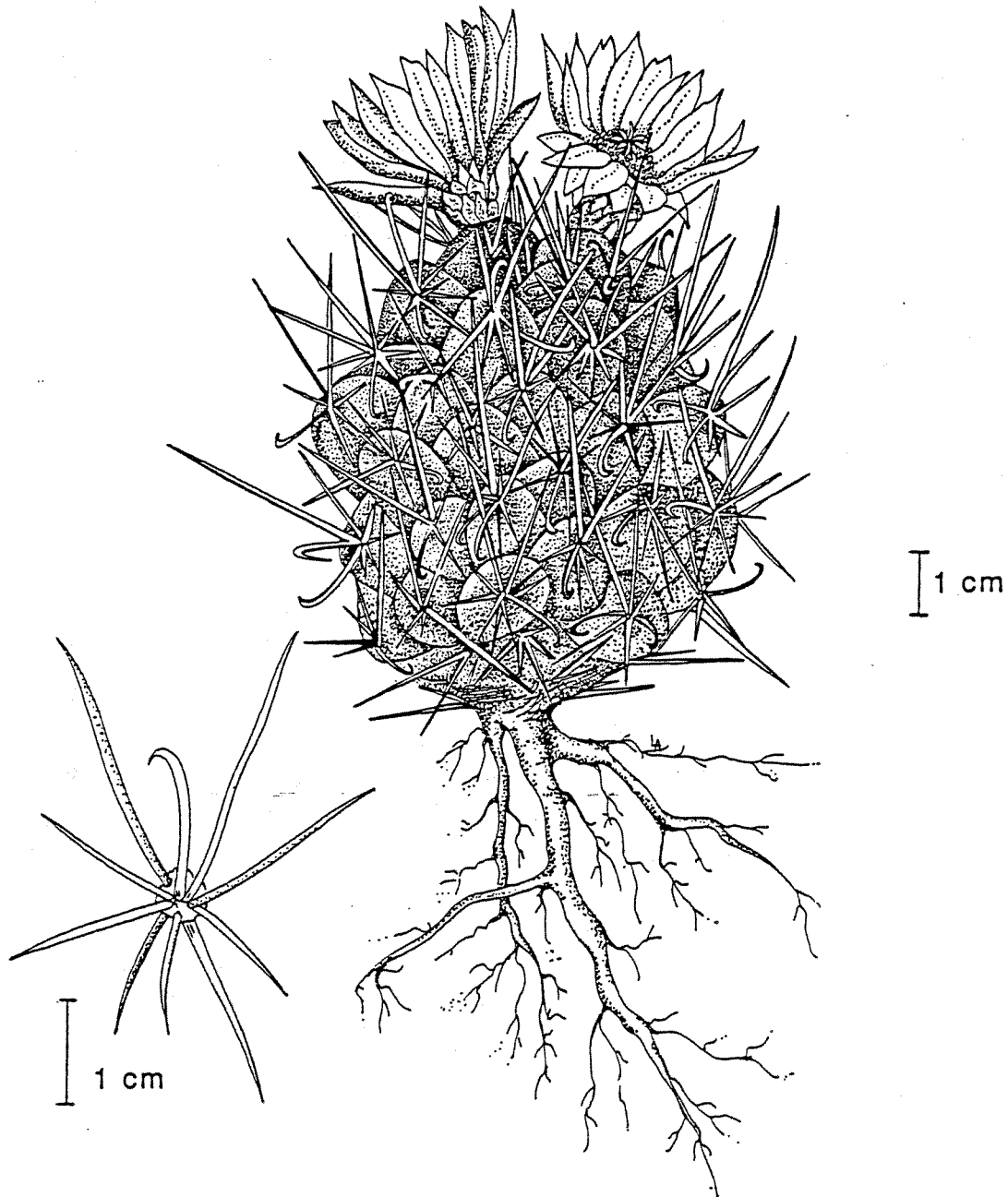


TOBUSCH FISHHOOK CACTUS

(*Ancistrocactus tobuschii*)

RECOVERY PLAN



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

1987

TOBUSCH FISHHOOK CACTUS
(Ancistrocactus tobuschii)

RECOVERY PLAN

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DISCLAIMER

This is the completed Tobusch Fishhook Cactus 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. 1987. Tobusch Fishhook Cactus (Ancistrocactus tobuschii) Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico 40 pp.

Additional copies may be purchased from:

Fish and Wildlife Reference Service
6011 Executive Blvd.
Rockville, Maryland 20852
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1-800-582-3421

ACKNOWLEDGEMENTS

Information and assistance in preparation of this plan were 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. Allan Zimmerman, and Dr. Elray Nixon.

In addition, we would like to acknowledge the technical assistance and comments of Mr. Harold Beaty (Temple, Texas), Ms. Jackie Poole (Texas Natural Heritage Program), Dr. Francis Thibodeau (The Center for Plant Conservation, Jamaica Plain, Massachusetts), Mr. Gary Valentine (USDA-Soil Conservation Service), and Dr. Allan Zimmerman (Chihuahuan Desert Research Institute).

