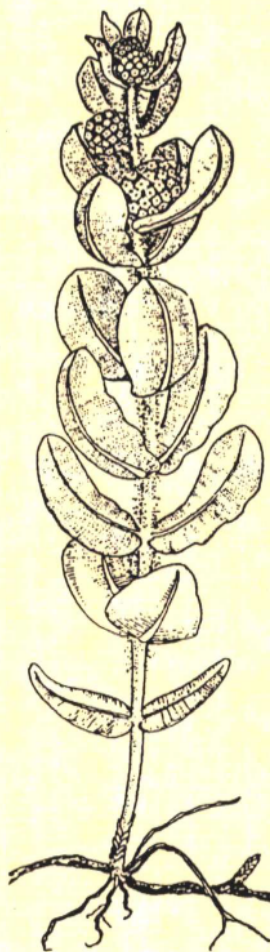


# WELSH'S MILKWEED

(Asclepias welshii)



## RECOVERY PLAN



US FISH AND WILDLIFE SERVICE

REGION 6

1992

WELSH'S MILKWEED

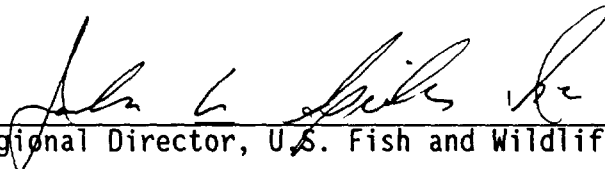
ASCLEPIAS WELSHII

RECOVERY PLAN

Prepared by

Region 6  
U.S. Fish and Wildlife Service  
Denver, Colorado

Approved:

  
Acting Regional Director, U.S. Fish and Wildlife Service

Date:

SEP 30 1992

## DISCLAIMER

Recovery plans delineate reasonable actions which are believed to be required to recover and/or protect the species. Plans are prepared by the U.S. Fish and Wildlife Service, sometimes with the assistance of recovery teams, contractors, State agencies, and others. Objectives will only be attained and funds expended contingent upon appropriations, priorities, and other budgetary constraints. Recovery plans do not necessarily represent the views or the official positions or approvals of any individuals or agencies other than the U.S. Fish and Wildlife Service involved in the plan formulation. They represent the official position of the U.S. Fish and Wildlife Service only after they have been signed by the Regional Director or Director as approved. Approved recovery plans are subject to modification as dictated by new findings, changes in species status, and the completion of recovery tasks.

## LITERATURE CITATIONS

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Cover illustration by Kaye H. Thorne, Brigham Young University, Provo, Utah.

## EXECUTIVE SUMMARY

Current Status: Asclepias welshii is currently known from three populations. The largest population of about 10,000 plants occurs on the Coral Pink Sand Dunes about 7 miles west of Kanab, Utah. Two smaller populations, with 300 to 500 plants each, occur in the Sand Hills about 8 miles north of Kanab, Utah, and in Sand Cove on the Utah-Arizona border about 28 miles east of Kanab, Utah, and Fredonia, Arizona. Asclepias welshii is vulnerable to habitat destruction from off-road vehicles and is being adversely impacted by recreational off-road vehicle use in its largest population. The two smaller populations are extremely limited and may not be demographically stable.

Goal: The immediate goal of the recovery plan is preventing the extinction of the species through management of its habitat to prevent adverse modification and to ensure that the species population is maintained in a viable condition. The long-term goal is to delist the species.

### Recovery Criteria:

Conservation Criteria: In order to prevent the species from becoming endangered, the protection of A. welshii populations and habitat must be ensured.

Delisting Criteria: The species may be considered for delisting when the above conservation criteria are met and when the following criteria are attained: (1) The species known populations have been demonstrated to be at viable population levels, and (2) formal land management designations, which would provide long-term habitat protection for A. welshii, are established for the known populations.

