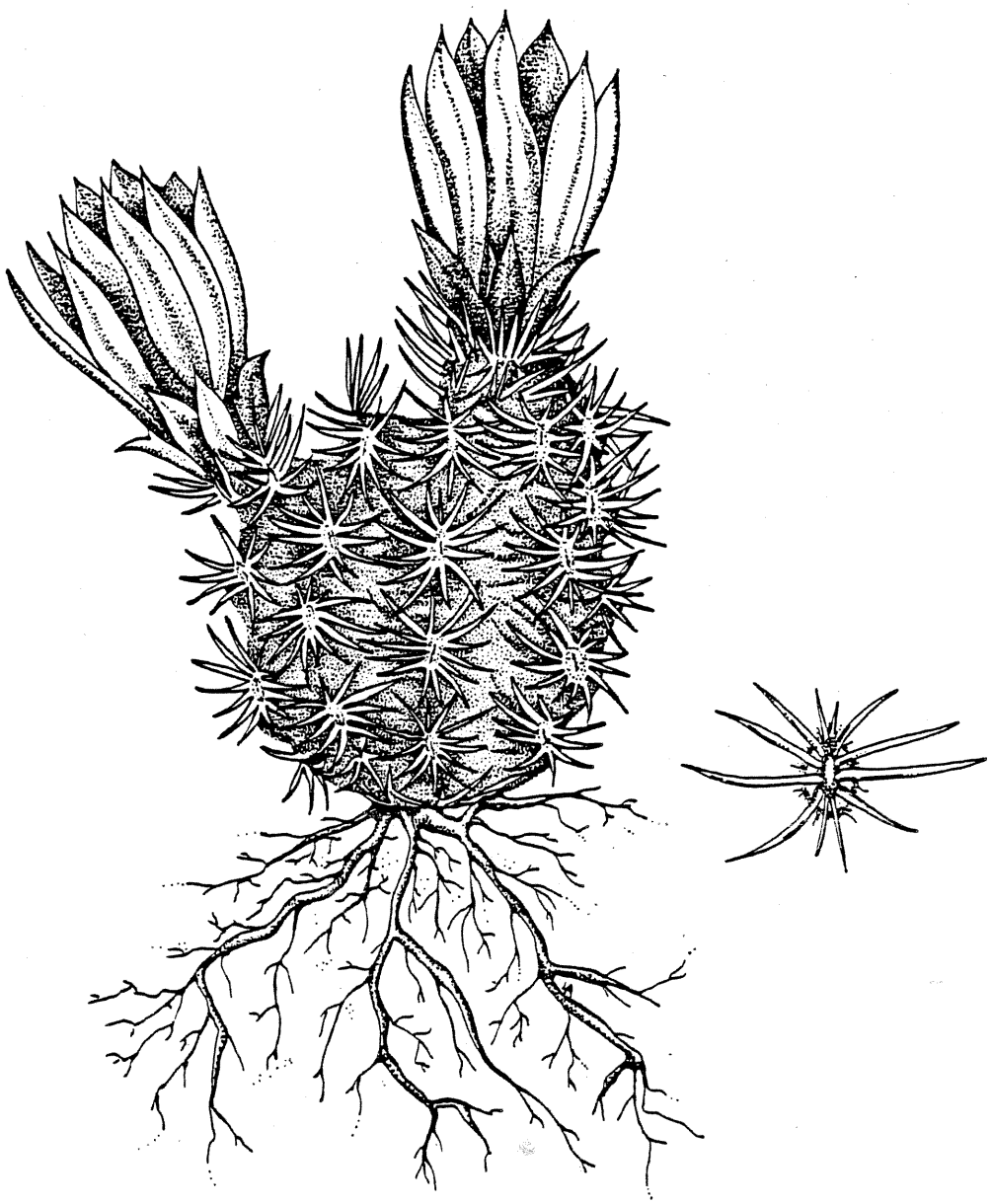
# DAVIS' GREEN PITAYA CACTUS

## (Echinocereus viridiflorus var. davisii)

# RECOVERY PLAN



U.S. Fish and Wildlife Service

Albuquerque, New Mexico

1984

# RECOVERY PLAN FOR THE DAVIS' GREEN PITAYA

## *ECHINOCEREUS VIRIDIFLORUS* ENGELM.

## VAR. *DAVISII* (HOUGHTON) L. BENSON

Prepared by:

