

THE NATURALIZATION OF *PHEGOPTERIS DECURSIVE-PINNATA* (ASPLENIACEAE), THE JAPANESE BEECH FERN, IN GEORGIA, U.S.A.

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ABSTRACT

Phegopteris decursive-pinnata (*Phegopteris taiwaniana*, *Thelypteris decursive-pinnata*), the Japanese beech fern, is reported from six nature preserves in the Atlanta/Gainesville region of Georgia, United States. The fern has been previously collected in a single county in Arkansas and two counties in Alabama. Recent Research Grade iNaturalist posts (2021–2025) report the fern in eight states including Alabama, Arkansas, Georgia, and Tennessee in the South, and in Delaware, Maryland, Pennsylvania, and Virginia in Mid-Atlantic region of the United States. These collections and observations suggest that this commonly cultivated ornamental fern is becoming naturalized in the United States.

KEY WORDS: flora of North America, garden escape, natural areas, non-native, *Phegopteris taiwaniana*

RESUMEN

Phegopteris decursive-pinnata (*Phegopteris taiwaniana*, *Thelypteris decursive-pinnata*), el helecho japonés, se ha observado en seis reservas naturales de la región de Atlanta/Gainesville, en Georgia (Estados Unidos). Anteriormente, este helecho se había recolectado en un solo condado de Arkansas y en dos condados de Alabama. Investigaciones recientes Las publicaciones de iNaturalist (2021–2025) informan de la presencia de este helecho en ocho estados, entre ellos Alabama, Arkansas, Georgia y Tennessee, en el sur, y Delaware, Maryland, Pensilvania y Virginia, en la región del Atlántico Medio de los Estados Unidos. Estas recolecciones y observaciones sugieren que este helecho ornamental, comúnmente cultivado, se está naturalizando en los Estados Unidos.

INTRODUCTION

Phegopteris decursive-pinnata (H.C. Hall) Fée (Aspleniaceae) is an ornamental fern with deciduous, bright green winged pinnatifid, erect blades that taper at both ends with new shoots that are produced on short runners. It is native to Nepal, China, Korea, Japan, Korea, Japan, Taiwan, Vietnam, and parts of Indonesia (Java and Sulawesi) (Plants of the World Online 2025). Sessa (2024), however, considers this fern to be *P. taiwaniana* T. Fujiw., Ogiso & Seriz. (Thelypteridaceae), an accepted species whose distribution is limited to Japan and Taiwan (Plants of the World Online 2025). Plants of the World Online (2025) lists *P. decursive-pinnata* f. *truncata* H. Itô as a heterotypic synonym of *P. taiwaniana*, which means that the two species names were described from different types but are the same taxon (<https://www.iapt-taxon.org/nomen/pages/main/glossary.html> ref, Accessed May 2025). The fern's naturalization at six sites in the Atlanta/Gainesville, Georgia, region is reported.

MATERIALS AND METHODS

The discovery of the Japanese beech fern plants was made at 6 of the 58 sites in surveyed nature preserves and parks in the Atlanta/Gainesville region of Georgia, during a 2021 survey for naturalized plants of four highly marketed fern species (*Dryopteris erythrosora* (D.C. Eaton) Kuntze, *D. cycadina* (Franch. & Sav.) C. Chr.; *Polystichum polyblepharum* C. Presl, and *Cyrtomium falcatum* (L.f.) K. Presl.) (Pemberton 2025). Herbarium specimens were made of the specimens of the fern from each site. Citizen science information was sought via iNaturalist posts to learn which U.S. states the fern had been observed in. Prior collections were examined through the SERNEC Data Portal. 2025. Horticultural and marketing information about this fern was sought in horticultural books and field guides on ferns as well as online searches.

