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Animal and Plant Health Inspection Service

Field Release of *Cataclysta camptozonale* (Lepidoptera: Crambidae), an Insect for Biological Control of Old World Climbing Fern (*Lygodium microphyllum*), in the Continental United States

Environmental Assessment, August 2004

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Table of Contents

1. Purpose and Need for Proposed Action 1

2. Alternatives Including the Proposed Action 3

3. Affected Environment 4

4. Environmental Impacts of the Proposed Action and Alternatives 7

5. List of Preparers 10

6. Listing of Agencies and Persons Consulted 11

7. List of Reviewers 11

8. References Cited 11

Appendix 1 13

1. Purpose and Need for Proposed Action

1.1 The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), is proposing to issue a permit to a USDA, Agricultural Research Service (ARS) researcher for release of a nonindigenous moth, *Cataclysta camptozonale* (Hampson) (Lepidoptera: Crambidae). The agent would be used by the applicant for the biological control (biocontrol) of Old World climbing fern, *Lygodium microphyllum* (Cav.) R. Br. (Lygodiaceae) in Florida. Before a permit is issued for release of *C. camptozonale*, APHIS must analyze the potential impacts of the release of this agent into the continental United States.

The proposed biocontrol agent, *C. camptozonale,* is a moth in the insect family Crambidae and is native to Australia. The adult moth lays eggs in small clusters on leaflets of the target weed, *L. microphyllum.* Eggs hatch in 6-7 days. Larvae feed on leaves of *L. microphyllum* for approximately 11-12 days. Older larvae spin a loose web of silk on leaves of the weed and pupate. Pupae develop to adults in 7-9 days. Adult moths are white with tan and black markings.

1.2 The applicant's purpose for releasing *C. camptozonale* is to reduce the severity of infestations of *L. microphyllum* in Florida. *L. microphyllum* is a climbing fern that belongs to the plant family Lygodiaceae. However, other authors consider the plant to belong to the plant family Schizaeceae that includes several additional genera, such as *Achinostachys* and *Anemia*. *L. microphyllum* has a large native range, extending through much of the Old World tropics, spanning almost half of the world's circumference from 18°E in Senegal to 150°W in Tahiti between the latitudes of 29°S in Australia and 27°N in northeastern India. It has been introduced into Jamaica, Guyana, and southern and central Florida. *L. microphyllum* is now well established in central and southern peninsular Florida where it grows in a number of wetland and mesic (having a moderate supply of moisture) habitats including hammocks, cypress swamps, flatwoods, bayheads, and disturbed sites. The potential distribution in Florida of this climbing fern includes all habitats in southern Florida from Lake Okeechobee south.

In 1973, *L. microphyllum* was limited to small portions of Martin and Palm Beach Counties along the eastern coast and to some sites in the inland Highlands County in Florida. By 1993, it had expanded greatly in Martin and Palm Beach Counties and was also found in Glades County for an

estimated infestation of 11,213 hectares. In 1997, an estimated 15,892 hectares were infested in 15 counties from coast to coast along the southern half of the Florida peninsula. By January 2002, the infestation was estimated at more than 40,470 hectares and is still expanding. The weed is a severe problem in many parks and preserves in south Florida including Loxahatchee National Wildlife Refuge, the Panther Refuge, Audubon Corkscrew Sanctuary, J. Dickinson Park, Fakahatchee Strand Preserve State Park, and Everglades National Park. First detected in Everglades National Park in 2001, the weed occupies an estimated 900 hectares of coastal marsh spread over 40 miles. Among the most invaded communities are Everglades tree islands. A recent model predicts that the climbing fern has the potential to occupy most of the cypress swamps and Everglades tree islands in the southern third of Florida by 2009 (Buckingham *et al.*, 2003).

L. microphyllum climbs over plants, including tall trees, forming massive walls of vegetation. It forms thick mats on the ground that smother native plants. Fires can be carried quickly to the tops of trees by burning fern and then spread by the floating, burning pieces. Because it reproduces by millions of spores spread by wind and other physical carriers, new infestations can arise great distances from existing populations. Young *L. microphyllum* plants are often found on moist portions (moss collars) of tree buttresses.