### Actions Needed:

1. Control activities which adversely affect the habitat of A. welshii.
2. Inventory suitable habitat for A. welshii and determine abundance and distribution of the species.
3. Determine the biological and ecological factors critical to the species conservation, and conduct minimum viable population studies in each of the species known populations.
4. Develop public awareness and appreciation for the conservation of the species.

Date of Recovery: 2010

Total Cost of Recovery: \$250,000

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## I. INTRODUCTION

Welsh's milkweed (Asclepias welshii Holmgren and Holmgren) was listed as a threatened species under the authority of the Endangered Species Act (Act), as amended, on October 28, 1987 (52 FR 41435). Critical habitat also was designated (see Figure 1). The recovery priority of this species is 5C (a species with a high degree of threat and low recovery potential with a possibility of conflict with human activities).

Figure 1

### Asclepias welshii critical habitat

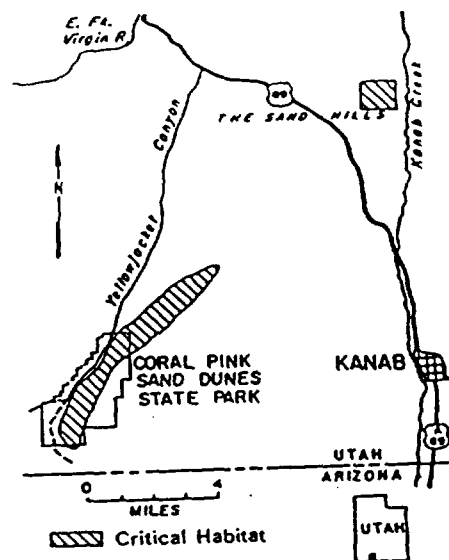


Figure 1. Asclepias welshii critical habitat

"Utah, Kane County: Entire Coral Pink Sand Dunes, within T43S, R7W and R8W, and T44S, R8W about 10 miles west of Kanab; also, the area of the Sand Hills, about 10 miles north of Kanab within T42S, R6W, Section 8 (S1/2 of the N1/2 and N1/2 of the S1/2). The constituent elements of this critical habitat are the sand dunes themselves." (50 CFR § 17.96(a))

## A. Description

Asclepias welshii is a tall, herbaceous plant in the milkweed family (Asclepiadaceae). The species stems are about 1 meter (40 inches) tall at maturity arising singularly or in clusters of about 10 stems from vertical taproots with horizontal runners connecting stem clusters. The leaves are displayed in opposite pairs along the stems. The upper leaves are broadly ovate shaped with a short petiole, about 8 centimeters (cm) (3 inches) long and 5 cm (2 inches) broad. The lower leaves are smaller, have acuminate tips and are borne directly on the stem without a petiole. The foliage and stems are covered with a very dense white-wooly pubescence (tomentum) early in the growing season. During the growing season, the tomentum of the current year's herbaceous stems and leaves is abraded off by blowing sand, leaving them nearly glabrous late in the growing season.

About 30 flowers are borne in a spherical inflorescence about 7 cm (3 inches) in diameter at the end of a pedicel about 10 millimeters (mm) (0.4 inches) long arising from the plant's upper leaf nodes. Individual flowers have the characteristic milkweed form. The reflexed calyx has individual lobes about 6 mm (0.25 inch) long. The corolla, with the characteristic milkweed hoods and horns, is about 6 mm long, cream colored with a rose-tinged center. The seeds of A. welshii, the largest in its genus, are about 2 cm (1 inch) long with a rudimentary coma (G. Adelson, Harvard Univ., pers. comm., 1990). Adaptive morphological characteristics of A. welshii, including its deep-seated clustered root and stem system, its dense tomentum, and its very large seeds with consequent large endosperm reserves, have endowed this species with the ability to survive on the unusual sand dune habitat to which it is restricted. For a more detailed description of this species, see Holmgren and Holmgren (1979), Cronquist et al. (1984), and Welsh et al. (1987).

