

Plant Data Sheet

Pteridium aquilinum (bracken fern)



ÖRNBRÄKEN, PTERIDIUM AQUILINUM (L.) KUNZ.
<http://runeberg.org/nordflor/508.html>

Taxonomy:

Family scientific name: Dennstaedtiaceae

Family common name: Bracken Fern Family

Genus: *Pteridium*

Species: *aquilinum*

Species authority: Linnaeus

Variety: *pubescens*, *fulvum*, *osmundaceum* (5)

Sub-species: *latiusculum*, *lanuginosum*, *pseudocaudatum*, *feeii*, *japonicum*, *decompositum*, *wightianum*, *aquilinum*, *pinetorum*, *capense*, *centrali-africanum* (5)

Cultivar: none

Authority for Variety/Sub-species:

Common Name(s): Brake, Brake Fern, Eagle Fern, Female Fern, Fiddlehead, Hog
Brake, Pasture Brake, Western Brackenfern (4)

Species Code (as per USDA Plants database): PTAQ

General Information:

General Distribution and Range: Found on every continent except Antarctica (4) and in all fifty states besides Nebraska (2).

Climate and elevation range: Form dense colonies in dry or wet forests in low to subalpine elevations. Submontane to subalpine plants occur on water receiving and water-shedding sites in temperate, boreal, mesothermal, and tropical climates. Do not like hot or cold deserts (1). Often found in riparian and upland habitats and abandoned pastures (3). It is rare in areas exposed to frost, aeration and high-intensity wind exposure (7).

Local habitat, abundance, and commonly associated species: Occur in meadows, clearings, along roadsides and in fire-disturbed sites. Prefer lakeshores, bogs, sterile sandy soils and acid sites (1). Grow best on deep, well-drained soils with good water-holding capacity, and may dominate other vegetation on such sites (4). Commonly associated species are coniferous forests, *Gaultheria shallon*, *Hylocomium splendens*, *Vaccinium parvifolium*, *Cornus Canadensis* and *Linnaea borealis* (1).

Plant strategy type / successional stage: Is a succession species that develops shade tolerance from intolerance and is able to survive in light spots in old growth forests (4). The light, windborne spores allow it to colonize newly vacant areas. It has been documented as a pioneer on sterile, cooled lava slopes and recently burned forest floors (6). Bracken survives winter entirely buried underground. When a fire occurs, everything is burnt, but the Bracken can immediately begin growing (8).

Propagation Details:

Ecotype: Lake McDonald, Glacier National Park (3)

Propagation Goal: plants

Propagation Method: Spores can be surface sown (9) but division is the most successful method (4).

Product Type: Container (plug) (4)

Stock Type: Container (3)

Time to Grow: Five months (4)

Target Specifications: Height: 15 cm, 5 to 7 mature fronds (4).

Propagule Collection: Sterile frond margins are covered by inrolled indusium that are empty of spores. Spores are born underneath the outer margins of leaflets on fertile fronds and are covered with an indusium on one side. Spores are protected by inrolled pinnule margins on the other side. A distinction must be made between non-fertile fronds and spore bearing ones in order for collection to be productive. Mature sporangia are light tan to medium brown when mature. Once spores are shed, sporangia appear to be brown and frayed. Immature spores are whitish to green. Spore collection should take place as the indusium begins to lift and spores become visible underneath. Fronds should be cut and placed in paper envelopes during transport (3).

Propagule Processing/Propagule Characteristics: Set fronds in a room free of air flow. Spores should be against butcher paper and will appear as a fine dust after several days of drying (3).

Pre-Planting Propagule Treatments: Spores should be collected from the surface of paper and surface sow in sterilized flats filled with sterile, finely milled peat moss moistened with distilled water. Water spores and seal flats with clear plastic wrap. Place flats in greenhouse set at 75/55 by day and 16/8 by night in temperature cycles (3). Prefer soil with a pH in the range 4 to 6 (9).

Growing Area Preparation: Greenhouse conditions for 2 to 3 months of spore germination and growth. 6 months of outdoor shadehouse for additional growth (3).

Establishment Phase: Spore germination will occur after seven days. Prothalli with reproductive structures continue to grow for 4 weeks. Here, it is important to keep a thin film of water of the prothalli surface for fertilization to occur. Maintain sterile conditions during establishment and germination. If fungi contamination occurs, remove infected portions and treat tray with highly diluted (1/4 is commonly recommended) fungicide drench. This treatment is only recommended if prothalli are well developed. Immediately reseal and water flats after fungicide treatment. Remove clear plastic from trays once sporophytes appear. Aseptic conditions are no longer necessary at this point (3).

