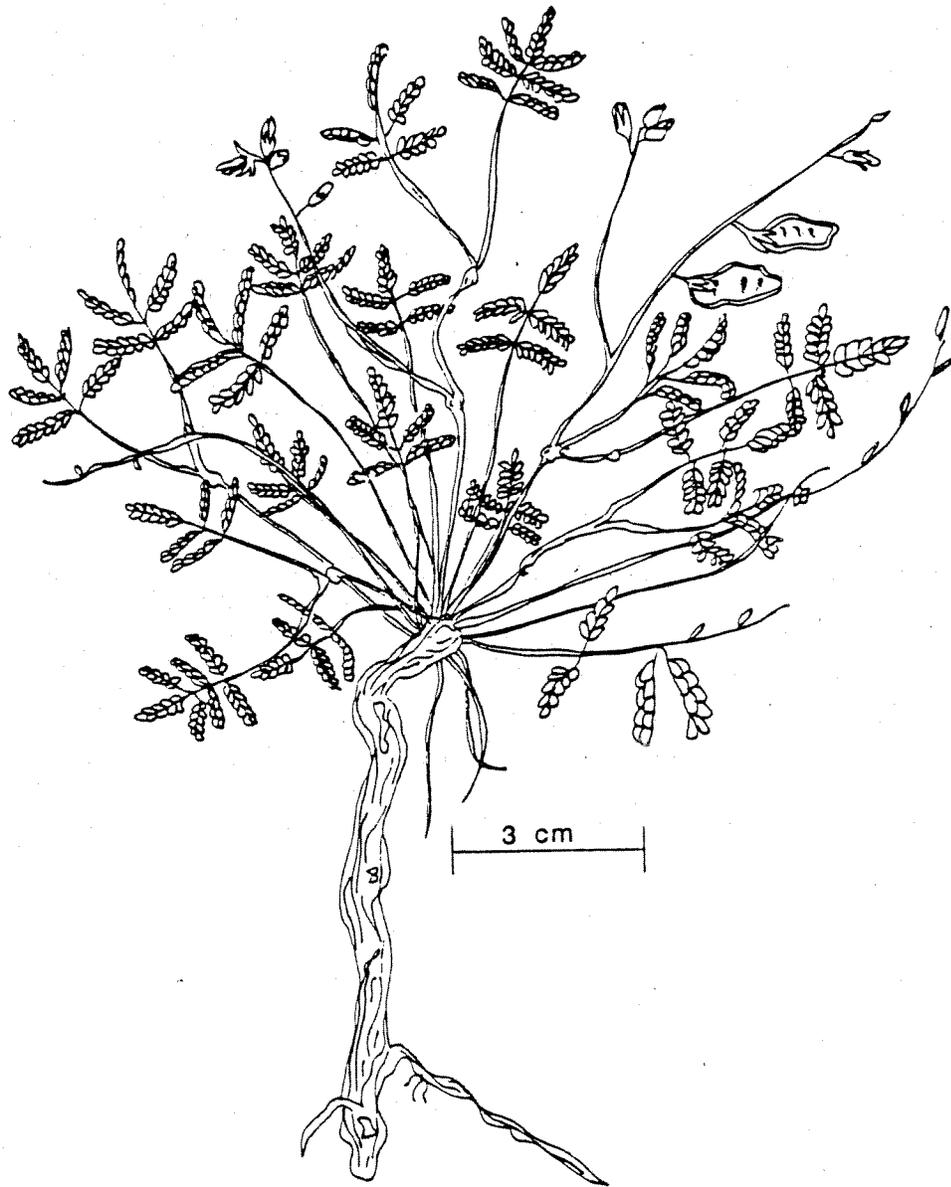


SLENDER RUSH-PEA

(*Hoffmannseggia tenella*)

RECOVERY PLAN



U.S. Fish and Wildlife Service
Albuquerque, New Mexico

1988

SLENDER RUSH-PEA

(Hoffmannseggia tenella Tharp & Williams)

RECOVERY PLAN

1988

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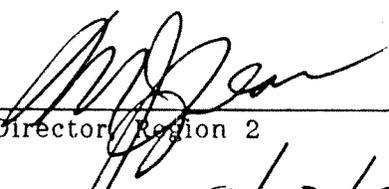
for

U.S. Fish and Wildlife Service, Region 2
Albuquerque, New Mexico

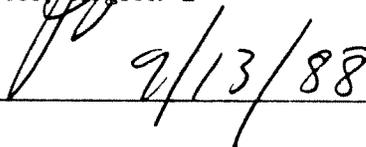
Edited by:

Charles McDonald

Approved: _____


Regional Director, Region 2

Date: _____


9/13/88

DISCLAIMER

This is the completed Slender Rush-pea Recovery Plan. It has been approved by the U.S. Fish and Wildlife Service. It does not necessarily represent official positions or approvals of cooperating agencies and does not necessarily represent the views of all individuals who played a role in preparing this plan. This plan is subject to modification as dictated by new findings, changes in species status, and completion of tasks described in the plan. Goals and objectives will be attained and funds expended contingent upon appropriations, priorities, and other constraints.

Literature Citations should read as follows:

U.S. Fish and Wildlife Service. 1988. Slender Rush-pea (Hoffmannseggia tenella) Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 38 pp.

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Fish and Wildlife Reference Service
6011 Executive Blvd.
Rockville, Maryland 20852
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or

1-800-582-3421

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Further assistance in preparation of this plan was provided by Texas Plant Recovery Team members: Mr. Harold Beaty, Dr. William Mahler, Mr. David Riskind, Mr. Gerard Hoddenbach, Dr. Richard Worthington, Ms. Jackie Poole, Dr. Allen Zimmerman, and Dr. Elray Nixon.

SUMMARY

- Goal:** To remove the slender rush-pea from the Federal list of endangered and threatened species by managing the species and its habitat in a way that will assure the continued existence of self-sustaining wild populations.
- Recovery Criteria:** Quantified criteria for down-listing and/or delisting the slender rush-pea have not yet been determined. The implementation of studies in this recovery plan will provide the necessary data from which quantified downlisting and/or delisting criteria can be established.
- Actions Needed:** Major steps needed to recovery the slender rush-pea include: maintaining present populations through landowner cooperation and habitat management; providing permanent U.S. Fish and Wildlife Service or conservation group protection for the known populations; establishing botanical garden populations; establishing additional populations in natural habitat; obtaining biological information needed for effective management; and developing public support for preservation of the slender rush-pea.

