Sandhill cranes inhabit many Wisconsin wetlands.

CHAPTER 2. GETTING TO KNOW YOUR WETLAND

It is important to know as much about your wetland as possible so you can make informed decisions about its future. This chapter will assist you in getting acquainted with your land. You will find the background information you gather to be invaluable in developing your restoration plan or making management decisions. The discussion on site assessment in Chapter 3 will help you gather further detail about your wetland for restoration purposes.

This discussion is for landowners with wetlands that are only moderately disturbed or degraded and still have recognizable wetland features. If your site has been badly degraded and retains virtually no wetland characteristics, you may wish to skip to Chapter 3 to begin assessing the site for its restoration potential.

"We can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in."

– Aldo Leopold, *A Sand County Almanac*, 1949

Getting Acquainted

The simplest way to learn about a wetland is to spend time there at different times of the day and under different conditions throughout the year. The same wetland may offer a very different impression from sunrise to mid-day, from spring to fall, and from sunny to drizzly to snowy days. Try to spend time in the wetland during all the seasons and under as many different weather conditions as you can to see the cycles, patterns, and diversity of life that your wetland has to offer.

Exploring a wetland community is an opportunity to "open your senses." Besides visual observations, feeling, smelling, and hearing different components of the wetland may heighten your awareness of the site. Wetlands offer a unique complement of sights, sounds, smells, and sensations found in no other natural environment. Our minds register many impressions, and by opening ourselves up to these sensations we contribute to our understanding of our natural environment.

Don't forget to dress for discovery. Wet, cold feet or not dressing warmly enough for the cooler wetland landscape could make your experience less enjoyable.

Here are a few questions that you might want to answer to help you understand your wetland better:

- ☑ What are some of the unique attributes or features of the wetland?
- ☑ What plants and animals live in or use the wetland?
- ☑ What degree of disturbance has the wetland experienced?
- ☑ In Chapter 1 we mentioned the different kinds of wetlands found in Wisconsin. Does this wetland fit into any of these categories?
- ☑ Does standing water occur for any or all of the growing season?
- ☑ Is the wetland in a basin or depression, on a flat low plain, or adjacent to a river, stream, or lake?
- ☑ Is the wetland isolated, or is it part of a larger wetland ecosystem?
- ☑ What animals or signs of animals do you notice?

Keep a Wetland Journal: Record Keeping

It is a good idea to keep a journal of observations and your impressions with each visit to your wetland. Day to day, season to season, year to year, you will begin to amass a collection of observations and important information about the area. This information will be very important as you plan conservation, management, or restoration activities for the wetland.

Good record keeping is an acquired skill. It takes practice to remember to record even simple events and observations, such as time of day, weather conditions like temperature, wind direction, speed, cloud cover, etc., and other basic details of that day's visit. You also may wish to note recent weather events such as when and how much rain or snow fell, the duration of a drought, etc.

Note which plants and animals are blooming, calling, mating, or simply

SENSING EXERCISE

Since we often rely almost exclusively on our sense of sight to characterize a place, one fun exercise to "tune in" to your wetland and "turn on" your various senses is to sit quietly near—or even in!—your wetland, close your eyes, and focus on the sensory stimuli that surround you. Focus a few moments on the sounds, then focus on the smells. Grab a handful of soil and take a sniff. Break a few leaves from nearby plants and smell them. The more time you take, the more you will discover. Approaching this exercise with a curious and open "mind of a scientist" will lead to countless discoveries about the unique characteristics of your wetland. Once you tune into the rhythms and cycles of your wetland, your future observations will be more informed, more thorough, and more interesting.