In the continental United States, *L. microphyllum* also has the potential to invade the Gulf Coast of Mexico and southern Texas with its wind borne spores (Pemberton *et al.,* 2002). A single spore carried by the wind is capable of starting a new infestation (Buckingham *et al.*, 2003).

Before a permit is issued for release of *C. camptozonale*, APHIS needs to analyze the potential effects of the release of this agent into the continental United States.

1.3 APHIS must decide among the following alternatives:

A. To deny the permit application (no action),
B. To issue the permit as submitted, or
C. To issue the permit with management constraints or mitigation measures.

1.4 Issues arising from the field release of *C. camptozonale* are:

A. Will *C. camptozonale* attack non-target plants within and outside of the area infested with *L. microphyllum*?

B. Will *C. camptozonale* affect any federally listed threatened or endangered species or other species of special concern?

1.5 The pending application for release of this biocontrol agent into the environment was submitted in accordance with the provisions of the Plant Protection Act (7 United States Code (U.S.C.) 7701 *et seq*.). This environmental assessment (EA) was prepared by APHIS in compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq*.) as prescribed in implementing regulations adopted by the Council on Environmental Quality (40 Code of Federal Regulations (CFR) 1500–1509), by USDA (7 CFR 1b), and by APHIS (7 CFR 372).

2. Alternatives Including the Proposed Action

2.1 This chapter will explain the alternatives available to APHIS. Although APHIS' alternatives are limited to a decision on whether to issue a permit for release of *C. camptozonale*, other methods available for control of *L. microphyllum* are also described. These control methods are not decisions to be made by APHIS and may continue whether or not a permit is issued for environmental release of *C. camptozonale*. These are methods presently being used to control *L. microphyllum* by public and private concerns and are presented to provide information to the reader.

2.2 Description of APHIS' alternatives.

2.2.1 Alternative 1 - No Action: Under this alternative, APHIS would not issue a permit for the field release of *C. camptozonale* for the control of *L. microphyllum*. The release of this biocontrol agent would not take place.

2.2.2 Alternative 2 - Issue the Permit: Under this alternative, APHIS would issue a permit for the field release of *C. camptozonale* for the control of *L. microphyllum*. This permit would contain no special provisions or requirements concerning release procedures or mitigating measures.

2.2.3 Alternative 3 - Issue the Permit with Specific Management Constraints and Mitigating Measures: Under this alternative, APHIS would issue a permit for the field release of *C. camptozonale* for the control of *L. microphyllum*. However, the permit would contain special provisions or requirements concerning release procedures or mitigating measures.

2.3 The following alternatives are presently being used to control *L. microphyllum*. These controls will continue under the "No Action" alternative but may continue even if a permit is issued for release of *C. camptozonale.*

2.3.1 Chemical Control. Ferriter (2001) summarizes current control methods and reports that various herbicides have given excellent control of *L. microphyllum* vines but that regrowth and nontarget damage usually occur. The herbicides glyphosate (Rodeo®), triclopyr (Pathfinder ®, Garlon®), 2,4-D (Weedar®, Vanish®), fosamine (Krenite®), and imazapyr (Arsenal ®) are used for control of *L. microphyllum*.

2.3.2 Mechanical Control. 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. Use of heavy equipment has limited value because site access is often limited, and equipment can disturb soils and non-target vegetation and transport spores to new locations.

2.3.3 Flooding. Flooding does not kill established vines but seems to prevent germination of spores on flooded soils.

3. Affected Environment

3.1 Plants related to *L. microphyllum*

The genus *Lygodium* occurs in tropical areas with 30-40 species worldwide (Wikström *et al.*, 2002). There is only one native *Lygodium* species in North America, *L. palmatum*. This species is state-listed as threatened in Maryland, state-listed as endangered in Indiana, Michigan, New York, and Vermont, a plant of special concern in Connecticut and Massachusetts, and a rare plant in Pennsylvania, but is not federally-listed. There is also an invasive Asian species in the United States, *L. japonicum*, which Florida considers a noxious weed.

Additional species of *Lygodium* are native to the Caribbean area and Central and South America. These species could be threatened by natural dispersal from large *C. camptozonale* populations in southern Florida or by dispersal through trade or transportation. These species include *L. cubense* Kunth, *L. heterodoxum* Kunze, *L. oligostachyum* (Willd.) Desv., *L. venustum* Sw., and *L. volubile* Sw.

