

**SURVEY OF TIMBER SALES
IN
SOUTHEASTERN MANITOBA
for
Potential Habitat
of
Rare Native Plant Species**

Year-1 FINAL REPORT

**Report by: Doris Ames
Date: March 2002**

**Project Manager: Bud Ewacha
Native Orchid Conservation Inc.
35 St. Michael Road
Winnipeg, MB Canada
R2M 2K7**

ACKNOWLEDGEMENTS

Native Orchid Conservation Inc. would like to thank Elizabeth Reimer and Jason Greenall, from Manitoba Conservation (CDC), for their assistance in GIS mapping and form preparation; Nestor Ewacha, Glen Switzer, Graham Sayer and Tim Swanson from Manitoba Conservation (Forestry), for assistance in planning the field work and for map preparation; Lawrence Smith, for sharing some of his vast knowledge of medicinal plants and their uses, and Carla Zelmer, for reviewing our field work methods and commenting on early drafts of this report. Special thanks to Al Ames, for his help with survey form design, and for scanning the photographs used in this report.

EXECUTIVE SUMMARY

Between May 1, 2001 and March 20, 2002, members of Native Orchid Conservation Inc. conducted a survey of timber sale areas in southeastern Manitoba, south of Hwy#1, between the Manitoba/Ontario border and Ste. Anne, for potential habitat of rare native plant species. We also surveyed part of the peat harvesting licence area, west of Hwy #308, belonging to Premier Horticulture. In addition, Manitoba Conservation's Department of Forestry, asked us to look at areas, in Belair and Brightstone Provincial Forests and Grand Beach Provincial Park, known to contain significant native orchid populations. To our knowledge, we are the only group doing this type of field work.

We identified 23 new locations as habitat for species at risk. These locations included 16 species of special concern (S1 to S3) as well as 11 species of native plants of cultural significance to First Nations people (see plant lists and GIS map). We identified and recorded the locations of many other native orchid species but concentrated on those at highest risk.

We intend to carry on with this survey in summer and will look at the new timber sales opened up this winter to see what species are there. After this project is finished, we believe it is crucial that these rare plant populations continue to be monitored to see if they were adequately protected, and how they reacted to tree harvesting, in the blocks around them.

INTRODUCTION

We decided to undertake this project for several reasons. Those of us who had been going out into the field for many years, were alarmed at the changes taking place in our forests and wetlands. Native orchids and other rare native plant species were becoming more and more difficult to find. Their habitat was disappearing as a result of human activities such as agriculture, logging and mining among others. We wanted to find a way to protect some of these native plant species and their habitat.

Dept. of Forestry personnel, in the eastern region, said they would like to have someone inspect timber sales areas for rare, native orchids, before the trees were harvested. They believed it might be possible to leave some of this orchid habitat out of the cut.

We had heard a similar idea put forward by Lawrence Smith, an elder from the Brokenhead Ojibway First Nation. He was having difficulty gathering enough medicinal plants to last the winter. At a Special Forest Products Workshop in 1999, both Lawrence and Gary Raven, an elder from Hollow Water First Nation, mentioned there was a need for an inventory of traditional medicinal plant populations in southeastern Manitoba. Traditional healers were unsure just how many of these culturally significant plants were left.

We knew that identification of rare plant species was essential in order for the forestry to develop forest management plans to protect their populations, and we were eager to take on this project. However, we also knew that Native Orchid Conservation Inc. could not fund and carry out this project alone. We needed partners. We began to apply widely for funding and inkind help. We received funding from Environment Canada's Habitat Stewardship Fund for Species at Risk, Manitoba Conservation's Sustainable Development Innovations Fund and Premier Horticulture. Inkind donations were received from Manitoba Conservation's Conservation Data Centre, Manitoba Conservation's Forestry Operations Eastern Region, Brokenhead and Buffalo Point First Nations and our own members. After much fund raising and preliminary planning we were able to start the project on May 1, 2001.

