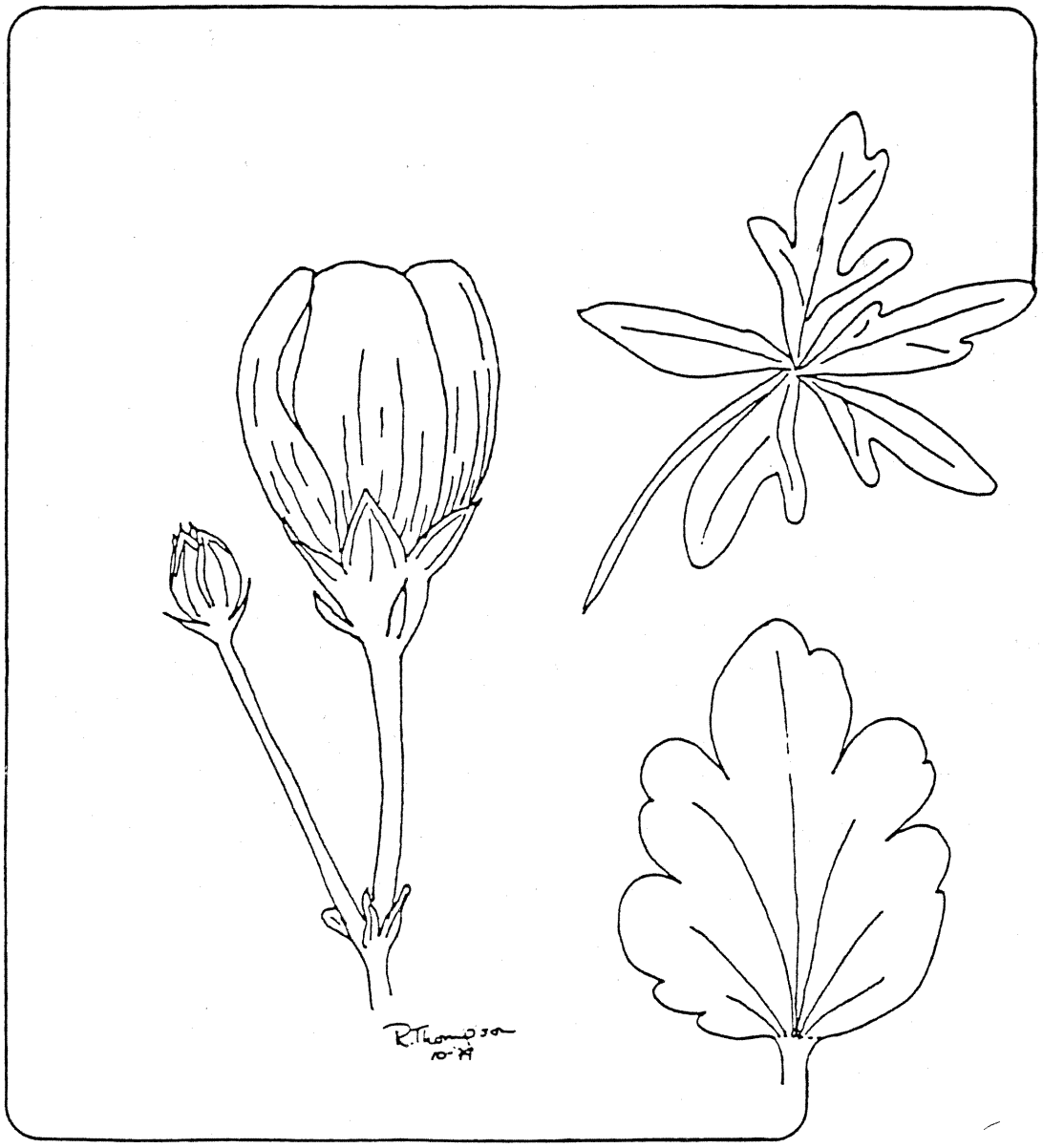
TEXAS POPPY-MALLOW

(Callirhoe scabriuscula)

RECOVERY PLAN



U.S. FISH & WILDLIFE SERVICE

ALBUQUERQUE, NEW MEXICO

1985

TEXAS POPPY-MALLOW

Callirhoe scabriuscula Robins.

RECOVERY PLAN

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Date: 3/21/85

DISCLAIMER

This is the completed Texas Poppy-mallow 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 key roles 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 citations should read as follows:

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SUMMARY

GOAL: To remove Texas poppy-mallow 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 Texas poppy-mallow 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 meet the recovery criteria include: working and cooperating with landowners to provide immediate protection for existing populations; studying population biology and ecology to develop the understanding needed to sustain healthy populations in their natural habitat; searching potential habitat for additional populations; establishing new populations within the species historic range if needed; and developing public awareness, appreciation, and support for preservation of Texas poppy-mallow.

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PART I

INTRODUCTION

The Texas poppy-mallow, Callirhoe scabriuscula Robins., was listed as endangered under the Endangered Species Act of 1973, as amended, on January 13, 1981 (46 FR 3184). A closely related species, C. bushii is included in category 2 of the November 28, 1983, supplement (48 FR 53640) to the 1980 notice of review. Callirhoe scabriuscula is known from a few small populations in deep, alluvial sands deposited in Runnels County, Texas. Habitat destruction has resulted in the loss of many plants and is threatening remaining populations. The most immediate threat is destruction of habitat by commercial sand mining. The populations are also threatened by collecting and grazing. The species is increasingly in danger and could become extinct in the wild within the next decade unless immediate action is taken to protect it.