Pemberton (1998) discussed *Lygodium* and its relationship to other ferns. The genus *Lygodium* has been placed in the family Schizaeaceae (Wunderlin and Hansen, 2000), along with two Florida native genera, *Actinostachys* and *Anemia*. In this EA, we follow Wagner and Smith (1993) who place the genus *Lygodium* in the family Lygodiaceae, the genus *Anemia* in the family Anemiaceae, and the genus *Actinostachys* in the family Schizaeaceae.

There are six species of pineland ferns in the genus *Anemia* in North America and Puerto Rico: *Anemia adiantifolia* (L.) Swarz, *Anemia hirsuta* (L.) Sw., *Anemia hirta* (L.) Sw., *Anemia mexicana* Klotzsch, *Anemia portoricensis* Maxon, and *Anemia wrightii* Baker. There is one North American species within the genus *Actinostachys, A. pennula* (Swartz) Hooker (also considered by some authors to be *Schizaea pennula* Swartz). There are 4 other species of *Schizaea* in North America: *S. fluminensis* Miers ex Sturm, *S. poeppigiana* Sturm, *S. pusilla* Pursh, and *S. robusta* Baker.

3.1.2 Distribution of Taxonomically Related Plants:

Lygodium palmatum is a temperate species ranging along the Appalachian Mountains throughout the eastern United States. It is generally local and rare except for the Cumberland Plateau of Kentucky and Tennessee where it is locally abundant in poorly drained, acidic soils, especially after disturbance. It occurs in woods, thickets, and bog margins in humus-rich, acid soils (Naumann, 1993). The southernmost limits appear to be northeastern Alabama (Cherokee County) and near Charleston, South Carolina. (probably from ornamental plantings). Its presence in Florida has never been confirmed and is doubtful (Nelson, 2000).

Lygodium japonicum occurs in Asia and Queensland, Australia (Ferriter, 2001). In the United States it is naturalized in the warmer regions of all coastal states from Texas to Virginia including the southern part of Arkansas. It occurs in wet woods, marshes, roadside ditches, riverbanks, and other wet, disturbed sites (Naumann, 1993).

Pemberton (1998) has reported the following *Lygodium* distributions: *L. cubense* occurs in Cuba, *L. heterodoxum* occurs in southeastern Mexico and Central America, *L. oligostachyum* occurs in Cuba and Hispaniola, *L. venustum* occurs in southwestern Brazil though South America, Central America, Cuba, Grenada, Hispaniola, Jamaica, Mexico, and Trinidad, and *L. volubile* occurs in northern Argentina to northern South America, Cuba, Guatemala, Jamaica, and Trinidad.

Actinostachys (*Schizaea*) *pennula* is reported only from Dade and Palm Beach Counties at the tip of the Florida peninsula and from Pinellas County near Tampa in damp forests and open baylands (Naumann, 1993).

Schizaea pusilla is reported from Delaware, New Jersey, and New York in the United States and from New Brunswick, New Caledonia, and Newfoundland in Canada, occurring in bogs, wet, sandy depressions, and crevices of ledges along shores (Naumann, 1993). *S. fluminensis* and *S. poeppigiana* are reported from Puerto Rico. *S. robusta* is reported from Hawaii.

Anemia wrightii is reported only from Dade County, Florida, on the tip of the peninsula. *A. adiantifolia* is reported from the 4 southernmost counties on the Florida peninsula plus the contiguous Palm Beach and Martin Counties and from 3 contiguous central counties along the coast: Citrus, Hernando, and Levy. It occurs in open to lightly shaded, rocky slopes and in hammocks and pine woods, often on limestone (Naumann, 1993). *A. mexicana* is reported only from Texas in lightly shaded limestone outcrops of the Edwards Plateau (Naumann, 1993). *A. hirsuta, A. hirta*, and *A. portoricensis* are reported from Puerto Rico.