SUMMARY

- Goal:** To remove Tobusch Fishhook cactus from the Federal list of threatened and endangered species by protecting plants and managing the essential habitat in a way that will assure the continued existence of natural self-sustaining populations.
- Recovery Criteria:** The criteria for downlisting Tobusch Fishhook cactus to threatened will be to establish at least four safe sites that contain at least 3,000 plants each. Delisting criteria have not yet been established. The implementation of studies in this recovery plan will provide the necessary data from which quantified delisting criteria can be established.
- Actions Needed:** The major steps for meeting the recovery criteria include: the establishment of safe sites through landowner cooperation or other measures; the implementation of measures to ensure that safe sites are secure from possible impacts; the establishment of a botanical garden population for research and education; the collection of biological data that is useful to managing the species; the establishment of a survey program to help determine the true distribution of the species; and, the development of public awareness, appreciation, and support for preservation of the Tobusch Fishhook cactus.

TABLE OF CONTENTS

	Page
DISCLAIMER.....	i
ACKNOWLEDGEMENTS.....	ii
SUMMARY.....	iii
PART I INTRODUCTION.....	1
Brief Overview.....	1
Taxonomy.....	2
Morphology and Phenology.....	3
Distribution.....	4
Land Ownership.....	8
Habitat.....	8
Associated Species.....	9
Impacts and Threats.....	11
Real Estate Development.....	11
Livestock Damage.....	11
Modifications of the Habitat by	
Natural Factors.....	12
Collecting by Cactus and Succulent	
Fanciers.....	12
PART II RECOVERY.....	14
Objectives.....	14

	Step-down Outline.....	15
	Narrative.....	17
	Literature Cited.....	29
PART III	IMPLEMENTATION SCHEDULE.....	30
APPENDIX	36
	List of Reviewers.....	36
	Comments Received.....	37
	Responses to Comments.....	40

PART I

INTRODUCTION

Brief Overview

Ancistrocactus tobuschii W. T. Marshall, the Tobusch fishhook cactus, is a native Texas plant. It was federally listed as endangered on November 7, 1979 (44 FR 64736) and listed as endangered by the State of Texas on April 29, 1983. No other members of this genus are either federally listed or candidates for listing.

Ancistrocactus tobuschii grows in limestone and limestone derived soils of the eastern Edwards Plateau of Texas. Plants are found in the Ashe juniper-oak vegetation association and typically grow near streams. These streamside plants may be inundated by floods that commonly occur in the area.

The Tobusch fishhook cactus is threatened by livestock grazing, real estate activities, collecting by cactus fanciers, and natural destruction of plants and habitat during major floods. The objective of this plan is to outline measures that will alleviate these threats to the extent that populations can maintain themselves at levels where the species can be downlisted to threatened and ultimately removed from the list of threatened and endangered species.

This plan begins with background information on the Tobusch fishhook cactus including taxonomy, morphology, distribution habitat, associated species, and present threats. This is followed by a step-down outline and narrative that provide information on recovery tasks necessary to reduce threats to the species and protect its habitat. The final section of this plan contains an implementation schedule that lists the recovery tasks, their priorities for accomplishment, agencies involved, and estimated costs.

Taxonomy

Ancistrocactus tobuschii was originally described by W. Taylor Marshall (1952) from one plant sent to the Desert Botanical Garden. This specimen was one of several collected in April 1951, on the G. W. Henri Ranch east of Vanderpool, Texas by Mr. Herman Tobusch of Villa Park, Illinois. Mr. Henri and his ranch foreman, Ted Ryan, made subsequent collections in the spring of 1952, and W. Taylor Marshall and Jim Blakley collected plants in June 1952 (Marshall, 1952). The type specimen (W. T. Marshall and E. R. Blakley, B1501, June 24, 1952) was deposited in the Herbarium of the Desert Botanical Garden. Isotypes (E. R. Blakley, No. 607) were deposited at the Herbarium of the Desert Botanical Garden and the Herbarium of the University of Texas (Benson, 1982).

The genus Ancistrocactus, which means "fishhook", contains four species, three occurring in the region of the Rio Grande River in southern Texas and adjacent Mexico, and one occurring farther south (Benson, 1982). According to Benson (1982) this genus is most closely related to Coryphantha and Neolloydia, all three genera being in the vast complex group of plants intermediate between Mammillaria and Echinocactus. In Cacti of the Southwest, Del Weniger (1970) calls the species Echinocactus tobuschii but this is an invalid name because the rules of botanical nomenclature were not followed in its publication.