METHOD

The survey area was large. The southeastern area alone was over 500sq.miles. It included all timber sales south of Hwy#1 between the Manitoba/Ontario border and Ste. Anne. We were also asked by forestry personnel to look at some areas in northeastern Manitoba that contained significant populations of native orchid species. These areas involved parts of Belair and Brightstone Provincial Forests and Grand Beach Provincial Park We intended to survey those areas for rare, native plant species and for plants of cultural significance to First Nations people.

We began by consulting the CDC database for the SRANKS on native orchids and other rare plants and medicinal plants in the area. We also consulted White and Johnson's *Rare Vascular Plants of Manitoba*, and some Manitoba Energy and Mines publications on surveys of bogs for peat moss in southern Manitoba. These often list plant species found in some of the wetlands, the pH, the underlying soil and rock, drainage etc. This was often helpful for predicting potential rare plant habitat. We also consulted several other books (see list of sources). We had topographical maps and limited access to the forestry's aerial photographs. We did not have GIS maps, for the area, showing the types of tree cover. However, not all areas that have the right kind of trees and other characteristics that should make them good potential habitat, for rare plants, will actually contain any rare plants, so this kind of study must always include a survey by experienced people on the ground, in any case.

We consulted elder Lawrence Smith from Brokenhead First Nation, about the correct way to handle medicinal plants, and later on about some of the traditional uses of these plants (see photos and descriptions). We also attended a "Sharing the Knowledge" Workshop at Circle of Life, Thunderbird House in Winnipeg. Native elders, in attendance, explained many aspects of their traditional belief system including the importance of medicinal plants .Apparently these plants play a dual role in medicine and in ceremonies. Because of interest expressed, in these plants, their collection and use, we have included some brief notes on the subject (see appendices).

A survey of this type is difficult to do, because it involves rough, wet, and generally inaccessible areas. It is similar to the kind of pre-harvest assessment done by forestry personnel and logging companies commonly referred to as "cruising for timber". To "cruise" in that sense, means to inspect a large forested area, in a systematic way, for merchantable timber.

Since most of the areas were not accessible, with our truck, in summer, we went out in the winter of 2001, to do preliminary surveys (see form and photos), prior to formally starting the project on May 1, 2001. Starting about mid January, when the ground was frozen, we were able to drive in on the logging roads. Forestry personnel provided us with a map of timber sale areas in the eastern region. These are the locations where trees will be harvested over a five year period. They also let us look at their aerial maps of timber sales and notified us from time to time as new ones were opened up.

They also advised us how best to access these areas. Recently they provided us with a map of the eastern region that had our rare plant habitats marked on them.

We looked for the kinds of habitat that would be likely to contain native orchids and other rare, native plant species (see photos). We had to rely on our years of field experience looking for these plants in this area. Although the coniferous forests and wetlands are prime habitat for many species of native orchids and rare plants, like insect-eating plants, we had to go out in the field and actually check the areas. Other orchid species prefer mixed coniferous-deciduous forests or deciduous forest alone. The orchid species, in our area, all have particular habitat affinities that might be different in other areas. For instance, cedar and spruce covered bogs with sphagnum hummocks often contain rare native orchids such as Ram's Head and Showy Lady's-Slippers and many other orchid species and insect-eating plants. Rich, calcareous fens and cedar swamps, such as those found in the Brokenhead Wetlands, contain the highest number of rare plant species. In the fen alone, we found 28 native orchid species and 24 rare plants. White Adder's Mouth, Green Adder's Mouth, Hooker's Orchid, Large Round-leaved Orchid and Tesselated Rattlesnake Plantain are likely to be found in those kind of rich fens and swamps but also inhabit drier coniferous bogs with higher acidity. Grass Pink and Rose Pogonia are usually found in calcareous meadow fens or floating coniferous swamps with a neutral to high pH. Loesel's Twayblade is usually found in calcareous meadow fens. Coral Roots prefer rich, mixed hardwood or sometimes deciduous-coniferous forests. Most of the rare plants prefer a bog or forest that has a neutral to high pH. The lower acidity apparently allows for greater nutrient uptake (see Fundy Model Forest Publication). Trailing Arbutus prefers to grow in the moss of dry coniferous (usually jackpine) forests, often on sandy soil, in the southeast. Turtlehead, another rare plant, is usually found in very wet, swampy areas, with long grass. On the other hand, dark, coniferous forests with closely spaced trees (closed canopy), or overmature trees, usually do not contain many orchids or other rare, native plant species and we don't find many native orchids in marshes, with cat tails or phragmites. This is because highly specialized plants like native orchids have very specific light requirements, (most species need a lot of light); need certain soil conditions (pH, moisture etc.); and require the presence of certain fungi. I think this applies to rare plant species in general, and that's why they are rare. So predicting their potential habitat is not a simple thing.

