

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Linum carteri var. carteri Small

COMMON NAME: Carter=s small-flowered flax

LEAD REGION: 4

INFORMATION CURRENT AS OF: February 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 first 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 A species.@

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering Plants - Linaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Florida

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Florida

LEAD REGION CONTACT (Name, phone number): Richard Gooch, 404/679-7124

LEAD FIELD OFFICE CONTACT (Office, name, phone number): South Florida Field Office, Paula Halupa, 772/562-3909 extension 257

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

Linum carteri var. carteri is an erect, annual or short-lived perennial herb, often with several stems 23 to 36 centimeters (roughly 1 foot) tall. The stems are puberulent (with fine, short hairs). The leaves are slender, 1.8 to 2.6 centimeters long. Its flower petals are orange-yellow and 9 to 17 millimeters long. In habit and flower the plant closely resembles pitted stripeseed (Piriqueta caroliniana). (Bradley and Gann 1999). Its historic range was from Coconut Grove southward in Miami-Dade County in pine rocklands. The very similar L. carteri var. smallii, which has glabrous (hairless) stems, has a larger range as an endemic, fire dependent, herbaceous annual plant that historically occurred throughout the pine rocklands of the Miami Rock Ridge on the southeast Florida mainland, and has recently been found in Everglades National Park, Big Cypress National Preserve and the Corkscrew Swamp Sanctuary (Gann et al. 2002).

Linum carteri var. carteri can be found only on the Miami Rock Ridge in Miami-Dade County. K. Bradley and G. Gann (1999) estimated that fewer than 1,000 individuals existed at 9 occurrences, of which only 3 were on conservation lands. Recently, a population was extirpated from the Charles Deering Estate (K. Bradley and G. Gann, pers. comm. 1999). The current assessment is that this plant is protected at Camp Owaissa Bauer, R. Hardy Matheson Preserve, and Rockdale Pineland. It is present at the USDA Subtropical Horticulture Research Station (Chapman Field). It is also present at three other locations (Gann et al. 2002).

Linum carteri var. carteri is unusual in that none of the known populations is from a completely undisturbed pine rockland. All known occurrences are within scarified pine rocklands, in disturbed areas adjacent to or within rocklands, or in completely disturbed areas. Linum carteri var. carteri may not be able to tolerate shading or litter accumulation, and therefore may have been excluded from much of its former habitat. Fire was suppressed in Miami pine rocklands for decades, and many native species may have been forced out of these pinelands by excessive shade. Scarified pine rocklands often support diverse assemblage of native pineland herbs and grasses (Bradley and Gann 1999).

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.

Residential and commercial development, and agriculture have drastically reduced the habitat for Linum carteri var. carteri throughout pine rockland habitats in south Florida. Pine rockland habitat in Miami-Dade County has been reduced to about 11 percent of its natural extent (Kernan and Bradley 1996). Of the original 74,000 hectares (ha) (182,780 acres), 8,140 ha (20,106 acres) of pine rockland habitat remained in 1996. Less than 2 percent of the 65,000 ha (160,550 acres) of pine rockland habitat that existed outside Everglades National Park in 1900 remains today (Kernan and Bradley 1996). Given the growth of Miami-Dade County, pressures from development are not expected to diminish in the years to come. Florida experienced a 15.3 percent increase in the human population from April 1, 1990, to July 1, 1998, and was ranked the fourth fastest growing State in the nation during 1998 (U.S. Census Bureau). Habitat loss by itself may drive Linum carteri var. carteri to extinction.

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

None are known.

C. Disease or predation.

None are known.

D. The inadequacy of existing regulatory mechanisms.

The Florida Department of Agriculture and Consumer Services has designated Linum carteri, which includes variety carteri and variety smallii, as endangered under Chapter 5B-40, Florida Administrative Code. This listing provides little or no habitat protection beyond the State=s Development of Regional Impact process, which serves to disclose impacts from projects, but provides no regulatory protection for State-listed plants on private lands. Without local or county ordinances preventing the destruction of the plant, conservation is not likely to occur.

