

Japanese Climbing Fern: A Threat to Texas' Forests Fifth of the "Dirty Dozen"

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Editor's Note: An introductory article discussing exotic invasive pests that could threaten forest resources in Texas was included in the June 2005 issue of *Texas Forestry*. As a follow-up to that article, a series of 12 short articles about specific exotic pests that are either present in Texas or are at our doorstep is planned. The authors (Joe Pase, Ron Billings, and Kim Camilli) are calling this series the "Dirty Dozen." Last month, Joe described Chinese tallow, the first invasive plant in the series. Japanese climbing fern is the second invasive plant to be presented. This climbing fern is becoming established in an increasing number of counties and is considered a significant invasive forest pest in southeast Texas.

Historically, numerous ornamental plants have been purposely introduced into the U.S. from foreign countries for economic uses or just to add color and diversity to backyard gardens and rural landscapes. Many introduced plants, such as crepe myrtle and Bradford pear, continue to be prized as landscape plants. Others, such as Chinese tallow and Japanese climbing fern, have worn out their welcome. They have escaped cultivation and become invasive, noxious plants that threaten to displace native plant communities in America's forests.

Japanese climbing fern, *Lygodium japonicum*, was first introduced as an ornamental into the southern U. S. from Japan in the 1930s and is still being spread by unsuspecting gardeners. In fact, these plants are being sold as recommended ornamentals on the Internet. Native to Asia and tropical Australia, this climbing fern has invaded forests in nine southern states extending from North Carolina and Florida west to Texas. It is a perennial, viney fern with lacy, finely divided leaves and orange-black, wiry vines(see photo). The vines rapidly climb over native vegetation, forming tangled masses that top shrubs and trees up to 90 feet tall, shading out and killing them.

This invasive fern can be found along highway rights-of-way, especially under and around bridges, and invading into open forests, forest road edges and margins of wetlands. It persists and colonizes by rhizomes and spreads rapidly by wind-dispersed spores. In East Texas, the above-ground foliage dies back in winter, but resprouts from rhizomes in the spring. The dead vines serve as a trellis for reestablishment. In fire season, the masses of climbing fern create a considerable fire danger. The vines serve as fire ladders to carry ground fires into tree crowns while the burning fern parts are often kited away to start new fires.

In Florida, this plant has forced some pine straw producers out of business due to the dense, impenetrable nature of the vine's growth within infested pine stands. The sale and distribution of pine straw infected with rhizomes or spores of Japanese climbing fern may well be a major means of long-distance spread of this noxious plant.

Based on herbarium records, Japanese climbing fern was first discovered in Texas in 1937 in Orange County. According to USDA Natural Resource Conservation Service records from 2004, this exotic plant is known to occur in nine counties in southeast Texas: **Hardin, Harris, Jasper, Jefferson, Liberty, Montgomery, Orange, Polk, and Walker** counties.

In 2005, the Texas Forest Service distributed a questionnaire on invasive plants to managers of natural areas in different regions of the state. This survey revealed that Japanese climbing fern has become established in eight additional East Texas counties (see map). These are **Newton** County (Siecke State Forest), **Sabine** County (Sabine National Forest), **San Jacinto** County (Sam Houston National Forest), **Houston** (Mission Tejas State Park) and **Trinity** counties (Davy Crockett National Forest), **Angelina** and **San Augustine** counties (Angelina National Forest), and **Tyler** County (Big Thicket National Preserve). Infestations no doubt also occur on private forestlands within these counties.

Eradication of Japanese climbing fern is difficult because of the large rhizome root system and the rapid germination from spores. Prescribed burns will eliminate aerial portions, but will not stop resprouting. Herbicides containing glyphosate offer the best choice for eradication of established infestations. A recommended foliar spray mix is 1 to 2 percent of either Garlon 4®, Garlon 3A®, Accord® Concentrate, or Rodeo® (Dow AgroSciences). Another effective herbicide is Escort® (Dupont) at 1 to 2 oz per acre in water and as a mixture with a glyphosate herbicide. Add ¼ to ½ percent surfactant to improve wetting and penetration.

When applying herbicide with a power or backpack sprayer, follow directions on the label and thoroughly wet all leaves. Apply herbicides during the summer months (July to October) when the plant has full foliage and is actively growing. Garlon 3A and Garlon 4 are selective broadleaf herbicides that do not affect grasses or sedges, allowing the latter to become competitors on treated sites. Treated areas must be checked often and newly developed plants controlled. Any soil disturbance will enhance spore germination and reestablishment.

Clearly, Japanese climbing fern is a rapidly spreading, invasive plant that we do not need or want in Texas' forests. If you detect this exotic plant infesting forests in a county not listed above, please contact Ron Billings, Texas Forest Service, by e-mail (rbillings@tfs.tamu.edu) or by phone (979-458-6650) so we can get a better handle on its distribution in Texas. Once verified, new records will be added to the county distribution map on the new partnership web page now being developed on Texas invasive pests at <http://www.texasinvasives.org>.



Figure 1: Japanese climbing fern in Sabine County, TX (Photos by R. F. Billings)

Counties with known infestations of Japanese climbing fern in East Texas

Legend

- Orange County (first detected in 1937)
- NRCS Records
- New Infestations (2005)

