

Remote Infestations of *Lygodium microphyllum*: A Case Study at Everglades National Park

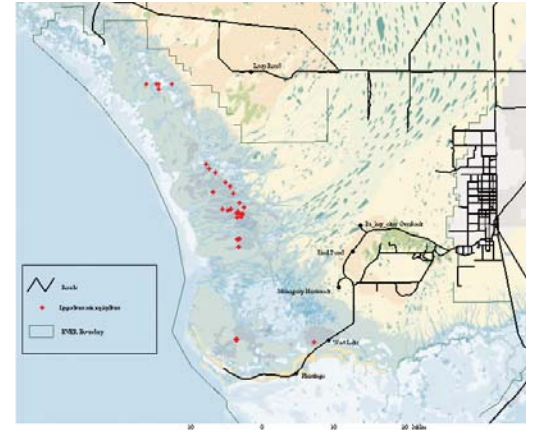
by Jonathan Taylor, Everglades National Park

Lygodium (*Lygodium microphyllum*) or Old World climbing fern was first found in Everglades National Park in 1999. At that time, the gross infested area was estimated at 200 acres. Since 1999, the Park has aerially treated 3,650 acres of lygodium. However, despite these efforts, Old World climbing fern has expanded its range. Treatments with both prescribed fire and herbicide have suppressed the formation of dense stands and reduced above ground biomass. Nevertheless, in 2005, the gross infested area was estimated at 10,000 acres.

Every two years systematic reconnaissance flights (SRF) have been used to track

the distribution of lygodium. Informal reconnaissance is conducted randomly by Everglades National Park employees, researchers, and volunteers. In addition, reconnaissance flights are flown prior to aerial treatments to prioritize sites and evaluation flights are flown post-treatment to evaluate treatment efficacy.

Old World climbing fern is found predominantly in remote western portions of the Everglades National Park from Cape Sable to Everglades City. The most affected areas are best described as coastal sparsely wooded prairies dominated by sawgrass (*Cladium jamaicense*), spartina (*Spartina bakeri*) and juncus (*Juncus roemerianus*). Old World climbing fern



2001

germinates readily on the tussocks created by these species. Lygodium grows upon the mangroves and hardwoods that delineate the affected prairies, but the infestations do not appear to start in these wooded areas. In 2003, very small discrete populations of the fern were found and treated at the base of melaleuca trees (*Melaleuca quinquenervia*) and within two tree islands in northeast Shark River Slough. In 2005, an individual plant was found and treated in Mahogany Hammock.

Aerial herbicide application is currently the best treatment method for Old World climbing fern. Infested areas are remote and access to them is almost uniquely limited to helicopters. Landing ground crews to treat the infestations is problematic since most of the affected areas do not have suitable landing sites for helicopters. For those areas that do have relatively suitable landing sites, ground crews could only work under the driest of conditions. Even then, it is unclear how long the deep peat soils could reasonably support sustained foot traffic between infested areas and the landing site. The dense vegetation would be an additional hurdle the work crews would have to overcome.

From 1999 to 2002, aerial treatments of lygodium involved the use of Rodeo (glyphosate). While lygodium was controlled, all native plants also were killed and the treated areas were re-colonized

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almost exclusively by lygodium. Native plants have not recovered in Rodeo treated areas. Therefore, in 2003 a request was made to the Florida Exotic Pest Plant Council to convene a meeting of the Lygodium Task Force to seek advice on alternative herbicides that would be more selective. The meeting concluded with a recommendation to use the herbicide Escort (metsulfuron methyl), known to be somewhat selective in sparing grasses and some broadleaf woody species.

Since 2003, Escort has been used to effectively treat Old World climbing fern. Grass species have not been noticeably affected. Woody species scattered in the prairies or around the fringes of the treatment areas (e.g., bay trees (*Persea* spp.), wax myrtle (*Myrica cerifera*) and buttonwoods (*Conocarpus erectus*)), appear unharmed. However, non-target affects were not completely avoided. Both native ferns and cabbage palms (*Sabal palmetto*) were killed by Escort treatments. Nonetheless, Escort has proven better than other herbicides.

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