Fortunately, most of these rare plants have indicator plant species that grow along with them. Potential habitat can often be recognized, even in winter, by the presence of these other species such as Pitcher Plants. Some even have indicator animal species. For instance, the Baltimore Skipper is usually associated with Turtlehead. Native orchid seed pods, in many species, persist all winter if not eaten, which makes them easier to identify in the field. Blooming times vary between species and you have to know when they are in our region (see list of blooming times in this region for the orchids we found). Field guides often give you the times for the southern U.S.A. or somewhere else. In southeastern Manitoba, you need to conduct the survey between May 1 and September 15 to be sure of seeing all of the orchids in flower. It is possible to identify orchids almost any time of the year, but most people find it much easier when they are in bloom.

Some of the medicinal plants, as well, are easier to identify when they are in fruit or flower. Native elders would be aware of the right time to look for them.

Areas that showed potential were marked on our maps and the GPS coordinates, location and habitat descriptions were written up in our log book. We took photographs of the habitat and plant species as well. Many times we could recognize dried and frozen understory plants, like pitcher plants, orchids, leatherleaf and moss, by their shape and seedpods. When we found areas with a great deal of potential, that were in danger of being cut right away, we would mark them with flagging tape and notify forestry personnel immediately. Otherwise we would return in the summer.

During the summer, starting in May 2001, we came back with an Argo (amphibious A.T.V.), to see if this area did contain significant populations of rare, native plants and medicinal plants. If it did, we marked off a suitable area including a buffer zone with flagging tape. Flagged areas varied from 1ha to 80 ha. In future, the areas should be larger if possible. When trees are cut in adjacent areas, light comes in and often kills plants at the edges. You need to allow for a good sized buffer zone to avoid losing plants. As well there is probably a minimum size necessary for a protected area, to preserve the species' biodiversity long term. Further studies and models may reveal just what size that is for each species. However, realistically, in southeastern Manitoba we have to protect what we can right now. In this relatively heavily populated area, land is needed for many other purposes and much of the land and its resources is already committed.

We photographed the identified plants and their habitat, and collected voucher specimens, if numbers permitted. We collected the whole plant, arranged it, made out a label which included GPS coordinates, and dried the specimen in a plant press. We then passed it along for confirmation, to Dr. Bruce Ford, taxonomist, at the University of Manitoba. We filled out plant survey forms (see copy), for Manitoba's Conservation Data Centre(CDC), so they could add the information to their rare plant database. CDC staff designed the plant survey form but we made a few modifications to suit this particular survey. We also designed a habitat survey form for winter use (see samples). The CDC later prepared the GIS map with locations of the rare and medicinal plant species we found marked on it. We marked the locations on our topographical and timber sales maps. Coordinates, location, access and habitat descriptions were recorded in our log book. We tried to check each area of potential habitat several times over the summer so we wouldn't miss any plant species. We then notified forestry personnel, in the eastern region so they could build appropriate mitigative action into their forestry management plans (see letters from Stan Kaczanowski and Don Cook).