3.2 Evidence of host specificity of *C. camptozonale.*

C. camptozonale is specific to a few *Lygodium* species in choice and no choice host specificity tests conducted in Australia and Florida (Buckingham *et al.*, 2003). There was no appreciable larval development on any of the other 36 genera in 23 families of ferns and their allies (see appendix 1 for a list of plants tested). Even on *Lygodium*, larvae developed to adults on only two of the six non-host species, *L. palmatum* and *L. japonicum* (Buckingham *et al.*, 2003). In Australia there are only two field host plants, *L. microphyllum* and *L. reticulatum*. The lack of larval development on the 4 species of Caribbean *Lygodium* indicates that *C. camptozonale* poses no danger to those plants even if the moth is able to migrate to those areas.

3.3 Threatened and Endangered Plant Species:

No species of ferns belonging to Lygodiaceae or Schizaeceae are federally listed species. Relatively few North American ferns and fern allies are listed species. Of the six listed species, all are members of plant families distantly related to Lygodiaceae or Schizaeceae (Isoetaceae, Dryopteraceae, Aspleniaceae and Thelypteridaceae). Puerto Rico has eight federally listed ferns but all are in families unrelated to Lygodiaceae or Schizaeceae. The

listed species belong to Adiantaceae, Aspleniaceae Cyatheaceae, Dryopteraceae, Lomariopsidaceae, and Thelypteridaceae. Hawaii has 11 federally listed ferns and fern allies but all belong to families that are unrelated to Lygodiaceae or Schizaeceae. These listed species belong to the Adiantaceae, Aspleniaceae Cyatheaceae, Dryopteraceae, Grammitidaceae, Lomariopsidaceae, Lycopodiaceae, Marsileaceae, and Thelypteridaceae.

4. Environmental Impacts of the Proposed Action and Alternatives

4.1 This chapter will analyze the potential environmental consequences of each alternative on the resources described in Chapter 3.

4.2 Effects of Alternative 1 - No Action

4.2.1 Effects on Non-Target Organisms: The continued use of chemical herbicides and mechanical controls at current levels would be a result if the "no action" alternative is chosen. In addition to being expensive, control tactics based entirely on the use of herbicides can lead to negative environmental side effects including undesirable chemical residues both in the ecosystem (soil, water) as well as adverse effects on non-target organisms. Herbicides and cutting of vines only provide temporary weed suppression, and in addition to being expensive, they can cause a great deal of non-target damage, and spread spores to new locations.

4.2.2 Effects on Threatened and Endangered: Impact on threatened and endangered species as a result of chemical and mechanical control would be similar to effects on non-target species and habitats described in section 4.2.1.

4.3 Effects of Alternative 2 - Issue Permit

4.3.1 Effects on Non-Target Organisms: *C. camptozonale* is specific to only a few species in the genus *Lygodium*. There was no appreciable larval development on any of the other 36 genera in 23 families of ferns and their allies. Even on *Lygodium*, larvae developed to adults on only two of the six non-host species, *L. palmatum* and *L. japonicum*. The lack of larval development on the 4 species of Caribbean *Lygodium* indicates that *C. camptozonale* poses no danger to those plants even if the moth is able to migrate to those areas. On the contrary, the moth might be a potential control agent if the climbing fern invades the Caribbean islands.

The native plant *L. palmatum* supported development of *C. camptozonale.* However, the moth is a subtropical species and *L. palmatum* is a temperate species not found in Florida. The moth will survive in USDA Plant Hardiness Zones 10 and 9b(USDA, ARS, 1990). Zone 7a (the southernmost zone reported for establishment of the native *L. palmatum*) is too cold for *C. camptozonale* and would not permit its survival (Buckingham *et al.*, 2003).

The predicted distribution of *C. camptozonale*, based on its known host range in Australia, is limited to Florida south of Tampa and to the Lower Rio Grande Valley of Texas, although *L. microphyllum* currently does not occur in Texas. There has been no indication of a winter diapause (dormancy) in the field; the moth is active throughout the year. There is some indication that it might have a summer aestivation (cessation or slowing of activity) in Australia during hot, dry periods (Buckingham *et al.*, 2003).

4.3.2 Impact on Threatened and Endangered Species: *C. camptonozale* is able to use only a few *Lygodium* species as host plants. It is a subtropical species known only to attack *L. microphyllum* and the closely related *L. reticulatum* in its native Australia. In host specificity testing, *C. camptonozale* was able to complete its life cycle only on three *Lygodium* species; the target weed (*L. microphyllum*), Japanese climbing fern (*L. japonicum*) an introduced weed, and the native *L. palmatum*.

