

CANDIDATE AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Sideroxylon reclinatum* Michx. ssp. *austrofloridense* (Whetstone) Kartesz & Gandhi

COMMON NAME: Everglades bully

LEAD REGION: 4

INFORMATION CURRENT AS OF: February 12, 2003

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: \_\_\_\_

90-day positive - FR date: \_\_\_\_

12-month warranted but precluded - FR date: \_\_\_\_

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: \_\_\_\_

New LP: \_\_\_\_

Latest Date species became a Candidate: \_\_\_\_

Candidate removal: Former LP: \_\_\_\_ (Check only one reason)

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of *Species*.@

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering plants, Sapotaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: U.S.A. (FL)

CURRENT STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: U.S.A. (FL)

LEAD REGION CONTACT (Name, phone number):

LEAD FIELD OFFICE CONTACT (Office, name, phone number): South Florida Ecological Services Office, Paula Halupa, 772-562-3909 ext 257

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

## Taxonomy

The genus Sideroxylon is represented by eight species in Florida. All of these plants were previously assigned to the genus Bumelia. Sideroxylon reclinatum, the Florida bully, is represented by 3 subspecies that range nearly throughout Florida and into neighboring states. The Everglades subspecies was first recognized by David Whetstone (1985) as Bumelia reclinata var. austrofloridense. The new variety was published in the *Annals of the Missouri Botanical Garden*, a peer-reviewed journal from one of the world's most important plant systematics research centers. It was transferred to the genus Sideroxylon by Kartesz and Gandhi (1990) in *Phytologia*, a non peer-reviewed journal that provides prompt publication for nomenclatural changes. The Sapotaceae is an important family of tropical trees, and its genera were revised by Pennington (1990, 1991). The transfer of Everglades bully from Bumelia to Sideroxylon presumably is in accordance with Pennington's revision, and constituted a nomenclatural formality. Kartesz and Gandhi made Sideroxylon reclinatum ssp. austrofloridense a subspecies rather than a variety; in plant nomenclature, the ranks of variety and subspecies are interchangeable, except in the situation where two or more varieties constitute a subspecies. This name is used in the current treatment of the Florida flora (Wunderlin 1998).

## Description/Habitat

Everglades bully (Sideroxylon reclinatum ssp. austrofloridense) is distinguished from the other two subspecies in Florida by its leaves, which are persistently pubescent (fuzzy) on their undersides, rather than smooth or pubescent only along the midvein (Wunderlin 1998). It is restricted to the tropical pinelands of Miami-Dade County. Gann et al. (2002) provide a history of collections: it was first collected at Camp Jackson near what is now the main entrance to Everglades National Park. It has been collected several times (starting in 1852) at Long Pine Key, an island of limestone-rock pineland surrounded by wetlands within Everglades National Park. S. reclinatum ssp. austrofloridense has been collected in pinelands east of Everglades National Park, including the Nixon-Lewis Hammock (where the pinelands have since been destroyed), privately owned Grant Hammock (which needs to be surveyed), and Pine Ridge Sanctuary, a 5.7 hectare/14 acre privately-owned preserve. S. reclinatum ssp. austrofloridense has been observed farther east at Larry and Penny Thompson Park (operated by Miami-Dade County, with 93 hectares [229 acres] of natural area) in the Richmond pinelands adjacent to the Metrozoo, but this occurrence has not yet been vouchered with a specimen (Gann et al. 2002).

## Status

Publicly-owned pineland remnants outside of Everglades National Park have been carefully inventoried for endemic plants, and the available data have been summarized in Gann et al. (2002). Sideroxylon reclinatum ssp. austrofloridense is easily recognizable and, given the intensity of inventories of Miami-Dade pinelands, there is little chance that significant populations have been missed.

The vegetation of Long Pine Key has been studied, especially with respect to fire management. Sideroxylon reclinatum (under the name Bumelia reclinata) was present in 64 percent of 73 permanent one-tenth acre plots (33 x 132 feet or roughly 10 x 40 meters) (Olmstead et al. 1983).

Because the report was prepared before subspecies austrofloridense was recognized, it is not clear whether all the Sideroxylon reclinatum on Long Pine Key belongs to that species or whether subspecies reclinatum is also present; Everglades National Park has both subspecies reclinatum and subspecies austrofloridense (Gann et al. 2003). Bumelia reclinata was one of the more uniformly present shrubs. Eighteen shrub-layer plant species were at least as uniformly present on Long Pine Key, including Bumelia salicifolia (Sideroxylon salicifolium) which was in 96 percent of the plots.