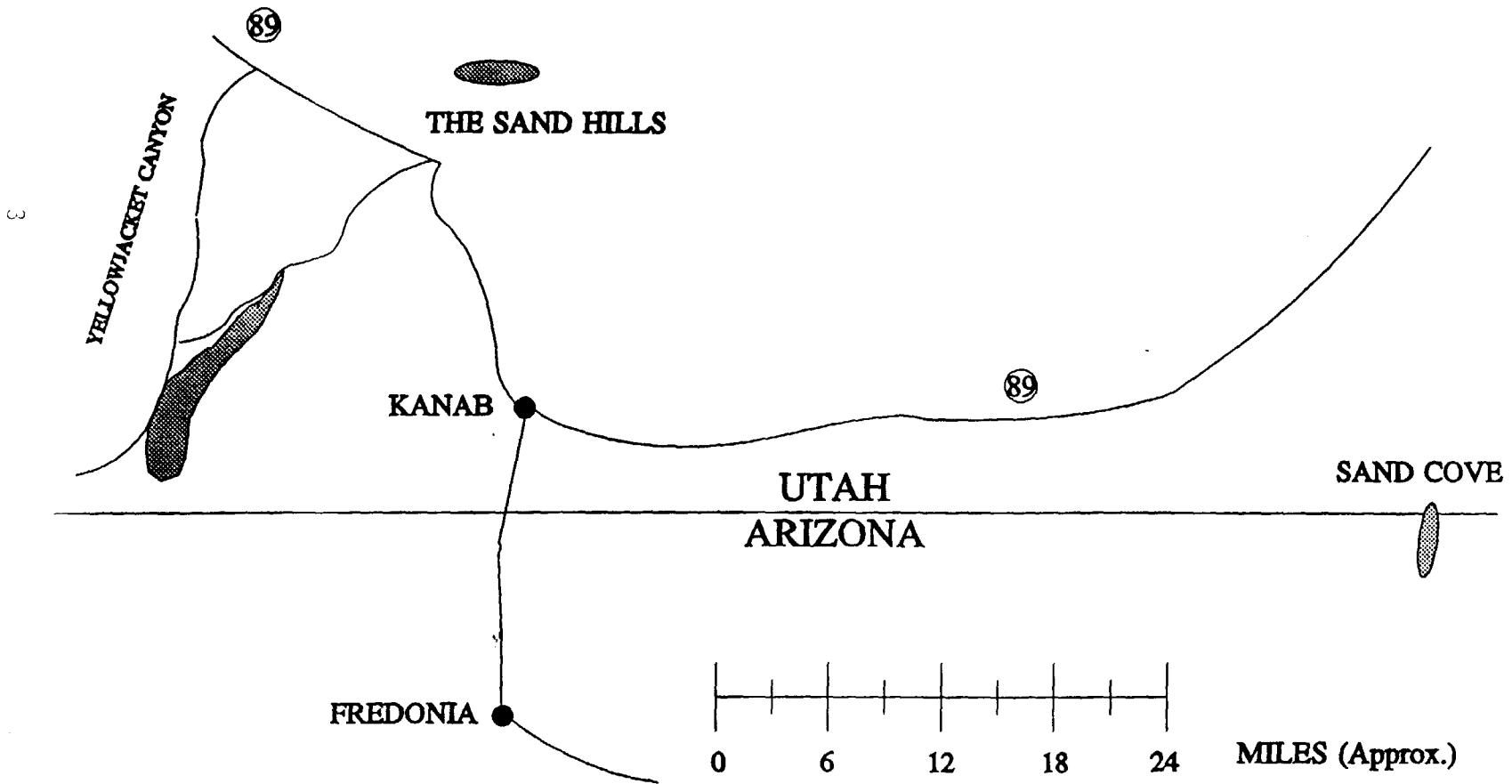
## B. Distribution

Asclepias welshii is currently known from three populations. Most of the known individuals are located on the Coral Pink Sand Dunes about 12 kilometers (km) (7.5 miles) west of Kanab in Kane County, Utah. A second population is located in the Sand Hills about 13 km (8 miles) north of Kanab, also in Kane County. A third population is located in Sand Cove about 45 km (28 miles) east of Kanab, Utah, and Fredonia, Arizona, on the Arizona-Utah border in Coconino County, Arizona, and Kane County, Utah (see Figure 2). No other historic populations are known to have existed.