Kenneth D. Heil
Math-Science Dept.
San Juan College
Farmington, New Mexico 87401

for

U.S. Fish and Wildlife Service, Region 2

APPROVED: _____
Regional Director, Region 2
U.S. Fish and Wildlife Service

DATE: 9/28/84

## SUMMARY


| | |
|---|---|
| Goal: | To remove the Davis' green pitaya cactus from the Federal list of endangered and threatened species by managing the essential habitat to sustain natural populations in the wild. |
| Recovery Criteria: | The criteria for downlisting and/or delisting the Davis' green pitaya have not as yet been determined. Implementing studies in this recovery plan will provide the necessary data from which quantification of downlisting and/or delisting criteria can be established. |
| Actions needed: | Major steps needed to meet the recovery criteria include: displaying "No Trespassing" signs along U.S. Highway 385 property fence lines; developing a cooperative agreement with private landowners for the protection and management of the Davis' green pitaya cactus population; initiating and supporting studies on the population biology and ecology of Davis' green pitaya cactus and developing a comprehensive trade management plan for all cacti. |

## DISCLAIMER

This is the completed Davis' Green Pitaya Cactus (Echinocereus viridiflorus var. davisii) 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 it does not necessarily represent the views of all individuals who played a key role in preparing this plan. This plan is subject to modification as dictated by new findings and 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 budgetary constraints.

Literature citation should read as follows:

U.S. Fish and Wildlife Service. 1984. Davis' Green Pitaya Cactus Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico, iii + 34 pp.

Additional copies may be obtained from:

U.S. Fish and Wildlife Reference Service
1776 E. Jefferson Street
4th Floor
Rockville, Maryland 20852
Phone: (301) 468-1737 Ext. 326 or 290
Toll Free - 1-800-582-3421

TABLE OF CONTENTS

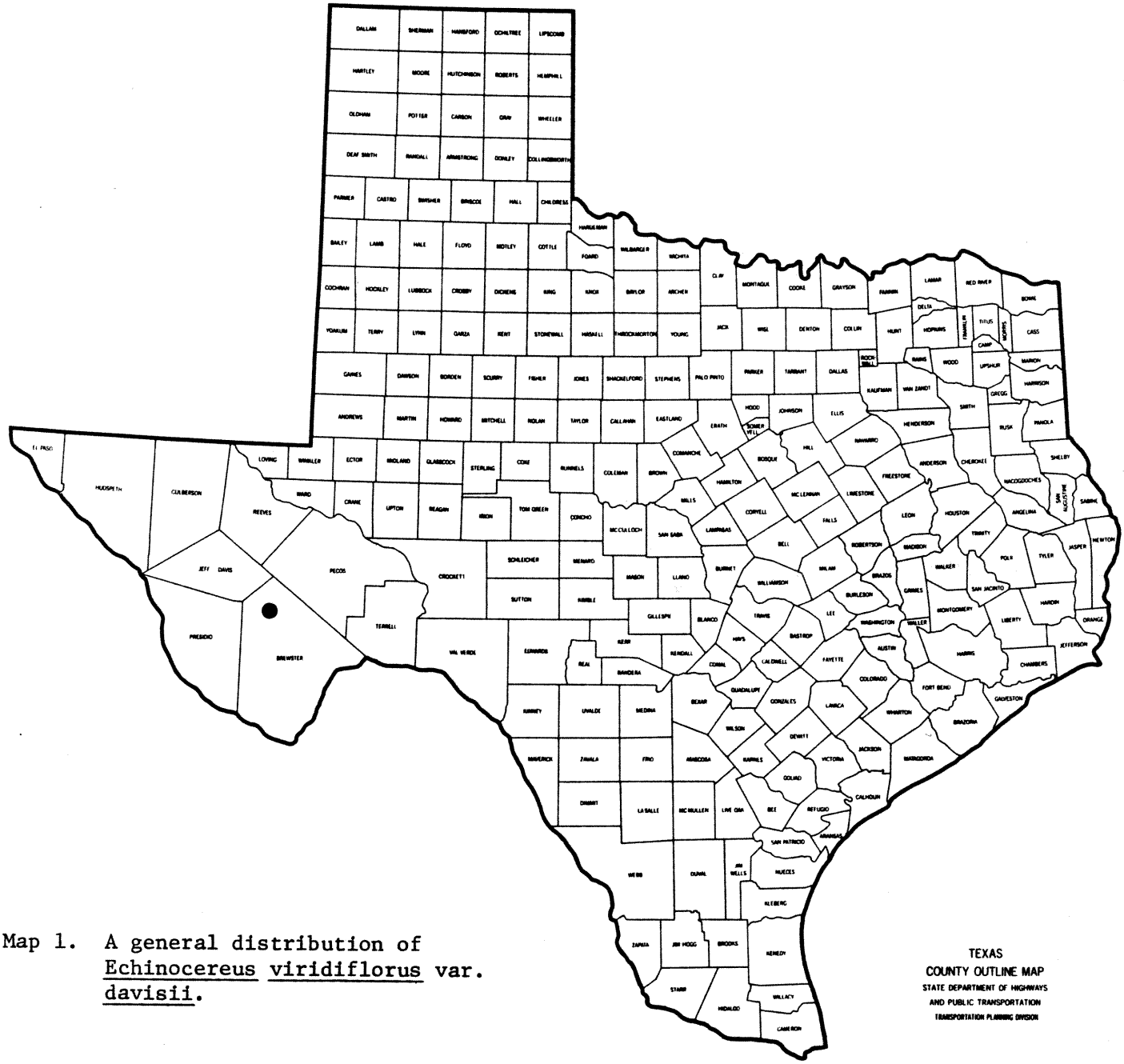
There has been some disagreement whether E. viridiflorus var. davisii is a true variety of viridiflorus or a species of its own as originally described - E. davisii. However, John M. Miller, Sul Ross University, is presently researching the flavonoids of the genus Echinocereus. He has found that the flavonoids of Davis' green pitaya cactus and other varieties of the species viridiflorus are the same (Pers. comm. 1983) which suggests that Davis' green pitaya is a variety of E. viridiflorus.