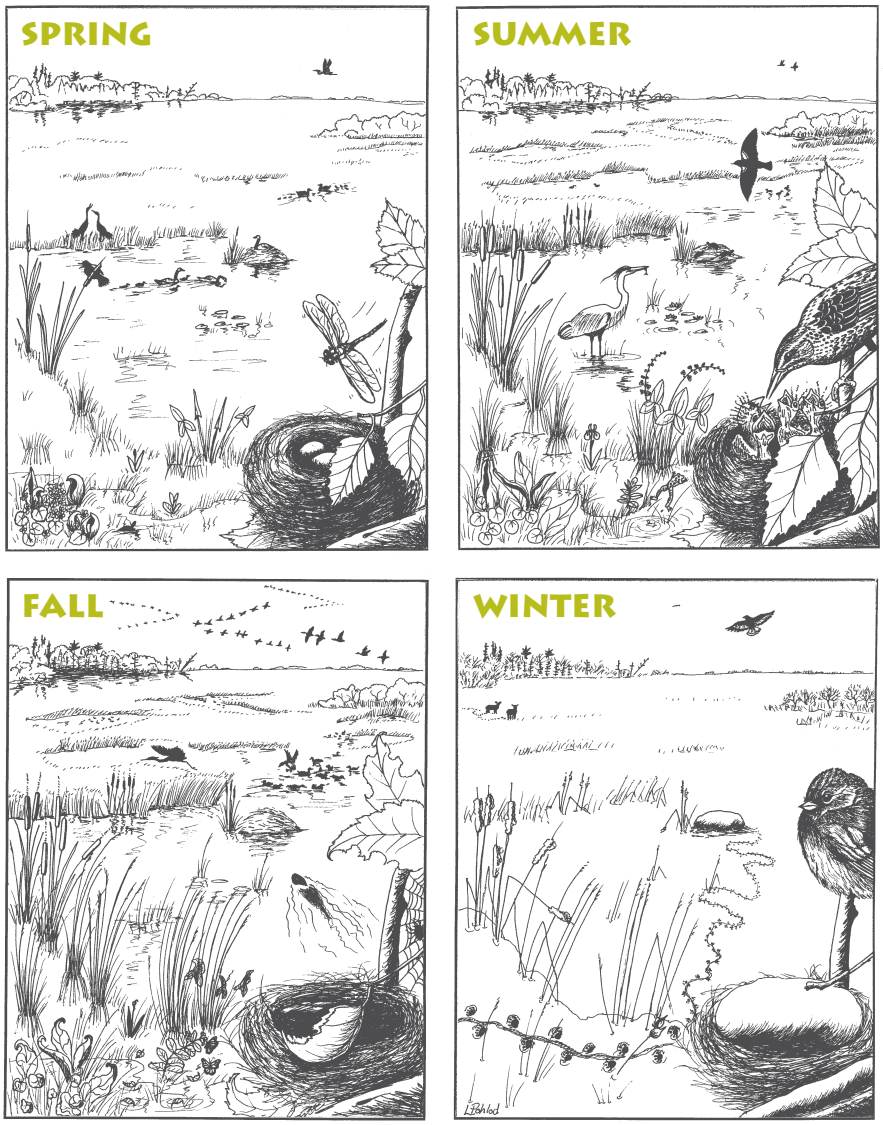
FIELD OBSERVATION CHECKLIST

- ❑ SPIRAL OR BOUND NOTEBOOK (JOURNAL)
- ❑ PENCIL OR WATER PROOF PEN
- ❑ THERMOMETER
- ❑ COMPASS
- ❑ RULER OR TAPE MEASURE
- ❑ BINOCULARS
- ❑ FIELD GUIDES
- ❑ MAGNIFYING LENS OR LOUPE (8X OR 10X)
- ❑ BACKPACK OR FANNY PACK
- ❑ RAIN GEAR
- ❑ BUG SPRAY
- ❑ WATER BOTTLE
- ❑ HAT
- ❑ SHOVEL
- ❑ CAMERA

observed. Where are these plants or animals found in your wetland? Were they found on dry or wet soils? Typically wetland plants live under specific conditions; for example, cattails often grow in shallow standing water, whereas some wetland grasses and wildflowers will be found only on drier portions of a site. If you make good observations and take notes of unknown animals or plants, or sketch or photograph them, you can try to identify them later with the help of field guides.

