

WAGNER NATURAL AREA NEWSLETTER

Volume 19 Number 1 June 2005

Newsletter of the Wagner Natural Area Society, Management Committee
and Volunteer Stewards of Wagner Natural Area, Parkland County, Alberta



Please join us for the ...

2005 Annual Orchid Walks in Wagner Sunday, June 19th, 2005

Leaving the main car park at 10 a.m., Noon and 2 p.m.
Members of the Wagner Natural Area Society will act as guides.

Walks are free to Society members and members of the public. Take this opportunity to check out our other beautiful fen flowers, too!

Inside this issue...



Aedes vexans taking a bite!

The Much-Maligned Mosquito –
see article by Mike Jenkins on
pages 3 and 4

Wrigglers – mosquito
larvae



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Joyce Gould of ANHIC, Parks &
Protected Areas, demonstrating
photopoints as a Monitoring
Technique for Stewards – see
Wagner Grapevine, Monitoring
Workshop, page 2



The Wagner Grapevine



Land Ahoy!

Our new property is in sight! Thanks to generous donations coming from The Nature Conservancy of Canada (Wagner is featured in their latest news brochure of land acquisitions, *The Ark*), the Alberta Conservation Association and of course our own individual donors, our prize of an additional 80 acres (80.3 acres to be exact, the new parcel has been surveyed) is now won! We merely await some of the administrative details, such as registration of subdivision with the County of Parkland. We anticipate there will be a cheque-handing-over ceremony and celebration, probably sometime in the fall, to which all our donors and members will be invited, so stay tuned for announcements, and watch our website!

Other Land Issues

Wagner Natural Area Lease. This spring we finally got our new lease in hand (backdated to September 1, 2004). It cost \$10 and is good for 10 years. Our previous lease to the Wagner property ran for 21 years.

Villeneuve Road Allowance. The County of Parkland has closed the southern portion of the Villeneuve Road Allowance (south of our original property line) and will allow the land to be incorporated into Wagner. We continue to lease the northern portion of the road allowance which, although still cleared of trees in places, is otherwise in a state of natural vegetation. The east-west allowance connecting at the east end to the road leading south from the Villeneuve overpass is also closed and is being allowed to revegetate naturally.

Students in Wagner

Dr. **Ben Rostron** of the University of Alberta has been successful in obtaining grant funding for two students who will be doing hydrogeological work in Wagner this summer: graduate student **Cate Hydeman**, and her assistant, undergraduate **Will Shulba**. Hi both, and welcome to our world!

Monitoring Workshop

Joyce Gould of the Alberta Natural Heritage Information Centre (Alberta Community Development, Parks and Protected Areas) and **Coral Grove** with the Volunteer Stewards' Program (Parks and Protected Areas), held a workshop in Wagner on May 16th on techniques of monitoring vegetation changes to sites by means of photography. Twenty-three stewards from various natural areas attended. Joyce demonstrated the use of photopoints (photos taken at regular time intervals from the same position and aspect to document landscape level changes over time) and photoplots (photos of small areas, such as quadrats aligned along a transect, for example to document erosion of a trail).

And speaking of monitoring... this is the year we have chosen to taken another look at the 18 permanent plots we established throughout Wagner as part of our Biophysical Inventory conducted five years ago. So if you see three or four people traipsing through the bush, hot, harassed and mosquito-bitten, GPS and paper in hand, muttering, "I'm sure the plot should be somewhere around here, "you will know what we are doing...monitoring our plots!

Walks to Date, May Count

Wayne Roberts of the University of Alberta held his annual **Frog-and-Toad Walks** May 5th and 12th this year. Egg masses were noted on May 5th, and toads were calling on both occasions. As of May 29th, a good number of tadpoles were swimming in the marl ponds along the Marl Pond Trail.

