for the guide, entitled *Natural Urban Landscapes: A Guide to Growing Native Plants* for sale soon, and bring a piece of the prairie back into your yard! 🌱

2008 Invasive Alien Plant Workshops

WORKSHOP 1:

Thursday, July 24

Register ASAP

**College of Agriculture,
51 Campus Drive, U of S
Saskatoon**

**Rooms 2C61 (presentations)
and 2D88 (plant samples)**

10:00 a.m. – 3:30 p.m.

(with a ½ hour break for lunch)

WORKSHOP 2:

Friday, September 5

Register by August 29

**Biology Lab Building,
3737 Wascana Parkway,
University of Regina, Regina
Room 411.2**

10:00 a.m. – 3:30 p.m.

(with a ½ hour break for lunch)

**For more information,
call 306-668-3940 or e-mail
invasives@npss.sk.ca.**

Waterlily discovery

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“Although believed to be quite rare in the province, especially in the case of *N. tetragona*, both species have been found in Saskatchewan, as indicated in the 2003 *Checklist of the vascular plants of Saskatchewan* by Vernon Harms.”

Dr. Wiersema indicates that the new hybrid plants discovered differed from both the *N. leibergii* and *N. tetragona* – the only waterlilies known from the region – as they were bigger in structure with larger flowers and more petals.

“These traits and the patterning of the leaf venation were reminiscent of *Nymphaea odorata*, a predominantly eastern North American species absent from central Canada, with the closest populations some 500 km away in southeastern Manitoba,” explains Dr. Wiersema. “Because of this resemblance the plants were treated in the *Flora of North America*, with a suggestion that they were ‘intermediate in morphology to *N. leibergii* and probably of hybrid origin’, under *N. odorata* subsp. *odorata*, and this name was thus also included in Harm’s *Checklist*. Hybrids between waterlily species of the same subgenus are often found where they co-exist,



PHOTOS BY ROB WRIGHT

These images show the pale-yellow, less noticeable, carpellary appendages in the centre of the *N. leibergii* flower (left) and the much more showy ring of stout, deep-yellow appendages (see arrow) of the new hybrid species (right).

but, as is usual in such cases, this was determined to be sterile. However, my inspection and staining of pollen from one of the central Canadian specimens revealed an unexpected high fertility.”

Two excursions to Saskatchewan – one in 1996 to Leaf Lake and Cumberland Marsh and one in 2000 to Cumberland Marsh – turned up a few individual waterlilies different from the ones around them, resembling an intermediate form of the more common *N. leibergii* and *N. odorata*. They also resembled the specimen collected by Ernie Kuyt in 1959 at Leaf Lake. If these individuals could be confirmed, this “discovery” of a new species would date back almost 50 years to when Ernie Kuyt unwittingly collected a previously

undescribed species.

That opportunity came when Dr. Wiersema was able to revisit the region in August of 2007 while on summer vacation. An expedition to Cumberland Marsh was planned, this time armed with an airboat to help the team cover more area in less time and penetrate inaccessible areas.

“While only a few (plants) had been documented on our 2000 visit by canoe, a more thorough survey of the immediate vicinity by airboat led to our discovery of many more individuals,” Dr. Wiersema writes. “Being largely absent from open water, which was almost completely dominated by spatterdock (*Nuphar variegata*), the discovered plants were mostly located within interspersed loose stands of bulrush (*Schoenoplectus*), which the *Nuphar* did not penetrate. The numerous individuals observed appeared to be confined to a small area perhaps 100 metres or less in diameter within a lake nearly 20 square kilometres in area.”

Comparing the flowers of *N. leibergii* and the new species, one can see a ring of stout, deep-yellow carpellary appendages in the center of the flower of the new species. *N. tetragona* (not shown), can be readily distinguished by its prominently four-angled floral base, flowers with purple stigmatic disks, and usual mottling of young floating leaves.

Subsequent DNA testing has confirmed that the plant in question is a hybrid of the two suspected parents (*N. leibergii* is the maternal parent) and that the two Saskatchewan populations are similar. This coupled with its unique morphology and its proven fertility will



PHOTO BY ROB WRIGHT

Dr. John Wiersema reaches under the water to inspect a waterlily specimen.

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lead it to be formally described as a new species of Canadian waterlily.

