

## Ohio's Ferns The Asian Connection

Scientists have marveled at the striking similarity between the floras of temperate eastern North America, which includes Ohio, and temperate East Asia for more than two centuries. Despite the tremendous distances separating them, these two regions of our planet have more in common floristically than any other two regions on earth.

While the species may not be identical, each region has its Dutchman's Breeches, Solomon's Seals, Mayapples and Trilliums to name just a few. Given this similarity, it should come as no surprise that many of our most invasive non-native plants are of East Asian origin. And unfortunately, our most troublesome plant pests also come from that part of the world – the most recent example being the Emerald Ash Borer.

By far the greatest commonality is in the Ferns of both regions. On Hokkaido Island in northern Japan there are 122 Fern species while in northeast America 116 species can be found. Incredibly, 47 of those species are common to both areas. The Interrupted, Walking, New York and Sensitive (a common plant in Crawford County) Ferns are all found on opposite sides of the world.

This “disjunction” as it is called, has troubled Botanists for many decades. Only recently have advances in the field of Geology been able to explain the phenomenon.

During the Tertiary period (38 – 54 million years ago) land bridges connected the continents of North America, Asia and Europe. Just as importantly, this period in Earth's history was much warmer than today and the climate was fairly uniform across vast geographic areas of the world. Temperate and tropical forests reached as far north as Siberia and Greenland – Redwoods grew from Asia to Alaska to Spitsbergen and into Europe. For millions of years there was a great mixing of the plant species throughout the northern hemisphere. Paleobotanists refer to it as the Boreotropical Flora.

The Ice Ages arrived and everything changed. Temperate and Tropical plants retreated as the ice sheets advanced and the land bridges connecting the continents were severed. What was once a vast circumpolar ecosystem was fragmented as it was driven south. The uplift of mountain ranges in the American west spawned desert-like habitats and created the immense grasslands of the Great Plains. Similar forces were at work in Asia.

In Europe the situation was somewhat different. The Ice Sheets pushed the plants south against the Alps and the Pyrenees and many species became extinct because they could not make the jump across these mountain ranges. To this day, the flora of Europe is impoverished as a result. The Marsh Fern (another Crawford County plant) and Royal Fern (Seneca and Richland Counties) are among the few that continue to thrive on all three continents.

Only in East Asia and northeastern North America did conditions remain stable long enough for remnants of the Boreotropical Flora to survive. That legacy lives on as a result.

The next time you encounter Sensitive Fern at Lowe-Volk Park or the magnificent Interrupted Ferns in Mohican State Park, remember that they also grow 10,000 miles away in Asia. It adds to the experience.

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