## Morphology

Davis' green pitaya cactus stems are dwarf and usually singular, turbinate to turbinate-ovoid, 1.2-2.5 cm long, 1-2 cm in diameter; ribs 6-9; radial spines 8-13, the upper ones shortest, slender, round, 4-7 mm long, the lateral ones longer, stouter, usually flattened, 11-15 mm long, basally gray and tipped with red; petaloid perianth parts yellow-green, up to 2.5 cm long; fruit green (Benson, 1982).

## Distribution

Davis' green pitaya cactus occurs in the Chihuahuan Desert near Marathon in northern Brewster County, Texas (Map 1). A single population grows on the Caballos Novaculite ridges that run in a northeast to southwest direction. The historic range and the present known range are believed to be the same.




Map 1. A general distribution of Echinocereus viridiflorus var. davisii.

## Habitat

E. viridiflorus var. davisii grows in a semi-desert grassland of the Chihuahuan Desert (Brown, 1982) and is restricted to the Caballos Novaculite Formation. This quartz formation forms low-lying ridges that are highly resistant to erosion and that support perennial bunch grasses and a wide variety of shrubs and cacti. This formation provides a favorable habitat for a number of endemic species, including E. viridiflorus var. davisii. Davis' green pitaya cactus is usually found growing among the chips of novaculite and is often associated with a species of spikemoss (Selaginella). The cactus' edaphic requirements are poorly understood and there is a need to determine these requirements to provide clues to factors restricting its distribution, since it is only found on a single novaculite ridge. Davis' green pitaya cactus grows at an elevation of 1,200-1,350 meters in an area where the average annual precipitation is approximately 41.0 cm.

## Population Biology

### A. Demography

1. Population numbers: The total population of E. viridiflorus var. davisii is approximately 20,000 plants over its total known range.

1983 the population doubled. Brack believes that the increase was due to favorable climatic conditions and not due to a lack of collecting.

There has been some collecting of E. viridiflorus var. davisii in the past, but its exact effect on the native population is unknown. Two monitoring stations should be set up and checked at least twice a year to determine, at least approximately, how much collecting is being done. With the limited distribution a commercial collector, over a period of time, could have a significant effect in depleting the population.

(f) Age of plants before reproduction: Most E. viridiflorus var. davisii begin to bloom after 3-4 years.

B. Phenology

1. Budding time: Early March.

2. Flowering time: Late March to early April; individual flowers last 2-3 days.

3. Fruit formation: Late April to early May; virtually 100% of adults that flowered in cultivation set fruit.

4. Fruit dehiscence: Mid to late May; the floral tube is persistent, and the dehiscence is irregular.

5. Seeds: Many mature fruits retain large numbers of old spines. It is felt that most fruits merely fall off the plant and that the seeds are scattered around the immediate vicinity by running water. Other similar habitats in the area are without plants and this indicates the very poor effect, if any, that vectors such as birds and insects have on the dispersal of this plant (Brack, pers. comm., 1983).

The number of seeds that E. viridiflorus var. davisii fruit produces is approximately 85 to 340 seeds per plant. No dormancy has been observed in the seeds of this species. The seeds can germinate immediately and will stay viable for approximately 5-10 years depending on weathering (Brack, pers. comm. 1983).