As for the future of this new species, Dr. Wiersema explains “thus far only two populations of this newly discovered species have been confirmed. It is impossible to know whether or not additional stands exist elsewhere in the region. Further exploration will be necessary to determine this, but access to many of the aquatic habitats in the area is quite difficult.

“Management strategies in Saskatchewan to preserve the known stands should be considered,” he continues. “Although the full extent of both populations, then and now, remains uncertain, they appear to have survived at least 50 years under existing conditions, providing hope for their continued survival. Field observations indicate that plants inhabit waters approximately two metres deep, producing abundant submersed leaves in addition to the floating ones,

suggesting that water depth and clarity will be important factors for consideration.”

For anyone who wants to go looking for this new species, or think they’ve found it, Dr. Wiersema requests additional sightings of the newly discovered species be reported to him, (jwiersema52@yahoo.com), “although accompanying high-resolution images of the diagnostic parts indicated above will be essential to facilitate its identification. Initial evidence suggests that flowers may be present for only a short while, from perhaps mid July to early August, something which must be taken into account when searching for this species. Until existing or potentially



PHOTO BY ROB WRIGHT

The underside of the leaves of the new hybrid waterlily specimen are bright green (left), in contrast to the purplish color evident on those of *N. leibergii* (right).

new populations are better understood, specimen collection beyond that necessary for floristic documentation is discouraged.”

To read the full-length article written by Dr. Wiersema, call 306-668-3940 or e-mail info@npss.sk.ca. ✱

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Rare Plant Survey Techniques

Course runs Aug. 6 to 8, 2008 in Saskatoon

Who is the instructor?

Dr. Darcy Henderson is a Grassland Ecologist with Environment Canada – Canadian Wildlife Service, and he authored the survey guidelines that form the basis of this course. Darcy is also chair of the Recovery Team for Plant Species at Risk in the Prairie Provinces, and has 18 years experience in ecological research, management and teaching spanning Manitoba to Alberta of prairie and boreal systems in both the private and public sectors. Darcy is volunteering with the NPSS and offering CWS facilities and monitoring sites to make this course happen.

What topics are covered and learning methods used?

DAY 1 – 8:30 am to 5:00 pm

- | | C | L | F |
|--|---|---|---|
| • Understand rare species concepts and rare plant survey types. | ✓ | | |
| • Understand the Species at Risk Act and permit applications. | ✓ | ✓ | |
| • Understand NatureServe/CDC concepts and report forms. | ✓ | ✓ | |
| • Understand detectability concepts applicable to rare plant surveys. | ✓ | | ✓ |
| • Understand census, sampling, and stratification in project planning. | ✓ | | |
| • Design a census survey for a small-scale project. | | ✓ | |
| • Design a stratified random sample survey for a large-scale project. | | ✓ | |
| • Apply GPS technology to locate and record survey routes. | | | ✓ |
| • Apply GPS technology to describe occurrences and populations. | | | ✓ |

DAY 2 – 8:30 am to 5:00 pm

- | | | | |
|--|--|--|---|
| • Complete an occupancy survey for rare plant populations. | | | ✓ |
| • Estimate population size from an enumerative survey of a population. | | | ✓ |
| • Apply digital photography for voucher specimen documentation. | | | ✓ |

DAY 3 – 8:30 am to 11:00 am

- | | | | |
|---|--|---|--|
| • Identify GIS applications in design and reporting on survey projects. | | ✓ | |
| • Data analysis, management, and reporting from previous day's work | | ✓ | |

C = classroom; L = indoor dry lab exercises; F = field instruction and exercises

Who should take this course?

Professionals who conduct, contract, or supervise rare plant survey projects, seeking improved skills in project planning, execution or reporting. Government, NGO, industry, and consulting sectors will all find value in this course.

NOTE: This is not a plant identification course.

How do I register?

Send an email to Chet Neufeld at the Native Plant Society of Saskatchewan (info@npss.sk.ca), indicating your name, mailing address and contact information. In the subject line please write "Rare Plant Survey Techniques Course". Chet will send a reply of confirmation and request that you send a cheque payable to the Native Plant Society of Saskatchewan for \$200.00. To cover expenses for this course and plan accordingly.

Why in Saskatoon in August?