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PART I

INTRODUCTION

Brief Overview

Hoffmannseggia tenella Tharp and Williams, the slender rush-pea, was listed as endangered on December 2, 1985 (USFWS, 1985b). The species is also listed as endangered by the State of Texas. No other members of the genus Hoffmannseggia are presently listed as endangered or threatened nor are any included as candidates for listing (USFWS, 1985a).

According to the treatment (pages 797-798 and 1738) of Correll and Johnston (1970) the genus Hoffmannseggia is represented in Texas by four species: Hoffmannseggia glauca that is a common roadside species in western Texas, the central and southwestern United States to Mexico, and South America; Hoffmannseggia drepanocarpa, the sicklepod rush-pea, that grows in sandy or limestone soils in western Texas, southwestern United States, and north central Mexico; Hoffmannseggia oxycarpa that occurs in rocky limestone habitats in southwest central Texas and adjacent Mexico; and Hoffmannseggia tenella that is endemic to Nueces and Kleberg Counties of Texas. Some authors include Hoffmannseggia in the closely related genus Caesalpinia (Correll & Johnston, 1970). Correll and Johnston (1970) list nine species of Caesalpinia as native to Texas.

Hoffmannseggia tenella is known from only two confirmed populations, both in Nueces County of the Texas Coastal Bend (Figure 1). One population near Petronilla Creek has only about 50 plants. The other population, estimated at 10,000 plants by Poole (USFWS, 1985b), is thriving on the

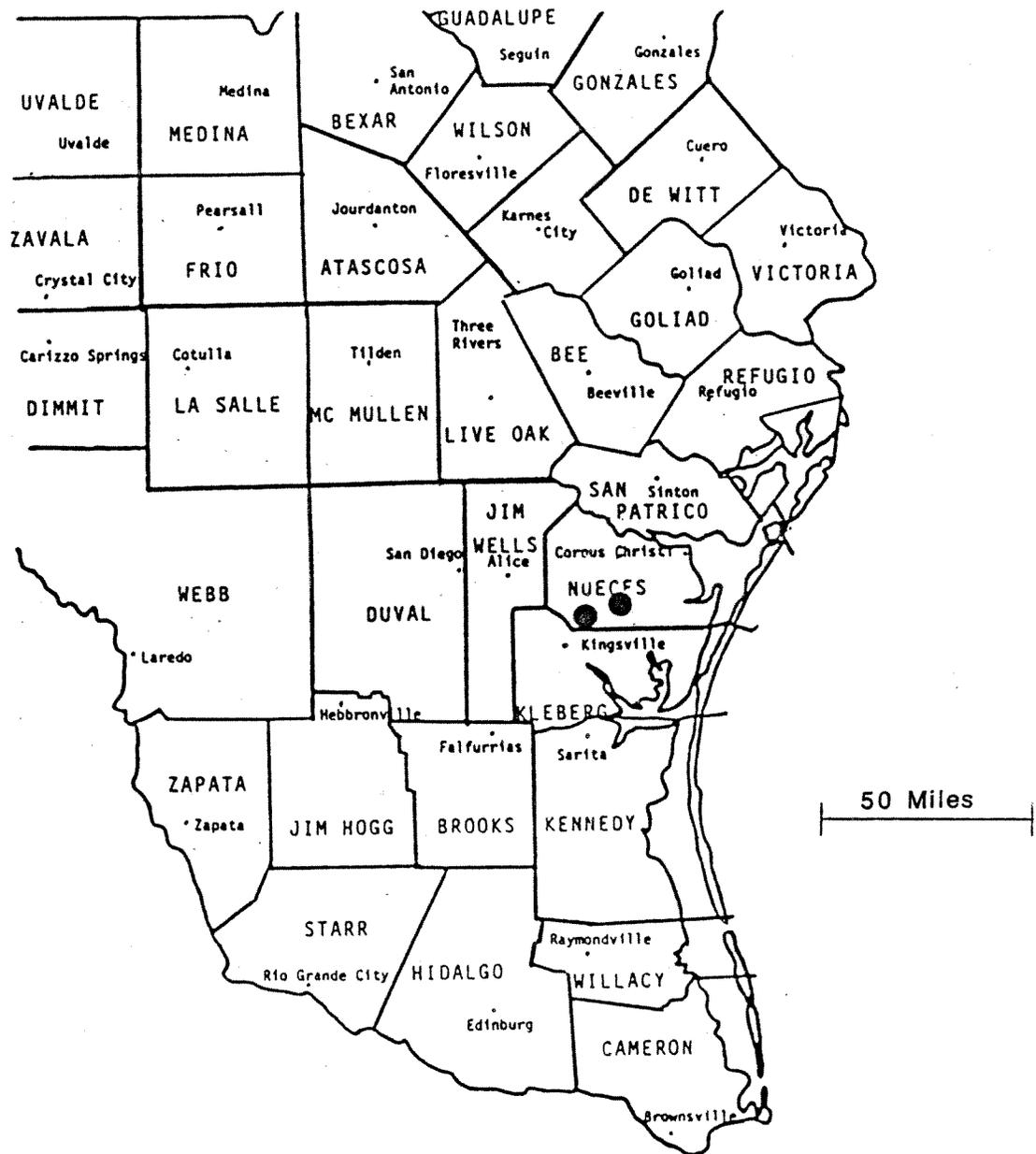


Figure 1. General location of the presently known populations of Hoffmannseggia tenella in south Texas.

property of the St. James Cemetery south of Bishop. Several other populations known from herbarium collections or other published records have not been reconfirmed. These populations include: the type locality in Nueces County between Robstown and Alice; "railroad near Robstown," Nueces County (Jones, 1982); a vacant lot in Bishop, Nueces County, and; two localities within one mile of each other on the Laureles Division of the King Ranch, in Kleberg County (Mahler, 1982).