May Count – Plant Species in Flower. We had a good turnout for this count, with **Pat Clayton, Patsy Cotterill, Alice Hendry, Frank Rusconi** and students **Lynn Lau, Zane Lewis and Will Shulba** showing up to take part on a sunny May 29th. A total of 55 species were recorded (including four additional species from Alice Hendry's property). This was five fewer than recorded on the 2004 count, although the general consensus seems to have been that spring came earlier in 2005. The number of species is in fact an artifact of the counting technique. A species is recorded in flower if even one flower is open and shedding pollen or with receptive stigmas (stage 4), but it is less clear when plants qualify as "fading" (stage 8). We were fairly ruthless (although subjective) in determining what plants were in "fading" condition and discounted several species on this basis. A good indicator of the earliness of the spring was provided by our indicator plant, bogbean, which we estimated as being up to 25% in flower. Last year we found no flowers of it at all.

May Count – Bird Species. **Dave Ealey** was up early like a true birder and counted 35 species on Wagner's original half-section from 7 to 11 a.m. on May 29th.

Jasper Keizer added 13 more species on and near his own property adjacent to (southeast of) Wagner. **Alice and Andy Hendry** reported a further five species on their own Osborne Acres property, for a grand total for the day of 53 species.

Wagner Natural Area Society

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Visit our website at <http://www.wagner.fanweb.ca>

The Much-Maligned Mosquito: Why It Finds Wagner Natural Area Prime Real Estate!

Mosquito Classification

Phylum: Arthropoda ; Class: Hexapoda (Insecta)
Order: Diptera (true flies); Family: Culicidae
Genera and Species: many

Mosquitoes, members of the family Culicidae in the order Diptera (true flies), are a diverse group of insects that we all love to hate. They have a fearsome reputation with respect to human health, being carriers, mainly in tropical regions, of diseases such as malaria (malaria is caused by *Plasmodium*, a protozoan parasite passed by the mosquito in its saliva), yellow fever, filariasis and viral encephalitis. But here in mid-Western Canada they mainly make themselves right-royal nuisances, when the females zero in on warm-blooded mammals and birds in their efforts to obtain a blood meal, the protein supplement that is vital for successful egg development in many species. The mosquito-borne "ague" that plagued eastern Canadians in the nineteenth century, which Susannah Moodie refers to in her famous work *Roughing it in the Bush* (1832), has been eradicated, as has malaria from much of the developed world, and although a new threat in the form of West Nile Virus (WNV) has recently arisen, it remains rare and is almost invariably non-fatal to humans. WNV's biggest threat to humans is that, as a result of fear, it will act as a powerful deterrent to spending time in the outdoors!

The following is adapted from Mike Jenkins' presentation with the above title at Annual Members' Night, November 22, 2004 at the University of Alberta.

Mike has a B.Sc. and B.Ed. from the U of A and has worked as a Biological Sciences Technical Assistant for the City of Edmonton's Pest Management since 1991.

Some Mosquito Biology

The mosquito family, Culicidae, consists of at least 3450 species world-wide, occurring in approximately 38 genera and three sub-families. Mosquitoes have a characteristic form: a slender, elongate body with two large wings (like all true flies), and long, fragile-looking legs. They have long, thread-like antennae that are more feathery and conspicuous in the males than in the females. All mosquitoes require access to water to breed, the egg, larval and pupal stages of their life history being spent in water. The eggs may be laid singly, in clusters, often attached to vegetation along the shore (*Anopheles*, *Aedes* mosquitoes), or in loose rafts on the water surface (*Culex* and related mosquitoes). Some individual females can lay up to 10,000 eggs in the course of a season. The larvae are easily seen in shallow pools as small dark "wrigglers", typically hanging from the surface film of the water by means of a breathing tube or siphon, open at the surface and equipped with hairs to prevent the entrance of water. The mouthparts of these larvae have mouthparts are modified as "brushes" which create a current and allow bacteria and tiny aquatic flora and fauna to be swept into their mouths. They also have gills (anal papillae) but these