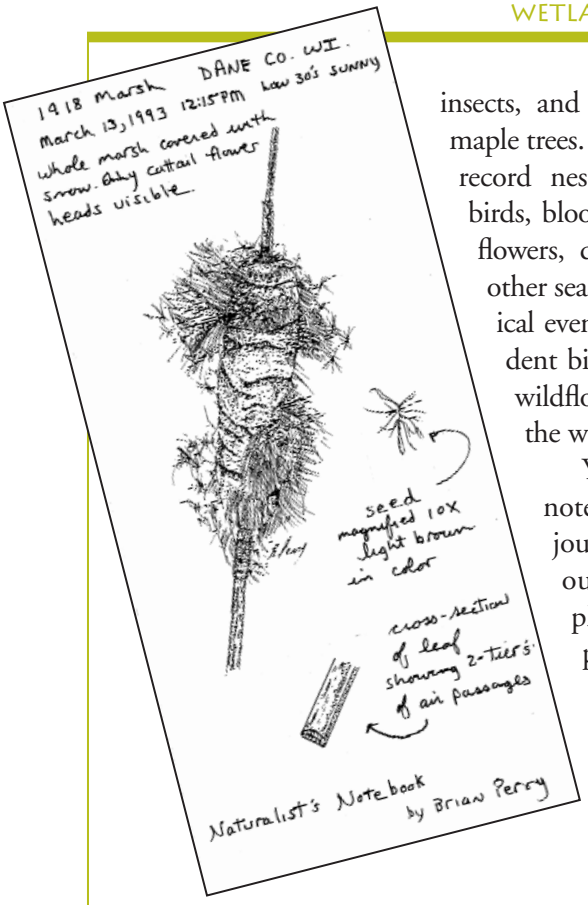
Repeated visits over the seasons will help you better understand your site and build lasting memories. Changes can be dramatic from day to day and week to week, especially in spring when migrating birds return to the wetland, plants bloom, and insects hatch.

The study of the seasonal occurrence of natural phenomena is called phenology. An intriguing way to explore your wetland is to maintain phenological records of natural events that you observe. Examples would include the date red-winged blackbirds or great blue herons return in the spring, the first bloom dates of wildflowers, first calls of frogs, the first hatch of different



"A sense of time lies thick and heavy on such a place. Yearly since the ice age it has awakened each spring to the clangor of cranes. The peat layers that comprise the bog are laid down in the basin of an ancient lake. The cranes stand, as it were, upon the sodden pages of their own history. These peats are the compressed remains of the mosses that clogged the pools, of the tamaracks that spread over the moss, of the cranes that bugled over the tamaracks since the retreat of the ice sheet. An endless caravan of generations has built of its own bones this bridge into the future, this habitat where the oncoming host again may live and breed and die.
To what end? Out on the bog a crane, gulping some luckless frog, springs his ungainly hulk into the air and flails the morning sun with mighty wings. The tamaracks re-echo with his bugled certitude.
He seems to know."

— Aldo Leopold,
A Sand County Almanac, 1949



insects, and first leaves of tamarack or silver maple trees. As the season progresses you might record nesting, hatching, and fledgling of birds, bloom and senescence (dying back) of flowers, drying cycles in your wetland, or other seasonal events. Late season phenological events could include departure of resident birds, last date of blooming autumn wildflowers, and first frost or freezing in the wetland.

You may wish to transfer your field notes into a more permanent wetland journal back home, where more thorough observations, impressions, photographs, drawings, and even poetry can be included.

Excerpt from a wetland notebook.

"April 26, 1838. A crow's voice filled all the miles of air with sound. A bird's voice, even a piping frog, enlivens a solitude and makes world enough for us. At night I went out into the dark and saw a glimmering star and heard a frog, and Nature seemed to say, Well do not these suffice?"