The main threat to the slender rush-pea is the conversion of natural Gulf Coastal Prairies to cropland or to pasture that has been improved with King Ranch bluestem (Bothriochloa ischarrum var. songarica) or bermuda grass (Cynodon dactylon). King Ranch bluestem and bermuda grass both grow aggressively and outcompete most native vegetation. These grasses are also used for roadside maintenance, thus eliminating this potential habitat for slender rush-pea.

The objective of this plan is to outline steps to prevent extinction and recover slender rush-pea by managing and protecting the existing populations and habitat, and by establishing new populations in other areas, especially protected sites such as botanical gardens and/or wildlife refuges.

This plan begins with background information on the status of the slender rush-pea, including consideration of past and present distribution and abundance, taxonomic relationships, habitat requirements, conservation and research efforts, and threats to the populations. A detailed outline of actions necessary for the recovery of slender rush-pea follows in the format of a

step-down outline. The narrative section of the outline provides more information on actions necessary to counteract threats to the species. The final section of this plan contains an implementation schedule that lists the recovery actions, their priorities for accomplishment, agencies involved, and estimated costs.

Taxonomy and Morphology

Hoffmannseggia tenella Tharp and Williams, Ann. Mo. Bot. Gard. 23:451-452, 1936, from a specimen collected Nov. 22, 1931, by Mrs. F.E. Clements between Robstown and Alice, in Nueces County. TYPE: Clements 128b (TEX, fragment and photograph at MO).

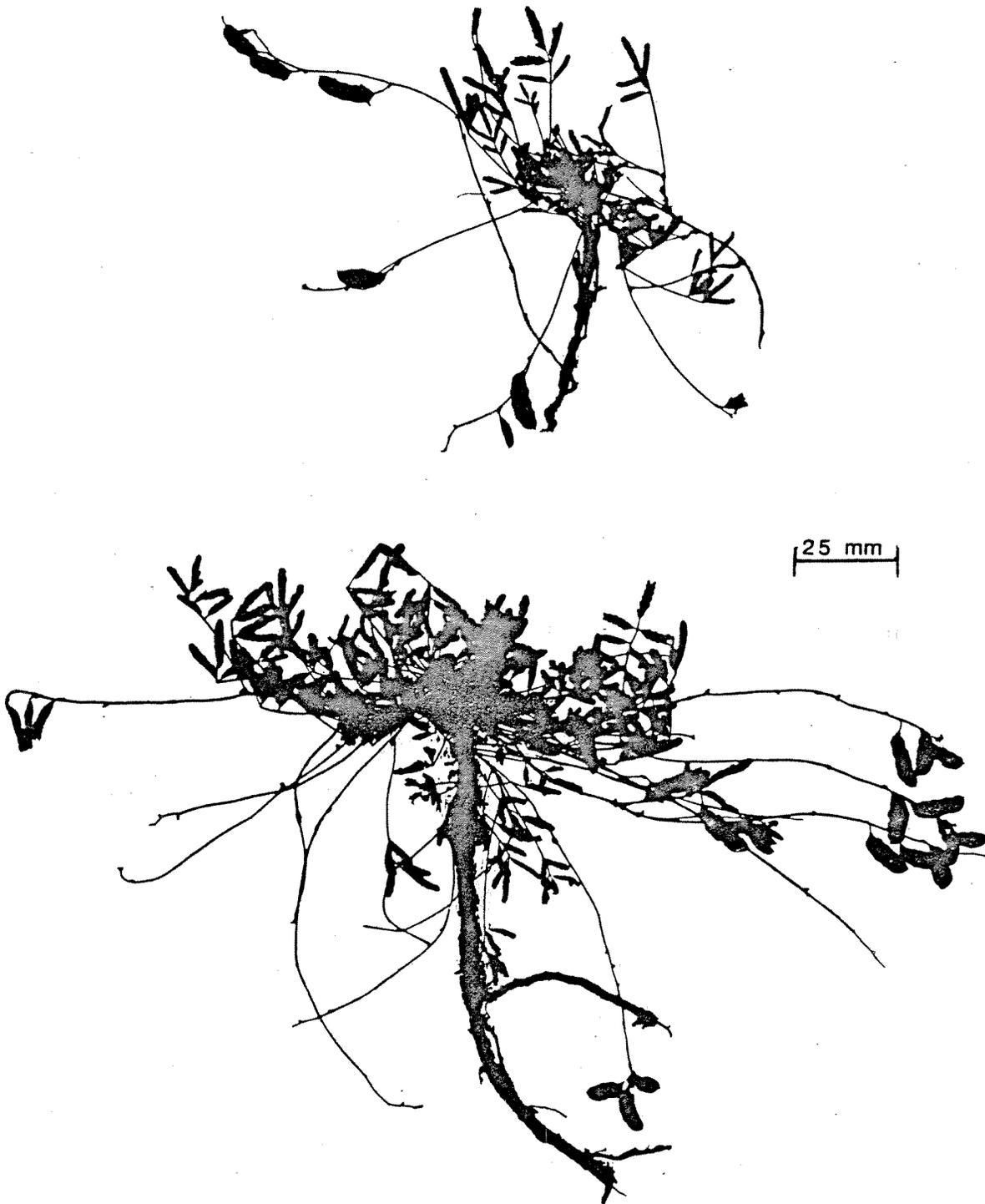
Other specimens: Fred B. Jones 6024, March 3, 1964, Kleberg Co., King (Laureles) Ranch, about 3 miles south of headquarters on clayey roadside (C.C. Museum); Fred B. Jones 6146, April 20, 1964, Kleberg Co., King (Laureles) Ranch, about 4 miles south of headquarters in pasture opening, clay loam (C.C. Museum) (Figure 2); Fred B. Jones 7478, April 16, 1969, Nueces Co., about 9 miles west of Chapman Ranch on clay bluff near Petronilla Creek (C.C. Museum); Mary Johnson s. n., 1976, city of Bishop (TAIC); G. Ajilvsgi 8239, 1982, Nueces Co., Petronilla Creek and FM 70 (SMU). Ruth O'Brien 1390, April 2, 1986, Nueces Co., Petronilla Creek and FM 70 (C.C. Museum, C.C. Bot. Gdn.); Ruth O'Brien 1389, April 2, 1986, Nueces Co., St. James Cemetery south of city of Bishop (C.C. Museum, C.C. Bot. Gdn.).