The purpose of this plan is to outline steps for the recovery of the Texas poppy-mallow. The primary objective of the plan is to increase the number of individuals in the wild to the point where population levels are stabilized, and ultimately increased to levels where the species can be removed from endangered or threatened status.

This plan first provides information on the status of C. scabriuscula, including consideration of past and present distribution, taxonomic relationships, habitat requirements, conservation and research efforts,

and threats to the populations. A step-down outline follows with detailed factors that are necessary for the recovery of the Texas poppy-mallow. A narrative following the outline provides more information on the actions necesssary to counteract the threats to this species. An implementation schedule lists each task along with a recovery priority rating, agencies involved, and costs. The plan is for a 3-year period, and is subject to annual revision.

Taxonomy

There is little difficulty in classifying Callirhoe scabriuscula or in delineating this species from other taxa in the genus. No changes in its classification have been proposed since it was first described in 1895. Six of the seven species in the genus Callirhoe are found in Texas and two of these, C. involucrata and C. leiocarpa, have been collected in areas immediately adjacent to the C. scabriuscula habitat. Callirhoe scabriuscula is easily distinguished from either of these species. The flowers of the Texas poppy-mallow are larger than those of C. leiocarpa and C. involucrata and the basal portion of the petal is a dark maroon. This portion of the petals of the other species is white. In addition, the other two species lack the distinctive star-shaped pubescence that covers the leaves and stems of the Texas poppy-mallow. Callirhoe leiocarpa grows erect as does C. scabriuscula, but the former is an annual whereas C. scabriuscula is a perennial. Furthermore, C. leiocarpa lacks subtending floral bracts. Callirhoe involucrata is a perennial but has a prostrate habit.

Although C. leiocarpa and C. scabriuscula flowers are visited by the same species of bee, there is no evidence of hybridization. Relationships among taxa in this genus are not well understood. Bates and Blanchard (1970) believe Callirhoe to be the most complex genus in the tribe Malveae of the Malvaceae (mallow family). Further investigations may provide vital information on the mode of evolution in both the tribe and the genus; undoubtedly C. scabriuscula would be an important component of this study.

Morphology

Callirhoe scabriuscula is an erect, simple or basally branched perennial herb reaching up to 45 cm (18 in.) high. It is covered throughout with slightly rough star-shaped hairs. The leaves are deeply and palmately 3-5 cleft. Bracts subtending the upper flowering stalks are similar to the lower leaves. The cup-shaped flowers are wine-purple with a dark maroon center. The 5 petals are each about 3.8 cm (1.5 in.) long and 1.9 cm (0.75 in.) wide. The root system has a fleshy tap root that abruptly narrows and branches after about 45 cm (1.5 ft.). During winter the plant exists as a small, 3-8 leaved, basal rosette.

Habitat

Callirhoe scabriuscula occurs within the Rolling Plains vegetation zone of Texas (Gould 1975). It is limited to deep, loose sand. This

habitat is unusual for the region and was formed by a combination of wind and water action. The sands were carried to the area by the Colorado River and then deposited above the floodplain by wind, apparently only during storms since the sand is deposited on the side of the river opposite to the direction of prevailing winds (Amos 1981).

The soils of the habitat are Tivoli-Brownfield fine sands of the Spur-Colorado-Miles soil association (Wiedenfeld et al. 1970). These sands have a high water intake rate with little runoff. The capacity for holding water and plant nutrients is moderate to low in the surface layers. Horizon development is limited to accumulations of organic matter and darker colors in the upper few centimeters. The A-horizon ranges from 5-36 cm (2-14 in.). Soil movement by wind is a severe hazard and dune formation is common, particularly in disturbed areas.

Associated Species

The habitat of C. scabriuscula supports a high diversity and density of flowering plants. The plant communities found in these soils are comprised of sand-adapted species, many of which are not encountered in adjacent habitats. Common species include:

bull nettle	Cnidoscolus texanus (Muell. Arg.) Small
Indian blanket	Gaillardia pulchella Foug.
yellow woolly-white	Hymenopappus flavescens Gray
eastern sensitive brier	Schrankia occidentalis (Woot. et Standl.) Standl.
trailing wildbean	Strophostyles helvola (L.) Ell.
prairie spiderwort	Tradescantia occidentalis (Britt.) Smyth

giant dropseed	Sporobolus giganteus Nash
sand dropseed	Sporobolus cryptandrus (Torr.) Gray
three awn grass	Aristida spp.

Past and Present Distribution

Dr. Sutton Hays first collected this species in the late 1800's on the Colorado River of Texas while on the El Paso and Ft. Yuma Wagon Road Expedition. A single specimen from this expedition (Hays, collection number 80) is in the Gray Herbarium at Harvard University (GH).* Other specimens were collected near the Colorado River several miles southwest of Ballinger in Runnels County, Texas by Cory in 1942 (at GH, TAES and TEX), Bates and Blanchard in 1968 (at BH, GH and MO), and Fryxell (at CTES and SMU). Until 1980, these specimens represented the only known locality for the species. In the spring of 1980, B. L. Turner discovered a second site (specimen at TEX) near the Colorado River approximately 15 miles northwest of Ballinger in Runnels County, Texas (Dorr 1983).