Morphology and Phenology

Ancistrocactus tobuschii normally has solitary obconic or turbinate stems up to 8.9 centimeters (3.5 inches) in diameter and nearly as tall (Weniger, 1970). The root system is described as a brown tap root by Weniger (1970) but it is said to be fibrous by others (Correll and Johnston, 1970; Benson, 1982). Each areole has 7-9 acicular radial spines similar to the centrals. The 3-5 centrals per areole are light yellow with red tips when immature and gray at maturity. The centrals are arranged in a "V" or sometimes a "W" pattern with one reddish tipped fishhooked spine lateral from these (Weniger, 1970). The flowers are yellow and 3.0-3.8 centimeters (1.2-1.5 inches) in diameter. Flower and fruit formation

occur near the tips of the current year's pyramidal shaped tubercles. The flowers appear from mid-February to mid-March with each blossom normally lasting a week. Plants normally complete flowering by the first week of April. The green fruits mature during the third and fourth weeks of May. Normally there are 3-4 scale leaves at the apex of the fruit. The fruits begin drying posteriorly and begin dehiscing by a basal longitudinal slit. This slit then develops in a circumscissile pattern for release of the seeds which roll down between the ribs. The seeds will germinate at the base of the mature plant unless they are washed or carried away. There are usually 20 seeds per fruit. The seeds are black with a fine reticulate coat and are 1.5 millimeters (.06 inch) long and 1.5-1.7 millimeters (.06-.07 inch) broad. Each seed has a distinct brownish red hilum and a distinct sharp angled raphe. Seed dormancy and other aspects of germination in the natural habitat are unknown.

Distribution

Ancistrocactus tobucshii has been found in Kerr, Bandera, Real, Kimble, and Uvalde Counties, Texas. It has also been reported from Brewster County, Texas, but this occurrence is doubtful. Two of the counties, Kerr and Bandera, represent historical localities. Occurrences in the other three counties have been reported since 1985. All of these sites are in the

Edwards Plateau of Texas which is an area dissected by many canyons and arroyos formed by the region's creeks and major rivers. The dominant vegetation is juniper, oak, and sycamore. The cacti occur in gravelly soils along rivers and plants are periodically disturbed by flooding. Severe floods will destroy plants but some disturbance appears to benefit the species because non-flooded areas become very grassy which tends to crowd out the cacti.

The population at the type locality near Vanderpool, Bandera County has been extirpated (Weniger, 1979). A visit to this site in 1985 confirmed that the cactus was probably extirpated during land clearing in the late 1960's. The site could possibly be repopulated because the current landowner is allowing natural succession. Populations observed by Weniger (1970) in western Kerr and northern Bandera Counties on the upper Medina River could not be located in 1985.

Populations presently known or believed to be extant occur in Bandera, Real, Kimble and Uvalde Counties (Figure 1).