—Ralph Waldo Emerson, *The Heart of Emerson's Journals*, 1926

Wetland Indicators: Plants and Animals

The best way to determine what kind of wetland you have is to look for characteristic wetland plants found there. Plants that typically occur together comprise a wetland community as described in Chapter 1. Many plants, because of the specific conditions they require or tolerate for growth, are wetland indicators.

As early as February, there may be plants blooming in your wetland, such as skunk cabbage, marsh marigold, willows, and silver maple. Many wetland plants bloom in early or late summer. Some plants will bloom long after a frost, including asters, gentians, and goldenrods. A number of good field guides exist to help you identify wetland plants (see Appendix A). As you begin to identify different species of plants, ask yourself, is the plant rare or common in your wetland? Is it a native plant or a non-native, exotic plant? By answering these questions you gain an understanding of the plant community in your wetland.

Wetlands may be rich in their diversity of wildlife species. A wide variety of animals—including insects, frogs, snakes, fish, birds, and mammals—depend on wetlands for part of most of their lives. Different kinds of wetlands serve as habitat for different species of animals, providing food, shelter, and breeding areas. Some animals may be permanent residents in your wetland, such as spiders, frogs, snails, fishes, and aquatic insects, while others will be seasonal visitors, such as insects, migratory

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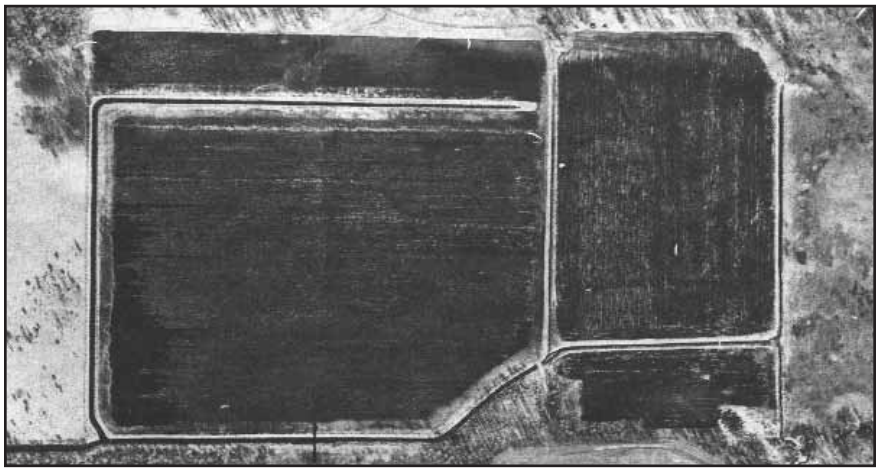
birds, and wandering mammals. Look for signs of wildlife throughout the seasons. For example, when leaves drop in the fall you may be able to find once hidden bird nests in shrubs and trees. Winter is a great time to find tracks of animals that you can't see during the summer season.

Signs of Wetland Disturbance



Southeastern Wisconsin Regional Planning Commission

Aerial photo of a typical drained wetland. Ditches were cut into muck soils.

Unfortunately many, if not most, of Wisconsin's wetlands have been harmed by some form of human activity over the past 100 to 150 years. It is hard to find a wetland that does not have signs of disturbance, especially in urban areas of the state. Some disturbances are historic and the wetland has begun to recover. In other situations historic disturbances did long-term harm to the wetland. Where disturbance occurred recently, degradation is quite obvious.

You need to know the signs of disturbance to understand the degree to which your wetland has been affected. ***Knowing how, and to what extent, your wetland is degraded is critical for determining how best to restore it to its original condition.*** In general, if the amount and flow of water—at the surface or under the ground—and the duration of soil saturation in a wetland are changed, the wetland plant and animal communities will likely change. Once wetland hydrology is altered, the factors that influence a wetland's plant and animal make up will be different.

