

WAGNER NATURAL AREA NEWSLETTER

Volume 15, Number 2 October 2001

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



Wagner Natural Area Society's
Annual Members' Night

Tuesday, November 13, 7:00 p.m.
at Save-on-Foods, Mayfield Common

Guest Room (west end of the store, enter through grocery
shopping area)

Program:

- 7:00 p.m. Introduction, President's Report, Treasurer's
Report, Membership Report
- 7:30 p.m. Presentation: "**Groundwater: Lifeblood of
Wagner**". Heather Von Hauff, PhD candidate
at the University of Alberta, will describe her
research into the hydrogeology of Wagner.
- 8:30 p.m. Karvonen Films' "**Wetlands-Cradle of Life**";
featuring sequences filmed in Wagner from the
new film, presented by **Michelle Macdonald**.
- 9:15 p.m. Refreshments

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Coming Soon!

Full-Colour, Full-
Size Poster of
**The Orchids of
Wagner Natural Area**
by local botanical artist
Rayma Peterson.

We expect these posters to
be available for sale in
December. For
information, please check
our website or contact a
member of the Wagner
executive (see page 2).



Editor's Comment

In today's world, anything that increases understanding increases tolerance and reduces our sense of frustration and powerlessness. This is probably why I find the annual general meetings of the three-year-old Stewards of Alberta's Protected Areas Association (SAPAA) very encouraging. I have reported on the last meeting (October 27) at some length in this issue for the benefit of Wagner executive who were not able to attend and for others who take an interest in the provincial government's track record on protected areas. This year John Kristensen, Assistant Deputy Minister, Parks and Protected Areas in the department of Community Development, and John Rintoul of the Alberta Natural Heritage Information Centre (ANHIC) within PPA, gave up their Saturday to better inform those stewards in attendance, and last year Sandra Myers, Volunteer Steward Program coordinator, and Lorna Allen, also of ANHIC, gave us the benefit of their wisdom. Of course these government employees put a positive spin on things, but I am invariably impressed with their talentedness, their long-standing experience in their department and their deep personal commitment to the goals of preservation and protection of the Province's biodiversity. There is plenty of give-and-take at these meetings: stewards express their concerns and ask questions, and in turn get to hear where the government is coming from, including a glimpse of the often tangled and highly political nature of land-use issues, a microcosm no doubt of the global situation. Though frustrations remain, most of us I believe come away with a heightened commitment to the symbiosis between the government's PPA division and us stewards.

Dr. Markus Thormann, now of the Canadian Forest Service, has kindly agreed to write a series on wetland topics for the newsletter. I have a very pleasant image in my mind of Markus, clad in shorts and T-shirt, wading chest deep against the current of the Athabasca River in

Jasper National Park, the water crystal clear and incredibly warm on a bright sunny day in mid-summer. I had briefly joined a group of students doing field work under the supervision of the U of A's Dr. Suzanne Bayley. On that same trip I had the privilege of donning my first pair of chest waders and plodding spaceman-like into a backwater of the Athabasca, to begin the process of learning how to throw quadrats over aquatic vegetation without out at the same time stirring up vision-obscuring mud.

I credit my wanderings in Wagner with my dawning awareness of the incredible biological diversity of wetlands and my opportunity to search the wetlands of Elk Island National Park for rare plants for the full realization that dry-land botanising isn't even the half of it. As human beings we tend to have an inbuilt aversion, cat-like, to getting our feet wet or not being on *terra firma*. If we aspire to be botanists, we need to get over that. This is not to say that wetland botanising doesn't have its challenges; it can be scary falling through a quaking fen up to one's crotch or higher, and I am not suggesting that anyone tries to go walking out into the middle of the marl ponds in Wagner. But if one goes near a wetland one should always have rubber boots or at least an expendable pair of runners handy (although there are alternatives: a friend of mine, not wanting to miss an interesting pondweed, stripped off to his underwear the better to immerse himself in a murky, eutrophic pool in Elk Island). I am still not the most intrepid, but I can now say that some of my happiest hours have been spent bouncing about on lakeside fens. To be afraid of getting wet is to be like the fat lady seen from the train in Frances Cornford's poem, the lady who walked through the fields in gloves, "missing so much and so much."