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* GH = Harvard University

TAES = Texas A&M University

TEX = University of Texas, Austin

BH = Cornell University

CTES = Instituto de Botanica del Nordeste

SMU = Southern Methodist University

MO = Missouri Botanical Garden

The site southwest of Ballinger is apparently the population center for the species. It covers approximately 160 ha (395 ac) of deep sand. The present size and position of the populations in this area indicates that one large population previously covered much, if not all, of this habitat. With disturbances and encroachment, sections of the large population were killed, leaving small segregated remnants. A study of this area by Amos (1979) located 16 populations ranging in size from a few square meters to approximately 1600 m^2(17,216 ft^2) with an actual population coverage of approximately 5 ha (12.35 ac). Based on quadrat samples of three populations, the total number of plants in 1979 was estimated at 48,000.

A brief field survey in May 1983, revealed two significant changes since the 1979 study. First was the loss of the largest population. Sand mining resulted in the destruction of the habitat and loss of this population. The second difference was reduction in size of all populations. For example, one population that consisted of several hundred plants in 1979 contained only about a dozen in 1983.

Land Ownership

At the time of listing in 1981, all extant populations were on land owned by private individuals. However, previously in 1977 and 1978, a few plants were found on State owned property along the frontage roads of a major highway. As populations shift it is likely that some plants will again be found on State owned property.

Research Efforts

During May and June of 1978-1980, the author studied the pollination and reproductive systems of Callirhoe scabriuscula. The following information represents a summary of this study (Amos 1981).

Floral morphology and phenology

The flowering season begins in late April and continues until mid-June. The flowers open each morning 2-3 hours after sunrise and close shortly before sunset. Within 30-90 minutes after pollination, the flowers close permanently. If not pollinated, flowers continue to open each morning for 6-8 days. The flowers are protandrous; anther dehiscence precedes emergence of the stigma by approximately 36 hours.

Breeding system

In studies of self-pollination, less than 1 percent of the flowers tested produced seeds when insect visitors were excluded from the flowers. In a series of crosses where pollen was taken from one flower and placed on the stigma of another, a high percentage of the flowers formed fruits ($x = 92.6$ percent). In a study of open pollination, 359 flowers were tagged on 15 plants and observed for 2 weeks. Of the 359 flowers, 305 (ca. 85 percent) produced seeds. On the basis of these studies, pollinators appear necessary for pollen transfer and development of seeds. Pollinators were active in the population during the study years.

Pollinators

A total of 16 species of insects were collected from the flowers of Callirhoe scabriuscula. It appears that visitors can be divided into three major groups: (1) general nectar foragers including flies, moths, bees, and beetles; (2) a small number of bees and flies that use the flowers only for shelter; and (3) a small number of bees that use the flowers for nectar, pollen, and shelter. Members of the latter group are the most important pollinators.

Nine of the 16 species, those in group 1, were observed foraging for nectar alone. For the most part, these species are ineffectual pollinators due to their size and/or behavior. For example, one common group of nectar foragers was taxa of the genus Nemotelus. These are small (ca. 5 mm long) Diptera that remain in a single flower for most of the day. They enter and exit a flower by way of a petal, rarely coming in contact with the reproductive structures.

Four species, those in group 2, were observed using the flowers as shelter throughout the night and/or during inclement weather. Due to their behavior, these insects are not regarded as important pollinators. For example, one species of bee in the genus Hesperapis (undescribed species) comes to the flowers between 1800-2000 hours, shortly before the petals close for the night, and emerge in the morning after the flowers open. These bees were not observed foraging C. scabriuscula

for either pollen or nectar and apparently visit only that one flower that provides shelter for the night.

The species of group 3 were the only ones observed collecting pollen from C. scabriuscula. These were three species of Hymenoptera: Diadasia afflicta Cresson, Melissodes intarta Cresson, and M. tepaneca Cresson. Diadasia afflicta and M. intorta have been reported to only collect pollen from species of the genus Callirhoe (Schlising 1972; Linsley and MacSwain 1958; LaBerge 1965). The foraging behavior of these three bees is noteworthy. They land atop the staminal column when entering the blossom, forage with the top of the abdomen against the column, and use it as a "take off" platform. This behavior is significantly different than that of insects in the other two groups who use a petal for entrance and exit. This foraging pattern brings the bee in contact with the pollen and the stigma. These three species also exhibit a similar behavior when foraging for nectar. Of special note in the study was the low insect activity on the flowers of C. scabriuscula. In 3,600 observations those considered primary pollinators were observed only 127 times. However, fruit production was still good, averaging 41.4 fruits/plant/season and 19 seeds/fruit (Amos 1979).

Impacts and Threats

At the principal population center southwest of Ballinger, much suitable habitat has been destroyed, is being severely impacted, or is in imminent danger of being destroyed. Much of this habitat is no longer suitable for the plant. A four lane divided highway and its frontage

roads dissect the area; large tracts of land have been cleared or altered for agriculture; and several homesteads are also present. Although the entire 160 ha appears to have once been suitable for the species, the area is presently occupied by only 16 scattered populations covering less than 5 ha.

The most immediate threat is destruction of habitat by commercial sand mining. Sand is scraped away, leaving large unvegetated pits 2.5 to 3.1 m deep. Truckloads of sand are removed on a daily basis.