The present distribution of S. reclinatum ssp. austrofloridense closely resembles that of the Florida pineland crabgrass or twospike crabgrass (*Digitaria pauciflora*), which is present on Long Pine Key and which formerly had a wider distribution in pinelands of Miami-Dade County. It was most recently collected outside of Long Pine Key in 1996. The Florida pineland crabgrass is a candidate for Federal listing.

THREATS (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change):

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

The Miami-Dade County pine rocklands have largely been destroyed by urban and agricultural development. Pine rocklands in the county (including patches of marl prairie) have been reduced to about 11 percent of their former extent (Kernan and Bradley 1996). Of the estimated historical extent of 74,000 hectares (182,780 acres), only 8,140 hectares (20,106 acres) of pine rocklands remained in 1996. Outside of Everglades National Park, only about 1 percent of the Miami Pine Rock Ridge pinelands remain, and much of what is left is in small remaining blocks isolated from other natural areas (Herndon 1998).

Somewhat different figures for the original extent of pine rocklands and their losses are provided in the South Florida Multi-Species Recovery Plan (US Fish and Wildlife Service 1999): approximately 65,450 ha (161,660 acres), with approximately 8,029 hectares now remaining in Everglades National Park. DERM (1995) reported that in 1990, 375 pine rockland fragments totaling nearly 1,780 ha (4,400 acres) remained. These fragments averaged only 4.9 ha (12.1 acres) in size, and ranged from 0.4 ha (1 acre) to 345 ha (853 acres).@p. 3-173).

Sideroxylon reclinatum ssp. austrofloridense is known to occur on conservation lands only at Long Pine Key (8,029 ha or 19,839 acres), Larry and Penny Thompson Park (93 hectares or 229 acres), and the privately-owned Pine Ridge Sanctuary (5.7 ha or 14 acres). It may be present the few non-protected pinelands, and perhaps only one: Grant Hammock (Gann et al. 2002).

Pinelands in Miami-Dade County outside of Everglades National Park are kept reasonably intact only by constant maintenance, including removal of exotic pest plants (Burmareed [*Neyraudia reynaudiana*], Brazilian pepper [*Schinus terebinthifolius*], and others); prescribed fires, usually in an urban setting; and prevention/cleanup of dumped trash. In areas such as Larry and Penny Thompson Park, the water table is now lower than it was historically, which is possibly stressing the slash pines and other plants.

Long Pine Key is susceptible to invasive exotic plants such as Burmese reed and Old World climbing fern (Lygodium microphyllum), which has spread southward into Everglades National Park (Ferriter 2001 Ferriter et al. 2003), and (Gann et al. 2002). The former agricultural lands of the Hole in the Donut adjacent to Long Pine Key are infested by invasive plants such as Brazilian pepper, Schinus terebinthifolius and common guava, Psidium guajava (Whiteaker and Doren 1989) and are a potential source of seeds of these invasives. The Park Service is restoring the those former agricultural lands, but until this work is complete, there is a threat of pest plants invading the rest of Long Pine Key. Among the exotic pest plants present in the Park is Old World climbing fern, Lygodium microphyllum (Gann et al. 2002), which is capable of smothering vegetation and is spreading rapidly in Florida (Langland 2001). It is spreading into southernmost Florida, and is already a very serious problem in Loxahatchee National Wildlife Refuge.

Long Pine Key may be affected by Everglades restoration. Gann et al. (2002) and Herndon (1998) express concern that changes to regional water management intended to restore the Everglades could negatively affect the pinelands of Long Pine Key. Overall, hydrological restoration may represent a threat, but it also represents a significant opportunity to make Long Pine Key more secure.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Bullies are not likely to be collected for any purpose other than voucher specimens to document their distribution; there is no threat from this source.

C. Disease or predation.

Not a threat.

