

Bermuda Shield Fern

Thelypteris bermudiana

Bermuda Protected Species



GOVERNMENT OF BERMUDA

Department of Environment & Natural Resources



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Current Status

Endemic

BPSA: Level 2

CITES: No

Bda Red List: CR (B2)

CMS: No

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Ecology

Identification

This endemic fern was formerly known as *Dryopteris bermudiana*, *Nephrodium bermudiana* and *Goniopteris bermudiana*. The fronds of Bermuda Shield Fern reach up to 2 feet (60 cm) long and 3 to 6 inches (7.5 to 15 cm) wide. The fronds are composed of pinnae (leaflets) arranged alternately along a central stem (rachis) which is covered by fine hairs. The pinnae are 1.5 to 3 inches (3.8 to 7.5 cm) long and up to 1 inch (2.5 cm) wide. The pinnae are simple with undivided, rounded lobes that are held very close together. The bottom pair of lobes on the pinnae, closest to the central stem of the frond, are often larger than the other lobes of the pinnae; usually only on one side. This is a distinguishing feature of this species. Veins are prominent on the pinnae.

The fronds of Bermuda Shield Fern are dark green and appear glossy above; lighter green and dull underneath. Often the tips of the pinnae in the upper parts of the frond appear to curve towards the apex of the frond.

Range

Endemic to Bermuda

Habitat

Bermuda Shield Fern lives on damp rock faces and at the mouths of caves, mainly in the Walsingham Tract area of

Bermuda including the Walsingham and Idwal Hughes Nature Reserves. Occasionally it is found on shaded, damp man-made stone structures like loose stone walls. In the restored habitat in Walsingham Sink it grows from the ground below the indigenous forest and attains a large size.

Reproduction and Life Cycle

Ferns do not reproduce by flowers and fruits like other plants. They produce dust-like spores on the underside of a mature frond. The spores develop into a small, flat, often heart shaped, prothallus. The prothallus has organs containing eggs and sperm on its surface. Ferns mostly occur in wet habitats, where water accumulates on the surface of the prothallus, allowing the sperm to move across the surface and reach the egg. Once fertilisation has occurred the sporophyte begins to develop; this is the mature fern that we see with roots and fronds.

Why protect this species?

Today, this species has become very rare in Bermuda due to destruction of its habitat, historical collection by hobbyists and competition from invasive plants. Its complex life cycle and restrictive habitat requirements make it difficult for populations to recover once impacted.

As an endemic species, it is critically important that efforts are made in Bermuda to conserve this species.

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What is being done to conserve it?

Protected Species Act Listing: Level 1, 2012 re-graded to Level 2, 2016

IUCN Red List: EN B1ab,C2a, 3.1

Recovery Plan: the main goals in the Plan are to protect and manage habitat, increase size and number of populations, maintain existing populations, conduct field surveys for new populations and potential habitat for introduction. Download at www.environment.bm

Public awareness: lectures on ferns are given to interest groups several times per year.

Research: Research has focused on environmental conditions that affect germination and survival. Genetic work is planned.

Monitoring: Population mapping was undertaken in 2013 to enable IUCN Red List assessment of this species. Monitoring the health of the mapped populations, and the additional mapping of newly discovered ones are ongoing.

Habitat protection: Most known Shield Ferns are found within existing protected areas. Expanding protection to known populations on private land needs to be pursued. Control of invasive plants in fern habitats is ongoing.

Artificial propagation: Spore germination has been successfully undertaken at the Dept. of Conservation Services. It is anticipated that the young plants can be grown on into a government-held *ex situ* collection as called for in the Recovery Plan. Spore collection from threatened populations is planned.

Protective legislation

Protected Species Act (2003)

What you can do?

Learn: Learn more about this species. Understand how destruction of habitat leads to loss of Bermuda's plant and animal diversity. Tell others what you have learned.

Control invasive plant species: Invasive plants should be managed in areas known to have the Bermuda Shield Fern so that they do not become overwhelmed by other vegetation. Control invasive plants on your property so they don't spread to nearby protected areas.

Grow and plant: Plant native and endemic plants on your property, and encourage your favourite garden centre to carry them. Do not dig up native plants from natural areas.

Protection: As a protected species, any specimen found in a proposed development area should be relocated to a nature reserve. If you see this fern on private land please email environment@gov.bm.

Information sources

To learn more please visit: www.environment.bm

Nathaniel L. Britton. 1918. Flora of Bermuda. Charles Scribner's Sons, New York.

Samia Sarkis. 2010. Recovery plan for six fern species from Bermuda (*Diplazium laffanianum* (Baker) C. Chr, *Goniopteris bermudiana* (Baker) comb., *Ctenitis sloanei* (Poepp. Ex Spreng.), *Asplenium heterochroum* Kunze, *Asplenium dentatum* L., *Rumohra adiantiformis* (G. Forst.) J. Department of Conservation Services, Government of Bermuda. 27 pages



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For Further Information

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