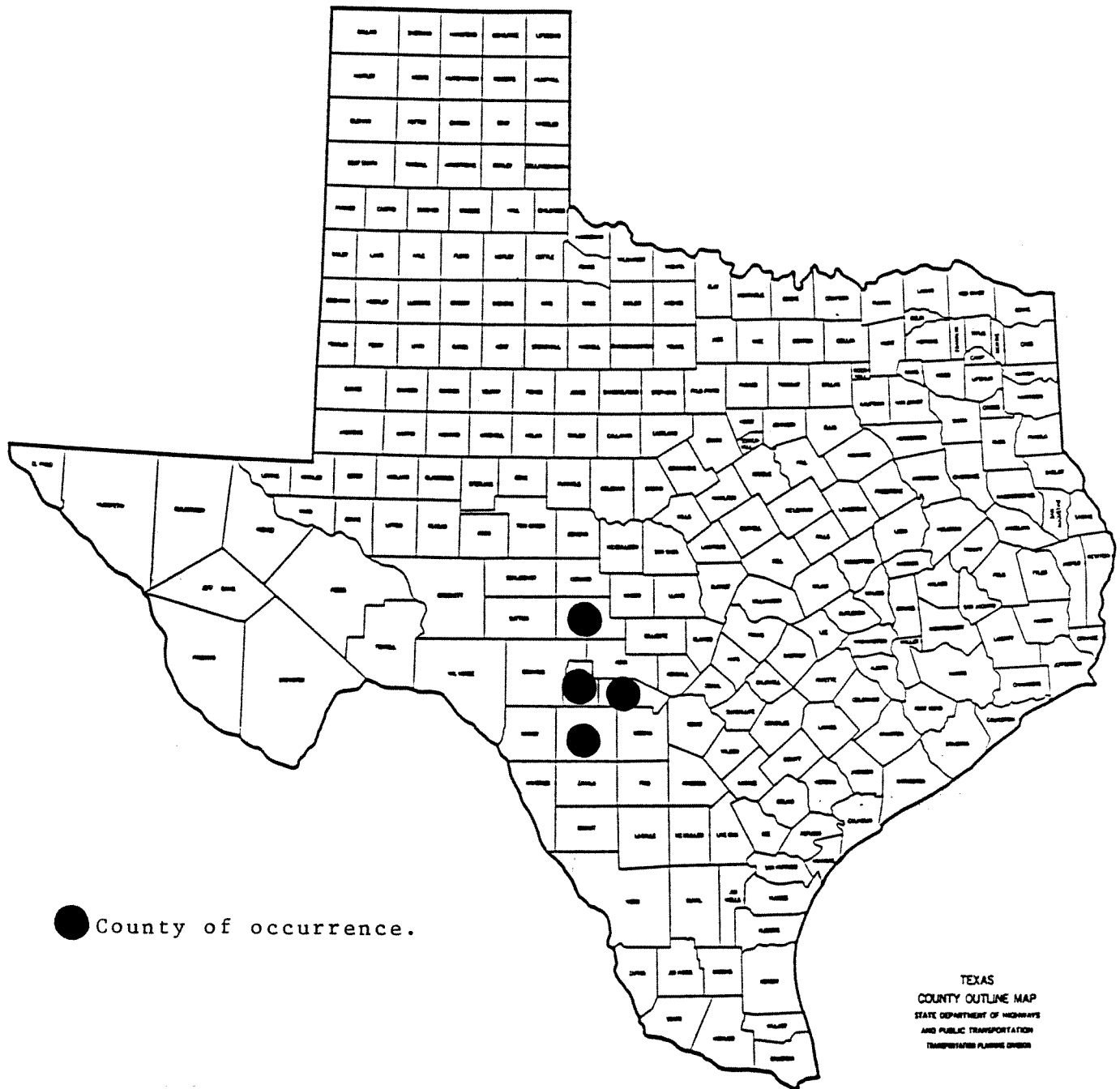


Figure 1. Presently known county distribution of Ancistrocactus tobuschii.

Land Ownership

Most of the sites occupied by Tobusch fishhook cactus are on private land. One site is on State highway right-of-way and one is on State property administered by Texas Tech University.

Habitat

Ancistrocactus tobuschii is found in the eastern Edwards Plateau of Texas occurring most frequently in river canyons. Areas supporting the highest number of individuals are thinly wooded with Ashe juniper, oak, and sycamore. The cacti occur on the higher stream banks and not in the gravelly cobblestone of river beds as some reports indicate. Very little ecological data are available concerning the specific habitat requirements of this species.

Associated Species

The following species are associated with Ancistrocactus tobuschii. The list is produced from field work conducted during the spring and summer of 1985 and from reports of associated species according to Weniger (1979).

Trees

Diospyros texana
Fraxinus texensis
Garrya Lindheimeri
Juglans microcarpa
Juniperus ashei
Platanus occidentalis
Quercus glaucoides
Q. texana
Q. fusiformis
Ungnadia speciosa

Shrubs

Baccharis texana
Berberis trifoliolata
Brickellia dentata
Cephalanthus occidentalis
Eysenhardtia texana
Forestiera reticulata
Rhus aromatica
R. virens
Sophora secundiflora

Herbs

Acalypha Lindheimeri
Asclepias viridis

Bouteloua curtispindula
Calylophus Drummondianus subsp. Drummondianus
Centaureum calycosum
Chaetopappa bellidifolia
C. effusa
Chasmanthium latifolium
Chrysactinia mexicana
Coryphantha sulcata
Desmanthus velutinus
Dichanthelium pedicellatum
Dichromena nivea
Dryopteris filix-mas
Elymus canadensis
Epithelantha micromeris
Euphorbia angusta
E. cyathophora
E. marginata
Fallugia paradoxa
Gaillardia pulchella
G. suavis
Gilia incisa
G. rigidula
Hedeoma Drummondii
Hymenoxys scaposa
Lespedeza texana
Liatris mucronata
Lithospermum incisum
Matelea edwardsensis
Melampodium leucanthum
Mentzelia oligosperma
Nolina Lindheimeriana
Paronychia Jamesii
Phyllanthus polygonoides
Plantago Helli
Polanisia dodecandra
Polygala Tweedyi
Rhus toxicodendron
Salvia farinacea
S. roemeriana
Scutellaria Wrightii
Smilax bona-nox
Stillingia texana
Teucrium canadense
Thelesperma curvicaupum
Thryallis angustifolia
Tragia nigricans
Tripsacum dactyloides
Verbesina microptera
Vernonia Lindheimeri
Yucca rupicola
Zexmenia hispida

Impacts and Threats

Ancistrocactus tobuschii is threatened by four primary factors: (1) real estate development, (2) livestock damage, (3) habitat modification by natural factors, and (4) collecting by cactus and succulent fanciers.

Real Estate Development

Ancistrocactus tobuschii occupies limestone arroyos in canyons of the eastern Edwards Plateau. This area is being promoted by real estate developers because of its scenic beauty and the opportunity for water recreation. People from large cities, particularly San Antonio, are attracted to the area to build summer homes or weekend cottages and habitat is destroyed when the land is bladed to remove vegetation. Potential habitat is also lost when low-water dams are constructed to enhance river recreation. As development increases in the Edwards Plateau more land will be modified and more dams will likely be constructed, further reducing habitat for Ancistrocactus tobuschii.

Livestock Damage

Much of the Edwards Plateau has been severely overgrazed for many years. Establishment and survival of cacti, which

like Ancistrocactus tobuschii remain very small, is difficult under these disturbed soil conditions. Anistrocactus tobuschii plants have been observed that were either uprooted or had apical meristem injuries from livestock trampling.

