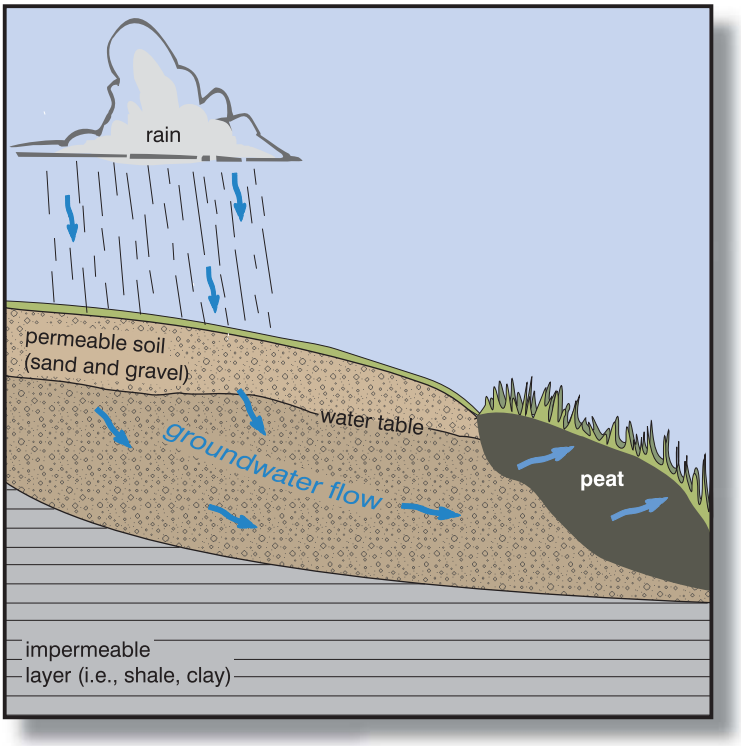
January 2007 Water Fact Sheet 2007-2

IOWA'S WATER
Ambient Monitoring Program

Fens of Iowa

What is a fen?

Fens are among the rarest type of wetland found in Iowa. These ecosystems, though often small, support large numbers of rare plants and animals. Fens are unusual because they are formed under unique geological settings and are actually fed by groundwater that slowly seeps out of the soil. By comparison most other wetland types are formed from pooled surface water (i.e., rain, surface run-off). Typically in fens, a layer of sand and gravel covers a less permeable stratigraphic layer. Rain water permeates the sandy upper layer and accumulates above an impermeable layer. Fens often form on or along hillsides. As water flows underground it dissolves carbonate minerals and becomes alkaline. In extremely alkaline fens a crusty, yellowish-white calcium carbonate deposit called marl or tufa forms at the surface on the soil.



Generalized cross-section of an Iowa fen. Fens are groundwater fed wetlands. Determining the source and quality of recharge waters is important for their protection.

To the casual observer, the most obvious characteristic of fens is that walking on one is like walking on a waterbed. This unusual condition has led to fens being referred to as "quaking" or "trembling" fens. Fens often produce mounds of peat because the groundwater inhibits decomposition of plant material. Some experts also believe that the pressure of groundwater underneath the peat layer may actually tend to push the peat outward slightly. This rich organic peat becomes saturated with water and creates this spongy condition. In especially moist fens, a good jump will cause the ground to ripple for many feet.



Many fens such as this one located in Cerro Gordo County can be found along the hillsides of river valleys. Often times, a series of fens may occur in this landscape position.



Some fens, especially the more saturated ones found in northwest Iowa, like Silver Lake fen in Dickinson County, contain horizontal bands of open, shallow water oriented perpendicular to the slope. These linear pools of water (flarks) are separated by narrow ridges of peat (strings).

Why are fens important?

Fens are among the most diverse natural ecosystems in Iowa. Soil moisture conditions can vary widely within the boundaries of a fen. Everything from saturated soils with pools of standing water, to moist soils progressing into dry prairie or woodlands may exist. This range of saturation within a fen helps support a wide diversity of plants. In Iowa, more than 225 species of vascular plants are associated with fens. A single fen contains as many as 75 plant species. Fens are home to approximately 24 species of plants that are considered endangered, threatened, or of special concern, 12 of which are restricted to fen habitats only. Fens also provide excellent habitat for upland or wading birds, insects, reptiles, amphibians and other wildlife. Since the beginning of European settlement, fens have been misunderstood and therefore are in danger of being destroyed. Many of these fens have been drained for row crops, heavily grazed or simply excavated into ponds. Only a handful of undisturbed, high-quality fens are known to remain in Iowa. Fortunately, several good-quality fens still exist despite occasional disturbance.

Where are fens located?

Fens are found throughout much of the world's upper latitudes. In European countries such as England and Ireland, fens used to be prominent features of the landscape, though many have now been destroyed. In North America, fens extend throughout most of the glaciated regions from Canada south to New England and west to the Rockies. Fens found here in Iowa occur at the southern part of the U.S. range, with only a few known to exist as far south as Missouri.