North America. *C. camptonozale* occurs only in subtropical and tropical Australia. Studies examining the moth's ability to survive at lower temperatures indicate that it will be unable to survive in USDA cold hardiness zone 9a (Buckingham *et al.*, 2003). The six listed North American ferns and fern allies live in colder zones.

Puerto Rico and the Virgin Islands. The climate in this area is suitable for the moth but there is no likely pathway from Florida to Puerto Rico and the Virgin Islands. *L. microphyllum* does not occur on the Caribbean islands except for one small population that has escaped a botanical garden in Jamaica. The four native Caribbean *Lygodium* species, which were found to be unsuitable for the moth's development in host specificity testing, do not occur in Puerto Rico or the Virgin Islands. *L. japonicum*, a developmental host of the moth, is naturalized to a limited extent on Puerto Rico. Purposeful introduction of *C. camptozonale* would be unlikely because *L. japonicum* is not weedy in Puerto Rico.

Hawaii. The climate of Hawaii is also suitable for the moth but natural or purposeful spread from Florida to Hawaii would be unlikely. *L.*

microphyllum does not occur in Hawaii and there are no native *Lygodium* species in Hawaii. *L. japonicum*, which is a developmental host of the moth, occurs sparingly as a naturalized plant on Hawaii.

Biological control of *L. microphyllum* may reduce the weed's dominance in the wetland natural habitats it occupies and may potentially limit its spread to uninfested areas. ++The U.S. Fish and Wildlife Panther Refuge in southwestern Florida has been invaded by *L. microphyllum*.

The endangered Everglades snail kite (*Rostrhamus sociabilis plumbeus*) and the endangered wood stork (*Mycteria americana*) make important use of habitats currently invaded or highly vulnerable to invasion by *L. microphyllum*.

The Everglades snail kite nests primarily in willows (91.6% of the time) (FWS, 1999) near water with emergent vegetation suitable for the kite's primary prey, the apple snail. This willow (*Salix caroliniana*) habitat within the Everglades, especially with fringing emergent vegetation, very commonly occurs on Everglades tree islands, one of the habitats most invaded by *L. microphyllum*.

The preferred nesting sites for wood storks are cypress groves, the second most invaded habitat type for *L. microphyllum*. Among the important wood stork cypress forest invaded by the weed is Audubon's Corkscrew Sanctuary in the western part of the Everglades.

APHIS has determined that *C. camptozonale* will have no effect on any listed species because of the very limited host range of the moth, the taxonomic separation between the target weed and listed ferns and fern allies, the inability of the moth to live in the climatic zone where North American listed ferns and fern allies occur, and the geographic distance between Florida and Puerto Rico and Hawaii where other listed ferns and fern allies occur. In Florida, there may be a benefit to certain listed species, such as the Florida panther, wood stork and Everglades snail kite, if the moth is successful in effectively suppressing *L. microphyllum.*

4.4 Effects of Alternative 3 - Issue the Permit with Specific Management Constraints and Mitigating Measures

4.4.1 Effects on Non-Target Organisms: No specific management constraints or mitigating measures have been recommended for this species. Therefore, under this alternative, impacts on non-target organisms would be identical to those described in 4.3.1.

4.4.2 Effects on Threatened and Endangered Species: No specific management constraints or mitigating measures have been recommended for this species. Therefore, under this alternative, impacts on threatened and endangered organisms would be identical to those described in 4.3.2.

4.5 No disproportionate effects are expected for minority, low income populations, or children due to the release of *C. camptozonale*. Potential reduction in herbicide usage to control *L. microphyllum* may result in beneficial effects to humans and the environment, decreasing health risks.

4.6 An unavoidable effect of the proposed action would be the lack of complete control of the target pest. Should the proposed action be unsuccessful, the present chemical and mechanical control activities would continue. *L. microphyllum* would continue to expand into areas presently uninfested.