C. Associated Species

The Caballos Novaculite Formation supports a scanty vegetation consisting of low shrubs, some rosetophyllous perennials, a few cacti, and both annual and perennial herbs. The associated species include:

Prosopis juliflora

Acacia constricta

A. rigidula

Berberis trifoliata

Bouteloua breviseta

Erinoneuron pulchellum

Yucca elata

Y. torreyana

Leucophyllum frutescens

Dasylirion leiophyllum

Larrea tridentata

Artemisia sp.

Ephedra nevadensis

Juniperus pinchotti

Nolina texana

Opuntia violacea

Echinocereus stramineus

Aloysia wrightii

Selaginella sp.

Coryphantha varicolor

C. hesteri

C. minima

Thelocactus bicolor
var. flavidispinus

Zinnia pumila

Mammillaria gummifera

Erigeron sp.

Castilleja sessiliflora

C. integra

Verbena sp.

Hymenoxys scaposa

Dyssodia pentachaeta

Calylophus sp.

Cheilanthes villosa

Condalia ericoides

Koeberlinia spinosa

Asclepias nummularia

Penstemon fendleri

D. Insect Vectors

The major pollinator of E. viridiflorus var. davisii is believed to be a metallic green, sweat bee belonging to the family Halictidae.

Land Ownership

The entire population of Davis' green pitaya cactus is on land that is privately owned by two individuals.

Impacts and Threats

The present range of Davis' green pitaya cactus and its historic range are the same. Threats are principally of three types: (A) direct collection of plants by commercial or private collectors; (B) destruction or modification of its habitat by livestock; and (C) natural threats. The following are existing or potential threats:

A. Commercial and Private Collectors

The major threat to E. viridiflorus var. davisii is overcollecting for commercial and non-commercial purposes; however, the extent of collecting on this species is yet to be determined. For those collectors that specialize in rare cacti, Davis' green pitaya cactus is a "must"

for their collection. Many European, Japanese, and American collectors know the exact location of the one population that is near Marathon, Texas, adjacent to U.S. Highway 385. This site was heavily collected by California nursery people about twenty years ago (Brack, pers. comm. 1983). Within the past few years, the cactus has reestablished in this area. This cactus is difficult to spot even when collecting sites are known. Being dwarf, and often below ground level, it takes a hands-and-knees effort to find one, except during the flowering season when they are easy to locate.

The Davis' green pitaya cactus is easy to grow in cultivation, and by using standard cactus seed germination techniques it is possible to get up to 80 percent germination. Seedling survival and growth present no problems. Though Davis' green pitaya cactus is not showy, most collectors prize the cactus for its rarity. Private and/or commercial collectors could have a strong impact on the plants near U.S. Highway 385, but it is doubtful if collectors would trespass very far onto private land. All lands are fenced and the only access to ranch roads leading away from U.S. Highway 385 is through locked gates.

It is difficult to determine the impact collecting has had on Davis' green pitaya cactus, the extent of current collecting, and whether seed collecting is occurring. Therefore, it is imperative to try to determine how much collecting is being done and try to curtail it.

B. Destruction or Modification of Habitat by Livestock

Domestic livestock may rarely cause damage to E. viridiflorus var. davisii through trampling. The ridges of novaculite contain little vegetation for grazing, and the novaculite chips are very sharp. All livestock observed were grazing on the flats below the novaculite ridges. Occasionally, some livestock in search of food may wander onto a novaculite ridge although no evidence of this was found. Trampling is not a major threat.

C. Natural Threats

1. Interspecific competition: There are many species of plants that grow on the Caballos Novaculite Formation. Competition for space may restrict Davis' green pitaya cactus. The density of plants in the habitat is primarily controlled by competition for space and available moisture. The root systems spread out laterally into the Selaginella.

2. Restrictions to a narrow edaphic situation: In addition to being restricted to the Caballos Novaculite Formation, Davis' green pitaya cactus has only been found on one ridge, though other novaculite ridges have been searched.

# PART II

## RECOVERY

The primary objective of this recovery plan is to manage the essential habitat of the Davis' green pitaya cactus so that it can be sustained in its natural habitat at a level where the species can be removed from the Federal list of endangered and threatened species. The criteria for downlisting and/or delisting the Davis' green pitaya cactus have not as yet been determined. Implementing studies in this recovery plan will provide the necessary data from which quantification of downlisting and/or delisting criteria can be established.

Research and monitoring of the population are required to provide a better understanding of the population biology and ecology of this cactus and in turn, these data can be used to suggest better management techniques. Management efforts will involve the cooperation of private landowners because the entire known population of Davis' green pitaya cactus occurs on privately owned land. In addition, artificial propagation may also prove to be a feasible measure for removing some of the collecting pressure on the wild population.