The total known population of A. welshii is estimated at 11,000 individuals (Bureau of Land Management 1980, 1984, 1990; U.S. Fish and Wildlife Service 1987). The Coral Pink Sand Dune population is estimated at 10,000 individuals on approximately 4,000 acres of occupied and potential habitat. The Sand Hills population of A. welshii is estimated at about 500 individuals on approximately 100 acres. The Sand Cove population is estimated at about 600 individuals on approximately 50 acres. The Coral Pink Sand Dunes are roughly divided in half between the State of Utah lands within Coral Pink Sand Dunes State Park managed



Figure 2  
PRESENT RANGE OF  
*ASCLEPIAS WELSHII*



by the Utah Division of Parks and Recreation, and Federal lands managed by the Bureau of Land Management (Cedar City district). The Sand Hills and Sand Cove populations of A. welshii are both located on Federal lands managed by the Bureau of Land Management (Cedar City and Arizona Strip districts).

### C. Population Biology

Asclepias welshii reproduction is probably both sexual and asexual. Flowering occurs from May to June with fruit and seed development and dispersal occurring from July to September. Species in the genus Asclepias have highly evolved floral structures which probably require highly specific pollinators (Faegri and van der Pijl 1971). The morphology of milkweed flowers is such that self-pollination (autogamy) is impossible. Pollen grains are collected into structures called pollinia which must be removed forcefully and brought into specific contact with slits in the stigmatic chamber. Potential pollinators identified for A. welshii include those found on Table 1 (V. Tepedino, Bee Biology and Systematics Lab, Logan, Utah, pers. comm. 1991). Some species of Asclepias have very low rates of fruit development often in the range of 1:100 (Wyatt 1976). Observation has shown that this apparently is the case with A. welshii in the Coral Pink Sand Dunes (J. England, U.S. Fish and Wildlife Service, pers. obs.). The species apparently reproduces vegetatively by sprouting from rhizomes. The factors which govern the distribution of A. welshii are not well known, nor are the long-term population dynamics.

### D. Habitat and Limiting Factors

Populations of A. welshii occur on aeolian sand dunes in a plant community dominated by sand mulesears (Wyethia scabrida var. attenuata) with prominent groves of ponderosa pine (Pinus ponderosa) and clumps of Gambel oak (Quercus gambelii). Other plant species commonly associated with A. welshii include: blowout grass (Redfieldia flexuosa), sand dropseed (Sporobolus cryptandrus), giant dropseed (Sporobolus gigantea), Indian ricegrass (Stipa hymenoides), giant dunegrass (Calamovilfa gigantea), sand hill muhly (Muhlenbergia pungens), sand-spurge (Reverchonia arenaria), silvery sophora (Sophora stenophylla), dune scurfpea (Psoralea lanceolata), Kanab yucca (Yucca kanabensis), rubber rabbit-brush (Chrysothamnus nauseosus), and winged wild-buckwheat (Eriogonum alatum) (B. Lunceford, Bureau of Land Management, Kanab, Utah, pers. comm. 1991). The vegetation surrounding the sand dune habitat of A. welshii is dominated by pinyon-juniper (Pinus edulis and Juniperus osteosperma) woodlands with sagebrush (Artemisia tridentata) parks.

