

Arboretum Review



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Ferns in the arboretum

At least 12 species of ferns are native in the arboretum. These are widely scattered in a variety of habitats. About 2 years ago we started a special fern area just behind the sugar bush. This area embraces a north-facing slope and a swampy area. The shade varies from dense to light and the soil from very wet to quite dry. A railroad tie trail has been built through the swamp area and a woodchip trail follows along the base of the slope. A retaining wall using limestone rocks provides a habitat for lime-loving ferns. Irrigation water is available during dry periods.

This collection of ferns has been made possible by an annual gift from Mr. and Mrs. Goodrich Lowry. We have been collecting ferns throughout the state and have also obtained some ferns from the Ozarks and the Pacific Northwest. The following ferns are now growing in the arboretum and most of them can be seen in the fern area.

TRUE FERNS

Adiantum pedatum (Maidenhair Fern)—This is one of our most attractive ferns. It is easily grown in the garden and thrives in soils that are high in organic matter and in partial shade. The plants are readily distinguished by the slender black petioles, or leaf stalks, and the semi-circular outline of the pinnules. The leaf stalk, or stipe, divides into two rachises with each branch bearing pinnules that are alternately arranged. In the arboretum this fern is quite common on north-facing slopes among sugar maples.

Asplenium platyneuron (Spleenwort)—The plant in our collection was collected near Columbia, Missouri. It is usually found growing in rock crevices and is distinguished by a rosette of leaves about 8 to 10 inches long and once pinnate. The leaf stalks are black. Our specimen is not growing especially well.

Athyrium felix-femina (Lady Fern)—This is the most common fern in the arboretum found on moist hillsides and at the edge of swamps. The fronds are tufted and grow to a height of 2 to 3 feet. The spore masses on the under surface of the fertile leaves are usually curved in the shape of a hook or a horseshoe. This characteristic makes it quite easy to distinguish the lady fern from the shield ferns. It is easily transplanted and grows well in the garden.

Athyrium goeringianum pictum (Japanese Lady Fern)—This species is much smaller than the native lady fern and is characterized by silvery gray bands with a mottled appearance. This fern has survived for 2 years and appears to be winter hardy.

Botrychium virginiana (Rattlesnake Fern)—This is the most common species of *Botrychium* in the state and is characterized by a broad triangular leaf blade that is divided three times. The fertile portion of the leaf is terminal and resembles a cluster of grapes. A number of plants have been found in dense woods in the arboretum and other plants have been brought in from various locations in the state.

Camptosorus rhizophyllus (Walking Fern)—This unique fern is native on calcareous rocks and can be found native in Minnesota only in the southeastern counties. The plants we have in the arboretum are growing on soil to which crushed limestone has been added to give the proper pH. This fern is easily recognized by the undivided tapering leaf blade that develops a new plant at the tip.

Cystopteris bulbifera (Bulblet Fern)—This is a fairly common woods fern that grows either on calcareous rocks or in rich woods soil. The tapering leaves are about 10 to 15 inches long. The production of small, green bulblets in the axils of the pinnae distinguishes this species from the Fragile Fern. These bulblets drop to the ground and, if moisture conditions are right, grow into a new plant. It is found scattered throughout the state but is most common near the lower Minnesota and the Mississippi rivers.

Cystopteris fragilis (Fragile Fern)—This species resembles the bulblet fern except it produces no bulblets and the leaves are not long tapering. In this species each pinnule vein terminates in a tooth while in the bulblet fern the veins end in a notch or sinus. This is a very common fern in moist woods throughout the state.

Dryopteris cristata (Crested Fern)—We have several species of *Dryopteris* in Minnesota. These are distinguished by the circular sori or spore cases on the back of the fronds. In the crested fern the margins of the pinnules are toothed and the basal pinnules on the basal pinnae are sessile. The fertile leaves are more upright and narrower than the sterile ones. The habitat is varied but it is most common in moist fertile woods in the central and northeastern parts of the state.

Dryopteris goldiana (Goldie's Fern)—This species is rare in Minnesota, found only in the southern counties. It is the largest of the shield ferns, reaching a height of about 3 feet. Like the crested fern it grows in moist, shady locations in deciduous woods.

Dryopteris spinulosa (Spinulose Shield Fern)—This species is readily distinguished by its bristly toothed leaf margins, the stalked basal pinnules, and the lacy cutting of the leaves. It grows throughout the state in moist, shaded woods. This is an attractive fern to grow in the shaded garden.

Gymnocarpum dryopteris (Oak Fern)—This small fern is only about 6 inches tall and is readily distinguished by its broadly triangular form. Each of the opposite lower pinnae are triangular and about as large as the central portion. This is an attractive fern that spreads by underground rhizomes. It is quite common in moist woods in the north central and northeastern counties of the state.

Matteuccia struthiopteris (Ostrich Fern)—This is a common, characteristic species. The fertile fronds are erect and brown in color with inrolled segments to enclose the sporangia. The sterile leaves are clustered and in mature plants the crown becomes elevated above the surrounding soil. Each leaf is erect and may be 3 or more feet long. The lowest pinnae are reduced in size giving a tapered appearance to the leaf. This is a common species throughout the state and is easy to grow. The dried fertile fronds are often used in dried flower arrangements, while the young sterile fronds (fiddleheads) are used as an excellent potherb.