are thought to be secondary to the siphons as sources of oxygen and may have other functions in certain waters (e.g., salt balance or osmoregulation). The larvae go through four developmental stages or instars, getting progressively larger (most keys for mosquito identification refer to the fourth instar stage) before they enter the pupa stage. The characteristically comma-shaped pupa (equivalent to the cocoons of butterflies or moths) relies on two "trumpets" on its thorax which, like the siphon, reach the water surface for respiration. (An older method of spreading oil on the shallow water bodies to kill immature mosquitoes, not recommended today, takes advantage of the immature mosquito's dependence upon the water surface for oxygen.) Pupae can move away from disturbance in a characteristic somersaulting motion that has earned them the name of "tumblers." They do not feed, however, as during this stage the organs of the adult are being formed, a process that can take as little as a day. The pupa splits along its back to allow the adult, at this point soft and quite vulnerable, to emerge. Both males and females get their energy by feeding on plant nectar and fruit and both genders have mouthparts that form a piercing/sucking tube called a proboscis, although it often much longer in the female, which (in most mosquito species) needs to suck blood in order to lay viable eggs. The proboscis consists of six needle-like stylets housed in a protective sheath or labellum. The stylets consist of a labrum-epipharynx through which anti-coagulant is injected into the wound, two mandibles and maxillae which bite a hole in the host's skin, and a hypopharynx, a hollow tube through which the host's blood is sucked. All the mouthparts (stylets) are long and slender but are homologous to the short, broad mouthparts found in other insects such as cockroaches and grasshoppers. It is believed that mosquitoes do not transmit HIV because the feeding (hypopharynx) and saliva-injecting (labrum-epipharynx) tubes are separate, and the AIDS virus, which is really rather fragile, cannot survive outside of an environment that is around 37°C. In contrast, the malaria parasite actually multiplies within the body of the mosquito, and is injected into the human victim along with the saliva, and the encephalitis virus is spread in a similar fashion. HIV just doesn't survive in the mosquito long enough to be spread to other people.

When males emerge from the pupa they immediately begin looking for a female to mate with, forming mating swarms on warm, humid evenings. Females generally live longer than males, and may lay more than one batch of eggs, with each batch taking only a couple of weeks to create a new generation. However, species living under cool temperate or arctic conditions may produce only one generation a year, with 11 months of the year being spent in the egg stage.

Mosquitoes in the Edmonton Area

About 40 species of mosquito occur in the vicinity of Edmonton, belonging to six genera.

Anopheles earlei

(Anophiline mosquitoes are the primary carriers of malaria,

continued on next page

but fortunately it is too cold in Canada for the malaria parasite to survive.)

This species is characterized by having two extra long palps which give it the appearance of having three probosci, as well as dark spots on its wings. The position that mosquitoes adopt when they alight is also characteristic. This species appears to stand on its head! The adult females overwinter in mammalian burrows or holes in trees and come out on warm spring days for a blood meal. The larvae, which frequent cold, clear water in permanent ponds (locally, for example, Fulton Marsh and the Sturgeon River), have very short siphons, which means they must lie almost parallel to the water surface to breathe.

Culiseta inornata

This is the most common species of the genus *Culiseta* in prairie. It overwinters under snow in shelter such as leaf litter and can emerge as early as early April if the days are warm. It is a large, slow mosquito that can produce several generations a year, breeding until October. The females prefer large mammals such as cows and horses for their blood meal. The eggs are laid in rafts preferably in semi-permanent ponds or even in trees. Multiple blood meals are taken, and this species can transmit the viruses causing western and eastern equine encephalitis.

Ochlerotatus (formerly *Aedes*) *canadensis*

This species is rather rare in the Edmonton area in general but is quite abundant in Wagner Natural Area. It has dark veins on its wings. It overwinters as an egg, laid by the female in temporary or semi-permanent shaded woodland pools (hence Wagner provides ideal habitat). *O. canadensis* doesn't fly far, perhaps only a few miles, and is considered a potential vector of WNV.