Patsy Cotterill

My apologies for an error on p. 2 of last spring's newsletter in which the map legend referred to the "original quarter-section" of Wagner. That should of course have read "original half-section." *Ed.*

It's that time of the year again! Please complete the membership form included in this newsletter, or join us on Annual Members' Night November 13 and renew your subscriptions then.

Wagner Natural Area Society

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

Executive 2001-2002

President	Irl Miller (455-3866)
Past President	Pat Clayton (456-9046)
Vice-President	Beth Jenkins (458-1794)
Treasurer	Dave Ealey (434-0841)
Secretary/Ed/Membership	Patsy Cotterill (481-1525)
Directors:	Leota Cummins (447-4256); Alice Hendry (962-4836); Mike Jenkins (481-8695); Derek Johnson (436-8231); Edgar Jones (436-5327); Ben Rostron (434-3839)

Wetland Series

In this issue of the newsletter we begin a series of articles by Markus Thormann on wetlands, their distribution, location in the landscape, and significance to society. Subsequent instalments will define the different wetland classes based on the Canadian Wetland Classification System, address water chemistry and its effects on plant communities, discuss plant communities and diversity, and discuss algal, bacterial, and fungal ecology, as well as wetlands as an ecosystem for animals.

In the next issue, Markus will use hydrologic and chemical parameters to define the five wetland classes found in Canada (bog, fen, marsh, swamp, and shallow open water). He welcomes comments and suggestions for inclusion in future instalments. He can be reached by phone at (780) 492-4615 or by e-mail at mthorman@ualberta.ca. (See biographical note on page 5.)

Wetlands – Shedding Some Light into their “Murky” Waters

By Markus N. Thormann

Part 1: The importance of wetlands and their distribution

Introduction

Not long ago, many people thought of wetlands to be wastelands, tracts of land that should be drained and changed for some other land use. However, wetlands are among the world's most important ecosystems. For example, the swampy environment of the Carboniferous period some 370 million (mio) years ago produced and preserved many of the fossil fuels on which we now depend (Mitsch and Gosselink 2000). More recently, increasing interest and research in these widespread ecosystems has shown that wetlands are valuable sources, sinks, and transformers of many chemical, biological, and genetic materials.

Some people refer to wetlands as the “kidneys of the landscape”, because they filter and purify polluted waters. Wetlands also stabilize water supplies, thereby ameliorating floods and droughts, protect shorelines by decreasing erosion, and recharge groundwater aquifers (Mitsch and Gosselink 2000). Other people refer to them as “biological supermarkets”, because of the rich biodiversity of organisms and their extensive food chains (Mitsch and Gosselink 2000). Wetlands provide unique habitats for a wide variety of flora and fauna. Wetlands, especially peatlands, have been understood to be significant carbon sinks, that is, they store large quantities of carbon in partially decomposed plant materials (peat). Thus, wetlands have been acting as “climate stabilizers” on a global scale (Mitsch and Gosselink 2000), a fact which has received much attention recently because of rising atmospheric temperatures (global warming).

Human history

Wetlands around the world have been used to varying degrees by the people living in their vicinity. In the industrialized world, human impact on these ecosystems ranges from severe to total. However, the importance of wetland environments to the development and survival of many cultures throughout human history is unmistakable. Many cultures live in harmony with wetlands, while others modify them quickly (Nicholas 1998).

The use of wetlands by humans dates back to the ancient Babylonians, Egyptians, and Aztecs, who developed specialized water-delivery systems from wetlands to their agricultural fields. More recently, entire cities (Chicago, Washington, parts of Paris) and airports (Boston, New York, New Orleans) have been built on former wetlands. Similarly, many people have and continue to live in or in close proximity to wetlands (Mitsch and Gosselink 2000). For example, the Camarguais of southern France, the Cajuns of Louisiana, and the Marsh Arabs of southern Iraq have lived a harmonious life with wetlands for centuries (Mitsch and Gosselink 2000), living off wild and domestic rice, cranberries, fish, and crayfish, or have harvested the peat for energy generation or horticultural purposes. Many forested wetlands produce timber, shallow marshes are used for grazing and hay production, and reeds from marshes serve as thatching for roofs (Mitsch and Gosselink 2000).