Until the early 1990s, most fens in Iowa were thought to occur only in northwest Iowa near

the Okoboji area. In the early 1990s State Preserves Board botanists John Pearson and Mark Leoschke attempted to locate the state's fens using aerial photography and soil maps. This investigation showed that a large number of fens also existed in northeast Iowa and several more have since been found scattered throughout other parts of the state. Recent work by the Iowa DNR has begun to map fen localities throughout Iowa to provide an organized and updated database. While compiling the information for this database, several new areas suspected of being fens were located. Even though most of the highest quality fens, such as Silver Lake and Excelsior fens in Dickinson County, have already been preserved, it's possible that more high quality fens exist, but are known only to a few people. More fen sites continue to be documented which indicates that Iowa may have more fens remaining than once thought.

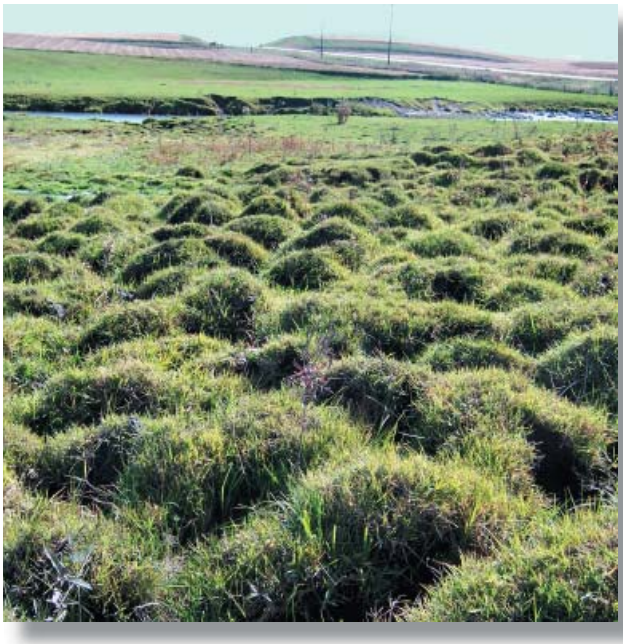


Acre for acre, fen wetlands are extremely valuable ecologically. Their unique micro-climate, created by a year-round source of groundwater, can support a variety of fen specific plants that in turn provide food and habitat for many types of animals. Photos (clockwise from top): Garter Snake, Baltimore Checkerspot butterfly, Bottle Gentian, Fringed Gentian, White Turtlehead plant.

Fens are an important part of Iowa's natural heritage. Enjoy their intrigue, learn more about their natural history, and support their conservation.

adapted from **Fen – A *special kind of wetland***
by Mark Leoschke and John Pearson
Iowa Conservationist magazine, March 1988.

In 2006, the Iowa DNR's Watershed Monitoring and Assessment Section, with funding from an EPA wetland grant, developed a rapid method to assess the quality of fens. Thirty of the original sites visited by Pearson and Leoschke in the 1990s were revisited to test the rapid method and assess the changes that have taken place. As part of this project, Dr. Tom Rosburg of Drake University conducted in-depth plant inventories at each of these sites to test the accuracy of the rapid method. In the future, the Watershed Monitoring and Assessment Section plans to expand the use of this rapid assessment method and visit as many of these potential fen sites as possible. Standardized assessment techniques such as this provide a way for resource managers to evaluate the quality of numerous sites quickly, consistently, and cost-effectively.



Bare hummocks, a sign of overgrazing, stand out vividly in this fen located in northwest Iowa. Overgrazing can pose a threat to many of Iowa's remaining fens. However, many landowners who have a fen on their property are willing to protect these special areas once they recognize their value.

What can I do if I own a fen?

Because most fens in Iowa are located on private land (~90%), and are usually quite small, each remnant fen is a valuable piece of Iowa's natural heritage. Landowners are encouraged to learn more about their fens and manage them to preserve their unique attributes. If you are interested in preserving your fen, would like information about managing your property or know someone who does, contact your local DNR Private Lands Biologist or USDA-NRCS office. There are a number of programs available to provide financial assistance to landowners who wish to manage or preserve their fens. Some of these include the USDA-NRCS's Wetland Reserve Program (WRP), the Iowa DNR's Landowner Incentive Program (LIP), and your local County Conservation Board. Also, non-profit conservation organizations such as the Nature Conservancy or Iowa Natural Heritage Foundation may also be interested in working with landowners who have fens.

For more information on fens and other wetland related programs, check the following sites:
www.iowadnr.com/wildlife/files/plassist.html • www.ia.nrcs.usda.gov/ • www.ecity.net/iaccb/ccbs.htm
www.nature.org/wherewework/northamerica/states/iowa/ • www.inhf.org/

Acknowledgements

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Photo on page 3 of Baltimore Checkerspot butterfly by Jay Cossey. Diagram and all other photos by Iowa DNR staff Pat Lohmann, Lynette Seigley, Jacklyn Gautsch, and Vince Evelsizer.

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Iowa Watershed Monitoring and Assessment Program Web Site – wqm.igsb.uiowa.edu

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