There was the odd time that we couldn't get into the timber sale, in summer, even with the Argo. Sometimes there would be floating bog and the machine would start to tip over, or the old stumps would be so high and there would be so much debris, that we couldn't drive or walk on it. Fortunately, this did not happen often. We kept detailed records of these trips in our log book. We made 27 trips in the spring, summer and fall of 2001 and an additional 14 trips in the winter of 2002. We tried to drive or walk

through as much of each timber sale as possible, stopping to check each area of potential habitat in several places. We also inspected a peat harvesting licence area, off Hwy#308, belonging to Premier Horticulture, before a new area was logged off and drained preliminary to peat harvesting.

RESULTS, CHALLENGES AND RECOMMENDATIONS

So far we have identified 23 new locations containing 16 species of special concern that the Conservation Data Centre ranks S1 to S3. S1 denotes a plant species that is very rare throughout its range, S2 defines a species that is rare throughout its range and S3 defines a species that is uncommon throughout its range. We also identified 11 different species of medicinal plants (see lists of these species and GIS map). We turned this data over to the Forestry as well as the Conservation Data Centre. The 24 rare plant specimens we gave to Dr. Ford for confirmation of their identity, will eventually be added to the University of Manitoba's herbarium. A report of our survey was sent to Premier Horticulture. Locations of culturally significant plant species will be turned over to Brokenhead and Buffalo Point First Nations. We identified many other species of native orchids and other more common plants, and recorded these findings, on the CDC plant survey forms. We have included photographs of all the species of special concern that we identified as well as the medicinal plant species. We hope most, if not all, of the identified habitats, will be protected. Percent of protected areas in a forest management area and changes in these plant populations over time could be local level indicators for sustainable forestry management. Some of the locations are so rich in rare plant species they may be future candidates for ecological reserves. We know there is always an element of risk involved in identification and documentation of rare plant locations, but on the other hand, it is the only way they can be protected, long term.

The huge area we needed to survey was a real challenge. It was hard to stay ahead of the cutting, especially during the winter. The mild weather helped us because the loggers couldn't spend much time in the bush. Their big machines bogged down due to the late freeze up and early thaws. But it isn't like that every year. It would be better to do these surveys before logging gets started in a new area. Another problem is that the timber sales are set five years at a time. Not every timber sale area is opened up during the first year or two so you have to wait to get access. If you only have funding for a year or two you can't really do it all. The survey should be continued for the full five years and beyond, to be sure no significant area is missed. Rare plants should be monitored to see if they were in fact protected, and what effect the tree harvesting around them has on their growth. It might be possible to establish just what the minimum protected area and buffer zone should be. Results of these follow up studies might lead to further consideration of alternative cutting methods. More or less intensive cutting methods, might be employed, depending on the type of habitat in a particular region. Another challenge is avoiding damage to the habitat while doing these studies. Driving, walking, even photographing, the plants can damage the delicate mini-ecosystem, especially in warm weather. Trampling around on moss and removing vegetation, while trying to get a good photograph or specimen, can be very damaging to delicate plants like Ram's Head and other small orchids.

In spite of these difficulties, a survey for rare plants and their habitat has to include habitat inspection by experienced people on the ground. Although they are a useful resource, you cannot depend completely on GIS maps or aerial photographs. Not all potential habitats contain rare plant populations, and relict plant populations exist in the most unlikely places. Tree species dominance, in particular, is no real predictor of rare plant habitat. For example, jackpine forests in the southeast often contain five or six rare plant species, but red pine plantation forests contain very few native orchids or other rare plant species (see photos). Usually there is little biodiversity, in those plantations and they do not usually support large populations of highly specialized plant species. It would be interesting to know why not. Forest development stage and canopy closure are more important indicators of rare plant habitat, as previously mentioned but there may be other factors.

Continued cooperation and good working relationships with the peat moss harvesters, large logging companies, private contractors, and the Manitoba Model Forest is crucial to successfully protecting rare plant species and their habitat. Most loggers and peat moss miners we talked to, want to protect rare plants and preserve the natural environment, and most of them know a great deal about the boreal forest.