The primary disturbance to wetland hydrology throughout rural Wisconsin is artificial drainage. Past ditching or buried drain tiles that remove surface and groundwater for the land to be used for cultivation alter the wetland's hydrology and can have significant long-term negative impacts on the entire wetland.

In urban areas the addition of stormwater runoff from streets and parking lots, yards, and roofs may degrade a water body or wetland. Storm sewers often drain directly into lakes, rivers, or wetlands, unloading excess water, chemicals, fertilizers, and other hazardous substances into these ecosystems.

Alice Thompson

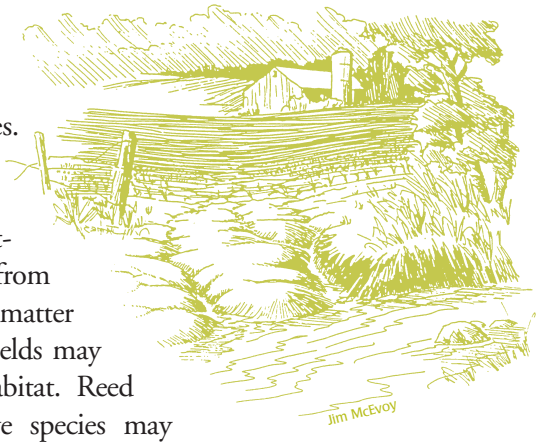
Ditch in Waukesha County wetland.

If a wetland soil is extensively disturbed, an opportunity exists for aggressive invasive species to establish themselves. Impacts to wetland soils that affect vegetation may include:

- cultivation,
- subsidence or erosion of muck soils,
- soil compaction due to cattle grazing or driving heavy machinery over a wetland, and
- placing telephone poles, pipeline, sewer lines, or underground cables.

Once the wetland sod has been broken, invasive species can get a foothold and may eventually outcompete the less aggressive native plants.

Siltation, or the accumulation of sediments, causes serious damage to wetland quality, especially in agricultural landscapes. Agricultural activities can cause soil erosion from fields to dump directly into adjacent wetlands. The increase in nutrients from manure, fertilizers, and plant matter entering the wetland from the fields may alter vegetation and wildlife habitat. Reed canary grass and other invasive species may encroach on a wetland that has trapped silt from adjoining farm fields.



Jim McEvoy

Wisconsin Wetlands Association

Many wetlands were filled historically.

Fill material such as soil, rocks, cement, and gravel brought into a wetland can have adverse direct and indirect impacts. The consequences of filling are usually quite obvious. The fill material may contain seeds of undesirable species that can

invade wetland areas. Filling one portion of a wetland may result in a shift in hydrology, increasing or decreasing water input into other areas of the wetland. For example, water pooling behind a dike or road will cause a shift in wetland vegetation to adapt to the changed water depth. A wetland that has been completely filled may not even be recognized as a former wetland!

Typical Disturbance Indicator Plants

Robert Queen

All the disturbances mentioned previously tend to reduce, modify, or change the quality of a wetland and its functional values, not to mention its aesthetic appeal. The biological diversity, or richness of plant and animal species in an area, can be seriously reduced through disturbance. A good wetland restoration project attempts to restore the original hydrology, plants, and animals to the site. Further discussions of wetland disturbance are found in Chapters 3 and 6.

Disturbed wetlands lose plant diversity and are typically dominated by only a few species. Several plant species frequently occur in the majority of Wisconsin's disturbed wetlands. Becoming familiar with these species will help you determine the extent of disturbance.

Purple loosestrife, reed canary grass, giant reed grass, and even cattails are extremely aggressive invasive plants that can grow under a number of conditions, ranging from wetlands with considerable seasonal inundation to relatively dry upland sites. Their presence indicates that some disturbance in the distant or recent past allowed the plants to gain entry. A more extensive discussion of these invasive species is covered in Chapter 6.