Culex tarsalis

Fortunately rather rare in the Edmonton area, this species is a primary target in the annual search for WNV. (*Culex pipiens* is the most important carrier of WNV, but it does not occur in this area.) Birds are the primary host of *C. tarsalis*, although it switches to large mammals in the late summer. This species likes lots of organic matter in its water, so it often frequents sewage lagoons. Repeated applications of the biological control agent *Bacillus thuringiensis* (bti) to roadside ditches and powerlines have been made in an attempt to control this mosquito, which can produce several generations in the course of a season. Because of the high organic load in many of their favourite habitats, some of those sites that have been treated with Bti continue to produce larvae (and adults) even after multiple applications. In some sites, Bti seems to be almost completely swallowed up by the organic soup, and has almost no effect—in which case, stronger insecticides are usually needed.

Aedans vexans

This is the commonest species in the Edmonton area, accounting for about 79% of specimens caught in traps. Its larvae are found in roadside ditches and wet depressions. *A.*

vexans overwinters as eggs but not all eggs hatch at once; they need several cycles of wetting and drying, linked to rainstorms, before they hatch. As larvae, however, they develop rapidly, going from egg to pupa in as little as four days. The adults are capable of dispersing for long distances, in rare instances for over 200 miles! This species is also considered to be a potential vector for WNV, but like *Ochlerotatus canadensis*, this probably only occurs in areas where the virus is already very prevalent due to the activity of *Culex* mosquitoes.

Wagner as prime real estate for mosquitoes!

Wagner Natural Area's marl ponds, beaver ponds, creeks, ditches, and small woodland pools lying in the hollows of the hummocky coniferous forest, seem to present many opportunities for mosquito species to breed. The larvae are, however, not as abundant as one might expect in the marl ponds, where there are competition for food from tadpoles and lots of predators such as dragonfly larvae, dytiscid larvae and small fish such as sticklebacks and fathead minnows. The creeks tend to be too fast-flowing for mosquitoes to breed in (the larvae tend to get swept away) and the same applies to some of the ditches. The two ponds by the front gate, however, are excellent reservoirs of *Aedes vexans*. It is the pools in the swamp forests, including those left by uprooted trees, that provide the best breeding habitat for Wagner's mosquitoes. Here, however, the larvae are subject to predation by the larvae of the phantom midge, *Eucorethra woodii*, whose larvae resemble mosquito larvae but are larger. (Most phantom midge species feed on nectar.) Fen pools are also good places for mosquitoes to breed, but in fact few *Aedes vexans* have been found in them, and no members of *Culex tarsalis*. Most are species such as *Ochlerotatus canadensis*, *Aedes cataphylla*, and many of the "other" species that make up the 40 or so species found in the Edmonton area.

Mosquito control

The most effective way to control mosquitoes is by spraying water surfaces with larvicide rather than by fogging adult mosquitoes. Dursban 26 is the broad-spectrum larvicide most commonly used by local municipalities in their spraying programs. Bti spray is more expensive, and only effective if used within two to three days after a rain. Field pools and some ditches are targeted; permanent bodies of water or flowing water are not sprayed.

Note: As a natural area, Wagner does not receive any form of mosquito control. Visitors to Wagner on cloudy, windless days can best avoid the annoyance of mosquitoes by covering up (with light-colored clothing) and wearing DEET insecticide. Those of us who have been going to Wagner for years think that Wagner's mosquito problem is vastly overrated (though recent drought years have undoubtedly lessened it), and most of the time we hardly notice them. It also helps to have a positive attitude, remembering that mosquitoes themselves are preyed upon. They are an important part of the food chain as food for birds, fish, amphibians and other insects. They also help to pollinate Wagner's beautiful orchids!

This year in her **president's report** to the Society at the Annual General Meeting held March 8, 2005, **Alice Hendry** found a novel way to recognize the efforts of the Society's executive. Her tribute follows...

Wagner Society's Own Academy Awards:

The Orchids, 2005

The Academy Awards ceremony has recently taken place and this year's awards have been presented. I follow these awards with some interest. Since the awards have been on my mind, I thought it would be appropriate to treat this year's president's report as an award ceremony based on the Academy's. Accordingly, here are the 2005 Wagner Awards. We'll call them The Orchids.