Practical field exercises will be carried out on actual populations of a plant species at risk near Saskatoon, and contribute to an ongoing monitoring program run by the Canadian Wildlife Service. No other time of year or location is better suited!

Is any knowledge/skill required?

Yes. A degree or diploma in natural sciences that included courses in statistics, and botany or plant taxonomy. Some experience with databases, GPS and GIS would also be useful. Field exercises require physical ability to scramble over sand dunes and observe outdoor safety.

What am I responsible for?

Registrants are responsible for their own transportation to, and accommodations in, Saskatoon – as well as breakfasts and suppers. Registrants should also bring their own digital camera and GPS. A laptop is encouraged for working along through some exercises, but is not required.

Registrants must also be prepared for field work conditions that may include extreme heat, solar radiation, rain, blowing sand, steep slopes, deadfall, and biting insects for up to 6 hours. Rain will not prevent us from doing field work in the sand dunes!

What does registration cover?

Registration covers the cost of preparing course materials, a signed certificate of completion suitable for framing, transportation between field sites and the CWS building, daytime refreshments and lunch for two days. Some GPS equipment will be supplied for exercises if you do not have your own; supplies are limited and on a first-come, first-served basis.

Sedges have edges . . .

By **BILL HILTON JR.**
Hilton Pond Centre
executive director

EDITOR'S NOTE: The original version of this article was first published in 2006 on the website of the Hilton Pond Center for Piedmont Natural History of York, South Carolina. It is condensed and reprinted here with the permission of the Hilton Pond Centre.

When leading Guided Field Trips down the trails at Hilton Pond Center, we often come across clumps of green plants with narrow, grass-like leaves. Invariably, when we ask folks what the plants are, they respond with “some kind of grass.”

Often they’re right – but sometimes they’re not – at which point we ask them to grasp a stem of the plant between thumb and forefinger and describe its shape. If the stems

AND leaves are all flat they likely would be correct in calling the plant a grass, but if the stem feels round or triangular it’s something altogether different, at which point we’d be inclined to sing out this mnemonic little ditty:

*Sedges have edges,
Rushes are round,
Grasses are hollow,
What have YOU found?*

Grasses, sedges, and rushes are all vascular plants – they have specialized tissues that conduct water and minerals (via xylem) and food (via phloem) and also produce flowers and fruit – but within the plant world they are relatively primitive and are classified as monocotyledons. (Monocots have only one embryonic leaf in each seed, while the “higher” dicots such as acorns and beans have two.)

Only a few grasses, sedges, or rushes develop woody tissue or reach heights of more than a few feet, and many are ground-hugging annuals that survive in a given locale only because of their prolific seed production.

Nonetheless, these three kinds of

plants are pervasive worldwide; one manual of flora lists 89 genera and 325 species in the Grass Family (*Poaceae*) and 16 genera and more than 280 species of sedges (*Cyperaceae*) and rushes (*Juncaceae*) – and that’s just in North and South Carolina!

One thing grasses, sedges, and rushes have in common is their flowers are relatively inconspicuous. In general, flowers of all these plants are tiny and yellow-green, rust, or tan in color, so most folks – even experienced naturalists and botanists – often can identify only a handful of grasses, sedges, and rushes from

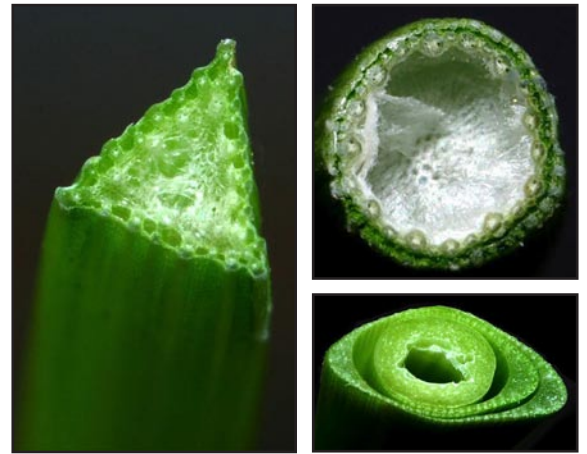
memory by looking at floristic parts.