In many open wetlands in the southern areas of the state—shallow marshes, sedge meadows, wet meadows, and wet prairies—where the water table has been lowered and where fire has been suppressed, native and non-native shrubs and trees begin to invade. Glossy and common buckthorns are typical aggressive non-native shrubs that establish themselves. Native shrubs and trees that invade disturbed wetlands include red osier dogwood, gray dogwood, willows, prickly ash, quaking aspen, and box elder.

Linda Pohlod

WETLAND INSECTS

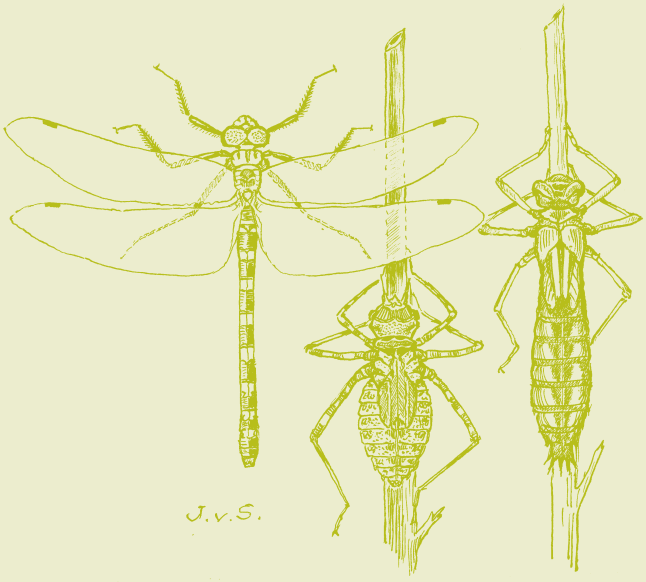
By Lesley Zuehls
University of Illinois

Wisconsin Wetlands Association

The mention of insects within a wetland typically conjures up thoughts of mosquitoes and other biting flies buzzing in our ears. However, there is a wide variety of insect diversity that depends on wetlands for survival. A healthy wetland will support an abundance of insects, creating a natural balance between predators and prey. This diversity ranges from aquatic to semi-aquatic to terrestrial. Some insects, such as dragonflies, damselflies, caddisflies, and mayflies, develop as larvae within the wetland before they emerge as adults into the terrestrial habitat. A number of insects never live within the waters of the wetland but depend on it for their survival. Butterflies, such as swallowtails, viceroys, coppers, skippers, and blues, frequent wetland plants as they forage and deposit their eggs. Extensive arrays of insects are found within wetlands, including beetles, true bugs, grasshoppers, leafhoppers, and many others.

Insects are critical for wetland function. The food webs within wetlands can be quite intricate. Insects shred plant material and graze on algae, breaking down and recycling nutrients within the system. Predators eat many of these insects and often each other as the larvae grow within the wetland's waters. Most aquatic insects emerge from the wetlands and are transformed into the terrestrial adult insects most of us are familiar with. As adults, these insects continue to play an important role within the wetland community. For example, dragonflies dart through the air, capturing and eating biting flies and other small prey along the way.

Restored wetlands carry out many of the same functions as natural wetlands and contain many of the same species. However, the effects on insect diversity within restored wetlands are not well understood. Initially, insect diversity will be low, but as insects colonize the wetland, this diversity will increase. The rate at which insects colonize depends on the distance between the restored and nearby wetlands and on insect type. Some species, such as dragonflies, are strong fliers and can colonize a new wetland rather quickly. The design of the restored wetland can encourage insect diversity. As the diversity of plant species increases, so will the diversity of insects. Plants provide habitat for insects both below and above the water's surface. Certain species of plants will encourage specific types of insects. Wetlands designed to mimic natural hydroperiods, basin heterogeneity, and native plant species will help to create a healthy system where a wide variety of insects thrive.



Dragon fly adult and nymphs.