

Suggested Herbicides*

Dry areas: Herbicides like Brush-B-Gone (triclopyr amine 8%), Brush Killer (triclopyr amine 8.8%), "Ready-to-use" Roundup (glyphosate .96%), Roundup Pro (glyphosate 41%) and Roundup Super Concentrate (glyphosate 41%) are effective and can be purchased at retail garden supply stores. These herbicides should only be used in dry areas. They may not be applied directly to water. Repeat applications may be necessary.

Wet areas: The herbicide Rodeo (glyphosate 53.8%) can be applied directly to the plant when it is growing over water. Repeat applications may be necessary. *(Read and follow all herbicide label directions. It is illegal to use a herbicide in a manner inconsistent with the label's instructions.)*

Follow up is essential: Visit treated areas periodically and look for regrowth. Regrowth should be sprayed with a herbicide.

Non-target damage: These herbicides are not selective. Be careful not to contact desirable plants with these herbicides.

Disposal: Careful disposal of climbing fern yard waste is important. Nearly invisible, fern spores are easily spread by wind. **Fern material should be bagged immediately.** Never discard climbing fern in natural areas. Mulching or composting are not recommended because spores may remain viable for long periods of time.

Physically removing the browned climbing fern after a herbicide treatment can be time consuming and costly, but the thick mats of dead fern can inhibit the growth of other plants. The remaining fern material can also provide a medium for germination of remaining climbing fern spores, a trellis for growth of new plants, and a fuel for fire.

Report all new occurrences in natural areas and provide herbarium voucher specimens as described on the Florida Exotic Pest Plant Council's web site (<http://fleppc.org>).

For more information about Old World climbing fern, visit Florida EPPC's web site at <http://fleppc.org>. For additional photographs see: <http://fleppc.org>, <http://plants.ifas.ufl.edu>, or *Identification & Biology of Non-Native Plants in Florida's Natural Areas* (1998, University of Florida, 1-800-226-1764).

*Mention of a trade name does not constitute a guarantee or warranty of the product. There is no express or implied warranty as to the fitness of any product discussed. Any product trade names that are listed are for the benefit of the reader and the list may not contain all products available due to changes in the market.



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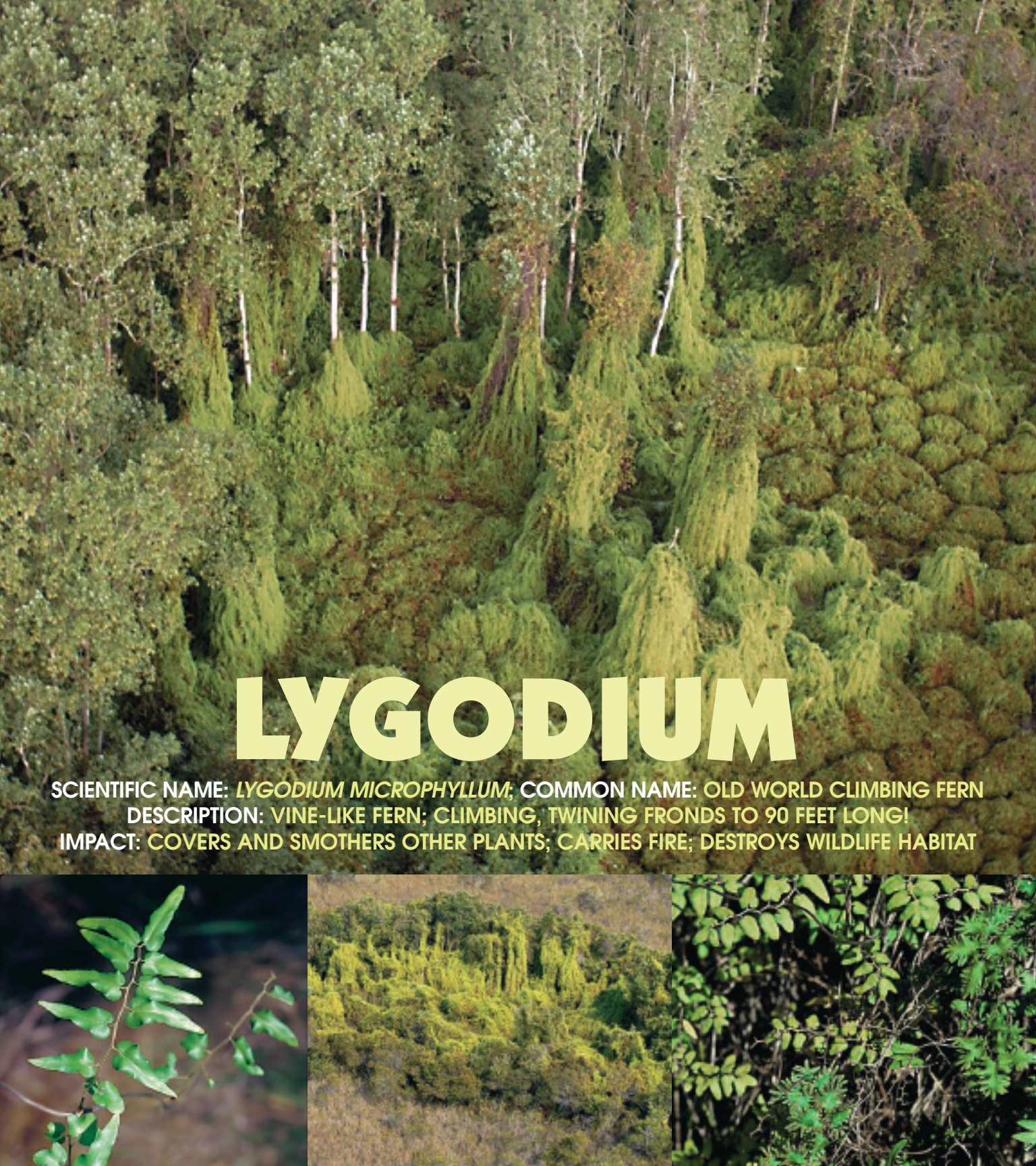
sfwmd.gov