Modifications of the Habitat by Natural Factors

During the late spring, heavy rainfall caused by weather systems that develop over the mountains of Mexico occurs on the eastern Edwards Plateau. When these systems stall over the Plateau, severe flooding results. Major floods, such as the one in 1978, result in severe erosion and habitat destruction. Similar flooding may occur in the fall in conjunction with tropical storms or cold fronts.

Despite damage by major floods, Ancistrocactus tobuschii appears to be a successional species that requires some natural disruptions such as minor flooding or physical vegetation removal. Unfortunately, very little ecological information is known for this cactus so the needed amount and type of habitat modification will remain uncertain until these data are obtained.

Collecting by Cactus and Succulent Fanciers

Weniger's book on the southwestern cacti (1970) contains a color photograph of Ancistrocactus tobuschii, a habitat description,

and the general location of the cactus. The rarity of this cactus is also described. Unfortunately, this book was published before attempts to recover the species were begun. The rarity of this cactus makes it desirable to collectors on the local, State, National, and even international levels.

This cactus could be severely affected by unscrupulous commercial collectors who can easily obtain population locations from literature published prior to designating the species as endangered. Furthermore, the Endangered Species Act does not protect plants from being collected on private land or restrict intrastate commerce. Texas law does, however, provide some protection for endangered plants on private land by requiring that written permission of the landowner be obtained and that a tag be affixed to each field collected endangered plant before it is offered for sale.

PART II

RECOVERY

Objectives

Because Ancistrocactus tobuschii occurs in an area of the eastern Edwards Plateau that is likely to be extensively developed, the protection of self-sustaining natural populations is of the utmost urgency. Therefore, the primary objective of this recovery plan is to establish at least four safe sites. Recovery focuses on activities that will preserve and increase the number of plants at these sites. When the number of plants at four safe site reaches 3,000 each it will be possible to downlist the species to threatened. It is believed this number of plants located in safe sites will preserve the species' genetic diversity and provide an adequate buffer against extinction in the event some natural disaster reduces one or more of the populations to much lower numbers. These figures may be revised later when additional information becomes available.

Collecting along with human and natural habitat destruction will continue to threaten this species which is made more vulnerable by its currently small numbers and limited known range. These factors will make constant protection of this cactus necessary. Because of these factors it is unlikely that the species can be

downlisted in the next five years. When downlisting is accomplished this plan will be re-evaluated to determine delisting criteria.

Step-down Outline

1. Remove immediate human threats to Ancistrocactus tobuschii by protecting known populations from collecting and habitat destruction.
 11. Establish four safe sites for protection of presently known populations of the cactus.
 111. Develop cooperation with private landowners.
 112. Develop cooperation with government agencies that manage land on which the cactus occurs.
 113. When necessary, take steps that will lead to permanent land protection.
 12. Develop a management plan for each safe site.
 13. Ensure that the safe sites, are secure from possible impacts.
 131. Prevent drainage modifications at the safe sites.
 132. Control access to the safe sites.
 133. Enforce Federal and State trade regulations.
 134. Establish a buffer zone for population expansion.
2. Establish a permanent living collection at a botanical garden or university.

3. Minimize long range threats to Ancistrocactus tobuschii by development of biological information relevant to recovery.
 31. Determine life history and ecological requirements for the species.
 311. Determine pollinators.
 312. Determine seed dormancy and longevity.
 313. Determine seed germination requirements and percentage germination.
 314. Determine microhabitat factors involved in population establishment.
 315. Develop a better understanding of the relationship between this species and the associated flora.
 316. Evaluate the effects of livestock and other faunal elements.
 32. Determine demographic statistics.
 33. Establish delisting criteria.
4. Establish a long term (5 year) survey program to more precisely determine the true distribution of the species.
 41. Locate new populations.
 42. Survey and map new populations.
5. Develop a comprehensive trade management plan for all cacti.

6. Develop a program to provide propagated plants and seeds to the commercial market.
 61. Develop propagation techniques.
 62. Make propagated plants and seeds available to the commercial market.
7. Develop public awareness, appreciation, and support for preservation of the species.
 71. Develop ways to increase public knowledge of the species.
 72. Develop a program to inform the public of the recovery effort.
 73. Establish a local technical group to help implement recovery efforts.
 74. Establish a local public interest group to support and become involved in recovery efforts.

Narrative

1. Remove immediate human threats to *Ancistrocactus tobuschii* by protecting known populations from collecting and habitat destruction.

This species is in danger of extinction. Protecting as many individuals as possible is of critical importance.

11. Establish at least four safe sites for protection of presently known populations of the cactus.

The habitat of *Ancistrocactus tobuschii* is subject to a variety of human and natural threats. To insure

the continued existence of this species, at least four areas presently supporting plants should be established as safe sites that receive special attention and management. Safe sites can be established through voluntary cooperation with private landowners or their establishment may require that the Fish and Wildlife Service or some other conservation organization acquire some degree of legal rights to manage the species and its habitat.

111. Develop cooperation with private landowners.

In order to maintain the species on private land it will be necessary to obtain the cooperation and goodwill of private landowners. Written agreements should be developed with landowners that describe specific measures that can be accomplished through landowner and Fish and Wildlife Service cooperation.