(continued on next page)

Table: Major wetland regions of the world

Continent	Country	Wetland Types
Central & South America	Cost Rica Venezuela Brazil Brazil	Freshwater tidal marshes Orinoco River delta, marshes and mangrove forests Pantanal, freshwater marshes and mangrove swamps Amazon River, freshwater marshes and swamps
Europe	Spain France, Italy The Netherlands Denmark, Ireland, The Netherlands, France, Sweden, Russia, Finland Scandinavia, Finland, Russia	Mediterranean Sea deltas, marshes Rhine River delta, marshes Coastal marshes and mud flats along North Sea, Baltic Sea, and the Atlantic Ocean Peatlands (bogs, fens)
Africa	Botswana Eastern Africa (Tanzania, Kenya, Rwanda) Zaire Niger	Lake Naivasha, Lake Manyara, Ngorongoro Crater, marshes and swamps swamps Niger River, marshes and swamps
Australia and New Zealand	Australia New Zealand	swamps, billabongs (semipermanent riparian pools) coastal marshes, Grand Kahikatea (forested wetland), Whangamarino wetland (swamp)
Asia	Russia Indonesia, China, India, Papua New Guinea, Bangladesh, Vietnam, Myanmar	Bi-Ob' River valley (marshes and swamps) mud flats, swamps, marshes, mangroves along major rivers (Mekong, Indus, Yangtze, Ganges Rivers and others) deltas of the Yangtze, Zhujiang, and Liaohe Rivers, marshes, swamps, rice paddies, fish ponds, saline marshes, bogs

This close association between people and wetlands has led to the inclusion and referencing of wetlands in their literature. Dante described a marsh of the Styx in Upper Hell as a final resting place for the wrathful in his "Divine Comedy", while Carl Linnaeus centuries later came to a similar "conclusion" as he visited Lapland peatlands in Finland. Moreover, Grendel, the mythical monster of "Beowulf" originates from the peatlands of northern Europe. More recently, even Hollywood has depicted the sinister and foreboding nature of wetlands in such classics as "Creature from the Black Lagoon" (1954), "Swamp Thing" (1982), and "Return of the Swamp Thing" (1989). With such negative images it is easy to understand why many of us have negative associations with these ecosystems and wish to avoid or drain them at all costs. Lastly,

the English language is filled with words that perpetuate these views ("bogged down in detail", "swamped with work", "the bogeyman", etc.)

Wetland distribution

Wetlands are defined as ecosystems that are "saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic [water-loving] vegetation, and various kinds of biological activity which are adapted to a wet environment" (National Wetlands Working Group 1988). Wetlands are found throughout the world in every climate, from the tropics to the tundra. Estimating the global extent of wetlands is difficult and depends on the definition used as well as their delineation (boundaries) within the landscape. Recent estimates range from 7 to 9

mio km², or about 4 to 6% of the global landscape. More than half of the total area of wetlands is found in tropical and subtropical regions, while the remainder is found in the sub-boreal, boreal, and polar regions (see Mitsch and Gosselink 2000). Some of the major wetland regions are listed in the Table. North American wetland regions have been omitted, because they will be addressed in detail future instalments of this wetland series.

Gorham (1991) estimated that northern peatlands, those wetlands that accumulate significant quantities of peat, cover approximately 3.4% of the landscape, or 500 mio ha. These peatlands form in low-lying areas in regions with a positive water balance, *i.e.*, water input from precipitation exceeds water losses from evaporation. About three-quarters of the northern peatlands, those in the northern hemisphere, occur in Canada and the Community of Independent States (formerly the Soviet Union). Gorham (1990) previously estimated that Canada, with 170 mio ha, has the greatest area of peatlands in the world (see Figure). Approximately 16% of Canada's landscape is covered by wetlands, most of which are peatlands (12%) (National Wetlands Working Group 1988). In fact, two of the three largest wetland expanses in the world occur in Canada: the Hudson Bay lowland wetland complex and the MacKenzie River valley wetland complex.

In Alberta, 17.3% of the landscape is covered by wetlands (Vitt et al. 1996). Of this 17.3%, 16.3% are peatlands, peat-accumulating wetlands (bogs and fens), with the remaining 1% being wetlands that do not accumulate appreciable quantities of peat (swamps and marshes). Peatlands are dominated by wooded fens (34.4%), sedge-dominated fens (30.6%), and bogs (30.3%). Nearly three-quarters of all bogs in Alberta are underlain by permafrost (Vitt et al. 1996).