D. The inadequacy of existing regulatory mechanisms.

The Florida Department of Agriculture and Consumer Services cannot list S. reclinata ssp. austrofloridense because only full species are eligible for listing as endangered or threatened species under chapter 5B-40, Florida Administrative Code. S. reclinata ssp. reclinata is not considered threatened. Most of this species occurs on lands managed by the National Park Service whose mission is, in part, A..to promote and regulate the use of the...national parks...which purpose is to conserve the ... natural ... objects and the wild life therein ... in such manner and by such means as will leave them unimpaired for the enjoyment of future generations@National Park Service Organic Act, 16 USC 1).

Scientists with the National Park Service have long recognized the magnitude of the threats, and the Park Service has worked vigorously to control melaleuca and other pest plants from its south Florida units (Everglades National Park, Biscayne National Park, and Big Cypress National Preserve). The State of Florida has been equally vigorous, and a state policy on invasive exotic species is nearing completion. The U.S. Department of Agriculture has an important biological control laboratory in Fort Lauderdale, and the University of Florida=s Institute for Food and Agricultural Sciences can provide significant assistance. The Florida Exotic Pest Plant Council provides a forum for addressing control issues.

Exotic pest plant control at Miami-Dade County's Larry and Penny Thompson Park has been successful. Costly removal of exotics has made way for inexpensive maintenance treatments. The well-established County policy to conserve pinelands on public lands is also critically important to preventing encroachment into the park's pine rockland. For example, after hurricane Andrew, debris was dumped on the park's undeveloped pineland while lawns and a mango orchard were spared. The County quickly stopped this practice and moved dumping to areas without important biological resources. There is little likelihood that the water table at Larry and Penny Thompson Park can be raised to something closer to the historic situation. There is little documentation of the effects of drainage, but local biologists are concerned that this has been bad for the health of slash pines and may have benefitted shrubs at the expense of grasses. The pineland at Larry and Penny Thompson Park occupies 200 acres, according to Miami-Dade County Parks and Recreation

E. Other natural or manmade factors affecting its continued existence.

Fire suppression and exotic plant invasions are the greatest threats to S. reclinatum ssp. austrofloridense and other pineland understory plants. Fire maintains the pine rockland community. Under natural conditions, lightning fires typically occurred at 3- to 7- year intervals, or more frequently in marl prairies. With fire suppression, hardwoods eventually invade pine rocklands and shade out understory species. Fire suppression has reduced the size of the areas that do burn and habitat fragmentation has prevented fire from moving across the landscape in a natural way. Thus, many pine rockland communities have moved past their normal condition of having an open, grassy understory and are becoming tropical hardwood hammocks.

Exotic species have also altered the type of fire that occurs in pine rocklands. Historically, pine rocklands had an open low understory where natural fires remained patchy, with relatively low temperatures, thus sparing many native grasses and shrubs. Dense exotic plant growth can create much higher temperatures and longer burning periods. Pine rockland plants cannot tolerate these extreme conditions. As a result, the native plants may have to be conserved by removing exotics through methods other than burning. One such method, hand chopping followed by spot treatment, is labor intensive and very costly. This method may not be feasible for the Everglades National Park, given the acreage of land, and current staffing and budget constraints. Invasive exotic plants have significantly affected pine rocklands. At least 277 exotic plants are now known to have invaded pine rocklands throughout South Florida (U.S. Fish and Wildlife Service 1999). The most serious threats to pine rocklands are Brazilian pepper and Burmese reed.

Given the species' narrow range, S. reclinatum ssp. austrofloridense is vulnerable to the results of natural catastrophic events such as hurricanes, which could extirpate existing populations. Hurricane Andrew of 1992 caused serious problems from spread of exotic pest plants. Larry and Penny Thompson Park lost most of its pine trees and briefly suffered from dumping of debris in the natural area. These problems were addressed by emergency restoration work conducted by Miami-Dade County's Department of Environmental Resources Management.

It is inherently difficult to conduct prescribed fires at Larry and Penny Thompson Park, which is surrounded by residential areas and a zoo. Every fire requires extensive planning and

notification of the public.

**FOR RECYCLED PETITIONS:**

- a. Is listing still warranted? \_\_\_\_
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? \_\_\_\_
- c. Is a proposal to list the species as threatened or endangered in preparation? \_\_\_\_
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded:

**LAND OWNERSHIP** (Estimate proportion Federal/state/local government/private, identify non-private owners):

Nearly 99 percent of the known habitat is federally owned, in Everglades National Park. About one percent is owned by Miami-Dade County, and much less than one percent is known to be privately owned.