The plant's conspicuous blooms could cause it to be threatened by amateur gardeners, wildflower enthusiasts, and commercial horticulturalists. Because all the populations occur on private land, collecting of these attractive plants is not prohibited by the Federal Endangered Species Act.

Several populations occur in areas that are grazed by cattle. Plant species composition in grazed areas is notably different from that in ungrazed areas, with Texas poppy-mallows in grazed areas showing a marked reduction in size and vigor.

Natural factors affecting the continued existence of the Texas poppy-mallow are restriction to a specialized and perhaps localized soil type and low seedling establishment (one seedling in 41.6 m^2, based on a 1979 survey). These natural factors tend to intensify any adverse effects due to human activities.

PART II

RECOVERY

Objective

The prime objective of this recovery plan is to protect Callirhoe scabriuscula and its habitat from further degradation due to human activities, and to maintain through management, healthy populations in their natural habitat at a level where the species can be downlisted to threatened and eventually delisted. However, limited data makes it impossible to quantify habitat and abundance in a manner needed to establish downlisting and delisting criteria at this time. Of particular importance is information on rates of seedling establishment required for population maintenance or growth. Of similar importance is a better understanding of plant distribution gained through continued searches of potential habitat. Once this information is obtained and once existing threats to known populations are removed, this plan will be reevaluated to: 1) determine if the Texas poppy-mallow can be downlisted to threatened; and 2) establish quantified criteria for delisting.

A step-down approach is followed in specifying a course of action for the recovery of Callirhoe scabriuscula. The prime objective of the plan is presented in the form of a precise problem statement. Intermediate and lower order objectives needed to accomplish the prime objective are then identified. The lowest order objectives are the specific tasks to which budgets and manpower requirements are assigned.

Step-down Outline

1. Manage presently known individuals and habitat for maintenance and expansion of existing wild populations.

    11. Provide immediate protection for existing habitat.

        111. Establish protected areas.

        112. Erect and maintain fences around protected areas.

        113. Notify public agencies and private organizations of the location of plants in or near rights-of-way.

        114. Contact landowners.

            1141. Work with landowners in the essential habitat areas to help them become aware of the importance of the plants and habitat.

            1142. Educate landowners on the use of chemicals and fire in the area.

    12. Monitor existing populations for size and general condition.

        121. Update information regarding locations of populations.

        122. Determine numbers of individuals in each population and assess vigor.

2. Sustain healthy populations in their natural habitat at existing sites.

21. Study the ecology and life history of the Texas poppy-mallow.

211. Continue investigations of reproductive biology and genetic structure.

212. Study seed viability, seed germination, and establishment of seedlings.

213. Conduct experiments investigating improvement of seed production, germination, and/or seedling establishment.

214. Monitor demographic trends.

215. Study the relationship between the Texas poppy-mallow and other organisms.

216. Study abiotic components.

2161. Soil.

2162. Water.

2163. Temperature.

217. Study effects of chemicals on plants and their pollinators.

218. Study the effects of grazing on the plants.

22. Analyze and use the data from ecological and life history studies to develop management plans.

3. Search potential habitat for additional populations.

4. Establish additional populations within the historic range.

   41. Increase size and number of populations in essential habitat areas.

   42. Establish a seed bank.

   43. Search for new suitable habitat within the species historic range and develop plans for establishing populations at these sites.

5. Develop public awareness, appreciation, and support for preservation of the Texas poppy-mallow.

Narrative

1. Manage presently known individuals and habitat for maintenance and expansion of existing wild populations.

   A crucial step in recovery is to protect existing populations and the habitat upon which they depend. All populations are threatened by expansion of commercial sand mining and development. The land presently inhabited by the Texas poppy-mallow is under private ownership. The Endangered Species Act is most effective in protecting populations on Federal lands. Immediate protection of the habitat and cooperation with landowners is essential to recovery of the species.

11. Provide immediate protection for existing habitat.

The most immediate threat to the Texas poppy-mallow is destruction of the habitat by commercial sand mining. This activity destroys the habitat, destroys existing plants, and removes the seed reservoir.

111. Establish protected areas.

Actions leading to securing cooperation between landowners and FWS, State agencies, or private conservation organizations will be necessary to maintain populations on privately owned land. Because all populations are on private land, establishment of protected areas will not be possible without landowner cooperation. Without such cooperation, further degradation of the habitat leading to species extinction is likely.

112. Erect and maintain fences around protected areas.

Once protected areas are established, fences should be erected and maintained around them. Because most populations are located along a major highway, fences would help reduce human intrusion. There is evidence of sand being removed on a small scale (i.e., for individual use). Also, the flowers of the poppy-mallow are very showy and on occasion are picked for bouquets.

113. Notify public agencies and private organizations of the location of plants in or near rights-of way.

Plants were seen in the rights-of-way of a highway in 1978. However, they have not been observed there since that time. It is possible that the plants could be reestablished in this area. Of particular concern is the mowing schedule of roadsides. The Texas Highway Department should be advised of plant locations and flowering and fruiting times of the Texas poppy-mallow. Mowing should be conducted only after the fruits have matured. Other agencies, including railroads, should be notified in writing of the location of populations in or near their rights-of-way to avoid possible damage. Of particular concern is the use of herbicides on railroad rights-of-way. If any of these or similar activities are authorized, funded, or carried out by a Federal agency, the agency must, under Section 7 of the Endangered Species Act, enter into consultation with the FWS to insure that such actions do not jeopardize the continued existence of the species.