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PLANTS BEHAVING BADLY

Lygodium



LYGODIUM

SCIENTIFIC NAME: *LYGODIUM MICROPHYLLUM*; **COMMON NAME:** OLD WORLD CLIMBING FERN

DESCRIPTION: VINE-LIKE FERN; CLIMBING, TWINING FRONDS TO 90 FEET LONG!

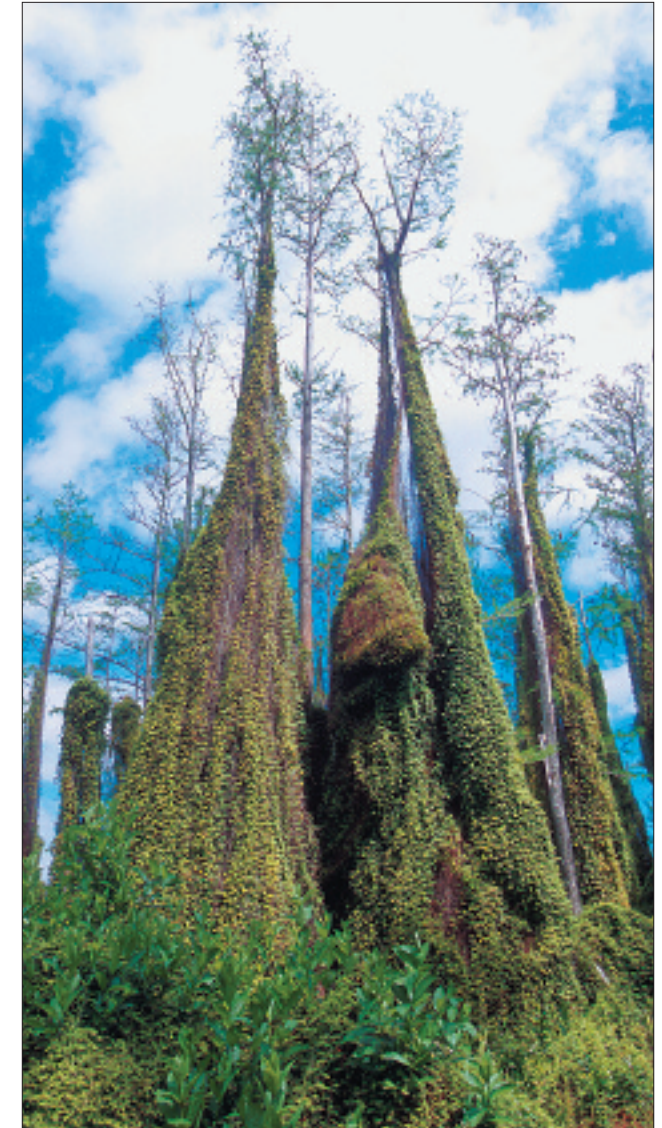
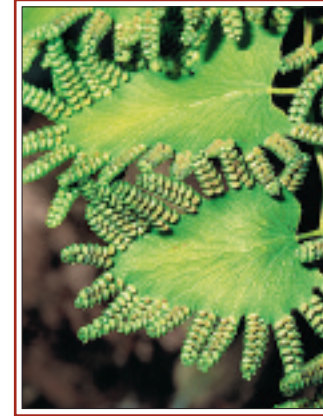
IMPACT: COVERS AND SMOTHERS OTHER PLANTS; CARRIES FIRE; DESTROYS WILDLIFE HABITAT