Step-down Outline

1. Remove threats to Echinocereus viridiflorus var. davisii by enforcement of existing regulations for protection.

    11. Enforce existing trade regulations under the Endangered Species Act (ESA), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Lacey Act.

    12. Determine the extent of collecting impacts on Davis' green pitaya cactus.

        121. Develop a monitoring system.

        122. Determine the extent and number of E. viridiflorus var. davisii in commercial trade.

    13. Display "No Trespassing" signs along U.S. Highway 385 property fence lines, after obtaining landowner approval.

2. Obtain management rights for existing populations of E. viridiflorus var. davisii.

    21. Develop cooperative agreements with private landowners for the protection and management of the Davis' green pitaya cactus populations and habitat.

22. Develop and implement habitat management plans for all existing Davis' green pitaya cactus habitat.

23. Protect occupied suitable habitat presently in private ownership.

3. Initiate and support studies on the population biology and ecology of Davis' green pitaya cactus.

31. Survey for new populations on other outcrops of the Caballos Novaculite Formation.

32. Determine all mechanisms involved in seed dispersal.

33. Determine what microhabitat factors are involved in seedling establishment ecology.

34. Determine the germination percentage rate of seeds and the taxon's overall reproductive potential and actual success in its natural habitat.

35. Determine what insects and/or other invertebrates are involved in the pollination of E. viridiflorus var. davisii.

4. Develop a comprehensive, trade management plan for all cacti.

   41. Develop a trade study.

   42. Develop a monitoring study to determine the impact of collecting.

   43. Determine the feasibility of reducing the collecting pressure on the wild populations by promoting a commercial, artificial propagation program.

   44. Establish Fish and Wildlife Service policy on the cactus trade problem.

5. Develop public awareness, appreciation, and support for the preservation of Davis' green pitaya cactus.

Narrative

1. Remove threats to Echinocereus viridiflorus var. davisii by enforcement of existing regulations for protection.

Because of the rarity of Davis' green pitaya cactus, the population should be protected by the enforcement of existing international, Federal, and State regulations including management of the threats to the species.

11. Enforce existing trade regulations under the Endangered Species Act (ESA), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Lacey Act.

Any individual in violation of ESA, CITES, or the Lacey Act regarding Davis' green pitaya cactus should be prosecuted as a deterrent to others and the judgement should be published in periodicals such as the Cactus and Succulent Journal of America.

12. Determine the extent of collecting impacts on Davis' green pitaya cactus.

The amount of collecting being done needs to be determined and the collecting curtailed. (See Task 4)

121. Develop a monitoring system.

To determine the number of individuals at selected sites and quantify the loss of individuals as a direct result of collecting, a monitoring system needs to be established.

122. Determine the extent and number of E. viridiflorus var. davisii in commercial trade.

This study would probably be part of a major study concerning all cacti in the trade. The study would involve the monitoring of journals and nursery catalogs, interviews with dealers, and possibly some undercover work.

13. Display "No Trespassing" signs along U.S. Highway 385 property fence lines, after obtaining landowner approval.

"No Trespassing" signs should be displayed where U.S. 385 cuts through the novaculite ridge that contains Davis' green pitaya cactus and where the collecting pressure is greatest. Signs should be placed along a relatively long stretch of fence line to keep from drawing attention to a particular area. This may deter collecting.

2. Obtain management rights for existing populations of E. viridiflorus var. davisii.

21. Develop cooperative agreements with private landowners for the protection and management of the Davis' green pitaya cactus populations and habitat.

Without the support of the two private landowners recovery of the Davis' green pitaya cactus will be impossible. To provide for the maintenance of the Davis' green pitaya cactus populations on these privately owned lands, it will be necessary to obtain the cooperation and good will of the private landowners. Once a working relationship is established, cooperative management agreements should be negotiated to acquire protection for Davis' green pitaya cactus and its habitat. If possible, such agreements should also provide for management rights to improve and enhance existing sites.

22. Develop and implement habitat management plans for all existing Davis' green pitaya cactus habitat.

As agreements with private landowners are reached, habitat management plans should be prepared for Davis' green pitaya cactus habitat. These plans should establish goals and objectives for management of the habitat.

23. Protect occupied suitable habitat presently in private ownership.

All land inhabited by E. viridiflorus var. davisii is under private ownership. The ESA is only effective in protecting populations on Federal land. Protection of habitat will require Federal involvement if ESA coverage is to be obtained. Therefore, actions allowing direct habitat protection should be considered.

3. Initiate and support studies on the population biology and ecology of Davis' green pitaya cactus.

Due to the rarity of the Davis' green pitaya cactus, the only known population must be sustained in a healthy and vigorous state. An indepth knowledge of the plant's population biology and ecology is needed to understand its habitat requirements. Growth requirements and limiting factors need to be studied in detail. The knowledge gained can be used to help sustain and manage the natural population.