This survey may help to promote innovation in the environmental and sustainable development industries. This is because it could form the basis, from which to design other surveys that could be done on the logging companies' forestry management licence areas, as well as the timber sales areas. Such surveys could be done prior to selecting the areas, for timber sales and tree harvesting. Personnel in the field could look for potential rare plant habitat while they are "cruising for timber". They could be given the kind of information they need to do this. For instance, our group has developed a slide presentation that helps our members identify native orchids at any time of the year, not just when they are in bloom. It would be possible to prepare a guidebook with a detailed description of the types of habitat likely to contain rare plants, in eastern Manitoba, as was done in the Fundy Model Forest of SE New Brunswick. But you would still need experienced people to check out timber sales, on the ground. They could take note of large nests, and unusual birds and animals at the same time. These things could be identified and protected as well. Information of that kind, would certainly enhance efforts to mitigate the effect of logging on biodiversity and lead to more sustainable forestry management. This would be a new initiative in protecting rare plants in Manitoba, not fully addressed by existing programs, although we are aware some of this type of work is being done.

Peat harvesting areas should continue to be monitored for rare plants. We received much cooperation from Premier Horticulture. As well as survey funding support, their local manager took us out to see a part of their licence area that was about to be cleared and drained (see report). A certain portion of their licence area has to remain virgin bog and they are willing to protect areas that contain rare plants. They will allow surveys of other areas as they open them up, prior to harvesting. This kind of relationship with the peat mining industry should be maintained. Virgin areas that contain sphagnum moss and other bog plants, including rare orchids, need to be there to supply seed in the

future for the areas under restoration. Their personnel might also benefit from information, on the rare plants likely to be found in wetlands.

Overall, we believe the project was a success and that the data we collected may help to protect some rare plants and their habitat, in these timber sales areas and peat harvesting areas, now and in the future. In the same way, it will help to promote environmentally sound decisions and activities. Preserving biodiversity will be beneficial for future generations because they will be able to continue to enjoy these rare plants and their habitats. Long term, the very lives of animals and humans depend on the preservation of plant diversity.

In the case of medicinal plants, conservation will allow First Nation communities, to continue to practice a significant part of their cultural activities. Since, even in modern times, 50% of medicines are derived from plants, we may all benefit. Little scientific research has been done into the medicinal properties of these boreal forest plants although First Nation healers have much experience working with them. These protected plant populations can act as a seed source for the harvested areas when they are restored.

Propagation of medicinal and rare plants, from seed, while not always possible, is certainly an option, with many species. Sweet Grass is one that comes to mind. Lady-slippers are another. Our experience with this project and our recommendations may lead to the development of better ways to recognize, protect, and restore, rare plant habitat, in Manitoba.

We prepared a brochure about this project and also an large eight-panelled board display that we have taken out to shopping centres so the general public can be made aware of the need to protect rare plants and their habitat (see photos). We gave an overview of the project to a meeting of our members on March 6th and mentioned our partners and funders on all these occasions. We spoke to loggers, forestry personnel, peat moss miners, politicians, our members and anyone else who would listen, about this project and about the need to protect rare plants and their habitat. We tried at all times, to be good ambassadors, for preservation of biodiversity, in the natural environment.

We plan to carry on with this project and we are presently seeking funding for another year to continue checking habitat in these timber sales. We believe it is crucial that these populations continue to be monitored, even after the five year limit is over, to see if the rare plants, in the protected areas, continue to thrive. This would likely involve a long term, systematic study over a period of years.

Please view our website at www.nativeorchid.com for more photographs of native orchids.