114. Contact landowners.

To provide for the maintenance of Texas poppy-mallow populations on privately owned lands, it will be necessary to develop cooperation and goodwill between private land-

owners and the FWS. The protection of these populations is essentially in the hands of private property holders. Landowners in the essential habitat areas and adjacent areas should be contacted to make them aware of the importance of the plants. A local resident should be enlisted to assist in this task.

1141. Work with landowners in the essential habitat areas to help them become aware of the importance of the plants and habitat.

Landowners should be provided with information about the species and the unique aspects of the habitat. Without their awareness and cooperation, further degradation of the essential habitat leading to species extinction is likely.

1142. Educate landowners on the use of chemicals and fire in the area.

Herbicides and insecticides are commonly used by nearby property owners. Also, crop dusters routinely fly over the essential habitat areas. These substances could cause irreparable damage to Texas poppy-mallow populations, either by directly damaging plants or by killing pollinating insects. Railroad maintenance can severely affect natural vegetation along rights-of-way. Maintenance

personnel and managers should be eductated as to the possible effect of their vegetation management techniques on the Texas poppy-mallow.

12. Monitor existing populations for size and general condition. In 1983 populations displayed a marked reduction in size and vigor as compared to 1979. A monitoring plan should be designed and implemented to assist in documenting changes in population structure.

121. Update information regarding locations of populations. Field surveys should be conducted throughout the essential habitat to determine changes in population number and size. This information should be updated annually.

122. Determine number of individuals in each population and assess vigor.

Population sizes should be estimated and some indication of vigor given (i.e. number of flowers per plant, a comparison of the number of fruits produced to the number of flowers, the number of seedlings in the population).

2. Sustain healthy populations in their natural habitat at existing sites. In order to develop management plans for sustaining healthy populations, it may be necessary to learn more about the Texas poppy-mallow.

21. Study the ecology and life history of the Texas poppy-mallow.

Studies on specific edaphic conditions and particular phases of the life cycle of the plant would provide much needed information about the limiting factors of the species (i.e., habitat requirements, seed production, numbers of plants in a community, etc.).

211. Continue investigations of reproductive biology and genetic structure.

Investigations to clarify breeding relationships and variation within and between populations should continue. Special attention should be given to the plants' apparent dependence on a few pollinators. Life history studies on the three species of bees that are primary pollinators may be in order if pollination is determined to actually be a limiting factor.

212. Study seed viability, seed germination, and establishment of seedlings.

These studies should provide vital information on population growth and aid in establishing the species in other areas within its historic range if this is determined to be a needed action.

213. Conduct experiments investigating improvement of seed production, germination, and/or seedling establishment.

Information from studies described in 211 and 212 may suggest methods of improving seed production, germination, and seedling establishment which should be pursued.

214. Monitor demographic trends.

Monitor population numbers over a period of years in an attempt to separate the effects of natural cycles from trends resulting from human impacts.

215. Study the relationship between the Texas poppy-mallow and other organisms.

The habitat of the Texas poppy-mallow supports a high diversity and density of plant species. Several different communities can be distinguished with the essential habitat on the basis of dominant plant species. There are marked differences between these communities in regard to population size and vigor of the Texas poppy-mallow. Studies should be conducted to determine what effect a change in community structure has on the poppy-mallow's growth. Also, various herbivores are abundant in the area and plants are vulnerable to both above ground and below ground foraging.

216. Study abiotic components.

Abiotic components such as soil, water, and temperature are important in understanding the ecology of the Texas poppy-mallow.

2161. Soil.

A soil analysis should be made to aid in characterizing the habitat and also in selecting potential new sites, if appropriate.

2162. Water.

The timing and amount of rainfall, with resulting moisture equivalence of the soil, needs to be determined. This may be of importance in seed germination, seedling establishment, and vigor of the plants.

2163. Temperature.

In 1979 temperatures were lower than normal during late May and June. The flowering season that year extended to mid-July. Temperature may be an important factor in the length of the flowering season, maturation of seeds, seed germination, pollinator emergence, and seedling establishment.

217. Study effects of chemicals on plants and their pollinators.

The effects of pesticide or herbicide use through both direct application and wind drift on the plants and their pollinators should be determined.

218. Study the effects of grazing on the plants.

Several populations are presently under grazing pressure. The major impact from cattle is soil disturbance and trampling of plants. The extent of this disturbance needs to be determined to decide what actions may be necessary to reduce this impact.

22. Analyze and use the data from ecological and life history studies to develop management plans.

In order to develop a habitat management plan with solid recommendations, it is necessary to have the information (see tasks under 21) to predict the impacts of particular actions (i.e., grazing) and to determine environmental and biotic parameters.

3. Search potential habitat for additional populations.

Other windblown sand deposits similar to the habitat presently occupied by Texas poppy-mallow exist on the upper Colorado River between Ballinger and Colorado City (a distance of about 80 miles). These areas need to be thoroughly searched for new populations. Additionally, deep sands are extensive in Jones, Haskell, Knox, Foard, Hardeman, and adjacent counties north of the presently known populations. Suitable habitat may exist in some of these counties and they should also be searched for presence of the species.