Hoffmannseggia tenella is a perennial legume (Fabaceae: pea family) with spreading stems 8-15 cm (3.1-5.9 in.) long terminating in 3-5 flowered, eglandular inflorescences and having a long woody taproot. Leaves are bipinnately compound with petioles to 13 cm (5.1 in.) long; leaflets are oblong, 2-4 mm (.08-.16 in.) in length, and 1-2 mm (.04-.08 in.) broad in 5 or 6 pairs on each of 3-7 pinnae. Flowers are orange and approximately 5 mm (.2 in.) long with 10 stamens. Filaments have retrorse hairs. The legumes are 12-15 mm (.5-.6 in.) long, 4-6 mm (.16-.24 in.) broad and contain 2-4 seeds. Flowering usually occurs from early March to June, sporadically thereafter depending on rainfall (USFWS, 1985b; Mahler, 1982) (Figure 2).

Current Status of Hoffmannseggia tenella

Confirmed Populations

Petronilla Creek. This site was visited four times during the drafting of this plan, the dates being February 13, 1986, April 2, 1986, May 13, 1986, and July 10, 1986. At least a few flowering plants were found on each visit. The rush-pea occurs on a high bank in mesquite brush near the northeast corner of Petronilla Creek crossing on F.M. Road 70, (Figure 3). King Ranch bluestem grows densely along the roadside up to the brush line. The rush-pea occurs in the open brush, in bare patches, and among short native grasses and other forbs. About 50 plants have been found. Plants in the brush were on private property, but a few at the brush line may be on the Farm Road right-of-way.



Herbarium of Fred B. Jones 790054
 PLANTS OF THE TEXAS COASTAL BEND

Hoffmannseggia tenella Tharp & Williams
 Kleberg Co.: King (Laureles) Ranch, about 4
 miles south of headquarters in pasture opening.
 Clay loam.

Fred B. Jones 6146 20 April 1964

Figure 2. Herbarium specimen of *Hoffmannseggia tenella*.

Figure 3. Petronilla Creek slender rush-pea population.

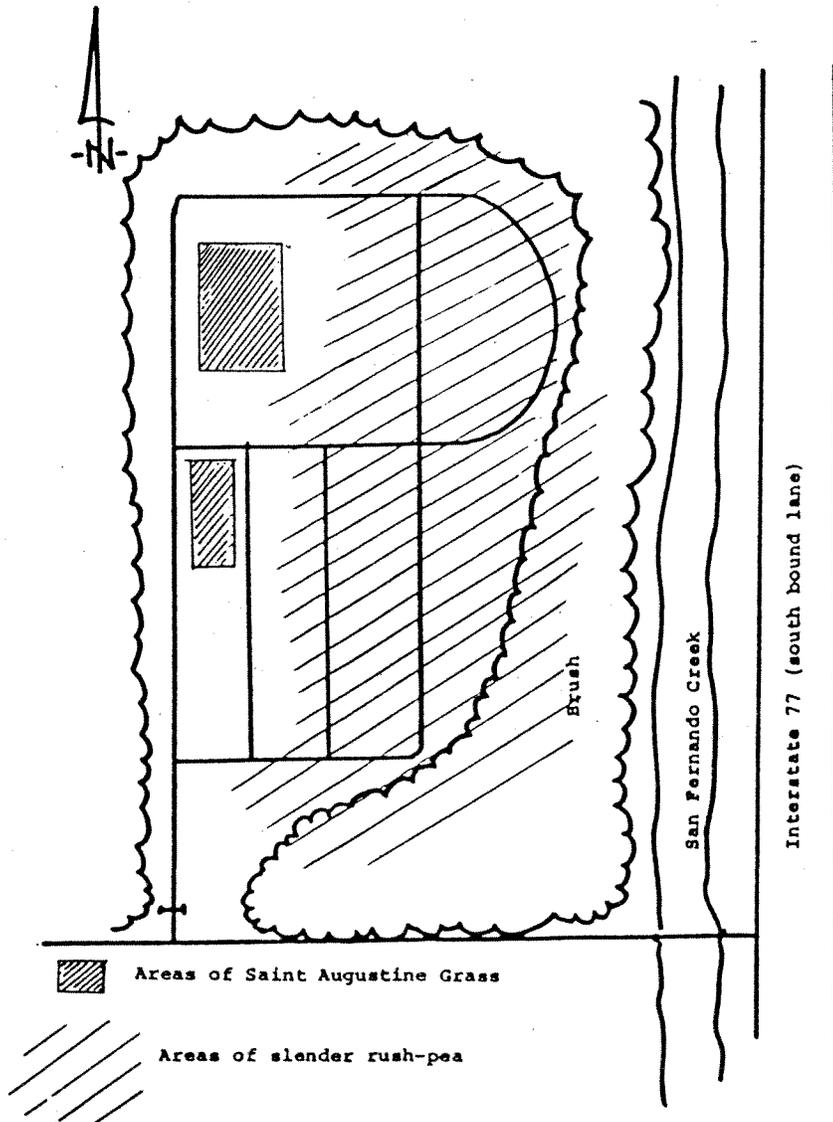
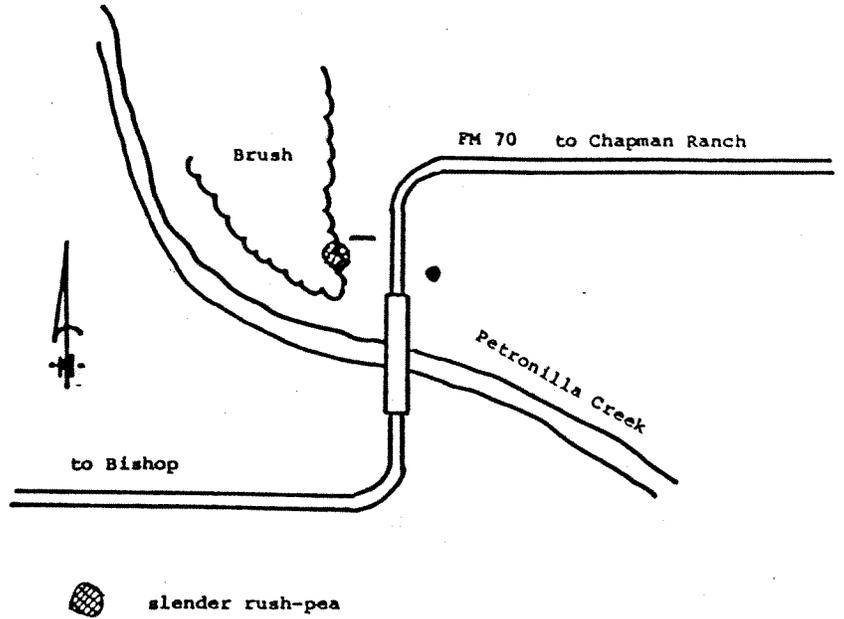


Figure 4. St. James Cemetery population.