4.7 Once a biological control agent such as *C. camptozonale* is released into the environment and it becomes established, there is a slight possibility it could move from the target plant to non-target plants and itself become a pest. Host shifts by introduced weed biocontrol agents to unrelated plants are uncommon (Pemberton, 2000). However, if a host shift were to take place, the resulting effects could be environmental impacts that may not be easily reversed. Biological control agents such as *C. camptozonale* generally spread even without the agency of man. In principle, therefore, release of these insects at even one site must be considered equivalent to release over the entire area in which potential host plants occur and in which the climate is suitable for reproduction and survival. Post- release evaluations of moth populations and their effects on *L. microphyllum* will be conducted for several years by ARS researchers after initial release in Florida.

5. List of Preparers

This environmental assessment was prepared by Dr. Gary Buckingham, USDA-ARS, Invasive Plant Research Laboratory, Gainesville, FL, Dr. Robert Pemberton, USDA-ARS, Invasive Plant Research Laboratory, Ft. Lauderdale, FL, Dr. John Goolsby, USDA-ARS, Australian Biological Control Laboratory, and Dr. Tracy Horner, Entomologist, USDA-APHIS - Policy and Program Development, Riverdale, Maryland.

6. List of Agencies Consulted

The Technical Advisory Group for the Biological Control Agents of Weeds (TAG) recommended the release of *Cataclysta camptozonale* on December 3, 2003. TAG members that reviewed the release petition (Buckingham *et al.,* 2003) included representatives from the U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Cooperative State Research, Education, and Extension Service, National Park Service, Environmental Protection Agency, Agricultural Research Service, Bureau of Land Management, U.S. Forest Service, the U.S. Army Corps of Engineers, Bureau of Reclamation, and Agriculture and Agri-food Canada.

7. List of Reviewers

This document was reviewed by Dr. Robert Flanders, Pest Permit Evaluation Branch Chief, USDA-APHIS-Plant Protection and Quarantine, Riverdale, MD.

8. References Cited

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Appendix 1. Plants tested for host specificity to *C. camptozonale* (Buckingham *et al.*, 2003).

Pteridophytes	
Anemiaceae	
Anemia adiantifolia	pine fern*
Anemia wrightii	Wright's pineland fern (E)*
Aspleniaceae	
Asplenium nidus	bird's-nest fern
Asplenium platyneuron	ebony spleenwort*
Asplenium scolopendrium	Hart's-tongue fern (FT)
Azollaceae	
Azolla caroliniana	mosquito fern*
Blechnaceae	
Blechnum serrulatum	swamp water fern*
Woodwardia areolata	netted/narrow leaf chain fern*
Woodwardia virginica	Virginia chain fern*
Cyatheaceae	
Cyathea cooperi	Australian or Cooper tree fern
Dennstaedtiaceae	
Hypolepis muelleri	bramble fern
Pteridium aquilinum	bracken fern*
Dryopteridaceae	
Ctenitis sloanei	Florida tree fern (E)*
Cyrtomium falcatum	Japanese holly fern
Polystichum acrostichoides	Christmas fern*
Rumohra adiantiformis	leatherleaf fern
Tectaria fimbriata	least halberd (E)*
Tectaria heracleifolia	broad halberd (T)*
Nephrolepis biserrata	giant sword fern (T)*
Nephrolepis cordifolia	tuberous sword fern
Nephrolepis exaltata	wild Boston fern *
Equisetaceae	
Equisetum hyemale	rough horsetail*
Gleicheniaceae	
Sticherus flabellatus	St. John
Lycopodiaceae	
Lycopodiella cernua	
Lygodiaceae	
Lygodium cubense	
Lygodium japonicum	Japanese climbing fern
Lygodium microphyllum	Old World climbing fern
Lygodium oligostachyum	
Lygodium palmatum	American climbing fern