SPECIES OF SPECIAL CONCERN

<u>Species</u>	<u>SRANK</u>	<u>Occurrences</u>	<u>Locations</u>
<i>Asarum canadense</i> - Wild Ginger	S3	1	C
* <i>Calopogon tuberosus</i> - Grass Pink	S2	1	K
<i>Chelone glabra</i> - Turtlehead	S2S3	2	P,H
<i>Chimaphila umbellata</i> - Pipsissewa	S3S4	5	F,G,Q,R,S
* <i>Corallorhiza striata</i> - Striped Coralroot	S3	9	B,C,E,F,H,J,N,V,W
* <i>Cypripedium arietinum</i> - Ram's Head	S2	3	E,N,P
* <i>Cypripedium reginae</i> - Showy Lady's-Slipper	S3	6	I,N,O,T,H,K
<i>Epigaea repens</i> - Trailing Arbutus	S3	4	A,B,F,G
<i>Gaultheria procumbens</i> - Teaberry	S3S4	6	F,G,L,Q,R,S
* <i>Goodyera tessellata</i> - Tesselated Rattlesnake Plantain	S2	8	F,G,L,M,R,S,U,V
* <i>Liparis loeselii</i> - Loesel's Twayblade	S3	4	H,I,K,N
* <i>Malaxis monophylla</i> -	S2	4	H,T,E,F

<u>Species</u>	<u>SRANK</u>	<u>Occurrences</u>	<u>Locations</u>
White Adder's Mouth			
* <i>Malaxis unifolia</i> - Green Adder's Mouth	S2	2	F,E
* <i>Platanthera hookeri</i> - Hooker's Orchid	S2	10	A,B,D,E,J,L,N,O,V,P
* <i>Platanthera orbiculata</i> - Large Round-leaved Orchid	S3	4	B,E,H,N
* <i>Pogonia ophioglossoides</i> - Rose Pogonia	S1	2	K,W
* indicates a native orchid			

BLOOMING TIMES OF IDENTIFIED RARE ORCHID SPECIES

<i>Calopogon tuberosus</i> - Grass Pink	July and August
<i>Corallorhiza striata</i> - Striped Coral Root	June and July
<i>Cypripedium arietinum</i> - Ram's Head	May and June
<i>Cypripedium reginae</i> - Showy Lady's-Slipper	June and July
<i>Goodyera tessellata</i> - Tesselated Rattlesnake Plantain	June through August
<i>Liparis loeselii</i> - Loesel's Twayblade	July and August
<i>Malaxis monophylla</i> - White Adder's Mouth	May and June
<i>Malaxis unifolia</i> - Green Adder's Mouth	June through August
<i>Platanthera hookeri</i> - Hooker's Orchid	July and August
<i>Platanthera orbiculata</i> - Large Round-leaved Orchid	June and July
<i>Pogonia ophioglossoides</i> - Rose Pogonia	June and July

MEDICINAL PLANT SPECIES

<u>Species</u>	<u>Occurrences</u>	<u>Locations</u>
<i>Arctostaphylos-uva-ursi</i> - Bearberry	7	F,G,M,Q,R,S,U
<i>Asarum canadense</i> -Wild Ginger	1	C
<i>Chimaphila umbellata</i> - Pipsissewa	5	F,G,Q,R,S
<i>Coptis trifolia</i> - Goldthread	3	B,W,N
<i>Drosera rotundifolia</i> - Sundew	1	P
<i>Gaultheria procumbens</i> - Teaberry	6	F,G,I,Q,R,S
<i>Ledum groenlandicum</i> - Labrador Tea	11	A,B,C,E,H,J,N,O,P,T,W
<i>Monarda fistulosa</i> - Bergamot	1	H
<i>Monotropa uniflora</i> - Indian Pipe	6	H,E,U,F,G,L
<i>Polygala senega</i> - Seneca Root	1	H
<i>Sarracenia purpurea</i> - Pitcher Plant	4	C,E,O,P

OJIBWAY TRADITION - PLANT COLLECTION AND USE

The Ojibway are famous for their Grand Medicine Society or Medewiwin. The Mediwewin believe that life is prolonged by right living and by the use of herbs which are intended for that purpose. Traditional medicine suggests that Cedar, Tobacco, Sweet Grass and Sage are the four sacred medicines given to the Anishinabe. They are used daily in the ceremonial smudging of body, mind and spirit.