4. Establish additional populations within the historic range.

If searches fail to locate enough new populations to ensure safety for the species, expanding present populations within the essential habitat and introducing the species into new areas within its historic range would diminish the risk of extinction.

41. Increase size and number of populations in essential habitat areas.

Restoring population number and size within the essential habitat would reduce the vulnerability of these populations.

42. Establish a seed bank.

A seed bank should be established and maintained for propagation of the species within the essential habitat and in other areas within the historic range.

43. Search for new suitable habitat within the species historic range and develop plans for establishing populations at these sites.

Since all populations but one are within a small area, introducing the species to similar habitats in other parts of its historic range would provide some insurance in the event of catastrophic destruction of some populations.

5. Develop public awareness, appreciation, and support for the preservation of the Texas poppy-mallow.

Education and cooperation of the public is a vital part of the recovery process. Enlist the support of public interest groups such as the Texas Organization for Endangered Species, The Nature Conservancy, and local garden clubs. The visibility of this support can be instrumental in shaping public opinion. Useful tools in this endeavor would include talks and slide presentations to local interest groups and articles on the Texas poppy-mallow in newspapers and nature magazines.

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PART III

IMPLEMENTATION SCHEDULE

The Implementation Schedule that follows is a summary of scheduled actions and costs for the Texas poppy-mallow recovery program. It is a guide to meet the objectives of the recovery plan for Texas poppy-mallow, as elaborated in Part II, Narrative. This schedule indicates the general category for implementation (I = information gathering, M = management, A = acquisition, O = other), recovery plan tasks, corresponding step-down outline numbers, task priorities, duration of tasks ("ongoing" 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. Part III of this plan constitutes the actions, that when accomplished, should bring about the recovery of the endangered Texas poppy-mallow and protect its habitat. It should be noted that monetary needs for agencies other than FWS are not identified and therefore Part III does not reflect the total financial requirements for the recovery of the species.

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

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

Recovery Action Priorities

1 = an action that must be taken to prevent extinction or to prevent the species from declining irreversibly.
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
RE - Realty

IMPLEMENTATION SCHEDULE

GENERAL CATEGORY (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)
M3	Establish protected areas.	111	1	2 years	2	SE RE		6,000	6,000		
M3	Erect and maintain fences.	112	2	ongoing	2	SE		15,000	1,000	1,000	
M3	Notify public agencies and private organizations of the location of plants.	113	2	1 year	2	SE		1,000			
01	Work with landowners.	1141	1	ongoing	2	SE		500	500	500	
01	Educate landowners.	1142	2	2 years	2	SE		500	500		
I1	Monitor populations.	12	2	ongoing	2	SE		10,000	5,000	5,000	
R6, R3 R9, R12	Study the ecology.	21	2	3 years	2	SE		15,000	5,000	5,000	
M3, M5	Analyze and use data to develop management plans.	22	2	3 years	2	SE			1,000	1,000	
I6	Search for new populations.	3	2	3 years	2	SE		5,000	5,000	5,000	
M2	Establish additional populations.	4	3	3 years	2	SE		10,000	5,000	5,000	
01	Develop public awareness and support.	5	3	ongoing	2	SE		5,000	1,000	1,000	

APPENDIX

List of Reviewers

An agency draft of the Texas Poppy-mallow Recovery Plan was sent to the following agencies for their review on September 25, 1984:

Director, Texas Natural Heritage Program, Austin
Director (AFA) Office of Endangered Species, USFWS, Washington, D.C.
Regional Supervisor, Division of Realty, USFWS, Region 2
Special Agent, Law Enforcement, USFWS, Region 2
Refuge Supervisor, Zone III, USFWS, Region 2
Field Supervisor, Ecological Services, Fort Worth Field Office, USFWS, Region 2
Division of Wildlife Research, USFWS, Washington, D.C.

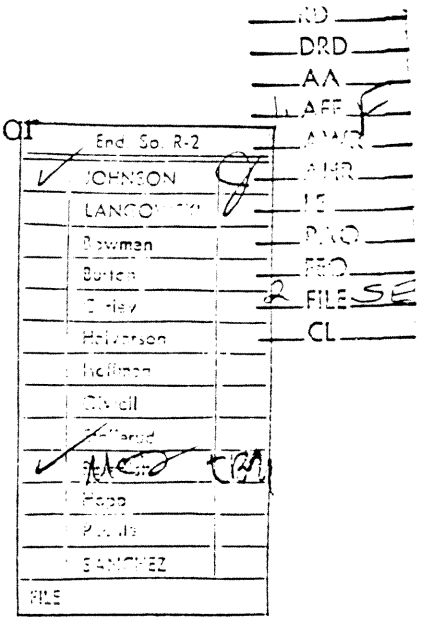
Comments Received

Letters of comment on this plan have been reproduced in this section, and are followed by the responses made to each comment.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE



In Reply Refer To:
FWS/OES

NOV 28 1984

Memorandum

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

From: Acting Associate Director

Subject: Comments on the Texas Poppy-Mallow Recovery Plan

We have reviewed the subject recovery plan and provided comments in the margins of the attached copy of the plan. In addition, we have the following comments:

A-1 1. Page 5: Where are the Cory (#39266 and #39265) and the Bates and Blanchard (#3005) specimens located?