31. Survey for new populations on other outcrops of the Caballos Novaculite Formation.

There are several ridges of Caballos Novaculite that contain potential habitat for Davis' green pitaya cactus. These

ridges need to be searched for this cactus. The novaculite ridges are all on private land belonging to several different landowners. A cactus survey would require getting permission from each landowner.

32. Determine all mechanisms involved in seed dispersal.

It is felt that running water is the major factor in the dispersal of the Davis' green pitaya cactus seeds. A study needs to be done to determine whether birds or rodents play a significant role in seed dispersal of this cactus.

33. Determine what microhabitat factors are involved in seedling establishment ecology.

Some seeds germinate where there is a small amount of soil lying on the novaculite formation. Selaginella sp. is usually an associate. Other seeds fall between the chips of novaculite where they become buried and may germinate. A thorough study of the edaphic factors in relation to seedling ecology is needed.

34. Determine the germination percentage rate of seeds and the taxon's overall reproductive potential and actual success in its natural habitat.

In its natural habitat, the percentage of Davis' green pitaya cactus seeds that germinate is unknown. Also, the number of seeds that grow to maturity from seeds that do germinate is unknown. A study is needed on the germination and mortality rates of the Davis' green pitaya cactus seeds and seedlings.

35. Determine what insects and/or other invertebrates are involved in the pollination of E. viridiflorus var. davisii.

The major pollinator of E. viridiflorus var. davisii is a metallic green, sweat bee belonging to the family Halictidae. It is not known if other pollinators are involved in the pollination of this cactus.

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

Prior to development of trade strategies, studies are necessary to determine what species are in the trade, the overall trend of trade in listed cacti, the feasibility of reducing the collecting pressure on the wild populatons by promoting a commercial artificial propagation program, and to determine strategies for effective, implementation of law enforcement responsibility of ESA, CITES, Lacey Act, and State laws. These studies should be national in scope and address all the cacti.

41. Develop a trade study.

Documentation of what species are in the trade and where they are coming from is of primary concern to the development of trade strategies. This would involve the investigation of the cacti dealers and catalogs, and interview with knowledgeable individuals.

42. Develop a monitoring study to determine the impact of collecting.

Establish sample plots to monitor listed cacti and cacti suspected of being impacted by trade. Natural changes in populations as well as the success of recovery efforts would also be measured by the monitoring study. The impact of seed collecting and taking of cuttings are needed to understand harvest limits on the species.

43. Determine the feasibility of reducing the collecting pressure on the wild populations by promoting a commercial, artificial propagation program.

A commercial, artificial propagation program may remove some of the collecting pressure on the cacti in the field. Some collectors enjoy raising their own plants from seeds or seedlings and if these are easily and economically available then the collectors may not turn to field collecting. Other collectors only want field collected plants, so some pressure is likely to exist on the wild populations.

44. Establish Fish and Wildlife Service policy on the cactus trade problem.

To implement recovery plans for various cacti, it is necessary that the FWS set official policy concerning a commercial artificial propagation program for cacti used in trade.

5. Develop public awareness, appreciation, and support for the preservation of Davis' green pitaya cactus.

Education of the public is a vital part of this recovery process. The cooperation of the public is essential for the ultimate success of the foregoing recovery measures. An appreciation of Davis' green pitaya cactus and its role in the environment needs to be developed. This can be initiated with educational programs such as pamphlets, talk programs, and slide shows.

## LITERATURE CITED

Backeberg, C. 1960. Cactaceae. 4:2017.

Benson, L. 1982. The Cacti of the United States and Canada. Stanford University Press, Stanford, California.

Brown, D. 1982. Desert Plants--Biotic Communities of the American Southwest--United States and Mexico. The University of Arizona for Boyce Thompson Southwestern Arboretum, Superior, Arizona.

Houghton, A. D. 1931. Echinocereus davisii sp. nov., Cact. Succ. Jour. 2:466.

Marshall, W. T. and T. M. Bock. 1941. Cactaceae. Abbey Garden Press, Pasadena, California.

U.S. Fish and Wildlife Service. 1979. Determination that Echinocereus viridiflorus var. davisii and Coryphantha minima are endangered species. Federal Register 44(217) (November 7, 1979):64738-64740.

_____. 1980. Review of plant taxa for listing as endangered or threatened species. Federal Register 45(242) (December 15, 1980):82480-82569.

_____. 1983. Supplement to review of plant taxa for listing as endangered or threatened species. Federal Register 48(229)(November 38, 1983):53640-53670.