Lygodium venustum	
Lygodium reticulatum	
Lygodium volubile	
Marsileaceae	
Marsilea vestita	water clover
Ophioglossaceae	
Ophioglossum nudicaule	slender adders-tongue*
Osmundaceae	
Osmunda cinnamomea	cinnamon fern*
Osmunda regalis	royal fern*
Parkeriaceae	
Ceratopteris thalictroides	
Polypodiaceae	
Athyrium filix-femina	lady fern (T)*
Campyloneurum phyllitidis	Florida strap fern*
Phlebodium aureum	goldfoot fern*
Platycerium bifurcatum	staghorn fern
Platycerium hillii	
Pleopeltis polypodioides	resurrection fern*
Psilotaceae	
Psilotum nudum	whisk fern*
Pteridaceae	
Acrosticium speciosum	mangrove fern
Adiantum capillus-veneris	southern maidenhair fern*
Pteris bahamensis	Bahama ladder brake (T)*
Salviniaceae	
Salvinia minima	water fern*
Salvinia molesta	giant salvinia
Schizaeaceae	
Actinostachys pennula	ray spiked fern (E)*
Schizaea bifida	grass fern
Selaginellaceae	
Selaginella emmelliana	
Selaginella pallescens	peacock fern
Selaginella uncinata	Spring blue spike-moss
Thelypteridaceae	
Thelypteris kunthii	Southern shield fern*
Thelypteris patens	grid-scale maiden fern (E)*
Vittariaceae	
Vittaria lineata	shoestring fern*

Gymnosperms

Cupressaceae	
Taxodium distichum	bald-cypress*

Cultivated Plants

Asteraceae	
Lactuca sativa	lettuce
Brassicaceae	
Brassica oleracea	broccoli
Cucurbitaceae	
Cucurbita moschata	Japanese pumpkin
Fabaceae	
Phaseolus vulgaris	bean
Poaceae	
Oryza sativa	rice
Saccharum officinarum	sugarcane
Rutaceae	
Citrus sinensis	sweet orange
Solanaceae	
Capsicum annuum	sweet pepper

* = Florida native species, E = Florida endangered species, T = Florida threatened species, FT = Federally threatened species.

Decision and Finding of No Significant Impact
for
Field Release of *Cataclysta camptozonale* (Lepidoptera: Crambidae), an Insect for Biological Control of Old World Climbing Fern (*Lygodium microphyllum*), in the Continental United States
Environmental Assessment
August 2004

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), is proposing to issue permits for release of a nonindigenous moth, *Cataclysta camptozonale* (Hampson) (Lepidoptera: Crambidae) in the continental United States. The agent would be used by the applicant for the biological control of Old World climbing fern, *Lygodium microphyllum* (Cav.) R. Br. (Lygodiaceae) in Florida. APHIS has prepared an environmental assessment (EA) that analyzes the potential environmental consequences of this action. The EA is available from:

U.S. Department of Agriculture
Animal and Plant Health inspection Service
Plant Protection and Quarantine
Biological and Technical Services
4700 River Road, Unit 133
Riverdale, MD 20737

The alternatives available to APHIS are No Action (no permits), Issue Permit, and Issue Permit with Management Constraints or Mitigating Measures. Because of the action being proposed by APHIS, the Issue Permit and the Issue Permit with Management Constraints or Mitigating Measures alternatives will result in the release of the biological control agent into the environment. APHIS has therefore analyzed the potential effects of the release of the agent into the environment. The No Action alternative, as described in the environmental assessment, would likely result in the continued use at the current level of chemical and mechanical control methods for the management of Old World climbing fern. These control methods described are not alternatives for decisions to be made by APHIS, but are presently being used to control Old World climbing fern in the United States and may continue regardless of permit issuance for field release for *C. camptozonale*.

I have decided that an environmental impact statement need not be prepared for any of the alternatives. I have decided to authorize the PPQ permit unit to issue permits for the field release of *C. camptozonale* without management constraints or mitigating measures. The reasons for my decision are:

1) This biological control agent is sufficiently host specific and poses little, if any, threat to the biological resources of the continental United States.

2) This species will not disproportionately affect minority or low- income populations, nor will they disproportionately affect children or result in any environmental health risks or safety risks to children.

3) *C. camptozonale* poses no threat to the health of humans or wild or domestic animals.

4) *C. camptozonale* will not affect any endangered or threatened species or their habitats.

While there is not total assurance that the release of *C. camptozonale* into the environment will be reversible, there is no evidence that this organism will cause any adverse environmental effects.

Based on the analysis found in the EA, I find that none of the alternatives will have a significant impact on the quality of the human environment and an environmental impact statement need not be prepared.

/s/
Michael J. Firko August 17, 2004
Assistant Director
APHIS Plant Health Programs
Plant Protection and Quarantine