A-2 2. In several places, the plan alludes to the existence of several populations of the Texas poppy-mallow and a reference is made to a distributional study (Amos, 1979), but the plan does not actually say how many populations or how many individual plants are known. This information should be included in the Past and Present Distribution section of the plan.

A-3 3. Pages 7-8: On page 7 there is reference to three major groups of pollinators, yet only two groups are listed. The third group should also be listed. All three groups are described in the succeeding paragraphs.

A-4 4. Page 10, Prime Objective: As stated in our previous memorandum (December 8, 1983), the primary objective needs to be stated in the most quantifiable terms possible, i.e., number of populations, number of individuals, reproductive rate, etc. Without quantified goals, it is very difficult to measure progress. Parameters must be provided to indicate when reclassification can be considered. If reclassification is unlikely, this should also be stated.

A-5 5. Page 13, subtask 111: Does this subtask really mean to establish a protected area or refuge, or does it mean "Review alternatives for habitat protection"?

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REC'D FWS-Region 2 NOV 30 1984

A-6

6. Page 18, subtask 22: The technical draft called for development of management plans in subtask 223. This draft mentions management plans in the narratives (Task 2 and subtask 22) but does not mention management plans in the Stepdown Outline. If management plans are desirable, subtask 22 can be changed to "Analyze and use the data from studies under 21 to develop management plans".

A-7

7. Implementation Schedule: Subtask 22 should continue for a year beyond the conclusion of subtask 21 rather than vice versa. As the schedule currently reads, study of the ecology of the plant will continue for a year beyond the time scheduled for analysis and use of the data collected. Therefore, the third year's data will not be used.

A-8

8. Implementation Schedule: Why are the startup costs for subtasks 12, 21, and 3 so great in comparison to the costs for succeeding years?

A-9

9. Page 18, subtask 31: Expand the narrative to reflect your revised quantified prime objective, e.g., 31. In essential habitat, increase the size and number of populations to "X" populations of "Y" plants each.

We hope these comments will aid in your preparation of the final plan. If you disagree with any of the above comments, particularly number 4 above, provide the Office of Endangered Species (OES) with your rationale prior to the Regional Director's approval. Upon approval of the plan by the Regional Director, please notify OES. Also, provide OES with 25 copies of the printed plan when it is available.

Attachment

J. R. Fielding

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

32

UNITED STATES GOVERNMENT

U.S. FISH & WILDLIFE SERVICE

Memorandum

	JOHNSON
	LANGOWSKI
	Bowman
	Burton
	Carley
✓	Halvorson
	Hoffman
	Olwell
	Stafferud
✓	[illegible]
	Hopp
	Padilla
	SANCHEZ
	FILE

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

DATE: October 26, 1984

FROM : Acting Field Supervisor, FWS, Ft. Worth, TX (ES)

SUBJECT: Agency Review Draft Recovery Plans for Hedeoma apiculatum and Callirhoe scabriuscula

We have reviewed the subject recovery plans per Mr. Fjetland's request in memorandums dated September 21, and October 5, 1984. Our comments are limited to two points that are applicable to any plans where the species in question are in our area of responsibility.

B-1 We believe positive actions to enhance the species should be spelled out in a short, lucid, narrative and included at the beginning of the recovery
B-2 plan. This narrative should also be included in the "Red Book" when updated. This would provide numerous agencies and organizations with information to include in their project plans. Additionally, these improvements could be suggested by the ES biologist when preparing comments or during the pre-development consultation process on a particular project.

Secondly, we believe a mechanism is needed for recovery team and ES field
B-3 station coordination during the recovery plan formulation process. Such coordination would oftentimes assist the ES field station during the pre-development consultation process with the action agency(s).

David A. Curtis

FWS REG 2
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OCT 29 '84
SE

UNITED STATES GOVERNMENT

Memorandum

U.S. FISH & WILDLIFE SERVICE
Region 2, Albuquerque, New Mexico 87103

TO : Assistant Regional Director, Region 2 (AFF)

DATE: October 17, 1984
LA-Texas
Texas Poppy-mallow (P.A.)

FROM : Assistant Regional Supervisor (RE)

SUBJECT: Agency Review Draft Recovery Plan for Texas Poppy-mallow

As requested in your undated memorandum, we have reviewed the subject draft recovery plan and offer the following comments:

> Page 10, part II, Recovery, Step-down Outline, section 111., page 13, Narrative Outline, section 111, and also on page 23, Part III Implementation Schedule, General Category M3, you state "Review alternatives for establishment of protected area."

C-1 Are you only going to "review alternatives," or are you also going to select and implement one or more of these alternatives? The statement on page 13, under section III, "Therefore, actions such as easements, cooperative agreements or memorandums of understanding will be necessary to maintain populations on privately-owned land," leads the reader to believe that alternatives will be, or already have been reviewed, and actions will be taken to protect this species based on the review, selection, and implentation of alternatives.

C-2 If you do intend to implement protection alternatives, the Implementation Schedule on page 23 needs to be revised to include the realty section as a responsibile FWS program for preparing a land protection plan (LPP), decision document (DD), and an environmental assessment (EA). Also, it is doubtful if the $5,000 estimated cost per year is sufficient to cover the costs of preparing the necessary documents, locating and negotiating with the landowners, surveying the area, working up an agreement, etc. We estimate that realty costs will

C-3 be in the neighborhood of $6,000 for each of the first two years, for a total realty cost of $12,000.