Fruits of the three plant groups in question are a bit more distinctive than their flowers, with some sedges producing inch-long prickly clusters of beak-like fruits; by comparison, many rushes make tiny globular fruiting structures less than one-eighth-inch in diameter. Fruits of grasses are more variable, from plump kernels on an ear of sweet corn to the tiny, expensive seeds many folks scatter to create lawns.

So if grasses and sedges and rushes look so much alike at

first glance, what’s a body to do when trying to differentiate them? Think about that little ditty we mentioned earlier.

Indeed, a simple “touch test” is the giveaway for sedges, whose stems when rotated have a very noticeable triangular shape – hence a total of three “edges”. To illustrate this characteristic, we clipped a flowering stem from a sedge and brought it back to the lab where we made a fresh cut with a razor blade and placed the stem in front of our 3:1 macro lens. This



PHOTOS COURTESY BILL HILTON JR.

These are photomicrograph stem cross-section images of a sedge (left) a rush (top right) and a stalk of grass (bottom right) at a scale of 3:1.

allowed us to make a photomicrograph that readily shows not only the triangular stem, but also the sedge’s vascular conductive tissue. (*Keep in mind this is a highly magnified view; the stem is only about 1/16-inch on each flat side!*)

For the sake of comparison, we followed the same procedure on a rush stem and a stalk of grass. In our two other photomicrographs, the cylindrical (“round”) nature of the rush’s 1/16-inch diameter stem is obvious, while the grass has a somewhat flattened stem that is noticeably “hollow”. In both, the rush and the grass vascular tissues are again visible.

We don’t recommend clipping wild specimens just to learn whether they might be grasses, sedges or rushes, but we do advocate a harmless “touch test” in the field to discover whether the plant is a sedge with triangular stems or a rush with round ones. Grasses – which typically have flattened stems and leaves – will be revealed by process of elimination, although it’s important to remember to feel the sedge’s triangular STEM rather than its flat LEAF. It should also be noted that a few genera of rushes may have flattened stems.

If in doubt about grasses, sedges, and rushes next time you’re exploring a natural area, just reach down and touch those mysterious grass-like plants, all the while chanting the charming and unforgettable chorus:

*Sedges have edges,
Rushes are round,
Grasses are hollow,
What have YOU found?*

To read the full-length article, visit <http://www.hiltonpond.org>. 🌿



PHOTOS COURTESY OF BILL HILTON JR.

Many rushes produce tiny globular fruits (top) while many sedges produce clusters of beak-like fruits.

Rare plant ID workshops

July 25 - Room 2C61, Department of Agriculture, U. of S.
August 12 - Room LB 411.2, Department of Biology, U of R.

The Native Plant Society of Saskatchewan (NPSS) will be hosting rare plant workshops in July and August. The workshops are designed for those with an interest in finding and identifying rare plants regardless of their skill level.

There will day-long courses held in Saskatoon and Regina. Both events will start at 10 a.m. and run until approximately 4 p.m. The workshops will cover topics including general plant identification, general survey techniques, rare plant classification systems and rare plant identification and reporting. Participants will get an opportunity to see high quality photos and specimens of rare plants and will receive informational packages to help them look for rare plants in the future. There is no other course like this in Saskatchewan, so take advantage of it!

There is an initial cost of \$25, which is fully refunded when you submit a reporting card to the NPSS – even if you didn't find anything rare! But wait – it gets better. If you're an NPSS member, you will get another \$20 for each additional reporting card submitted (up to a maximum of two additional reporting cards). And, if you sign up to be an NPSS member at the workshop, you can qualify for this bonus – the surveys have to be completed in native habitats to qualify.

To register for either workshop, call 306-668-3940 or e-mail info@npss.sasktel.net. ✱

Volunteers needed

The Prairie Habitat Garden (PHG) – a project developed and maintained by faculty and students in the College of Education – is looking for volunteers to help with a variety of gardening activities from now until the end of August.

PHG project co-ordinators are striving to showcase the beauty of Saskatchewan's natural plants and to provide an opportunity to educate students about the importance of sustaining the province's native landscapes.

Anyone interested in gardening and in donating an afternoon (or more!) to a worthy cause is welcome to help out!

For more information, please visit our website at: <http://www.usask.ca/education/prairiehabitatgarden/>.

If you are interested in this great volunteer opportunity, please contact Erin Birns at erb738@mail.usask.ca or 306-381-8076. ✱

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