



# Invasive Species Management Plans for Florida

**Japanese Climbing Fern**  
***Lygodium japonicum* (Thunb.) Lygodiaceae**  
**Old World Climbing Fern**  
***Lygodium microphyllum* (Cav. R. Br.) Lygodiaceae**

INTRODUCTION

*Lygodium japonicum*, or Japanese Climbing Fern (JCF), is an adventive species that was introduced into Florida as an ornamental plant in the 1930's. In Florida it is currently found in the north and western areas of the state, but is quickly spreading and has been found as far south as Broward and Collier counties. It is also found in the southern areas of Alabama, Mississippi, and Louisiana. Japanese climbing fern is able to engulf shrubbery and ground covers by forming a dense canopy of vegetation.

Old World Climbing Fern (*Lygodium microphyllum*), was found growing in south Florida in the 1960's. Since that time, this species covers nearly 50,000 acres today. It infests cypress swamps, engulfing tree islands with 90 foot long fronds. Due to the climate, this species does not die back in the winter, allowing for massive growth.

DESCRIPTION

Lygodiaceae includes many plants such as Japanese climbing fern, *Lygodium japonicum*, and old world climbing fern, *Lygodium microphyllum*. It is often confused because of the close similarities between the species but is easily distinguished by differing leaf characteristics. Old world climbing fern has unlobed leaflets that are glabrous (smooth, not hairy) below. Japanese climbing fern is a perennial vine-type fern, reaching up to 90 feet in length. Its leaves are lacy and finely divided, arranged opposite on the vine. The vines are green to orange to black and wiry, often infesting trees and shrubs forming dense mats of vegetation. Fronds are tan-brown and persist in winter, but remain green in south Florida. Vines formed from branches arise from underground rhizomes, which are slender, black and wiry. Fertile fronds are usually smaller segments with fingerlike projections around the margins. These bear sporangia (spore producing structures) in double rows under the margins. These are very tiny and easily dispersed by wind.

## IMPACT

Japanese climbing fern can grow in sun or shade, damp, disturbed or undisturbed areas. It can grow so dense that it forms a living 'wall', leading to the elimination of seedlings and other native vegetation. Japanese climbing fern was added to the Florida Noxious Weed List in 1999. It is also a major problem in pine plantations, causing contamination and harvesting problems for the pine straw industry. Old World climbing fern infests cypress swamps and other hydric sites, forming a monoculture. This massive infestation displaces all native flora and fauna, completely changing the ecosystem of the area.

## MANAGEMENT

Preventative: Monitoring is very important in the strategy for the management of these climbing ferns. Constant monitoring can aid in the detection of new populations. Steps to prevent spore movement or formation are the key in controlling climbing fern. Since the microscopic spores are easily transported via clothing, wind and possibly water, contamination is a constant threat. Control measures should be employed when the fern is not producing spores, which occurs in the late summer/early fall. If control measures must be employed during spore formation and dispersal, then these areas should be treated at a time when workers will not be traveling to other sites in the same day. Take care not to drive equipment through the fern foliage, as this will also help to minimize spore movement.

Cultural: Very little strategies have been observed that limit the spread of climbing fern through cultural methods. Because of the small size of the spores, these can travel over great distances and infest seemingly undisturbed areas.

Mechanical: Hand pulling is one mechanical strategy for the removal of small patches of these climbing ferns, however it will regrow from below the cut as well as from hand pulling. Machinery can be used to remove the large mats of foliage that form over vegetation in areas where compaction is not a concern. Fire will kill it back, but regrowth occurs. Fire also causes major damage to the native vegetation as the fire climbs up the vines into the canopy of the trees and shrubs.

Biological: A rust (*Puccinia lygodii*) of *Lygodium* spp. in greenhouses is being looked at as a biological control agent to control Japanese climbing fern, although many of the biological control efforts are focused on old world climbing fern. More studies are being done to determine the efficacy of other biological control agents for Japanese climbing fern.

Chemical: Some research has been conducted on both climbing ferns, and it appears a 2 to 3 % solution of glyphosate (Roundup, etc.) is effective. Another herbicide, metsulfuron (Escort), has been shown to provide excellent control at rates of 0.5 to 1 oz. per acre. Be sure to include a non-ionic surfactant at 0.25% (10 mLs or 2 teaspoons per gallon of spray solution). A combination of these herbicides has provided good control when applied in the fall of the year before a killing frost.

#### REFERENCES AND HELPFUL LINKS:

Invasive Plants of the Eastern United States:

<http://www.invasive.org/eastern/species/3045.html>

Lygodium Management Plan for Florida. A report from the Florida Exotic Pest Plant Council's Lygodium Task Force: [http://www.fleppc.org/Manage\\_Plans/lymo\\_mgt.pdf](http://www.fleppc.org/Manage_Plans/lymo_mgt.pdf)

Center for Aquatic and Invasive Plants: University of Florida: IFAS:

<http://aquat1.ifas.ufl.edu/welcome.html>



## Japanese



- Japanese climbing fern causes major problems in pine plantations
- Trellising into pine trees and covering forest floor



## Old World



- Old World climbing fern has fronds over 90 feet long, reaching into tree canopies, smothering trees and other vegetation



## Leaves

- Japanese climbing fern has finely divided leaflets
- Old World climbing fern has unlobed leaflets that are smooth on underside



## Spore Formation

- Ferns do not produce flowers, but small microscopic spores
- These are formed on special leaves that look distinctly different from regular leaves
- Spore formation for both occurs in late summer