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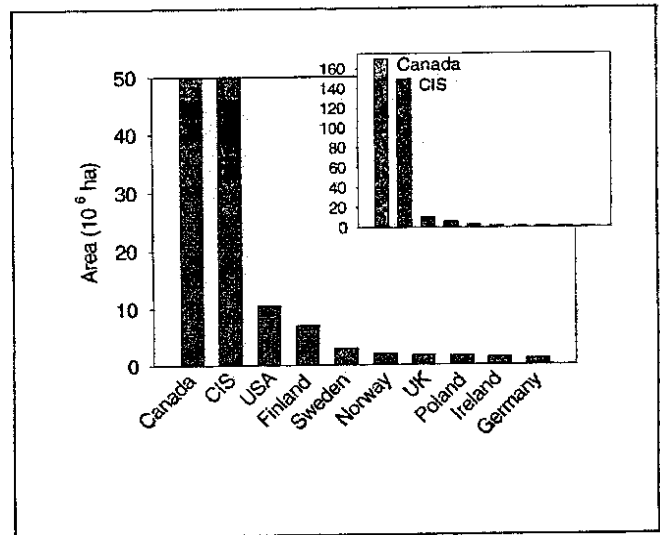
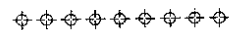


Figure. Peatlands of the world by area

Markus Thormann graduated from the University of Alberta with a PhD in Environmental Biology and Ecology earlier this year. He gained an MSc in Plant Ecology in 1995. His doctoral thesis topic was the influence of microfungus communities and environmental variables on plant decomposition dynamics in the southern boreal peatlands of Alberta. Since the early 1990s he has been visiting and studying bogs, fens and marshes in Alberta, Ontario and Quebec. Markus is currently a Postdoctoral Visiting Fellow with the Canadian Forest Service, investigating the effects of forestry practices and climate change on Canada's boreal forests and watersheds.



News Item: Stewards of Alberta Protected Areas Association (SAPAA) Meeting

The switch of the Parks and Protected Areas (PPA) Division from Alberta's Department of the Environment to Community Development is a good thing, said **John Kristensen**, assistant deputy minister speaking at the third annual meeting of SAPAA October 27 at the Kerry Wood Nature Centre in Red Deer. The move, on March 15th of this year, links natural heritage issues logically with cultural heritage issues and provides Parks with a better opportunity to compete for its interests than formerly, against the stronger players in the Dept of Environment. He hopes to build back the identity of the parks program, and even if it is not possible to return to the "glory days" of parks, when many new ones were being created, at least to make better progress in restoring interpretive programming.

Noting the importance of the volunteer stewards program to the government, he called it an impressive volunteer effort, involving some 340 stewards of whom 239 were individuals and 65 were groups, looking after 174 sites. He noted the creation of a new category of steward, a roving steward, with specialized knowledge of a particular topic, who visits a variety of sites. Kristensen pledged to continue strong support of the Volunteer Stewards program, especially as the formal completion of the Special Places Program on July 24 of this year has resulted in expanded opportunities for volunteerism.

Because other government departments, such as Sustainable Resource Development, are involved in the management of public lands, volunteer stewards sometimes have difficulty knowing whom to call on for help. Kristensen observed the importance of having good communications between the steward and their site supervisor (land manager). A new policy and procedures manual is in the works, and a new format for the volunteers' newsletter is planned, with a newsletter, available on the website, now dedicated to issues concerning natural areas' stewards and campground hosts. (Stewards are invited to submit articles for it.) In the interests of better communication with the public, the government is willing to re-do outdated natural area brochures upon request. Regarding complaints that stewards are often not aware of developments proposed for their areas, Kristensen observed that although information should be provided in a timely manner after a development has been approved, prior government commitments and regulations may

prevent the government from notifying stewards in advance. (There are, however, to be no new industrial commitments on newly created Special Places, although existing ones will be honoured.)

With respect to the new Parks and Protected Areas Act, still being worked on, Kristensen admitted that no public forums will be held regarding the re-classification of protected areas. (Classification of reserves, parks and natural areas into different categories of protection and use was a major feature of the proposed Heritage Act abandoned last year.) Classification will be done on the basis of all information available on the site and here the inspection reports submitted annually by stewards can be of enormous help in "adding value" to a protected area and determining whether it is of local, provincial, national or international significance.

Observing that Community Development under Minister Gene Zwozdesky has ultimate authority over legislated protected areas, Kristensen noted that it has no jurisdiction over areas that may be of ecological interest but are not so protected, for example, Forest Land Use Zones (FLUZ), which are under the authority of Sustainable Resource Development.