Medicinal plant information is controlled essentially by the elders. They are generally extremely cautious about providing information on traditional plant use to anyone who does not respect and/or adhere to their traditional beliefs. They wish to maintain control

and direction over the harvest of those plants of cultural significance to them. For many thousands of years, the Ojibway in Manitoba have collected these plants for use in traditional medicines and ceremonies. They continue to barter or exchange them as far down as southern Mexico. According to tradition, tobacco and a prayer is offered, to the Creator, before a medicinal plant is collected.

The elders told us that aboriginal people have special methods for protecting and handling their medicinal herbs. They handle their herbs with special care and reverence. Whenever you are about to harvest a medicinal plant, put down tobacco as an offering to the Creator before you take the plant. Say Megwetch (thank you), to the plant god. Always treat medicinal plants with respect so these plants will help people when they are sick. Do not store medicinal plants in plastic bags. Elders wear sage branches on their shoes when collecting plants, in case they accidentally step, on a medicinal herb. They believe we need to take care not to over harvest medicinal plants or any other plant, and that we need to preserve and care for nature at all times. We are especially grateful to Lawrence Smith and other First Nation elders for their guidance and encouragement. Much of the above information, on the Medewiwin Society, was adapted from Manitoba Model Forest Project 95-4-09.

MEDICINAL HERBS - THEIR TRADITIONAL USES AND HABITAT

***Polygala seneca* - Seneca Root** - the dried root of this plant is used to treat coughs, colds and asthma. It is also used by some healers in the treatment of diabetes. Although dropped from the National Formulary in 1960, it continues to be used in some cough preparations because of its expectorant qualities. European herbalists still use it today in cough syrups. It can be found growing in moist prairie and at the edges of aspen groves. We found this specimen at the edge of the road in a gravel pit, among poplar trees.

***Asarum canadensis* - Wild Ginger** - the pleasant-tasting root can be chewed plain or candied, and is used to treat chest colds and heart disease. Sometimes added to meat to prevent spoilage, tests reveal the plant has antimicrobial properties. This plant is not very common anymore, in the southeast, and those that we did find were growing in rich mixed hardwood forests.

***Monarda fistulosa* - Bergamot** - the leaves are used to make a peppery-tasting tea that was used to treat bloating and stomach ache as well as bladder and blood problems. This pretty plant is usually found in waste places and at the edge of poplar groves. The seed head is a nice, flat button, often seen in dried arrangements. We found this specimen along the road through an old gravel pit.

***Ledum groenlandicum* - Labrador Tea** - the leaves are used by First Nation people to make a tea rich in Vitamin C. This tea is also used to treat stomach and kidney complaints. It was exported to England, in the 1800's, by the Hudson Bay Company. The Bay employees used it as a tonic and it sometimes appeared on the menu at fancy

dinner parties, in the early years of the Red River settlement. It is still common today in the moist, coniferous bogs, of the boreal forest.

***Chimaphila umbellata* - Pipsissewa** - used by First Nations people to treat urinary tract and kidney problems. Studies have shown it to be a mild urinary antiseptic. It is also used as one of the flavourings in root beer. We find it once in a while in dry, coniferous forests in eastern Manitoba, more often in Jackpine forests than in Spruce.

***Gaultheria procumbens* - Wintergreen or Tea Berries** - a tea made from the flavourful leaves was used to treat headaches and upset stomach. The plant was used externally and internally to treat arthritis and rheumatism. A few berries were eaten, or a poultice made from crushed leaves could be applied to the site of the pain. The plant contains methyl salicylate closely related to Aspirin. The plant is usually found on acid soil in dry, coniferous forests.

***Arctostaphylos-uvi-ursi* - Bearberry** - this herb is used in several ways. The leaves are mixed with tobacco and smoked during ceremonies. The stems and leaves were boiled to treat diarrhea, and the plant is also used to treat kidney infections. We find it growing on sandy soil in dry woodlands.