Thank you for the opportunity to comment on this project early in the planning process. Please give Bruce Halstead a call if you have any questions.

Larry A. Dunkeson

34
HERBARIUM
SOUTHERN METHODIST UNIVERSITY
DALLAS, TEXAS 75222

Dr. Charlie McDonald
Office of Endangered Species
P.O. Box 1306
Albuquerque, NM 87103

14 January 1985

Dear Dr. McDonald:

In response to the discussion on the recovery plan of Callirhoe scabriuscula at the meeting in Albuquerque, I am submitting the following comments.

From my field studies on the distribution of Texas endemics, most of the rare taxa have been the result of inadequate field studies and thus were more widespread in their distribution than previously thought. The chief limiting factor in the distribution of Texas endemics has been the specialized habitat of many of the taxa. If the habitat is rare, so is the taxon.

In relation to this species, the deep sand habitat is not restricted to Runnels County and therefore the habitat is not a restrictive factor to its distribution. There are similar habitats along the Colorado River as well as the Quaternary deposits forming bands that extend northward to the Red River. I expect that additional populations will be found especially since one new population has been reported up the river from the current one.

D-1 A map is enclosed outlining potential habitat for this taxon.

Sincerely,

Wm. F. Mahler

Wm. F. Mahler

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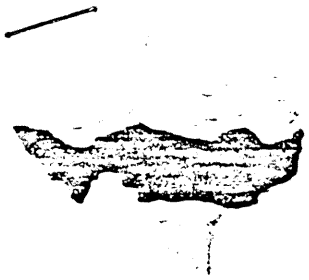
JAN 16 '85



TEXAS
HERITAGE
PROGRAM

January 16, 1985

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

Dear Charlie:

E-1 Enclosed are Chuck Sheviak's study on Spiranthes parksii and the additional locality information for Callirhoe scabriuscula. Both Turner 80-49A and Dorr 1560 are the same locality. I also included from Larry's dissertation a map of other wind blown sand deposits on the Colorado River. I think that Dr. Mahler had other sand deposits in mind, but I'm not sure. I sent him the same information on Callirhoe.

I thoroughly enjoyed the Plant Recovery Team meetings. I felt that the first day was extremely informative, and an excellent way to disseminate information to many people at the same time. The second day was also an expidient way to handle the review process of candidates and recovery plans. Certainly these meetings save much time and expense compared to contacting concerned persons individually.

Let me know about the new contract as soon as you know the status of the funding. And don't forget to return the letter-to-the-editor draft with your comments.

Sincerely,

Jackie

Jackie M. Poole
Botanist, Texas Natural Heritage Program

JMP/dd

Enclosures

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JAN 18 '85

SE

Responses to Comments

A-1 Herbarium locations for cited specimens have been included.

A-2 Suggestion was incorporated.

A-3 Suggestion was incorporated.

A-4 The basic biological information from which quantified objectives can be developed is presently lacking. One objective of this plan is to acquire such information at which time the plan will be reevaluated and quantified objectives established.

A-5 This subtask has been modified to indicate that protected areas should be established rather than just review alternatives for establishment.

A-6 Suggestion was incorporated.

A-7 Suggestion was incorporated.

A-8 Start-up costs, although still higher than costs for succeeding years, have been reduced.

A-9 Because basic biological information from which quantified objectives can be established is presently lacking, quantified information cannot be included in subtask 31 at this time. Once information from population biology and ecological studies is available, this plan will be reevaluated to establish quantified objectives.

B-1 A summary briefly outlining recovery goals, recovery criteria, and actions needed has been included at the beginning of the plan.

B-2 Comment noted.

B-3 Comment noted.

C-1 This subtask has been modified to indicate that protected areas should be established rather than just review alternatives for establishment.

C-2 Suggestion was incorporated.

C-3 Suggestion was incorporated.

D-1 The plan has been revised to include additional searches of potential deep sand habitat in northern Texas.

E-1 The additional locality information has been incorporated.

III. Environmental Impacts of the Proposed Action

The determination that this taxon is endangered pursuant to the Act will bring into effect the prohibitions under Section 9 (a) (2) of the Act as published in the June 24, 1977 Federal Register (42 FR 32373-32381). In summary, these state that it will be illegal for any person subject to the jurisdiction of the United States to import, export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered species. There would, however, be no restrictions on interstate movement of any of the species if movement is not in the course of a commercial activity involving a change of ownership of the specimen. In this context, the term "commercial activity" is defined in Section 3 (2) of the Act as follows:

> "The term 'commercial activity' means all activities of industry and trade, including, but not limited to, the buying or selling of commodities and activities conducted for the purpose of facilitating such buying and selling provided, however, that it does not include exhibition of commodities by museums or similar cultural or historical organizations."

Regulations published in the Federal Register provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species. Permits may be issued for scientific purposes or for enhancing the propagation or survival of such species.

The following impacts will also result from this action:

A. Maintenance of the subject species - When the listing of this species as endangered becomes final, the plants will receive federal protection from certain activities, notably commercial exploitation of the plants for collectors, that are causing a decline in their numbers. The plants have no other commercial use or value at present. This taxon is a narrow endemic on a restricted soil type,