Second guest speaker **John Rintoul**, manager of Alberta Natural Heritage Centre (ANHIC)'s database at Parka and Protected Areas, reviewed the history of the creation of natural areas in the province, and associated legislation, from the end of the last century when the federal government set aside sections 11 and 29 as school and reserve land in every township in the newly surveyed country, through increasingly targeted efforts since the 1960s to identify and protect the full range of Alberta's physical and biological diversity. Rintoul explained how by the 1990s accumulated knowledge and sophisticated computer technology allowed the establishment of the Alberta National Heritage Information Data Centre (ANHIC), and its database. ANHIC is part of a worldwide network of data centres established by the Nature Conservancy of America. The data stored in the ANHIC database can be retrieved and manipulated to allow the government to determine priorities for setting aside and managing protected areas. This information also allows the government to give better guidance to resource development companies who wish to avoid rare plants and animals in the course of their activities. ◆◆◆◆◆◆◆◆◆◆



The Wagner Grapevine



Development Appeal Upheld!

Wagner Natural Area's neighbour to the north, Mrs. **Gladys Osborne**, lost her bid to appeal the decision made by Parkland County's Development Appeal Board on April 9th of this year that her fish ponds posed a threat to the integrity of Wagner's groundwater supply. An Alberta Court of Appeal denied her objection in July. Mrs. Osborne has complained to APEGGA, the provincial professional engineers' association, of professional misconduct on the part of hydrogeologist and engineer Dr. **Ben Rostron**, who testified at the appeal hearing. Dr. Rostron, however, stands by his statements.

Moth Collecting Study

Despite our inability to find a full-time summer student to continue our moth research project, which resulted in the loss of our grant, a small contract was awarded to **April Mitchell** and **Evelyn Robinson** to collect moths in September and October this year. Such late collections had not been done previously, and more information is needed on moth populations.

New Karvonen Film on Wetlands

Videotapes are now available of the latest release from Karvonen, "Wetlands—Cradle of Life", which includes footage taken in Wagner Natural Area. Videotapes can be obtained, at a cost of about \$20, through the Wagner executive.

Edmonton Natural History Club Conference on Conserving Nature in the Edmonton Region, September 21-23, 2001. Over 200 people attended this conference on urban natural area conservation based out of Grant MacEwan Community College downtown campus in Edmonton, with participants coming from various parts of the province. Volunteers included **Pat Clayton** and **Patsy Cotterill**, who as conservation chair of the ENHC was on the organizing committee. **Derek Johnson** gave a presentation on local and regional ecosystems, which he will repeat at a Plant Study Group meeting at the Provincial Museum on November 13th at 7:30 p.m.

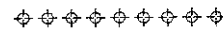
Bouquets Department

Congratulations once again to our own **Edgar (Eddie) T. Jones**, who received the Order of Canada on August 21, 2001. This adds to his long list of awards, including two Distinguished Flying Crosses (World War II) and an Honourary Doctor of Laws

degree from the University of Alberta. Dare we mention that he was the first recipient of the Wagner Appreciation Award for services rendered to our natural area and its management committee? Congratulations also to **Patsy Cotterill** who was awarded the Federation of Alberta Naturalists' Loren L. Goulden Award at the ENHC conference banquet for services to natural history and conservation. Last, but not least, congratulations—or should that be condolences?—to **Pat Clayton**, past president of WNAS, who has now taken on the presidency of the ENHC. With no new young presidential blood coming forward this year, Pat stepped in to fill the breach. However, the ENHC, after several years of strong leadership, is now on a roll with its activities and Pat can expect good support from her executive team.

Pipeline in Clifford E. Lee Nature Sanctuary?

At the time of writing local naturalists are abuzz with the news that the energy company Probe Explorations has filed an application to the Alberta Energy and Utilities Board to dig a natural gas pipeline that will cross the Sanctuary, located northwest of Devon. The landowner, Canadian Nature Federation, naturally opposes the application, as does CEL Management Committee. For more information, contact **Dick Clayton** of the CEL Committee at 456-9046.