St. James Cemetery. This population was discovered by Jackie Poole of the Texas Natural Heritage Program in 1985. This old rural cemetery, on San Fernando Creek, just south of Bishop, has been constantly maintained for at least 100 years. The maintained grounds cover about 20 acres (8 hectares) (Figure 4). Different sections are being maintained to varying degrees. The most recent graves are in an area of about 2 acres (.8 hectares). Some of the plots in this area have been planted in St. Augustine or Bermuda grass. No rush-peas occur in this section. The remaining area is covered with native grasses and forbs, but with some bare patches, and is cut regularly by a tractor-pulled mower. The rush-pea is scattered over this entire area. An older section has been reclaimed by brush. Here, among mesquite, native shrubs, and grasses, numerous rush-peas also occur. Because of the large number of plants and their prostrate growth habit, no effort has been made to accurately count the plants at this site. Poole estimated this population at 10,000 plants (USFWS, 1985b).

Populations of Unknown Status

Robstown - Alice. This population is known only from the type specimen collected in 1931. The locality given on the specimen label is "between Robstown and Alice." This population has never been relocated. Jones (1982) reported the discovery of a population along the railroad tracks near Robstown, but he has been unable to confirm the population himself (F. Jones, Corpus Christi, Texas, pers. comm., 1986).

King Ranch. Two sites were found by Fred B. Jones in March and April of 1964; they were 3 and 4 miles south of the King Ranch Headquarters on the Laureles Division. The King Ranch is private property with limited access. No searches for Hoffmannseggia tenella have been conducted on the King Ranch in recent years.

Bishop. This population is known from a 1976 herbarium specimen labeled "City of Bishop." Several botanists have searched for this population without success.

Habitat

The slender rush-pea is found in barren openings or where low native grasses persist in clayey soils of blackland prairies and creek banks of the Gulf Coastal Prairie. "It appears to be a component of slightly to highly disturbed prairie and can persist until crowded out by competition from other encroaching species" (USFWS, 1985b).

Associated Species

The slender rush-pea occurs in prairies and scattered open areas among shrubs, subshrubs, prickly pear cactus, low native grasses, and annuals. Table 1 lists the most commonly associated species.

Table 1. Vegetation of Slender Rush-Pea Populations.

Scientific Name ¹	Common Name	PET	SJ ²
SHRUBS AND TREES (Typical mesquite brush constants as described by O'Brien, 1980)			
<u>Acacia rigidula</u>	Blackbrush	X	-
<u>Acacia smallii</u>	Hulsache	X	X
<u>Acacia schaffneri</u>	Hulsachillo	X	X
<u>Castela texana</u>	Amargosa	X	-
<u>Celtis pallida</u>	Spiny Hackberry	X	X
<u>Condalia hookeri</u>	Brasil	X	X
<u>Parkinsonia aculeata</u>	Retama	X	X
<u>Prosopis glandulosa</u>	Mesquite	X	X
<u>Schaefferia cuneifolia</u>	Desert Yaupon	X	-
<u>Yucca treculeana</u>	Spanish Dagger	X	-
<u>Zanthoxylum fagara</u>	Collma	X	-
<u>Ziziphus obtusifolia</u>	Lote Bush	X	X
CACTI ³			
<u>Ferocactus setispinus</u>	Twisted Rib	X	X
<u>Mammillaria heyderi</u>		X	-
var. <u>hemisphaerica</u>			
<u>Opuntia leptocaulis</u>	Tasajillo	X	X
<u>Opuntia lindheimeri</u>	Prickly Pear	X	X
ALSO FOUND:			
<u>Jatropha cathartica</u>		X	X
NATIVE GRASSES COMMON AT THE SITES ⁴			
<u>Bouteloua rigidisetata</u>	Texas Grama	-	X
<u>Buchloe dactyloides</u>	Buffalo Grass	-	X
<u>Stipa leucotricha</u>	Texas Speargrass	-	X
INVADING INTRODUCED GRASSES AT SITES ⁴			
<u>Bothriochloa ischaemum</u>	King Ranch Bluestem	X	X
var. <u>songarica</u>			
<u>Cenchrus ciliaris</u>	Buffelgrass	X	X
<u>Cynodon dactylon</u>	Bermuda Grass	X	X
<u>Stenotaphrum secundatum</u>	St. Augustine	-	X

¹After Correll and Johnston, 1970, except cacti.²PET - Petronilla Creek, SJ - St. James Cemetery.³After Benson, 1982.⁴Gould, 1965.

Biology

The number of seeds produced per fruit is small (2-4); however, several fruits may be produced simultaneously, and the extended, although sporadic, flowering period (Feb. - Nov. according to Jones, 1982, Feb - July confirmed) greatly enhances the species' reproductive potential. The species may always have been rare and limited in range, but it was undoubtedly more numerous before much of its habitat was destroyed by human activities. Mahler (1982) suggested the species is "a member of the lower seral stages of succession, perhaps even a pioneer species" or an "invader species of highly disturbed soils where it persists until crowded out by other species."

Impacts and Threats

The most important threat to survival of the slender rush-pea is destruction of Gulf Coastal Prairies. Extensive acreages of Gulf Coastal Prairies within the historic range of slender rush-pea are now in row crop agriculture, greatly reducing rush-pea habitat. Areas not in cropland are used for grazing cattle. Pastures have been improved through the introduction of bermuda grass and King Ranch bluestem. Both of these non-native species are extremely aggressive, forming dense stands that crowd out the native vegetation. As a result of agriculture and ranching, only remnants of natural Gulf Coastal Prairie remain to provide habitat for the slender rush-pea.