As in making a movie, managing a natural area requires a team. The stars of the Wagner team for the last year deserve the following awards.

The Orchid for Best Actress in A Leading Role goes to Pat Clayton for her many hours of hard work and dedication. Pat has been almost entirely responsible for our success in raising money for Project Land. She has filled out applications for land purchase funds and has been our liaison with FAN, the money holding agency for the land purchase project. She has had the starring role in Project Land. In addition, Pat writes most of the letters that the Wagner Society sends, and she agrees to take on many other tasks. The Orchid for Best Actress in A Supporting Role is awarded to Patsy Cotterill. Patsy is responsible for our meeting minutes and for the two newsletters per year that are an important tool in keeping our members informed. Patsy is also a great help with all things botanical.

The Orchid for Best Actor in A Leading Role goes to Irl Miller. Irl's activities on behalf of the Wagner Society are legion. He has worked tirelessly for Project Land. He has been our contact with our lawyer regarding the law suit that was filed against us. He keeps an eye on oil and gas company activities in our area. He works as our contact person with Parkland County, and he has had many other responsibilities in his leading role over the last year. The recipient of the 2005 Orchid Award for Best Actor in A Supporting Role is Ben Rostron. Ben, a hydrogeologist, is our water expert. His role has been to facilitate and to direct our efforts to learn more about Wagner Natural Area's water source.

There have been a number of movies made in Wagner Natural Area during this year. Awards are appropriate for a few of these.

The Orchid for best Horror/Science Fiction movie is given to the drama *War of the Weeds: The Alien Invasion*. We fought a battle with several invasive weed species this year. Many hours were spent in the back-breaking labor of pulling weeds, cutting weeds, and hauling weeds for proper disposal. This epic battle will continue during the spring and summer of 2005. Weed pull weekends, with a cast of tens, may have to be filmed in 2005.

The Orchid for Best Documentary goes to *Aviators*, Mike Jenkins' excellent presentation on mosquitoes, given at our

Member's Night on Nov. 24, 2004. Mike's talk left us all buzzing.

The Best Documentary Short Subject Orchid is awarded to *The Bench*, for the wonderful production of the May 15th ceremony at the Cabin Site when Janice Cantafio's plaque was added to that of Barry Jenkins' on the memorial bench. The Orchid for Best Visual Effects goes to *The Orchids of June*. The spring rains of 2004 produced an outstanding display of orchids in Wagner Natural Area. This movie should be shown on the big screen of an IMAX theatre. Seeing this film renewed the sometimes flagging spirits of all the actors in the Wagner drama.

The Writing (Original Screenplay) Orchid is awarded to *Three Dimensional Modelling of Wager Natural Area Groundwater Flow System*, the Master of Science thesis of Heather von Hauff. Heather's thesis provides the society with valuable information about Wagner's water supply. The thesis will be a tool that the society will utilize often and undoubtedly will be featured in major dramas in future years.

The Orchid for Best Slapstick Comedy goes, unfortunately, to those responsible for the unending delay in the delivery of our new, 10-year lease of Wagner Natural Area. This delay has indeed been a *Comedy of Errors*, a Marx Brothers production involving **more** than three Stooges AND Laurel and Hardy. We'll call this movie *Leasegate*.

The movie, *\$213,000 Baby*, the story of the success of Project Land, wins the Best Drama Orchid. This is truly the feel good movie of the year. Major actors in this production are the many individuals who donated money and the organizations, The Nature Conservancy of Canada and the Alberta Conservation Association, who provided grants. Each of these donors deserves an Orchid.

A Special Achievement Orchid goes to the movie *The Facilitator*. Glen Semenchuk of FAN has the leading role in this movie. Glen has been instrumental in bringing together the cast, the directors and the producers of Project Land. And finally, the award you have all been awaiting (drum roll) the Best Picture Orchid. This Orchid goes, of course, to *It's A Wonderful Site*. This movie about wonderful Wagner Natural Area has extraordinary visual effects and cinematography. It is one of those movies that just keeps getting better with each viewing. This year saw the **official** natural area grow by almost 100 hectares (that's a lot of footage). May many more movies (excepting crime movies) be made about this special place.