Polypodium virginianum (Common Polypody)

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Onoclea sensibilis (Sensitive Fern)—Like the ostrich fern, the fertile leaves are quite distinct, brown and erect. The sterile leaves are broad with coarse teeth. The veins form a network which is quite unlike other ferns. This fern is widely distributed in low, wet places. It is common in our sphagnum bog.

Osmunda cinnamomea (Cinnamon Fern)—The cinnamon fern and the interrupted fern are two of the most common ferns and are quite similar in appearance. In the cinnamon fern the fertile fronds, when present, are slender and brown. After producing the spores the fertile fronds fall to the ground. The sterile fronds are twice pinnate with rounded pinnules. The leaf lobes have tiny hairs along the margin which help to distinguish this from the following species. It is common in east central and northeastern counties.

Osmunda claytoniana (Interrupted Fern)—This fern is very similar to the cinnamon fern but can be distinguished from it by lack of hairs on the leaf margins and by the fertile portion of the leaves which are very distinct from the sterile portions. Normal green pinnae occur both below and above the fertile portion which is brown in color. This fern is easily recognized when the spore-producing portions of the leaves are present. It is widely distributed throughout the state in both shade and open areas. This is an excellent fern for landscape plantings.

Osmunda regalis (Royal Fern)—This fern differs from the other *Osmunda*'s in being twice pinnate and by having the fertile pinnae at the apex. It is less common and usually grows along the shores of small lakes in very wet soil. It will grow in either shade or in full sun.

Polypodium virginianum (Common Polypody)—This is a common rock fern growing in the crevices of a variety of rocks. Occasionally it can be found growing on the banks of a sandy ravine. The leaves are evergreen and pinnately lobed about 6 inches long. They arise along a creeping rhizome. This fern should be planted in the crevices of a shaded rock wall.

Polystichum agrostichoides (Christmas Fern)—This evergreen fern is not native to the state but appears to be fully hardy. The leaves, which are about 18 inches long, form an attractive rosette. Plant at the base of a tree or in front of an old tree stump.

Pteridium aquilinum (Bracken Fern)—This is a very common and distinctive fern found on a variety of soils and situations. It prefers a dry, sandy soil with open shade. The leaves are ternately compound. Spores are borne under the recurved leaf margins. This is an invasive species that spreads rapidly by underground rhizomes.

Thelypteris palustris (Marsh Fern)—This is a common fern in swampy places. The leaves are lance-shaped and about 2 feet tall. The pinnae are deeply lobed. The fertile leaves are narrower than the sterile leaves and the margins of the leaves are curled downward. The rhizome creeps along just under the surface of the soil. It is common throughout central Minnesota.

Thelypteris phegopteris (Long Beech Fern)—The long beech fern is common in northeastern Minnesota. The leaves are about 6 inches tall and broadly triangular. The pinnae are opposite and attached to the rachis by a broad base.

Woodsia ilvensis (Rusty Woodsia)—This small fern grows in rock crevices and can be found in most parts of the state. The leaves are chaffy and hairy and as the leaves mature the scales and hairs become a rusty brown. During dry periods the leaves become quite dry and brittle but freshen up and resume growth during rainy periods. This is the most common species of *Woodsia*.

Other fern species have been planted but they have not been growing long enough to report on. It is our plan to include all of the native ferns and others that may prove hardy in our climate.

FERN ALLIES

Equisetum arvense (Field Horsetail)—This is the common horsetail that grows in open fields of low fertility. The fertile stems are a distinctive brown color and wither as soon as the cones, which are borne at the tips, mature. The sterile stems are green with whorled lateral branches.

Equisetum fluviatile (Water Horsetail)—This horsetail is common in swamps and is distinguished by a large central hollow in the stem and thin stem walls. The stem is green and jointed with from 15 to 20 teeth on each sheath. The stems may be unbranched or there may be a few ascending branches near the top of the stem. Fertile stems end in a small, spore-producing cone.

Equisetum hyemale (Common Scouring Rush)—This species is common along stream banks and on lake shores throughout the state. Occasionally it is found in dry, open places. The scouring rush is mostly unbranched and green in color except for the ashy-gray sheaths. The stems contain silica and the Indians used them for scouring pots and pans. A spore-producing cone is produced at the tips of the stems.

Lycopodium annotinum (Bristly Club Moss)—Several species of *Lycopodium* are found in Minnesota. These are found in moist, shady woods mostly in north central and northeastern counties of the state. The Bristly Club Moss is characterized by pointed leaves that come out all around the stem and the fertile cones that are sessile on a leafy branch.

Lycopodium clavatum (Running Club Moss)—This club moss is distinguished by the long, running stems that creep along the surface and the leaves that have slender, somewhat twisted tips. The cones are borne at the tips of slender upright stalks that are devoid of the typical leaves. It is quite common in northeastern Minnesota.

Lycopodium complanatum (Ground Pine)—This is a striking plant with scale-like leaves and flattened, fan-shaped branches. Cones are borne in clusters on erect, scaly stems. It is confined largely to north central and northeastern counties.

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