# EAST INDIAN HOLLY FERN, *ARACHNIODES SIMPLICIOR* (DRYOPTERIDACEAE), IN GEORGIA, U.S.A.

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ABSTRACT

East Indian holly fern, an escaped ornamental native to Asia, is reported for the second time in Georgia, one of only four states from which it has been collected. Being native to cold temperate Asia and hardy to USDA zone 6, this fern has the potential to naturalize beyond the southeastern United States.

RESUMEN

El helecho de Asia Oriental, una planta ornamental escapada originaria de Asia, se ha registrado por segunda vez en Georgia, uno de los cuatro únicos estados en los que se ha recolectado. Al ser originario de las zonas templadas frías de Asia y resistente a la zona 6 del Departamento de Agricultura de los Estados Unidos (USDA), este helecho tiene el potencial de naturalizarse más allá del sureste de los Estados Unidos.

## INTRODUCTION

The East Indian holly fern, *Arachniodes simplicior* (Makino) Ohwi, is native to China, Japan, Korea, Tibet, and Viet Nam (Plants of the World Online 2025). The plant's native region includes tropical Vietnam and cold temperate Tibet and Hokkaido in Japan, demonstrating its ability to grow in a wide range of climatic conditions. This allows it to be grown in temperate gardens and as a house plant, where its variegated foliage contributes a distinctive elegance (Olsen 2007).

The East Indian holly fern (Fig. 1), also known as the variegated holly fern and the variegated shield fern, is semi-evergreen and 0.3 to 0.8 m tall with 2–3 pinnate, shining, leathery-waxy, broadly triangular blades that are dark green with a distinctive light green to yellow stipe down the center of the pinnae (Mickel 1994; Sessa 2024).

This collection is the second in Georgia, one of four states from which it has been reported.

## MATERIALS AND METHODS

The discovery of the East Indian holly fern at this site occurred during a survey for four highly marketed, naturalized fern species (*Dryopteris erythrosora* (D.C. Eaton) Kuntze, *D. cycadina* (Franch. & Sav.) C. Chr.; *Polystichum polyblepharum* Nakai, and *Cyrtomium falcatum* (L.f.) K. Presl.) at 58 sites in the Atlanta and Gainesville, Georgia region (Pemberton 2025).

## RESULTS AND DISCUSSION

Voucher Specimen: **GEORGIA. DeKalb Co.:** one of two fertile plants at Fernbank Forest in Atlanta, growing on a mossy rock on a steep slope in a native, 45 ha hardwood forest, 33.775656, –84.324355, 17 Oct 2021, *Pemberton 21-25* (GAM).

***Prior Collections.—***The first collection of this fern in Georgia was the 2021 collection by Robert Wyatt in Clarke County in northeastern Georgia (GA280277) from a site with numerous mature and juvenile plants (Wyatt & Harris 2022). The earliest detected occurrence and collection of this fern in North America was in Aiken County, South Carolina in 1981 by Judith Gordon (GA087670). Gordon (1981) found about 100 plants in a population that she estimated to be 20–25 years old. Gordon and others revisited the population in

J. Bot. Res. Inst. Texas 19(4): 621–624. 2025
https://doi.org/10.17348/jbrit.v19.i4.1447
Published online: 16 December 2025

Fig. 1. *Arachniodes simplicior*, East Indian holly fern growing in Fernbank Forest in Atlanta, Georgia. https://www.inaturalist.org/observations/48948287 by running_naturalist Eli Dickerson cc commons.

subsequent years and found that it was well established but not spreading (Wyatt & Harris 2022). The fern was found next in Arkansas in Pulaski County in 2008 by Theo Witsell (ANHC000033), followed by many subsequent collections from this county and in Garland County (Peck 2011). Then the fern was collected in Florida in Jackson County in 2012 by Loran Anderson (NYBG02104453). Weakley's 2025 map adds three locations in Alabama, one in Louisiana, and one in North Carolina in addition to the four states already mentioned, but specimens or other documentation for these occurrences were not found by this author. Sessa (2024) describes the fern as being uncommon, becoming established in damp woods in the South. Weakley (2025) says it is found on moist banks in forested ravines.

***Citizen Science Observations.—***A search of iNaturalist (https://www.inaturalist.org/observations) on 20 May 2025, found 67 Research Grade posts for *A. simplicior* in 7 states, the 6 southern states mentioned above and Virginia. Georgia had the most posts with 36, led by the Atlanta Metropolitan area with 7. The plant in Figure 1 (https://www.inaturalist.org/observations/48948287) was photographed at Fern Forest on 8 July 2020, ca. 15 months earlier than when it was encountered and collected at Fern Forest. The precise location of the photograph is obscured but it is probable that the plants found in 2021 and photographed in 2020 were part of the same population within the 25 ha forest.

***Horticulture and Marketing.—***This fern has been in cultivation from at least 1976 when it was included in Hortus Third (Staff 1976) as *A. aristata* (G. Forst.) Tindale, but it was not in Bailey 1949, a predecessor of Hortus Third. Hoshizaki (2007) stated that this variegated cultivar was introduced to the nursery trade only recently ("about 1985"). But as Wyatt and Harris (2022) commented, the spores that started the 20–25-year-old South Carolina population found by Gordon in 1981 must have arrived in the time frame of 1955–1960, so cultivation of this fern dates from that period or earlier.

Mickel (1994) described the East Indian holly fern as easily grown, hardy in Zones 6–9, and frequently available in commerce. Seven West Coast fern nurseries offered this distinctive fern for sale in 2004 (Hill & Narizy 2004). Although the East Indian holly fern is currently only naturalized in the southeastern part of North America, it has potential to naturalize much farther north, given its cold hardiness and occurrence in cold regions of its native Asia. A Google search (google.com) for East Indian holly fern for sale on 6 June 2025 found 55 companies offering the fern for sale in North America. The large number of outlets is probably due to the fern being offered as both a house plant and outdoor garden plant. Market intensity is correlated with plant naturalization and invasion (McCulloch-Jones et al. 2021; Pemberton & Liu 2008).

## CONCLUSIONS

The few plants found at Fernbank Forest suggest that the colonization by the East Indian Holly at this site is recent. This fern is a rarely collected escape of horticulture in North America. The 67 Research Grade iNaturalist posts indicate that it occurs more frequently in the wild than the number of herbarium collections indicate. Being native to cold temperate Asia (Tibet and Hokkaido in Japan) and being hardy to USDA hardiness zone 6 suggest that the fern has the potential to naturalize much beyond the seven southeastern states where it now occurs. iNaturalist has been found to be quite valuable in helping detect the increase and geographical spread of naturalized ferns (Pemberton & Escalona 2025).

## ACKNOWLEDGMENTS

The photograph of *A. simplicior* in Figure 1 is from an iNaturalist post of the fern https://www.inaturalist.org/observations/48948287 by running_naturalist (Eli Dickerson) creative commons. Arty Schronce reviewed and improved an earlier version of this manuscript. I appreciate Robert Wyatt's thoughtful review of the manuscript for JBRIT and Editor Barney Lipscomb's efforts.

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