Best Picture, star of the show, and the reason we all work so hard — take a bow, Wagner Natural Area.

Editor's closing words...

And last but not least, the Orchid for Best Director goes to Alice Hendry herself, for the movie entitled *The Wagner Corporation*. In this documentary Alice brings enthusiasm and creativity to the task of harnessing diverse talents for the common goal of combating social and environmental injustice and promoting ecosystem stability. A bouquet of (wild) roses for the lady...

More Members' Reminiscences of Wagner ...

by *Patricia Horton Webb*

At the turn of the 20th century my father's parents emigrated from the cloth mills of West Yorkshire to their homestead on the west edge of Elk Island National Park. The time that the family lived on the farm there instilled a deep and abiding love of the outdoors in my father and his brothers. Likewise, my English mother's family lived out in the countryside, surrounded by farms and hills. She and her family, too, spent much of their time outdoors - walking, riding, playing games and camping. This shared love of the outdoors proved a strong and lasting bond between my parents. When I was young our family spent most weekends out in the countryside surrounding Edmonton. When we didn't have time to go north to the Clyde sand hills or east to Elk Island, we would take short trips to the Winterburn sand hills and the "muskegs" north of the original Highway 16.

Membership in the Edmonton Bird Club introduced our family to people with similar interests, such as Eddie Jones, Cy Hampson, Bob Lister, Peter Demulder and Kay Ball. At that time Wagner became more widely known as a place to go birding, with the colony of gulls that nested in the trees at Wagner being of particular interest. Over the years, as my parents became more interested in, and knowledgeable about plants, as well as birds, visits to Wagner became a continual source of delight. Early spring visits to the marl ponds then gave way to the pleasure of discovering the flowerings of the various orchids and other flowers that appeared through the summer season at Wagner.

Because Wagner is situated so near to the west side of the city of Edmonton, it became a favourite place for my parents to take visiting relatives and friends who did not have time to more extensively explore the outdoors around Edmonton. The visit to Wagner was invariably the one experience each of these visitors remembered throughout the years. In their later years when they were not able to travel far from home, Wagner was one of the areas my parents visited as often as possible and they treasured the memories of each visit.

Yellow lady's slippers were always very special to our family. Mum and Dad made a pilgrimage many years ago to save a pocket of yellow lady's slippers that was to be bulldozed to make way for the new Beverly bridge. Over the years the yellow lady's slippers in their back yard became a matter of casual study. The number of flowers was recorded each year, and their appearance was eagerly awaited as the first sign that summer was truly here. James and I continue that tradition with the clump of yellow lady's slippers that we removed from Mum and Dad's garden when their house was sold.

The last time we took Mum and Dad out to visit Wagner, the yellow lady's slippers were in bloom there. We wandered around through the field, passed the picnic shelter, and then headed for the trail through the trees. Mum and Dad were in front of James and me. They stomped along

happily ahead of us on the path through the trees. James and I got as far as the edge of the trees and were brought to a halt by a virtually solid wall of mosquitoes, each one anxious to find an accessible part of our bodies. By the time James and I had covered ourselves with a liberal application of mosquito dope, Mum and Dad were well along the path to the marl ponds. When we finally caught up to them, solicitous enquiry returned the answer that 'the mosquitoes were not bothering them and they didn't need any dope'. This, while the nasty high-pitched hum mounted in our ears!! After spending a pleasant time in the sunshine at the marl ponds, the four of us kept on along the path, stopping to admire the wonderful display of yellow lady's slippers in the tall grasses beside the path that ushered us back out to the fence gate. A very memorable visit to the intriguing habitat that is Wagner Natural Area.