112. Develop cooperation with government agencies that manage land on which the cactus occurs.

Plants have been found on land managed by Texas Tech University and by the Texas Highway Department. The Fish and Wildlife Service should develop memoranda of understanding or cooperative agreements with these agencies. The agreements should outline long-term objectives and general management activities.

113. When necessary, take steps that will lead to permanent land protection.

In some instances it may be desirable for the Fish and Wildlife Service, the Nature Conservancy, or some other conservation organization to pursue actions that would give them direct management authority over occupied or potential habitat. Land protection actions by the Fish and Wildlife Service will require full NEPA compliance and documentation.

12. Develop a management plan for each safe site. Once safe sites are established, management plans should be developed that establish goals and objectives for the species and its habitat.

13. Ensure that the safe sites are secure from possible impacts.

If populations at safe sites are to sustain themselves, the sites must, to the extent possible, be managed to eliminate threats to the species.

131. Prevent drainage modifications at the safe sites.

This species shows a tendency to occupy habitats that have good drainage. It is therefore, essential to maintain present drainage around populations.

132. Control access to the safe sites.

This factor is of highest priority. Numerous people visit the eastern Edwards Plateau during the spring, summer and fall. During these "family outings" people randomly wander throughout the area. The cactus could easily be destroyed or damaged by such individuals. Cactus collecting also poses a threat. Both types of damage might be reduced by making access more difficult through fencing and posting no-trespassing signs.

133. Enforce Federal and State trade regulations.

Regulations under the Endangered Species Act of 1973, the Convention on International Trade in Endangered Species, the Lacey Act, and Chapter 88 (Endangered Plants) of the Texas Parks and Wildlife Code should be enforced to the maximum extent possible. Any convictions under these acts should be published in periodicals such as the Cactus and Succulent Journal of America to remind others that the regulations exist and are being enforced.

134. Establish a buffer zone for population expansion.

The known populations are small and contain relatively few plants. If populations are to expand,

the safe sites must incorporate buffer zones that allow space for expansion. The size and shape of buffer zones will be addressed in the management plans.

2. Establish a permanent living collection at a botanical garden or university.

Even though plants in a living collection can not substitute for healthy populations in natural habitats, a living collection would still contribute significantly to the overall recovery effort. Much information on ecological requirements and reproductive potential could be obtained most easily from a living collection. In addition, a permanent well documented and accessible living collection, together with appropriate seed banking, could provide an important source of material for non-destructive research, maintenance of wild populations, and public awareness. An adequate living collection would remove the necessity of repeatedly returning to wild populations to collect plants for various recovery projects.

3. Minimize long range threats to *Ancistrocactus tobuschii* by development of biological information relevant to recovery.

A better understanding of the demography of populations and the life history and ecological requirements of the species would provide information useful to management.

31. Determine life history and ecological requirements for the species.

A clear understanding of these factors is essential to management and only limited information is currently available.

311. Determine pollinators.

The populations should be monitored to determine pollinators. Once pollinators are determined, care should be taken to maintain them locally.

312. Determine seed dormancy and longevity.

Knowing the length of seed dormancy and the longevity of seed viability could be vital to population maintenance. This information could be used to help predict the effects of poor seed production years or to help calculate the number of seeds that could be safely harvested for artificial propagation projects.

313. Determine seed germination requirements and percentage germination.

Specific requirements for seed germination in the natural environment are not known for this species. This factor should receive high priority and will be important if it is determined

that low seedling establishment is limiting population sizes.

314. Determine microhabitat factors involved in population establishment.

To understand the present distribution of the species and the potential for population expansion, a better understanding of microhabitat parameters is essential. Soil characteristics need to be defined and monitoring should be initiated to determine edaphic changes that may occur following heavy rains.

315. Develop a better understanding of the relationship between this species and the associated flora.

A better understanding of the intracommunity dynamics of this species and of its position in community successional patterns is essential. A clearer understanding is needed of the positive and negative influences of species immediately associated with this cactus. A first step in determining these relationships is to determine the frequency of associated vegetation. This baseline information will be beneficial when the cactus is monitored and attempts are made to correlate population expansion or decline with other vegetational changes.

316. Evaluate the effects of livestock and other faunal elements.

Study is needed to determine the actual affect of grazing on the species. The role of birds or rodents as seed dispersers should be evaluated.

32. Determine demographic statistics.

Knowledge of such statistics as life span, age to first flowering, fruit and seed production, and age class structure of populations will be important to successful management. Accumulating this information will require detailed population studies over a number of years.

33. Establish delisting criteria.

Use information from the preceding studies, distribution studies, and from management experience to establish quantified delisting criteria for the species.

4. Establish a long term (5 year) survey program to more precisely determine the true distribution of the species.

Surveys for this cactus will be difficult because it is easily overlooked, particularly in the summer and fall when it is hidden by perennial grasses.

41. Locate new populations.

Cooperation with landowners will be necessary to gain permission for qualified individuals to search for new populations.

