

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME:

Chamaecrista lineata (Sw.) Greene var. keyensis (Pennell) H.S. Irwin & Barneby (= Cassia keyensis (Pennell) Macbryde)

COMMON NAME: Big Pine partridge pea (= Key cassia)

LEAD REGION: 4

INFORMATION CURRENT AS OF: March 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 *Aspecies*.@

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Plant - Fabaceae

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 Ecological Services 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.):

Chamaecrista lineata var. keyensis (also known as Cassia keyensis) is a herbaceous perennial plant that occurs only on the edges of rockland hammocks and pinelands in the pine rocklands ecological community. It is shade intolerant and requires periodic burning to reduce competition from woody vegetation (TNC 1999). It was historically known from Big Pine Key and from one site on Cudjoe Key, Monroe County, Florida (Long and Lakela 1971). It is presently known only from Big Pine Key, where Ross and Ruiz (1996) found it in 130 of 145 (89 percent) pine rockland sample plots on the island. The total number of individuals has been estimated to be close to 10,000. Most known plants occur on the National Key Deer Refuge, with approximately 1,000 or fewer plants occurring on unprotected, privately-owned lands elsewhere on Big Pine Key (Bradley and Gann 1999). It is also present on a 21-acre preserve owned by The Nature Conservancy (Gann et al. 2002).

Pine rocklands on the National Key Deer Refuge encompass approximately 400 hectares (ha) (1,000 acres) of the refuge (3,300 ha (8,200 acres (ac)) (R. Frakes, U.S. Fish and Wildlife Service, pers. comm. 1999). Given the species' narrow habitat range, and the small number of individuals that occur, Chamaecrista lineata var. keyensis is vulnerable to extinction.

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 acreage of pine rocklands on Big Pine Key was reduced from 1,049 ha (2,592 ac) in 1955 to 701 ha (1,732 ac) in 1989 (Folk 1991). This has resulted in a loss of approximately 33 percent of habitat. A significant amount of pine rockland habitat in the Keys is still threatened by development (C.R. Kruer, pers. comm. 1998). Based on the number of people moving to Florida, pressures from development are not expected to diminish in the years to come, especially throughout the range of Chamaecrista lineata var. keyensis. Florida had a 15.3 percent increase in the human population from April 1, 1990, to July 1, 1998, and was ranked as the fourth fastest growing state in the nation during 1998 (U.S. Census Bureau 1998).

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 Cassia keyensis (= Chamaecrista lineata var. keyensis) 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 does not occur.

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

Fire suppression and exotic plant invasions are the biggest threats to Chamaecrista lineata var. keyensis. 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 Chamaecrista lineata var. keyensis. 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 fire subclimax and are succeeding to tropical hardwood hammock communities. Currently, experimental fire regimes are being conducted on the National Key Deer Refuge on Big Pine Key. The Service is working cooperatively with Florida International University in Miami to determine the proper fire frequencies necessary to maintain the pine rockland community on the refuge. The fire management activities are designed to induce two burns per year for 2 years, at 8 ha (20 ac) a year. This management plan is designed for the endangered Key Deer (Odocoileus virginianus clavium), the threatened Garber's spurge (Chamaesyce [= Euphorbia] garberi), and the endangered key tree-cactus (Pilosocereus [= Cereus] robinii), all of which utilize the pine rockland ecological community. Chamaecrista lineata var. keyensis may benefit from the refuge's fire management plan.

Exotic plants have significantly affected pine rocklands. At least 277 taxa of exotic plants are now known to invade pine rocklands in South Florida (U.S. Fish and Wildlife Service 1998). Some of these may compete directly with Chamaecrista lineata var. keyensis for space and resources, while others have a profound effect on community structure and responses to fire. The exotic tree, Brazilian pepper (Schinus terebinthifolius) is the most widespread and one of the most invasive species. If left uncontrolled in a fire-suppressed pineland, it will form a dense monospecific canopy almost completely eliminating native vegetation. Earleaf acacia (Acacia auriculiformis), natal grass (Rhynchelytrum repens), shrub verbena (Lantana camara), and tongue tree (Albizia lebbek) are some of the other exotic pests in pine rocklands. All of these species affect the characteristics of a fire when it does occur. Fires that once burned fairly cool with mostly pine needle duff for fuel may now burn much hotter and affect the type of community that develops following fire. For instance, a catastrophic fire moves the herbaceous component to bracken fern thickets rather than grasses. Therefore, with the presence of exotic species, it is uncertain just how a managed fire regime will affect Chamaecrista lineata var. keyensis.

Based on the low number of individuals in such a narrow range, catastrophic events such as hurricanes and tropical storms may negatively affect Chamaecrista lineata var. keyensis. Either event could extirpate remaining populations, or possibly cause the extinction of the species.

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):

Chamaecrista lineata var. keyensis can be found within the 40.5-ha (1,000-ac) pine rocklands portion of the 3,321-ha (8,200-ac) National Key Deer Refuge. Other known populations occur on private lands within proximity of the National Key Deer Refuge and are not protected.

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

The National Key Deer Refuge is conducting studies to determine proper fire regimes for the listed species that occur in pine rocklands; however, there are no specific conservation activities for Chamaecrista lineata var. keyensis. Although the conservation activities on the National Key Deer Refuge are not targeting Chamaecrista lineata var. keyensis, the species may benefit since it occupies habitat utilized by other listed species.

The Service has developed a multi-species recovery plan. This plan is ecosystem-based and includes many recommendations for conservation of the pine rockland community (U.S. Fish and Wildlife Service 1998).

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.

Folk, M.L. 1991. Habitat of the Key deer. Ph.D. dissertation. Southern Illinois University, Carbondale, Illinois.

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.

Long, R.W. and O. Lakela. 1971. A flora of tropical Florida; a manual of the seed plants and ferns of southern peninsular Florida. University of Miami Press, Coral Gables, Florida.

Ross, M. and P. Ruiz. 1996. A study of the distribution of several south Florida endemic plants in the Florida Keys. Report to U.S. Fish and Wildlife Service, Jacksonville, Florida.

The Nature Conservancy. 1999. BioSource; National Heritage database.

U.S. Census Bureau. 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 subspecies has a very narrow distribution in pinelands of Big Pine Key. Most of the plants are on Key Deer National Wildlife, the rest on private land. The total number of plants may be no more than 10,000.

Imminence: The Refuge has a prescribed fire program appropriate for the conservation of this fire-dependent plant and is considering alternative mechanical treatments for hard-to-burn areas. As a result, habitat management problems are long-term rather than immediate.

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: February 2003

Conducted by: David Martin - South Florida Ecological Services Office

Comments:

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