

Hardy Species: Wetland Plants



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Wetland plants exhibit a variety of special adaptations that allow them to exist in waterlogged or saturated soils under anaerobic (without oxygen) conditions that exist for several weeks during the growing season to year-round. Plants that are able to survive and reproduce under these harsh conditions are commonly referred to as hydrophytes. Morphological and physiological adaptations allow hydrophytes alternate metabolic pathways that contribute to successful oxygen exchange and, therefore, tolerance of otherwise toxic environments. Upland plants simply cannot survive extended periods of anaerobic conditions, so hydrophytes become the dominant species. Common wetland plants include duckweed, bulrushes, cattails, sedges, willows, and cottonwoods, as well as showy flowers such as elephant's head, fringed gentians, and marsh marigolds. Wetlands can be identified through the plants that occur on the site, as well as through the soils that result from specific hydrologic conditions.

Approximately 38 percent of Yellowstone's 1,200 plant species are associated with wetlands, and 11 percent (species such as water lilies, water buttercup, spikerush, and cattails) grow only in wetlands. Such species are called obligates because they occur in wetlands 99 percent of the time.



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Elephant's head. Top right: water lily.

Yellowstone's wetlands are home to many unusual plants. Of the 90 rare plant species known to occur in the park more than half are associated with wetlands.

In Yellowstone, wetlands are subjected to a wide range of water temperatures, which leads to a fascinating array of plant species. Within one wetland complex, there can be both cool and warm water springs rising to the surface, allowing plant species that would otherwise be separated by hundreds or even thousands of miles to grow and reproduce adjacent to one another. Plant communities that are not recorded anywhere else in the world exist in Yellowstone's wetlands.

The heat generated in thermal areas also allows some plant species to survive in areas far north of their typical distribution. Although its main distribution is in the southwest United States, *Castilleja exilis*, a red-flowered annual paintbrush that blooms in early August, is known to occur in two thermally influenced wetland areas at opposite ends of the park.

Two greater Yellowstone wetland endemics (plant species that grow nowhere else in the world) are especially interesting. Yellow spikerush (*Eleocharis flavescens*) typically occurs in tropical and subtropical America; outside of Yellowstone, the closest population is in Mississippi. A special variety of this species, warm spring spikerush (*Eleocharis flavescens* var. *thermalis*), has developed in Yellowstone. It grows primarily as floating mats on warm thermal water, vanishing if the water temperature becomes too hot or too cold. Warm spring spikerush is totally dependent on warm water; it never occurs in water that is cold to touch.



Paintbrush.

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Globeflower.

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Bladderwort.

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Tweedy's rush (*Juncus tweedyi*) is also highly restricted in its distribution, occurring primarily within the park's boundaries with just a few populations beyond. This wetland plant is often associated with thermal areas, especially in areas that are quite acid in composition. Sometimes Tweedy's rush will be the only obvious plant in portions of a thermal area.



Tweedy's rush.

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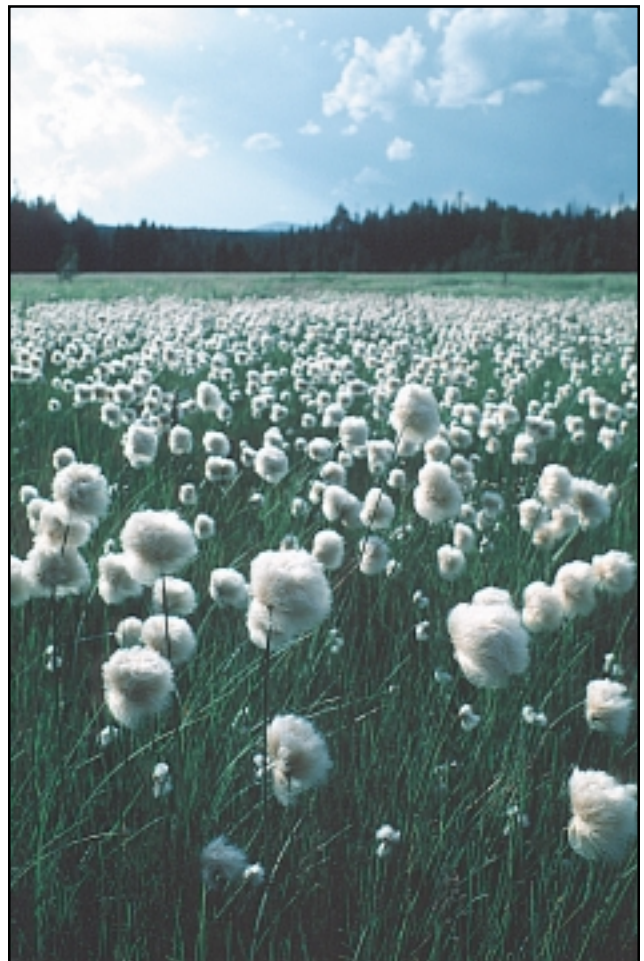
and Alaska. These plants are often found in peatlands—wetlands with large accumulations of dead plant material (peat) that have formed around cold-water springs. In Yellowstone, plants from northern Canada and Alaska grow alongside others typical of the Rocky Mountains of Wyoming and Montana.

Other Yellowstone wetland plants, species such as green keeled cotton-grass (*Eriophorum varidicarinatum*), False uncinia sedge (*Carex microglochis*), mud sedge (*Carex limosa*), and lesser paniced sedge (*Carex diandra*), are more typically found in the boreal (northern) zone of Canada



Sundew.

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Cotton-grass near Norris.

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