42. Survey and map new populations.

Once new populations are found, they should be carefully surveyed and mapped. Recording the number of plants, their sizes, and exact localities will be invaluable to future monitoring.

5. Develop a comprehensive trade management plan for all cacti.

Studies are needed to determine what species are in trade, the overall trend of trade in listed cacti, and the feasibility of reducing collecting pressure on wild populations by promoting a commercial artificial propagation program. These studies should be national in scope and address all cacti. The results will be used to develop policy and a comprehensive trade management plan for all cacti. Strategies for effective implementation of law enforcement responsibilities under ESA, CITES, Lacey Act, and State laws need to be developed.

6. Develop a program to provide plants and seeds to the commercial market.

If information from task 5 indicates that artificial propagation will reduce collecting from the wild, an

effort should be made to see that adequate sources of propagated plants are commercially available. This may be particularly helpful for Ancistrocactus tobuschii because several of the historic sites are easily accessible and already well known from the literature.

61. Develop propagation techniques.

Reliable commercial growers who sell only propagated plants should be supported in work to develop propagation techniques for this species.

62. Make propagated plants and seeds available to the commercial market.

Individuals in the commercial market should be encouraged to increase the availability of propagated plants and seeds to help decrease collecting from the wild.

7. Develop public awareness, appreciation, and support for preservation of the species.

Public education is extremely important to this species' successful recovery. Landowners usually do not realize that this species exists and most will support protection and conservation efforts if they learn that a unique plant grows on their land.

71. Develop ways to increase public knowledge of the species.

One mechanism to increase public knowledge would be through a poster with a photograph and description of the cactus. The poster could be mailed to local landowners along with instructions on how to contact the nearest individual involved in the recovery effort.

72. Develop a program to inform the public of the recovery effort.

A slide program about the recovery effort should be developed for presentation to local conservation groups, schools, garden clubs, and journalists. The journalists for small newspapers in the region typically write columns of local interest and could be very instrumental in developing support for recovery efforts.

73. Establish a local technical group to help implement recovery efforts.

A technical group of the most qualified local people should be developed to help implement recovery efforts. A local group may help the acceptance of recovery because many landowners would already have had personal contact with group members.

74. Establish a local public interest group to support and become involved in the recovery efforts.

A local public interest group would be invaluable to the recovery effort. It should include landowners who might be willing to help locate plants and map new populations as they do their daily work. The group should also include representatives from local conservation groups, garden clubs, etc., as well as a representative from the local technical group.

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PART III

IMPLEMENTATION SCHEDULE

The following Implementation Schedule outlines actions and costs for the Tobusch fishhook cactus recovery program. It is a guide to meeting the objectives elaborated in Part II of this plan. The 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 FWS tasks. These actions, when accomplished, should bring about the recovery of the Tobusch fishhook cactus and protect its habitat. It should be noted that monetary needs for agencies other than FWS are not identified and therefore, Part III may not reflect the total financial requirements for the recovery of this cactus.

General Categories for Implementation Schedule

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

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 contaminant
13. Reintroduction
14. Other information

1. Lease
2. Easement
3. Mgmt. Agmt.
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. Depridation 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
 SE - Office of Endangered Species
 LE - Law Enforcement
 RE - Realty
 TPWD - Texas Parks and Wildlife Department

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY	# TASK DURATION	RESPONSIBLE AGENCY		FISCAL YEAR COSTS (EST)*			COMMENTS
					FWS REGION PROGRAM	OTHER	FY 1	FY 2	FY 3	
M7	Develop coopera- tion with private landowners	111	1	3 years	2	SE	3,000	3,000	3,000	
M7	Develop coopera- tion with land man- aging agencies	112	1	2 years	2	SE	1,000	1,000		
A7	Provide permanent land pro- tection	113	1	3 years	2	SE RE	3,000	3,000	3,000	32
M3	Develop manage- ment plans	12	2	3 years	2	SE	4,000	4,000	4,000	
M7	Prevent drainage modifica- tions	131	2	ongoing	2	SE	1,000	1,000	1,000	
M3	Control safe site access	132	2	3 years	2	SE	5,000	5,000	5,000	

*Costs refer to USFWS expenditures only.

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY	# TASK DURATION	RESPONSIBLE AGENCY		FISCAL YEAR COSTS (EST)*			COMMENTS
					REGION	PROGRAM	FY 1	FY 2	FY 3	
O2	Enforce trade regulations	133	2	Ongoing	2	SE LE	1,000	1,000	1,000	
M3	Establish buffer zones	134	1	3 years	2	SE RE	500	500	500	
M1	Establish a botanical garden living collection	2	2	3 years	2	SE	5,000	5,000	5,000	
I14	Determine pollinators	311	3	3 years	2	SE	1,000	1,000	1,000	
I14	Determine seed dor- mancy and longevity	312	3	3 years	2	SE	1,000	1,000	1,000	
I7	Determine germination requirements	313	2	3 years	2	SE	1,000	1,000	1,000	
I3	Determine micro- habitat	314	3	3 years	2	SE	5,000	5,000	5,000	

*Costs refer to USFWS expenditures only.