***Coptis trifolia* - Goldthread** - the root of this herb is used by some First Nation healers to purify the blood, treat liver problems and combat alcoholism. It has many powerful medicinal properties and was listed in the United States Pharmacopoeia from 1820-1882. It's not common, but sometimes we find it, growing in the moss, in damp woods and bogs.

***Drosera rotundifolia* - Sundew** - dried or fresh, this insect-eating plant has long been used to treat respiratory problems such as asthma. The plant also has a long standing reputation, in Europe, as a love charm or aphrodisiac. It is certainly not common and we usually find it in remote coniferous bogs and fens with sphagnum hummocks.

***Sarracenia purpurea* - Pitcher Plant (Frog Pants)** - this carnivorous plant is used to treat kidney and bladder complaints. Highly regarded by the Cree, they often added it to other medicines to treat the very sick. We find it growing in the moss, in coniferous bogs and fens. It is an indicator of habitat that may contain, native orchids and other rare plants.

***Monotropa uniflora* - Indian Pipe** - the juice of this strangely beautiful, ghost-like plant, has been used by First Nations people to treat eye inflammation. The dried seed pods are highly valued as a ceremonial smudge. It is connected by fungi to the roots of nearby trees, from which it gets nourishment. We usually find it growing in the shade in rich, moist, coniferous forests but it is not common. The brown seed pods are much harder to see. They seem to blend into the forest.

***Hierochloe odorata* - Sweet Grass** - we didn't find any new locations as yet for this sacred herb. We have seen it growing on moist meadows at the edge of the road on the

Brokenhead Ojibway First Nation and in the Manitoba Tall Grass Prairie Preserve near Tolstoi. It is included here, because it is such an important traditional medicinal herb. It is used in ceremonial smudging and is thought to keep evil away from the home. Attractive dried braids of this grass, are much in demand.. A tea can be made from it, to thin the blood, and the smoke is inhaled to treat colds. It is an all around panacea. The sweet smell comes from the anticoagulant, Coumarin, it contains. Sweet grass is used in some aromatic pipe tobacco mixtures. Usually found in damp sloughs and moist prairies, it's not something we are likely to find when surveying timber sale areas. It is easy to grow. Small, greenhouse-grown plants are available from some wildflower nurseries and they do very well. Coming into bloom easily in June, it will spread quickly if the ground is suitable.

SOURCES

Bannatyne, B.B. *Sphagnum Bogs in Southern Manitoba and Their Identification by Remote Sensing* Manitoba Department of Energy and Mines 1980

Johnson, Derek, Linda Kershaw, Andy MacKinnon, Jum Pojar *Plants of the Western Boreal Forest and Aspen Parkland* Lone Pine Publishing 1997

Looman, J and K.F. Best *Budd's Flora of the Canadian Prairie Provinces* Research Branch Agriculture Canada Publication-1662 1979

Manitoba Wildlife Branch *Rare Plants of Manitoba* 13p. 2000-11-27 unpublished

Mark Mitchell & Associates *The Harvest, Market and Availability of Special Forest Products in the Manitoba Forest Project* 95-04-09

Petrie, W *Guide to Orchids of North America* Hancock House 1981

Quammen, David *The Song of the Dodo: Island Biogeography in an Age of Extinctions* Scribner 1996.

Scoggan, H.J. *Flora of Manitoba* National Museum of Canada Bulletin-40 1957

Smith, Welby *Orchids of Minnesota* Minn. Department of Natural Resources 1993

Weldon-Genge, Jillian *Identification of Potential Habitat for Rare and Endangered Plants in Southeastern New Brunswick* Fundy Model Forest 2002-03-19

White, David J. and Karen L. Johnson *The Rare Vascular Plants of Manitoba* Syllogeus-27 National Museum of Canada 1980

APPENDICES

Appendix A - Photographs