Management and Conservation Efforts

The Corpus Christi Botanical Garden has been contracted to study propagation techniques and establish a botanical garden population of slender rush-pea. Attempts to grow plants from seeds have thus far been unsuccessful, but this work is still in its preliminary stages.

The Texas Nature Conservancy has been contracted to identify and contact the landowners of the two confirmed populations. Landowners will be informed of the significance of the plants and encouraged to protect the populations. As management techniques are determined, this information also will be supplied to landowners.

PART II
RECOVERY
Objectives

The primary objectives of recovery are to protect the slender rush-pea and its habitat from destruction owing to human activities and to maintain, through management, healthy populations at levels where the species can be downlisted to threatened and eventually delisted. However, limited data make it impossible at this time to quantify habitat and abundance requirements with the precision needed to establish quantified downlisting and delisting criteria. Information must be acquired on specific habitat requirements, population biology, and population ecology. When existing threats to slender rush-pea are removed, this plan will be reevaluated to: 1) determine if either downlisting to threatened or delisting are practical goals, and if so, 2) establish quantified criteria for delisting.

Step-down Outline

1. Maintain the species and its habitat at the currently known localities.
 11. Take steps leading to long term protection and management of the sites.
 111. Develop cooperation with private landowners and local government agencies.

112. Protect the populations through long-term leases, easements, or acquisitions.

12. Work with the Texas highway department to protect plants on or near the highway right-of-way.

13. Monitor populations for human impacts, disease, or impacts from unusual weather conditions.

14. Develop and implement habitat management practices that will enhance the populations.

2. Verify unconfirmed records and search for additional populations of the slender rush-pea.

3. Establish a botanical garden population and additional natural populations of the species.

31. Develop and refine cultivation techniques.

32. Maintain populations in cultivation at botanical gardens.

33. Establish populations at two suitable sites within the species' historic range.

4. Initiate and support studies on the ecology and population biology of the slender rush-pea.
 41. Determine precise habitat requirements.
 42. Study the population dynamics of the known populations.
 43. Study the population ecology of the species.
 44. Determine genetic relationships among the populations and the relationships with closely related species.
5. Establish downlisting and delisting criteria.
6. Develop public awareness, appreciation, and support for preservation of the slender rush-pea.

Narrative

1. Maintain the species and its habitat at the currently known localities.

Because of the rarity of this species, it should be protected by enforcement of existing regulations and management of its habitat to ensure the continued existence of natural, self-sustaining populations.

11. Take steps leading to long term protection and management of the sites. In order to ensure the continued existence of the populations, long term commitments will be necessary.

111. Develop cooperation with private landowners and local government agencies.

Without the support and cooperation of private landowners and local government agencies, recovery of the slender rush-pea will be impossible. To provide for the maintenance of populations on private lands, it will be necessary to obtain the cooperation and good will of the landowners. Once a working agreement is established, cooperative management should be undertaken for protection of the slender rush-pea and its habitat. Such cooperation should include management to improve and enhance existing sites if deemed necessary and feasible.

112. Protect the populations through long-term leases, easements, or acquisition.

Since the known populations are on private property (the Petronilla Creek population may extend onto adjacent public right-of-way) with no legal protection from habitat destruction, it is important that actions be taken by the U.S. Fish and Wildlife Service or other conservation organizations to allow direct habitat protection. Actions that may be entered into with willing landowners range from leases to fee title

acquisition. Any of these actions by the Fish and Wildlife Service would require full NEPA compliance and documentation.

12. Work with the Texas Highway Department to protect plants on or near the highway right-of-way.

The highway right-of-way at the Petronilla Creek population is not fenced, and the exact boundary between State and private land is not certain. The area should be searched to determine if any plants do occur within the right-of-way. If they do, the Highway Department should take steps to protect them. Most of the right-of-way is unsuitable for slender rush-pea because of a heavy cover of King Ranch bluestem. An effort should be made to ensure that the grass does not eliminate slender rush-pea habitat by invading the adjacent brush.

13. Monitor populations for human impacts, disease, or impacts from unusual weather conditions.

A monitoring program should be developed to determine any changes in population extent or numbers. If declines are detected, an effort should be made to determine the causes and, if possible, alleviate them. Likewise, if increases are detected, the contributing causes should be determined so those management measures can be practiced elsewhere.

14. Develop and implement habitat management practices that will enhance the populations.

More understanding of the biology and ecology of the slender rush-pea is needed to formulate the most effective management practices. However, preliminary observations indicate that one effective practice would be to continue mowing at the St. James Cemetery in Bishop and to expand mowing of the Farm Road 70 right-of-way up to the brush line at the Petronilla Creek population. Controlled experiments with "disking, rototilling, or prescribed burning near the known populations" could be tried to determine if such practices would enhance seed germination, as suggested by the Soil Conservation Service (USFWS, 1985).

2. Verify unconfirmed records and search for additional populations of the slender rush-pea.

Failure to reconfirm historic populations of this inconspicuous plant indicates the need for continued searches for the species. A special effort should be made to gain permission to search potential habitat on the extensive private ranchlands in the area.

3. Establish a botanical garden population and additional natural populations of the species.

Although maintenance of organisms in their known natural habitat is the ideal conservation method, the presence of only two known populations increases the risk of extinction. Establishment of a botanical garden population and additional wild populations would decrease this risk.

31. Develop and refine cultivation techniques.

Propagation and maintenance of the slender rush-pea in cultivation will require experimentation until the best techniques are established. Proper techniques will ensure increases in the cultivated populations and increase the likelihood of success for populations introduced into natural habitats.

32. Maintain populations in cultivation at botanical gardens.

Much biological information can be obtained most easily from a botanical garden population. In addition, a permanent, well documented, and accessible botanical garden population, together with appropriate seed banking, would provide an important source of material for non-destructive research, maintenance of wild populations, and public awareness.