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY	# TASK DURATION	RESPONSIBLE AGENCY		FISCAL YEAR COSTS (EST)*			COMMENTS
					FWS	OTHER	FY 1	FY 2	FY 3	
I3	Determine relationship with associated flora	315	2	5 years	2	SE	2,000	2,000	2,000	
I3	Evaluate affects of livestock and other animals	316	2	5 years	2	SE	3,500	3,500	3,500	
I6	Determine demographic statistics	32	2	5 years	2	SE	5,000	5,000	5,000	
04	Establish delisting criteria	33	3	1 year	2	SE			500	
II4	Locate new populations	41	2	5 years	2	SE	2,000	2,000	2,000	
II1	Survey new populations	42	2	5 years	2	SE	500	500	500	
II4	Develop a trade management plan for all cacti	5	2	1 year	2	SE	20,000			

34

*Costs refer to USFWS expenditures only.

PART III - IMPLEMENTATION SCHEDULE

GENERAL CATEGORY	PLAN TASK	TASK #	PRIORITY #	TASK DURATION	RESPONSIBLE AGENCY		FISCAL YEAR COSTS (EST)*			COMMENTS
					REGION	FWS PROGRAM	FY 1	FY 2	FY 3	
I7	Develop propagation techniques	61	3	3 years	2	SE	3,000	3,000	3,000	
M4	Make prop- agated plants com- mercially available	62	3	Ongoing	2	SE	1,000	1,000	1,000	
O1	Increase public knowledge	71	2	Ongoing	2	SE	2,000	2,000	2,000	
O1	Inform public of recovery effort	72	2	Ongoing	2	SE	1,000	1,000	1,000	
O4	Establish a local technical group	73	2	1 year	2	SE	500			
O4	Establish local interest group	74	2	1 year	2	SE	500			

*Costs refer to USFWS expenditures only.

APPENDIX

List of Reviewers

An agency review draft of this plan was sent to the following agencies for review on August 15, 1986.

Executive Director, Texas Parks and Wildlife Department,
Austin, TX

Regional Supervisor, Realty, USFWS, Region 2

Special Agent in Charge, Law Enforcement, 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.

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.



ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES

OCT 10 1986

RD _____
DRD _____
ABA _____
AFF _____
ARW _____
AWE _____
ALE _____
APA _____
AHR _____
Cole _____
File _____
Action 3E
CL 10-243

Memorandum

To: Regional Director, Region 2 (ARD/AFF)
From: Acting Assistant Director
Subject: Comments on Agency Review Draft - Tobusch Fishhook Cactus

Rec'd
FWS-Region 2

OCT 21 '86

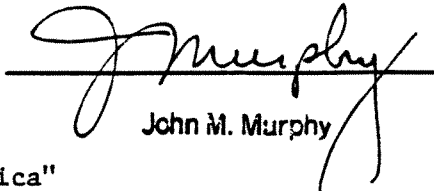
RD

The subject plan has been reviewed and marginalia are provided in the attached copy of the plan. In addition, the following comments are offered:

1. Page 5, Distribution - A State map showing the counties where the cactus is found would be helpful. A-1
2. Page 5, second paragraph, and page 6, first paragraph - By the word "relocated" do you mean "rediscovered"? A-2
3. Page 7, first paragraph - The site being described is "generally above the zone of frequent flooding." Is this an exception to the statement on page 5, that periodic flooding appears necessary for the species? A-3
4. Page 16, Task 11 - This task should include directions to formulate a program with Texas Tech University and the Texas Highway Department (page 7) to conserve plants on their lands. A-4
5. Page 19, Task 134 - Wording has been deleted from this paragraph. A-5
6. Page 24, Task 61 - Define the traits which would be required for an individual to be "reliable". A-6
7. Page 27, Literature Cited - Is the Sabo, K. 1978 reference cited in the recovery plan? A-7

I hope these comments are useful as you prepare the final draft of this recovery plan for the Regional Director's approval. Upon his approval, notify the Office of Endangered Species (OES), 500 Broyhill Building, and provide them with 25 copies of the printed plan when it is available.

Attachments


John M. Murphy

FWS REG 2
RECEIVED

OCT 23 '86

SE

"Take Pride in America"

Memorandum

SE

Responses to Comments

- A-1 A county distribution map has been included.
- A-2 These sentences have been reworded to clarify their meanings.
- A-3 The site described on page 7 is different from most other known sites. A statement indicating this has been included.
- A-4 Task 11 has been revised to include the development of memoranda of understanding or cooperative agreements with these agencies.
- A-5 Correction was made.
- A-6 Cactus nurserymen who only sell propagated material are the ones intended to be included in the "reliable" category. The task has been reworded to clarify this.
- A-7 The text and literature cited section have been checked to be sure they correspond.
- B-1 Safe sites are areas where plants are protected and the habitat is suitable to sustain the population. The needed level of Fish and Wildlife Service involvement will depend on the circumstances and cannot be specified at this time. Task 11 has been revised in a way that should make realty's function clearer.