Length of Establishment Phase: one month (3)

Active Growth Phase: Sporophytes appear 2 months after spore germination. Individual plants are transplanted from flats to pots when they are 4 cm tall. They are moved to an outdoor shadehouse in late spring after establishment. Plants are then fertilized with controlled release Osmocote 13-13-13 NPK and Micromax micronutrients mixed into medium (3).

Length of Active Growth Phase: three months (3)

Hardening Phase: Fertilize with 10-20-20 NPK liquid fertilizer in September and October and water plants before winterization (3).

Length of Hardening Phase: one month (3)

Harvesting, Storage and Shipping: 5 months for harvesting starting in September. Store over winter in an outdoor shadehouse under insulating snow and foam (3).

Length of Storage: five months (3)

Guidelines for Outplanting / Performance on Typical Sites:

Other Comments: Bracken fern served as a food source for Native Americans who ate their fiddleheads and used their rhizomes for making bread. The leaves are poisonous to animals (typically livestock) that consume them in large amounts. The toxic ingredient is an enzyme that destroys the animals' thiamin reserves (10).

Information Sources:

Protocol Author: Sophie Pierszalowski

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References:

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- (2) "USDA: Plants Profile." <http://plants.usda.gov/java/profile?symbol=PTAQ>
- (3) "Glacier National Park: Protocol Information."
http://www.nativeplantnetwork.org/network/view.asp?protocol_id=3506
- (4) Rook, Earl. 2002. *Pteridium aquilinum*, Bracken Fern.
<http://www.rook.org/earl/bwca/nature/ferns/pteridiumaqui.html>
- (5) "Garden Guides: Bracken Fern."
<http://www.gardenguides.com/plants/taxonomy.asp?tax=2189956#>
- (6) "Index of Species Information."
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- (7) Marrs, R.H. "Biological Flora of the British Isles: *Pteridium aquilinum* (L.) Kuhn."
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- (8) "A Homeopathic Proving of *Pteridium aquilinum*."
<http://www.jkeates.freemove.co.uk/Bracken.pdf>
- (9) "Plants for a Future." <http://www.pfaf.org/database/plants.php?Pteridium+aquilinum>
- (10) "Florida Forest Plants." http://www.sfrc.ufl.edu/4h/Bracken_fern/bracfern.htm

Plant Data Sheet

Bracken fern / *Pteridium aquilinum*

Range

Occurs throughout the world except in hot and cold deserts (1)

Climate, Elevation

Dry to wet forest, low to subalpine elevations (2)

Submontane to subalpine, occurs on water-shedding and water receiving sites in boreal, temperate, mesothermal, and tropical climates(3)

Local occurrence

Meadows, roadsides, clearings (2), fire disturbed sites (3)

Habitat preferences

Sterile sandy soils, acid sites, lake shores, bogs (2)

Plant strategy type/successional stage

Shade intolerant pioneer, succession species that is sufficiently shade tolerant to survive light spots in old growth forest (1)

Associated species

Coniferous forest, *Gaultheria shallon*, *Hylocomium splendens*, *Vaccinium parvifolium* (3), *Cornus Canadensis* and *Linnaea borealis* (1)

Collection restrictions or guidelines

Spore release in mid July for the PNW

Seed germination

Spores germinate without any dormancy requirement, usually in the

spring after the spores are shed (1)

Vegetative regeneration

Aggressive rhizome system, can be up to 400' in diameter and hundreds of years old (1)

Seed life

Spore germination declines from 96% to 35% after 3 years of storage (1)

Recommended seed storage conditions

Propagation recommendations

Division most successful method (1)

Soil or medium requirements

pH of 5.5 to 7.5 is optimal for spore germination, spore germination requires soil sterilized by fire (1), grows best on deep well-drained soils with good water holding capacity (4)

Installation form

Bare root, divisions

Recommended planting density

Care requirements after installed (water weekly, water once etc.)

Normal rate of growth or spread; lifespan

In first year, rhizomes may grow to 86 inches long, by end of second year, rhizome system can exceed 6' in diameter (1)

Sources cited

- (1) Rook, Earl. 2002. *Pteridium aquilinum*, Bracken Fern.
<http://www.rook.org/earl/bwca/nature/ferns/pteridiumaqui.html>
- (2) Pojar, J. and MacKinnon, A. 1994. *Plants of the Pacific*

Northwest Coast. Lone Pine Publishing, Redmond, WA, USA.

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(4) Crane, M. F. 1990. *Pteridium aquilinum*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2003, April). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [User, supply access date here].

Data compiled by: *Lizbeth Seebacher* May 5, 2003