Be on the Lookout!

In Florida, invasive exotic plants make up as much as 31 percent of the total plant species. An invasive exotic plant is a species that is able to reproduce on its own, has moved beyond the influence of insects and diseases in its land of origin, and which destroys native landscapes. These plants can just keep growing and reproducing, out-competing and displacing native plants and animals and disrupting natural processes such as fire and water flow. All the information to date shows that invasive exotic plants have taken an aggressive hold in Florida and that they are continuing to spread at an alarming rate. Florida's local, state and federal land managers are fighting a constant battle to manage invasive exotic plants on Florida's publicly owned natural areas.

Old World climbing fern, *Lygodium microphyllum*, is native to Asia, Australia and South Africa. It was introduced in Florida prior to 1965. Old World climbing fern was first found in the wild in the late 1960s near Jonathan Dickinson State Park along the Palm Beach and Martin County line. Today, the fern has invaded a wide variety of habitats from cypress domes to pine flatwoods across southern and central Florida. Old World climbing fern has the ability to grow over trees and shrubs and spread horizontally, eventually smothering whole communities of plants. This fern climbs into the canopy of trees, carrying fire into the crowns, and allows fire to burn into communities such as cypress swamps and other bottomland swamps where natural fires are rare.





WEEDBUSTERS LygodiumBEHAVING BADLY

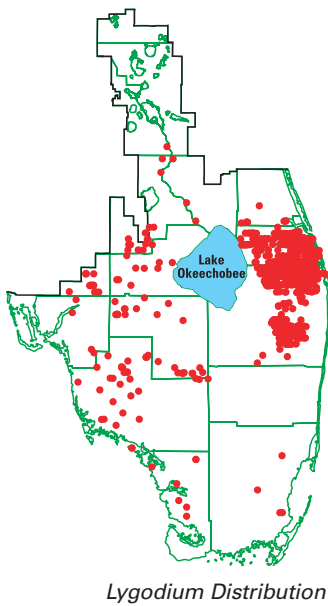
Overview of Problem

Two species of exotic climbing fern (*Lygodium*) have become invasive in Florida since the early 1900s. Old World climbing fern (*L. microphyllum*) is native to wet-tropical and subtropical regions of Asia, Australia and South Africa. It has become a serious weed in South Florida, where it is rapidly increasing in density and range. Japanese climbing fern (*L. japonicum*) is native to temperate and tropical Asia. It occurs from eastern Texas through the southern states to North Carolina and Florida. Both species are recognized Noxious Weeds in the State of Florida, and are therefore illegal to possess, transport and/or cultivate.

Old World climbing fern invades many habitats in South Florida. It reproduces by millions of spores, which can be spread great distances by wind and other physical carriers (i.e. birds). New plants establish, which then grow over trees and shrubs, smothering native plant communities. It is now common in cypress strands and domes, pine flatwoods, freshwater marshes, coastal prairies, mangrove communities, tree islands, and some agricultural areas. The fern twines among and over any available structure, completely blanketing other plants. Fern colonies also develop thick mats of old rachis material (dried stems and roots) on the soil surface. These mats essentially bury native plant communities and severely impair wildlife habitat quality.