## PART III - IMPLEMENTATION SCHEDULE

Priorities in column four of the implementation schedule are assigned using the following guidelines:

Priority one (1) - Those actions absolutely necessary to prevent extinction of the species.

Priority two (2) - Those actions necessary to maintain the species' current population status.

Priority three (3) - All other actions necessary to provide for full recovery of the species.

Abbreviations: FWS - USDI Fish and Wildlife Service
SE - Office of Endangered Species
LE - Law Enforcement
RE - Realty
TNC - The Nature Conservancy

## GENERAL CATEGORIES FOR IMPLEMENTATION SCHEDULES

Information Gathering - I or R (research)

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

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

Acquisition - A

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

PART III IMPLEMENTATION SCHEDULE

| ENERAL ATEGORY (1) | PLAN TASK (2) | TASK # (3) | PRIORITY # (4) | TASK DURATION (5) | RESPONSIBLE AGENCY FWS REGION (6) | FWS PROGRAM (6a) | OTHER (7) | FISCAL YEAR COSTS (EST.)* FY1 (8) | FY2 | FY3 | COMMENTS (9) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| )2 | Enforce existing trade regulations under ESA, CITES, and the Lacey Act. | 11 | 1 | ongoing | 2 | LE | | 2,000 | 2,000 | 2,000 | |
| I3 | Display "No Trespassing" signs along U.S. Highway 385 | 13 | 1 | ongoing | 2 | SE | | 5,000 | 1,000 | 1,000 | |
| .3 | Develop cooperative agreements with private landowners. | 21 | 1 | 2 | 2 | SE | TNC | 1,000 | 1,000 | | |
| .2, A4 | Develop and implement habitat management plans for all existing Davis' green pitaya cactus habitat. | 22 | 2 | ongoing | 2 | SE | | 1,000 | 1,000 | 1,000 | |
| .,A6 | Protect occupied suitable habitat. | 23 | 1 | 3 | 2 | SE RE | TNC | 2,000 | 2,000 | 2,000 | |
| ,R6 | Study population biology and ecology. | 3 | 2 | 5 | 2 | SE | | 10,000 | 10,000 | 10,000 | |
| .14 | Develop a trade study. | 41 | 1 | 1 | 2 | SE | | 20,000 | | | |
| .1 | Develop a monitoring study. | 42 | 1 | ongoing | 2 | SE | | 20,000 | 10,000 | 10,000 | |

*Costs refer to USFWS expenditures only.

PART III IMPLEMENTATION SCHEDULE

| ENERAL ATEGORY (1) | PLAN TASK (2) | TASK # (3) | PRIORITY # (4) | TASK DURATION (5) | RESPONSIBLE AGENCY FWS REGION (6) | RESPONSIBLE AGENCY FWS PROGRAM (6a) | RESPONSIBLE AGENCY OTHER (7) | FISCAL YEAR COSTS (EST.)* FY1 (8) | FY2 | FY3 | COMMENTS (9) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Determine the feasibility of reducing collecting pressure by promoting artificial propagation program. | 43 | 2 | 1 | 2 | SE | | 15,000 | | | |
| M7 | Establish FWS official policy on the cactus trade problem. | 44 | 2 | 1 | 2 | SE | | 2,000 | | | |
| 01 | Develop public awareness, appreciation, and support. | 5 | 3 | ongoing | 2 | SE | | 3,000 | 3,000 | 3,000 | |

*Costs refer to USFWS expenditures only.

# APPENDIX

A TECHNICAL REVIEW DRAFT WAS SENT OUT FOR REVIEW ON OCTOBER 18, 1983, AND WAS COMMENTED ON BY THE FOLLOWING PEOPLE:

Director, U.S. Fish and Wildlife, Washington, DC (OES)

Harold E. Beaty, Texas Plant Recovery Team Leader, Temple, Texas 76502

Superintendent, Big Bend National Park, Big Bend, Texas 79834

AN AGENCY REVIEW DRAFT WAS SENT OUT FOR REVIEW ON MARCH 30, 1984, AND WAS COMMENTED ON BY THE FOLLOWING PEOPLE:

Director, U.S. Fish and Wildlife Service, Washington, DC

Field Supervisor, FWS, Fort Worth, Texas (ES)

Superintendent, Big Bend National Park, Big Bend, Texas 79834

Charles D. Travis, Executive Director, Texas Parks and Wildlife Department, Austin, Texas 78744

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

AA
AFF
AWR
AHR
IE
PAO
PEO
2 FILE SE
CL

In Reply Refer To:
FWS/OES

JUN 4 - 1984

Memorandum

To: Regional Director, Region 2 (ARD/AFF)
Acting Associate
From: Director

Subject: Nellie Cory Cactus and Davis' Green Pitaya Recovery Plans - Agency Drafts

We have completed our review of the subject plans. A few minor comments may be found in the margins of the attached texts. We have also noted the changes to the Stepdown Outlines described in your April 24, 1984, memorandum and have incorporated the new pages in the draft plans.