33. Establish populations at two suitable sites within the species' historic range.

Several public and private agencies within or near the range of this species control land that may be suitable habitat. Among these are the Rob and Bessie Welder Foundation in San Patricio County and the Laguna Atascosa National Wildlife Refuge in Willacy County. After the edaphic requirements of the slender rush-pea are better known, suitable sites on protected properties should be selected for introduction of new populations. In selecting plants for reintroduction to the wild, care must be given to assure as large a

gene pool as possible. This can be done by collecting plants or seeds from across the donor population or from each of the known populations. Clonal plants should not be used except as part of controlled experiments.

4. Initiate and support studies on the ecology and population biology of the slender rush-pea.

Conservation efforts for this, or any other species, must be based on a thorough understanding of biotic and abiotic factors necessary for survival of the species (Radford, 1981). In-depth knowledge of the population biology and ecology of the slender rush-pea is needed before the long-term success of management can be assured.

41. Determine precise habitat requirements.

Information is needed on soils, microclimate, community structure, frequently associated species, successional phenomena, and dependence on natural disturbance. It has been speculated that slender rush-pea is a component of early succession, so the study of succession in Gulf Coastal Prairies and the place of slender rush-pea within this successional sequence should receive immediate attention.

42. Study the population dynamics of the known populations.

The demographic trends of the populations should be determined. Aspects of reproductive biology that should be studied include: types of reproduction, pollination biology, seed dispersal, seed biology, and seedling ecology.

43. Study the population ecology of the species.

Interactions of slender rush-pea with other organisms may be either positive, neutral, or negative. Positive and neutral interactions include obligatory or facultative relationships with other plants or animals. Negative interactions include herbivores, predators, parasites, diseases, and intra- or interspecific competitors.

44. Determine the genetic relationships among the populations and the relationships with closely related species.

Genetic studies using isozymes and/or flavanoids combined with a thorough morphological analysis can provide information on the distinctness or indistinctness of the gene pool within or among the populations under study and can also provide information about the species' relationship with other members of the genus.

5. Establish downlisting and delisting criteria.

Once more is learned about the ecological and life history requirements of the species and the success of management is determined, this plan will be reevaluated and, if appropriate, quantified downlisting and delisting criteria will be established.

6. Develop public awareness, appreciation, and support for preservation of the slender rush-pea.

The full recovery of endangered species such as the slender rush-pea depends on the attitude and support of the public. Educational materials

and presentations should be used to gain public appreciation for this and other endangered species and support for the program to save them.

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PART III
IMPLEMENTATION SCHEDULE

The following Implementation Schedule outlines actions and costs for the slender rush-pea recovery program. It is a guide to meeting the objectives elaborated in Part II of this plan. This schedule indicates the general category for implementation, recovery plan tasks, corresponding outline numbers, task priorities, duration of tasks ("on-going" denotes a task that once begun should continue on an annual basis), which agencies are responsible to perform these tasks, and lastly, estimated costs for Fish and Wildlife Service tasks. These actions, when accomplished, should bring about the recovery of the slender rush-pea and protect its habitat. It should be noted that monetary needs for agencies other than Fish and Wildlife Service are not identified and therefore, Part III does not reflect the total financial requirements for the recovery of this species.

General Categories for Implementation Schedule

Information Gathering - I or R (research) Acquisition - A

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Population status 2. Habitat status 3. Habitat requirements 4. Management techniques 5. Taxonomic studies 6. Demographic studies 7. Propagation 8. Migration 9. Predation 10. Competition 11. Disease 12. Environmental contamination 13. Reintroduction 14. Other information | <ol style="list-style-type: none"> 1. Lease 2. Easement 3. Management agreement 4. Exchange 5. Withdrawal 6. Fee title 7. Other |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Other - O

1. Information and education
2. Law enforcement
3. Regulations
4. Administration

Management - M

1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation control
6. Disease control
7. Other management

Recovery Action Priorities

- 1 = an action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
- 2 = an action that must be taken to prevent a significant decline in species population/habitat quality, or some other significant negative impact short of extinction.
- 3 = all other actions necessary to provide for full recovery of the species.

Abbreviations Used

- FWS - USDI Fish and Wildlife Service
 CCES - Corpus Christi Ecological Services
 Field Office
 RE - Realty

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY			FISCAL YEAR COSTS (EST)*			COMMENTS
					REGION	FWS PROGRAM	OTHER	FY1	FY2	FY3	
A3	Provide habitat protection through cooperation with private landowners	111	1	2 years	2	CCES RE		1,000	1,000		
A7	Obtain longterm protection of essential habitat	112	1	2 years	2	CCES RE		6,000	6,000		
M3	Work with Texas highway department to protect plants	12	2	ongoing	2	CCES		250	250	250	
M3	Monitor for human or natural impacts	13	2	ongoing	2	CCES		3,000	3,000	3,000	
M3	Implement beneficial management practices	14	2	ongoing	2	CCES		4,000	4,000	4,000	
I14	Search for unknown populations	2	2	3 years	2	CCES		5,000	5,000		
I7	Develop cultivation techniques	31	2	3 years	2	CCES		2,500	2,500	2,500	
I17	Maintain botanical garden population	32	2	ongoing	2	CCES		7,500	1,000	1,000	

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY		FISCAL YEAR COSTS (EST) *			COMMENTS
					REGION	FWS PROGRAM OTHER	FY1	FY2	FY3	
M2	Establish populations in suitable natural habitat	33	2	5 years	2	CCES	15,000	7,000	3,000	
R3	Determine habitat requirements	41	2	5 years	2	CCES	20,000	20,000	20,000	
R6	Study population dynamics	42	2	5 years	2	CCES	20,000	20,000	20,000	
R14	Study population ecology	43	2	5 years	2	CCES	20,000	20,000	20,000	
R14	Determine genetic relationships	44	3	5 years	2	CCES	10,000	10,000	10,000	
O3	Establish down-listing and delisting criteria	5	3	1 year	2	CCES			500	
O1	Develop public awareness	6	2	ongoing	2	CCES	2,000	2,000	2,000	

* Costs refer to USFWS expenditures only.

APPENDIX

List of Reviewers

A technical/agency review draft of the Slender Rush-pea Recovery Plan was sent to the following individuals and agencies on December 10, 1986.