A few memorable notes ... 1950 and earlier... by *Edgar T. Jones*

I can always remember with pleasure some of my earlier visits to "Wagner muskeg", as I used to call it. In those days some of our rarer birds were breeding within the boundaries of Wagner. Birds like Lesser Yellowlegs I found on several occasions; once as I recall the female flushed almost from under my feet! The reason, I quickly found out, was that the first two of four eggs were actually "fipping out" or hatching. Two days later when I again checked, all had hatched and were gone, no doubt sheltering nearby under a clump of Labrador Tea!

The springs and early summers were always a joy in Wagner. I can remember one time sitting on a log in a huge patch of Yellow Lady's-slipper orchids, at least 500 to 600 all around me, as I watched a Western Wood Pewee sitting on a nest saddled on a tamarack branch, beautifully arched over. A small branch of the tree was also arched over the nest, framing it perfectly with fresh apple-green needles. We later photographed this most colorful nest.

On still another occasion, a pair of Yellow-rumped Warblers, formerly called Myrtle Warblers, had built their nest in a small spruce tree. I watched for a couple of hours as they fed four ravenous young a variety of colorful green caterpillars. Only when the adult came with food could you see the four tiny, down-covered heads come up with gaping mouths from behind the screen of soft feathers with which this species lines its nest. Feathers of Ruffed Grouse, Mallard duck or gull might be found in the nest, having been picked up along the edge of a pond or possibly from feathers caught on the twigs of Labrador Tea. Both Labrador Tea and Myrtle Warblers were common in Wagner.

Wagner, with its fifteen or so species of the 26 orchid species found in Alberta, is not only a botanist's delight but could also be very exciting for bird watchers as well!

Sprucing Up Wagner Natural Area!!

by J. Derek Johnson

In the spring of 2005, the Wagner Natural Area Society (WNAS) was approached by a group of Junior Forest Wardens in Stony Plain about the possibility of planting some white spruce seedlings in the natural area. This request created some discussion when it was brought up at a subsequent meeting of the management committee. Some members felt that planting seedlings in the natural area was inappropriate and that nature should be left to take its own course. Other members thought it would provide both experience for some potential up-and-coming foresters, as well as an opportunity for the Society to set up a quasi-scientific experiment to monitor the survival and growth of the planted seedlings. White spruce is the most widespread coniferous tree in Canada and it is common in the natural area. The seeds used to grow the seedlings come from a compatible area and the seedlings were grown in the nursery at Smoky Lake, northeast of Edmonton. The pros won out over the cons and the Society gave the group permission to do the planting. A forester from the Northern Forestry Centre, Richard Krygier, and I volunteered to select planting sites and set up the monitoring experiment. Members of the Society agreed to provide additional garden spades so that there were enough for everyone who showed up to plant.

The Junior Forest Wardens obtained 500 seedlings from the Smoky Lake nursery and two areas were selected for planting. The first site was in an area bordering the willows along the Marl Pond Trail, close to where the continuous water level recorder was installed by Alberta Environment. Approximately 150 seedlings were planted here. The second site was at the south end of the Villeneuve field in the 10 m buffer strip that the Society established several years ago in the hay meadow to begin the process of reclaiming this field. Approximately 350 seedlings were planted here. One hundred seedlings in each area have been marked and their root collar diameter and height measured. The survival and growth of these seedlings will be measured at regular intervals (no less often than every five years after the first year survival measurement). The experiment is only quasi-scientific as there was very little consistency in planting techniques.

Planting day was May 7th. Morning arrived with a light drizzle after heavier overnight rain. The drizzle soon stopped and the day turned out to be ideal for planting, not too hot and plenty of cloud cover to minimize stress on the seedlings. By the time everyone arrived, there were 31 people in the Villeneuve field, ranging in age from preschool to about mid-fifties. Not everyone planted seedlings. The