RESULTS AND DISCUSSION

Voucher specimens.—**GEORGIA. DeKalb Co.:** Atlanta, Daniel Johnson Nature Preserve, 33.7977°, –84.3420°, on 7 Oct 2021, *Pemberton 2021-12*; dense patch of fertile plants found growing on the shaded bank of Rock Creek in a hardwood forest; Atlanta, Lullwater Conservation Garden on 13 Oct 2021, 33.7792°, –84.3332°, *Pemberton 2021-05*; 10 plus fertile plants growing on a rocky creek bank and the sandy creek bed; Atlanta, Emory University Lullwater Preserve on 16 Oct 2021, 33.7957°, –84.31858°, *Pemberton 2021-23*; three fertile plants growing on a forested slope; Tucker, Henderson Park, 33.8646°, –84.2322°, on 6 Nov 2021, *Pemberton 2021-59*; many fertile plants growing on a rocky stream bank in a ravine in a hardwood forest. **Fulton Co.:** Atlanta, Clear Creek Nature Preserve, 33.8003°, –84.3772°, on 12 Oct 2021, *Pemberton 2021-03*; single fertile plant growing on grassy creek bank in part sun beneath trees; Atlanta, Frazer Center, 33.7707°, –84.3260°, on 19 Oct 2021, *Pemberton 2021-27*; single fertile plant growing between rocks lining the bank of Lullwater Creek in part sun.

These specimens will be deposited in the herbaria of the Botanical Research Institute of Texas (BRIT), University of Georgia (GA) and the University of North Carolina (NCU).

In May 2025, two of the collection sites in Atlanta were revisited. At Frazer Forest, three plants were found growing between the rocks lining Lullwater Creek (Fig. 1A). At the Emory Lullwater Preserve, four plants were growing with moss and other ferns on shaded hillside beneath hardwood trees (Fig. 1B).

Prior Collections.—Three previous collections have been made of this fern in the United States, all relatively recently. The first by J.H. Peck in Garland County, Arkansas, on 25 June 2010 (BRIT462983), growing in Garvan Woodland Gardens but “spontaneous naturalized on own.” The other two collections were made in Cheatum State Park in Alabama. The first by Bran R. Keener in Clay County on 21 June 2014, in crevices in limestone (AUA000031153). The second was in the Clariborne County part of the park by C. Horn on 25 May 2017 (NBYC02000), described as a small colony of fronds next to a creek.

Citizen Science Observations.—There are 34 Research Grade iNaturalist posts of the Japanese beech fern dating from 2017 through 2025. (https://www.inaturalist.org/observations?place_id=1&quality_grade=research&taxon_id=482149, May 2025). These posts are from eight states including Alabama, Arkansas, Delaware, Georgia, Maryland, Pennsylvania, Tennessee, and Virginia. There were 14 posts in Georgia including 10 in the Atlanta area. The recency of these posts, 28/34 being from 2020 to 2024, suggest that the fern is actively naturalizing.

Horticulture and Marketing.—The Japanese beech fern is listed in *Hortus Third* 1976 indicating that it has been in cultivation in the United States for 50 years or more. Olsen, 1994, described *P. decursive-pinnata* as being less familiar to gardeners than other Asian ferns, but it had the potential to become popular among fern collectors. Mickel (1994) described it as frequently but not commonly available. It continues to be frequently sold. A May 6, 2025, internet search (<https://www.google.com>) for companies selling this fern found 34 instore and online outlets offering this fern, including important wholesale growers such as Monrovia and Casa Flora, and important retail outlets such as Walmart. The fern is an appealing garden subject for a number of reasons. The plant's 1- to 2-foot-tall (30–60 cm) fronds remain bright green throughout the growing season, and the new shoots produced on its roots creates a colony-like growth that can be used as a short groundcover (Steffen & Olsen 2015). It tolerates both cold and hot climates growing in USDA Hardiness Zones 4–10 (Hoshizaki & Moran 2001).

CONCLUSIONS

Prior to the collections reported here, *P. decursive-pinnata* had been collected at only in a few areas of the southern United States, but because it can grow in a wide range of climates, it has the potential to naturalize both farther north and farther south in the humid eastern United States. Many ferns native to temperate eastern Asia have recently been naturalizing and spreading the American South (Wyatt 2020; Wyatt & Harris 2022; Pemberton 2025). The discovery and collection of *P. decursive-pinnata* at 6/58 or ca. 10% of surveyed sites in the Atlanta Metropolitan area (Pemberton in 2025), coupled with the prior collections in Arkansas and Alabama, and the many recent iNaturalists posts in eight states suggest that the Japanese beech fern is naturalizing in the United States. iNaturalist is a valuable tool in helping to detect the naturalization and spread of alien ferns in North America (Pemberton & Escalona 2025).



FIG. 1. Japanese beech fern, *Phegopteris decursive-pinnata*, **A**. Young plants growing in a hillside forest with offshoots, bar = 5cm, **B**. Spring growth among rocks lining a creek, both in Atlanta, Georgia, nature preserves. **C**. Large plant in Georgia State Botanical Garden in Athens, bar = 10cm.

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