A-1

As noted in the past (see attached memorandum of August 22, 1983), many cactus recovery plans address similar threats which may make it feasible or desirable to produce one or a reduced number of management plans, combining several species. Similarly, since these two species are found in the same or adjacent habitat, it may be more desirable to combine these two plans into a single recovery plan with a habitat protection approach covering both species. This would more effectively serve the implementation of recovery efforts for these two species. Also, combining these two plans would not be difficult, as the two plans are nearly identical.

A-2

A short discussion describing a projected management scenario would also be useful in directing our recovery efforts. This should be added as part of the recovery objectives in Part II.

A-3

You should decide whether it is feasible at this time to combine these two plans. Whether or not the plans are combined into a single recovery plan, they are ready for final drafting. Please send us a copy of the signature page of the plan or plans, when approved. When available, please forward 30 copies of the printed plans to OES for distribution.

FWS R
RECE
JUN
SE

Attachments

James R. Fielding
J. R. Fielding

REC'D
FWS-Region
JUN 7 1984

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

U.S. FISH & WILDLIFE SERVICE

# *Memorandum*

**TO** : Regional Director, FWS, Albuquerque, NM (SE)

**DATE:** April 10, 1984

**FROM** : Field Supervisor, FWS, Fort Worth, TX (ES)

Peggy P.

**SUBJECT:** Agency Review - Draft Recovery Plan - Nellie cory cactus (Coryphantha minima) and Davis' green pitaya cactus (Echinocerus viridiflorus var. davisii)

We have reviewed the subject draft recovery plans and have no comments at this time.

B-1

Thomas L. Johnson

RECEIVED

APR 12 84

SE

United States Department of the Interior
NATIONAL PARK SERVICE
Big Bend National Park
Big Bend National Park, Texas 79834

IN REPLY REFER TO:

N1621

May 14, 1984

Memorandum

To: Assistant Regional Director, U.S. Fish and Wildlife Service, Region 2

From: Superintendent, Big Bend National Park

Subject: Agency Review Draft Recovery Plan for Davis' green pitaya cactus (Echinocereus viridiflorous var. davisii)

Our comments are as follows:

C-1 1. Page 6, paragraph 1 - Omit the last sentence referring to collecting, as the same statement is contained in the first sentence.

C-2 2. Page 16, # 123 - A relatively long stretch of fenceline should be posted to keep from drawing attention to a particular area.

C-3 3. Page 19, # 313, first sentence - Amount is misspelled.

C-4 4. Page 20, # 315, first line - Insectors should be insects.

We appreciate the opportunity to comment on this Agency Draft Review.

H. Gilbert Lusk

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 South School Road Austin, Texas 78744





June 1, 1984

Mr. Michael J. Spear
Director, Region 2
U. S. Fish and Wildlife Service
P. O. Box 1306
Albuquerque, New Mexico 87103

Dear Mike:

This is in response to your letters of March 27 and March 30, 1984 regarding the agency review draft recovery plans for the Nellie cory cactus (Coryphantha minima) and Davis' green pitaya (Echinocereus viridiflorus davisii), respectively.

D-1 We have reviewed the plans and believe them to present viable strategies for conservation of these species. However, perhaps a section describing current protection would be appropriate for inclusion in the plans. These species have been listed as endangered not only under federal regulations but also by the State of Texas (regulations enclosed). In addition, the degree of protection afforded these species by landowners in

D-2 denying or limiting access to areas where the species occur could have a profound effect on plan viability.

Thank you for the opportunity to comment. Let us know if we may be of further assistance.

Sincerely,

Charles D. Travis
Executive Director

CDT:FWP:aeh

Enclosure

RESPONSE TO COMMENTS ON AGENCY REVIEW DRAFT

A-1 Comments were incorporated.

A-2 Comment was noted. The two plans probably could have been easily combined at an earlier stage; however, at this point it would not be time efficient to combine them.

A-3 Suggestion was incorporated.

B-1 Response noted.

C-1 Suggestion was incorporated.

C-2 Suggestion was incorporated.

C-3 Correction was made.

C-4 Correction was made.

D-1 Comment was incorporated in the introduction.

D-2 The Service recognizes the importance of the private landowners in the recovery of Davis' green pitaya cactus and this is addressed under task 21.