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

Fire is required to maintain the pine rockland community. Under natural conditions, lightning fires typically occurred at 3- to 7-year intervals. With fire suppression, hardwoods eventually invade pine rocklands and shade out understory species like Linum carteri var. carteri. Natural fires are unlikely to occur or will be suppressed in the remaining highly fragmented pine rockland habitat in Miami-Dade County.

Invasive exotic plants, especially Burmese reed (Neyraudia reynaudiana) and Brazilian pepper (Schinus terebinthifolius) threaten pine rockland plants, including Linum carteri. The control of exotic species in pine rockland is a very important part of habitat maintenance, although it can be very costly once exotics are established in an area (Bradley and Gann 1999). Brazilian pepper is the most widespread and one of the most invasive species. If left uncontrolled in a fire-suppressed pineland, it will form a dense single-specie canopy almost completely eliminating native vegetation. Earleaf acacia (Acacia auriculiformis), natal grass (Rhynchelytrum repens), shrub verbena (Lantana camara), and tongue tree (Albizia lebeck) are some of the other exotic pests in pine rocklands. All of these species affect the characteristics of a fire when it does occur, providing fuel for fires much hotter than when the main fuel was pine needle duff. For instance, a catastrophic fire may favor bracken fern at the expense of grasses.

Based on the low numbers of individuals within the species= narrow range, catastrophic events such as hurricanes or tropical storms may negatively impact the species by altering the vegetation composition or water levels, or simply by creating masses of urban debris that may be disposed of in remnant pinelands (as happened in 1992).

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):

Linum carteri var. carteri populations with fewer than 100 total individuals are located at Camp Owaissa Baer and R. Hardy Matheson Preserve, managed by Miami-Dade County. The species is also present at the County=s Rockdale Pineland (Gann et al. 2002). One site is owned by the US Department of Agriculture. The other known sites are located on private, non-protected lands and are subject to development. The private sites appear to be considerably smaller than the protected ones. There is little opportunity to protect this plant through land acquisition.

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

In 1979, Miami-Dade County enacted the Environmentally Endangered Lands Covenant Program which gives private land owners of pine rockland habitat a tax break if they agree to not develop the property and manage it for a period of ten years (U.S. Fish and Wildlife Service 1999). Although there are no current conservation activities being conducted for Linum carteri var. carteri at the Miami-Dade County preserves, a management plan has been proposed to manage for Linum carteri var. carteri.

The Service has developed a multi-species recovery plan for the threatened and endangered species of South Florida. This plan is ecosystem-based and includes many recommendations for conservation of the communities where Linum carteri var. carteri occurs (U.S. Fish and Wildlife Service 1999).

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

Bradley, K. A. and G. D. Gann. 1999. Status summaries of 12 rockland plant taxa in southern Florida. Report submitted to U.S. Fish and Wildlife Service, Vero Beach, Fla. The Institute for Regional Conservation, 22601 S.W. 152 Ave., Miami, Florida 33170. 82 pp.

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. 1056 pages.

Kernan, C. and K. Bradley. 1996. Conservation survey of Linum arenicola in Dade County, Florida. A report to the U.S. Fish and Wildlife Service. Fairchild Tropical Garden, Miami.

U.S. Census Bureau. 1998. State and metropolitan area data book. 1997-1998.

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. Atlanta, Georgia. 2172 pp.

LISTING PRIORITY (place * after number)

THREAT

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: This plant is known from only about 9 localities, of which 3 are protected. The total number of plants may be only about 1,000.

Imminence: One locality was destroyed recently and this variety=s status may be precarious even on protected sites.

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, removal of candidates, and listing priority changes.

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

Concur: _____ Date _____
Director, Fish and Wildlife Service

Do not concur: _____ Date _____
Director, Fish and Wildlife Service

Director's Remarks:

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Date of annual review: March 2003

Conducted by: David Martin - South Florida FO

Comments:

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