preschoolers spent their time making stickmen out of the marking stakes and the high school girls spent much of their time giggling and complaining about how dirty their hands were getting. The planting was supposed to be random, and it certainly was. Nominal spacing between the seedlings was supposed to be about 2 m and for the most part this was achieved. Since the turf mat in the fields was relatively tough, the garden spades proved to be a good tool for planting. To plant the seedling, an approximately 30 cm square of sod was cut out. As much loose dirt as possible was then scraped from the bottom of the sod. The seedling was then placed in the hole and the soil was then packed in around it. The sod mat was left beside the hole and not put back in. There were three reasons for planting the seedlings this way. First, leaving the sod mat to the side removes some of the nearby competition for the seedlings. Second, the darkened soil surface warms up more quickly than the sod and stimulates the seedlings to grow. Third, the depression left by planting this way accumulates water. All together, these factors give the seedlings a better chance to establish and survive. In one area of the Villeneuve field, the holes filled up with water almost as soon as they were dug, the water table was so high. In this area, the seedlings were pulled and replanted on higher ground.

The Junior Forest Wardens commented that the Wagner Natural Area provided them with the best planting conditions they'd had in many years. The group also helped to pick up litter along Highway 16 on their way back to the parking lot. This was much appreciated by the Society, as the amount of litter in the area was probably the most since completion of the highway interchange more than 10 years ago. Hopefully, some of the young tree planters may return in future years to see how well their seedlings are doing.



Northern Forestry Centre forester Richard Krygier demonstrating the proper planting technique to the Junior Forest Wardens and their families.
Photo by J. Derek Johnson

Wildflowers of Wagner No. 24

Scrophulariaceae

Pedicularis groenlandica



Close-up of individual flower

Figwort Family Elephant's-head

By mid to late June the long purple-red spikes of Elephant's-head are a striking sight, so much so that some people mistake them for orchids. Found in roadside ditches, meadows and lakeside fens in the Rocky Mountains and foothills, and rich fens in the boreal forest region, this species grows where the water is high in calcium ions. Elephant's-head is abundant in Wagner's fens, and can be readily seen in the fens along the Marl Pond Trail.

A perennial herb that grows 20-50 cm tall, with unbranched stems that are often clustered, Elephant's-head is smooth and shiny, and often deep purplish red in overall colour rather than green. The leaves, 5-20 cm long and 0.5-1.5 cm wide, are deeply divided into paired, shallowly toothed segments, which gives them a delicate, fern-like appearance, characteristic also of other members of the genus *Pedicularis*. The largest leaves occur at the base of the stem, with progressively smaller leaves arranged spirally along it towards the top.

The flowers are built on the plan typical of the figwort family, with five petals joined to form a bilaterally symmetrical tube that flares at the open end into a distinct upper and lower lip.

This flower structure is adapted for pollination by bees, particularly bumblebees. In Elephant's-head the plant takes its common name from the prominent upper lip, about 1 cm long, which is curved like a hood over the lower lip and then prolonged into a long, upturned tube or beak. This "hood" and "trunk", together with the wide lateral lobes of the lower lip representing "ears," provide an uncanny resemblance to a miniature elephant's head. Each flower in the 5-15 cm-long spike is subtended by a three-pronged purple bract that further intensifies the colour of the flower head. The fruits are flattened, curved capsules, 8-14 mm long, containing many small seeds.

Like all *Pedicularis* species (louseworts), and various other members of the Scrophulariaceae, Elephant's-head is a partial parasite. It has sucker-like structures on its roots whereby it can attach to the roots of neighbouring plants (in fens the host is often dwarf birch) and withdraw water and nutrients from the host. (Sugars are manufactured in the normal way by photosynthesis.)

Lousewort species occur throughout the northern hemisphere, and the common name likely derives from old folk use as a remedy against ectoparasites. In Alberta, *Pedicularis* reaches its greatest diversity in the mountains, in alpine or subalpine habitats, with species such as Arctic lousewort, *P. arctica*, large-flowered lousewort, *P. capitata*, and western lousewort, *P. bracteosa*. In the boreal forest the yellow-flowered Labrador Lousewort (*P. labradorica*) and the Swamp Lousewort (*P. parviflora*) occur sporadically. Despite its purple flowers and somewhat similar habitat, the Swamp Lousewort lacks the long flower spike and distinctive "elephant head" of *P. groenlandica*, and is readily distinguished from it.