Infestations of Old World climbing fern alter fire behavior, which is a naturally occurring element and management tool in many of Florida's plant communities. Thick "skirts" of old fronds wrapped around trees serve as ladders to carry fire into tree canopies, often killing trees that would normally survive periodic fires. Fires that would normally stop at the moist margins of cypress sloughs now burn into and through areas infested with Old World climbing fern. Portions of the burning fern can also break free and "kite" fire to new areas on heat plumes.

Previous experience with other highly invasive plants (such as melaleuca) has shown that plant populations tend to reach a "critical mass" of coverage and then begin an exponential rate of expansion, often spreading faster than management efforts can be effectively instituted. Old World climbing fern has reached such a critical mass in South Florida. Resource managers and private landowners are reporting these plants on private and public lands in increasing frequency and magnitude regionwide. Particularly alarming is the fact that this species is establishing in extremely remote and undisturbed areas that were previously thought to be somewhat resistant to exotic plant invasions. The fern's minute windblown spores have allowed the plant to establish significant populations on tree islands in the Everglades, remote cypress domes in the Big Cypress National Preserve, and in backcountry areas of Everglades National Park. Biannual surveys conducted by the South Florida Water Management District estimate that Old World climbing fern has more than doubled its coverage in just two years!



How to Identify

Old World climbing fern plants consist of long, twining fronds to 90 feet long. Rhizomes (underground stems), and rachis (main stem of the frond) are dark brown to black and wiry. Leafy branches off the rachis are 2 to 5 inches long with several pairs of leaflets (pinnules). Fertile leaflets are fringed with tiny lobes of enrolled leaf tissue along the leaf margin, which cover the reproductive tissues.

Where to Look

Infestations of Old World climbing fern are most likely to occur in central and south Florida and have been reported as far north as Hillsborough and Brevard counties. This fern commonly invades moist habitats, but also grows in shallow water and dry areas, and in both pristine and disturbed conditions. Young plants are often found on moist portions (moss collars) of tree buttresses.

How to Stop the Spread

Climbing fern control options include preventative, herbicidal, biological, mechanical and physical methods. Biological control holds the key to effective long-term regional management of this species. Initial overseas searches have been conducted for biocontrol agents in the fern's native range. Even after potential agents have been isolated, screened, and released – which may take more than a decade – it may take several more years for the agents to build up effective populations.

In the interim, and during the biological control introduction phase, a combination of preventative, herbicidal, mechanical and physical control measures will be required to reduce infestations and prevent colonization of un-infested areas. It is extremely important to identify and treat small populations of exotic climbing fern before they become substantial infestations. Early detection and treatment is key to successful and economical management of this plant.

Treatment of individual plants is the most conservative and effective approach in natural areas, but locating, accessing and treating individual plants can be extremely time-consuming. Thus, less time-consuming and costly methods of herbicide application are constantly being investigated.

Cutting vines will result in death of the vines above the cut location, but will not kill the lower portion of the plant. Regrowth will occur after physical removal (hand-pulling) or burning. Flooding does not kill established vines but seems to prevent germination of spores on flooded soils. Use of heavy equipment has limited value because site access is often limited, and equipment can disturb soils and non-target vegetation as well as transport spores to new locations. Control requires application of herbicide, which should only be applied by those knowledgeable in the use.

Contact the Institute of Food and Agricultural Sciences (IFAS) Pesticide Information Office, (352) 392-4721, for information on pesticide applicator training. See IFAS Publication SP242, "Control of Non-native Plants in Natural Areas of Florida" for specific methods to control climbing ferns and other invasive plant species in natural areas, and SP295, "Natural Area Weed Management – A Training Manual for Restricted Use Pesticide Applicators" for technical information about the use of herbicides in natural areas. These publications can be purchased by calling (352) 392-1764 or ordered online at <http://ifasbooks.ufl.edu>. A fact sheet with current control recommendations for homeowners can be found at www.fleppc.org/ly101.htm, and a management plan for land managers can be found at www.fleppc.org/Exotic_Guides/Lyg_control.htm.

UNWANTED:A GALLERY OF INVASIVE EXOTIC PLANTS OF SOUTH FLORIDA