- Ms. Jackie Poole, Texas Natural Heritage Program, Austin, TX
- Mr. Gerard Hoddenback, National Park Service, Santa Fe, NM
- Dr. William Mahler, Southern Methodist University, Dallas, TX
- Mr. David Riskind, Texas Parks and Wildlife Department, Austin, TX
- Mr. Gary Valentine, U.S. Soil Conservation Service, Temple, TX
- Dr. Richard Worthington, The University of Texas at El Paso,
El Paso, TX
- Dr. Elray Nixon, Stephen F. Austin State University, Nacogdoches, TX
- Mr. Andrew Sansom, The Texas Nature Conservancy, San Antonio, TX
- Dr. Allan Zimmerman, Chihuahuan Desert Research Institute,
Alpine, TX
- Mr. Harold Beaty, Temple, TX
- Mr. Paul Cox, San Antonio Botanical Gardens, San Antonio, TX
- Dr. Francis Thibodeau, The Center for Plant Conservation,
Jamaica Plain, MA
- Executive Director, Texas Parks and Wildlife Department, Austin, TX
- Regional Supervisor, Realty, USFWS, Region 2
- Field Supervisor, Ecological Services, Fort Worth Field Office, USFWS,
Region 2
- Field Supervisor, Ecological Services, Corpus Christi Field Office, USFWS,
Region 2
- Director (AFA/OES), Office of Endangered Species, USFWS, Washington,
D.C.
- Director (WR), Division of Research, USFWS, Washington, D.C.

Comments Received

Comment letters are reproduced in this section followed by the Service's response to each comment. Some reviewers submitted comments marked directly on the draft plan or submitted comments by phone. These comments have not been reproduced.

3. The recovery objectives for the threatened bunched cory cactus and Lloyd's Mariposa cactus have interim goals of 10,000 individuals and 20,000 individuals, respectively. Why is the interim goal for the Lloyd's cactus double that of the bunched cory cactus?
4. All maps and drawings should include a scale to better depict size and distance. A-3
5. Most of the plans do not quantify the primary objective. This should be done if at all possible. A-4

I hope these comments are useful as you prepare the final draft of these recovery plans for the Regional Director's approval. Upon his approval, notify the Office of Endangered Species, 500 Broyhill Building, and provide them with 30 copies of the printed plan when it is available.

Ronald E. Lamberton

Attachments

TEXAS NATURAL HERITAGE PROGRAM
 GENERAL LAND OFFICE
 STEPHEN F. AUSTIN BUILDING
 1700 NORTH CONGRESS AVENUE
 ROOM 619
 AUSTIN, TEXAS 78701
 (512) 463-5299
 1-800-252-RARE

January 6, 1987

Dr. Charlie McDonald
 U.S. Fish and Wildlife Service
 Endangered Species Office
 P.O. Box 1306
 Albuquerque, New Mexico 87103

Dear Charlie,

Thank you for allowing me the opportunity to comment on the recovery plan for Hoffmannseggia tenella.

The entire paragraph concerning the status of Hoffmannseggia and Caesalpinia in Texas needs to be reworked. According to Correll and Johnston (1970), there are four species of Hoffmannseggia in Texas: H. glauca, H. drepanocarpa, H. tenella, and H. oxycarpa. H. oxycarpa was retained in Hoffmannseggia in the Appendix. H. oxycarpa grows on rocky limestone hills and along streams and roadsides in southwest central Texas and adjacent Mexico. As for the number and origin of Caesalpinia species according to Correll and Johnston (1970), there are nine species with one, C. gilliesii, being non-native. Of the original eleven listed, C. oxycarpa has been retained in Hoffmannseggia and C. texensis has been placed in synonymy with C. drummondii.

B-1

The main threat to the slender rush-pea is not "habitat changes due to the introduction of invasive grasses", but the conversion of the habitat to agricultural land, either cropland or pasture. Certainly the introduced, invasive pasture grasses are threatening the few strongholds of the slender rush-pea that remain, but habitat destruction has been, and continues to be, the main threat.

B-2

Almost throughout the recovery plan, it is stated that the slender rush-pea occurs on the "Blackland Prairie". This is confusing because, when capitalized, the Blackland Prairie refers to a specific vegetation area of Texas. Although it is true that the slender rush-pea occurs on prairies with black, clayey soils,

B-3

it does not occur on the "Blackland Prairie". The habitat description from p. 10 is more accurate: "clayey soils of blackland prairies and creek banks of the Gulf Coastal Prairie". Either all references to the Blackland Prairie should be changed to blackland prairie or Gulf Coastal Prairie.

In the Narrative, it is suggested that herbarium collections in or near the range of the species be searched. The Texas Natural Heritage Program has surveyed approximately 15 such collections across the state for records of rare species, and would be glad to share this with the U.S. Fish and Wildlife Service or other workers.

B-4

In the technical description, the flowers should be 5 mm (.2 in.) long, rather than 2 in. long.

B-5 ,

Sincerely,



Jackie M. Poole
Botanist, Texas Natural Heritage Program

JMP:mt

Response to Comments

- A-1 Collecting is not considered a threat to slender rush-pea and vandalism seems unlikely. Under these circumstances, it is not believed the locality information in this plan will cause any additional risk to the species.
- A-2 The Implementation Schedule has been reviewed to ensure that recovery task priorities are appropriate.
- A-3 Suggestion has been incorporated.
- A-4 For many endangered plants with restricted distribution and low numbers, to little is known about their reproduction and ecological requirements to establish any realistic numerical goals for downlisting or delisting. This plan contains a task to establish numerical goals once adequate biological information is available.
- B-1 Material in the appendix of Correll and Johnston (1970) concerning the taxonomic treatment of Hoffmannseggia and Caesalpinia was overlooked. The error has been corrected.
- B-2 Portions of the plan dealing with threats to the species have been reworded.
- B-3 This error has been corrected.
- B-4 Since herbarium data is available from the Texas Natural Heritage Program, the recovery task to search regional herbaria before doing field searches has been deleted from the final plan.
- B-5 The correction has been made.
- C-1 Comment noted.
- D-2 Because some non-technical readers may not be familiar with metric measurements, both metric measurements and English equivalents have been used throughout the plan.
- D-1 Comment noted.
- E-1 Comment noted.