Cartoon submitted by
Cliff Adams

Wildflowers of Wagner No. 19

Equisetum arvense L. Equisetaceae

Horsetails (*Equisetum* spp.) are not flowering plants, but are allied with the ferns. Like them they produce spores which germinate into independently living, tiny, simple plants (the gametophyte generation) that develop sex organs in which male and female gametes are formed. The products of sexual fusion germinate into the familiar large spore-bearing plant (sporophyte generation), thus completing the cycle. In ferns the spores are borne on the backs of ordinary green leaves or in specialized fertile leaves but in the horsetails they are produced in cone-like structures (strobili) at the ends of erect or ascending stems. (In flowering plants there is an analogous alternation of generations but the spores (represented by the pollen grain and part of the ovule) give rise to a gametophyte generation that occurs entirely within the tissues of the flowering plant itself (sporophyte generation).

Horsetails are an easily recognized group of plants on account of their distinctive appearance: they have hollow, conspicuously jointed green stems which may or may not bear whorls of dense branches. The leaves are reduced to green or pale sheaths surrounding the joints (nodes) that are tipped with darker-coloured teeth. The stems of most species are ridged and bear lines of tiny tubercles containing silica along them; these make the stems somewhat abrasive to the touch and also useful as pot cleaners—hence the genus' alternative name of scouring-rush!

Field horsetail, despite its specific epithet, *arvense*, meaning "of the field", occurs in a variety of habitats, from lowland to alpine elevations, and is widely distributed around the northern hemisphere in Eurasia and North America. In Wagner it is a fairly common component of the understory of coniferous and mixedwoods.

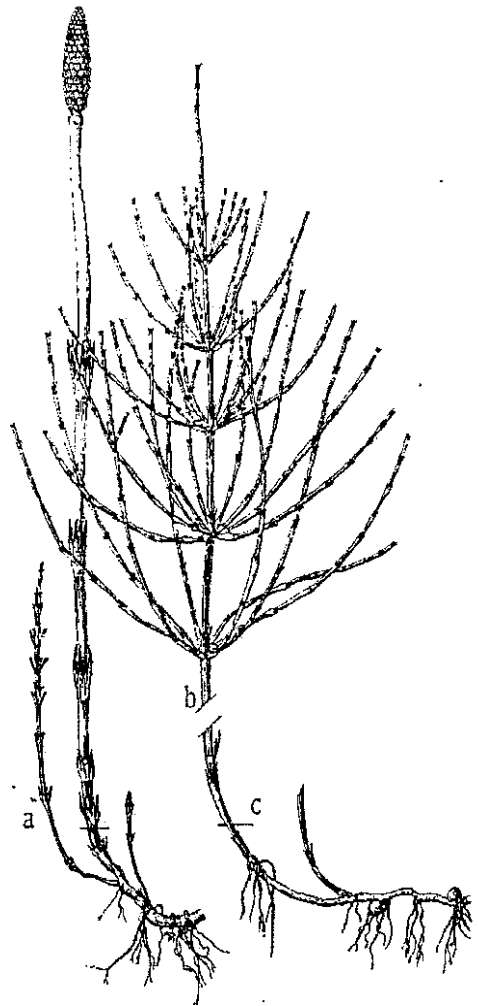
Field horsetail produces shoots of two kinds from an extensive underground system of black, horizontal stems (rhizomes): pale-brown, unbranched fertile shoots that bear a single cone at their apex and appear in early spring (most easily seen along winter-dusty roadsides), withering after spore release, and sterile green shoots that do the photosynthetic work of the plant and last all season. The latter bear whorls of long narrow branches, each of which also have sheaths at their nodes, tipped by narrow dark teeth that are drawn out to a point.

In Wagner's woods, these green stems grow quite tall (up to 50 cm) and erect, but in more open situations such as sand dunes and muddy shores, this same species is often low and bushy, giving it an altogether different look. In nature, gametophytes of field horsetail are rarely found, and reproduction takes place asexually, by separation of portions of the rhizome, and especially of the tubers that occur along its length.

Other relatively common dry-land horsetails occurring in Wagner are meadow horsetail, *E. pratense*, distinguishable by its somewhat narrower branches, giving it a more delicate appearance, and the deltoid shape of its sheath teeth, and the very much smaller, unbranched dwarf-

Common or Field Horsetail Horsetail Family

scouring rush, *E. scirpoides*. When the green stems of field and meadow horsetails begin to decay in the fall they take on the distinctive appearance of whitish filigree "skeletons," presumably as a result of their silica content.



Drawing courtesy of John Maywood