**PRELISTING** (Describe status of conservation agreements or other conservation activities):

Everglades National Park is a conservation area whose pinelands are managed to maintain the natural vegetation. There do not seem to be critical problems with invasive exotic plants on Long Pine Key. Comprehensive Everglades Restoration Planning (CERP) will carefully review the protection of the uplands of Long Pine Key as the surrounding Everglades wetlands are restored. The Federal government, through the Fish and Wildlife Service, funded control of exotic pest plants and restoration of Larry and Penny Thompson Park and neighboring pinelands before and after hurricane Andrew, which devastated the area.

**REFERENCES** (Identify primary sources of information [e.g., status reports, petitions, journal publications, unpublished data from species experts] using formal citation format):

- Dade County Department of Environmental Resources Management [DERM]. 1993. Endangered pine rockland plant species recovery project: draft annual report. Submitted to the U.S. Fish and Wildlife Service. Cooperative agreement # 14-16-0004-91-951.
- Gann, G. D., K. A. Bradley, and S. W. Woodmansee. 2002. Rare plants of south Florida: their history, conservation, and restoration. Institute for Regional Conservation, Miami, Fla. 1056 pp.
- George D. Gann, G. D., K. A. Bradley, and S. W. Woodmansee. 2003. Floristic Inventory of South Florida. <http://www.regionalconservation.org/ircs/index.cfm> Institute for Regional Conservation. Consulted April 8, 2003.
- Herndon, A. 1998. Life history studies of plants endemic to South Florida. Final report to the National Park Service under cooperation agreement number CA5280-5-9019. October 1, 1995 to April 30, 1998.

- Kartesz, J. T. and K. N. Gandhi. 1990. Nomenclatural notes for the North American flora. II. *Phytologia* 68(6): 421-427.
- Kernan, C. and K. Bradley. 1996. Conservation survey of *Linum arenicola* in Dade County. A report to the U.S. Fish and Wildlife Service. Fairchild Tropical Garden, Miami, Florida.
- Olmsted, I., W. B. Robertson, Jr., J. Johnson, and O. L. Bass, Jr. 1983. The Vegetation of Long Pine Key, Everglades National Park. South Florida Research Center Report SFRC-83/05. National Park Service South Florida Research Center
- Pennington, T.D. 1990. Flora Neotropica. Monograph 52: Sapotaceae. Bronx, New York Botanical Garden for Organization for Flora Neotropica, 1990 770p. - illus., maps.
- Pennington, T.D. 1991. The genera of the Sapotaceae. Kew: Royal Botanic Gardens, Kew, 1991 xi, 295p. - illus.
- U.S. Fish and Wildlife Service. 1999. South Florida Multi-Species Recovery Plan. Atlanta, Georgia.
- Whetstone, R. D. 1985. *Bumelia reclinata* var. *austrofloridense* (Sapotaceae), a new variety from south Florida, U.S.A. *Ann. Missouri Bot Gard.* 72: 544-547.
- Wunderlin, R. P. 1998. Guide to the vascular plant of Florida. University Press of Florida, Gainesville. 806 pp.
- Wunderlin, R. P. and B. Hansen. 2003. Atlas of Florida vascular plants. *Sideroxylon reclinata* ssp. *austrofloridense*. <http://www.plantatlas.usf.edu/main.asp?plantID=1123>. A photograph is available.

LISTING PRIORITY (place \* after number)

THREAT
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Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9*
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

**Rationale for listing priority number:**

*Magnitude:* The magnitude of the threats to this plant is moderate due to 99 % of it habitat being on Federal land, thus facilitating management actions for its conservation.

*Imminence:* The threats however are imminent which is due constant pressure on the habitat to with the presence of so many invasive/exotic species that can change the fire regime along with the changes that will be brought about through restoration of the everglades.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, annual retentions of candidates, removal of candidates, and listing priority changes.

Approve: Linda Kelsey March 14, 2003  
Acting Regional Director, Fish and Wildlife Service Date

Concur: Steve Williams April 5, 2004  
Director, Fish and Wildlife Service Date

Do not concur: \_\_\_\_\_ Date \_\_\_\_\_  
Director, Fish and Wildlife Service

Director's Remarks:

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Date of annual review: February 12, 2003

Conducted by: Paula Halupa, South Florida Ecological Services Office

Comments:

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