The soil supporting A. welshii is unconsolidated aeolian sand on active dunes while the surrounding habitat is either vegetated, stabilized sands, sandstone slickrock, or various exposed shales and other fine grained exposed geologic rock types or their finer grained developed soils. The sand dunes on which A. welshii occurs are effectively "islands" of suitable habitat within a "sea" of unsuitable geologic substrates with their resultant soil types. Due to its very limited specific habitat requirements and its small population size, Asclepias welshii is vulnerable to any event which could cause the local extirpation of one or more of its isolated populations.

Table 1

Insect Visitors to the Flowers  
of  
Asclepias welshii

|                        | Family        | Species   |
|------------------------|---------------|---|
| BEES                   | Anthophoridae | <u>Ceratina nanula</u> Ckll.<br>** <u>Xylocopa californica arizonensis</u> Cr.  |
|                        | Apidae        | ** <u>Apis mellifera</u> L.<br>** <u>Bombus bifarius</u> Cr. ?  |
|                        | Halictidae    | <u>Dialictus albohirtus</u> Crwd.<br><u>D. ruidosensis</u> (Ckll.)<br>D. species #3 ?<br>D. species #4 ?  |
|                        | Megachilidae  | <u>Anthidium rodecki</u> Schwarz<br><u>Heriades timberlakei</u> Mich.   |
| WASPS                  | Vespidae      | <u>Polistes dorsalis</u> (F.)   |
|                        | Sphecidae     | <u>Mimesa</u> species ?<br><u>Microbembex californica</u> Bohart<br><u>Bembex americana</u> F.<br><u>Oxybelus californicus</u> Bohart & Schlinger |
| BUTTERFLIES<br>& MOTHS | Nymphalidae   | ** <u>Euphydryas anicia hermosa</u>   |
|                        | Noctuidae     | ** <u>Euxoa aurulenta</u> (Smith)   |

? preliminary identification of species

\*\* species actually carrying milkweed pollinia

(Vincent J. Tepedino, USDA/ARS, Bee Biology & Systematics Lab, Utah State University, Logan UT, personal communication, 1991)

It is probable that some population reduction has taken place as a consequence of off-road vehicle use. The occupied habitat of A. welshii in the Coral Pink Sand Dunes and the Sand Hills has been designated as critical habitat under the authority of the Act. The Sand Cove population is located within the Paria Canyon--Vermillion Cliffs Wilderness Area.

#### E. Threats

Realized and potential threats to A. welshii stem primarily from recreational off-road vehicle use. Mineral and energy development, road building, and livestock grazing are minor threats and are, at present, insignificant to the survival of the species. The demographic stability of the various populations of A. welshii is not known. The smaller populations may not be large enough to ensure the species long-term survival. The effect of natural factors, such as disease, parasitism, grazing by native species, natural erosion, and vegetative competition on the viability of the species population is not known.

## II. RECOVERY

### A. Objective and Criteria

The immediate objective of this recovery plan is to manage the habitat of Asclepias welshii so that viable populations can be maintained throughout the range of the species. The long-term objective is to delist the species if populations of A. welshii have been demonstrated to have long-term demographic stability and the species-occupied habitat has been secured. If not, the removal of A. welshii from the list of endangered and threatened species may not be possible in the foreseeable future. The listing of A. welshii as a threatened species provides the recognition and protection necessary to ensure the species survival in the foreseeable future. Recovery can be termed completed and delisting considered when conservation of this species natural habitat is sufficient to maintain each population as a viable self-sustaining population throughout the known range. The current recovery criteria are:

Conservation Criteria: In order to prevent the species from becoming endangered, Asclepias welshii populations and habitat must be protected from loss of individuals and environmental degradation through enforcement of Sections 6, 7, 9, and 10 of the Act.

Delisting Criteria: The species may be considered for delisting when the above conservation criteria has been met and when the following criteria have been attained: (1) The species known populations have been demonstrated to be at viable population levels, and (2) formal land management designations, which would provide long-term habitat protection for A. welshii, are established for those populations.

The above objective and criteria are subject to change as more information becomes available. The estimated date for meeting the conservation criteria is 2010. The estimated date for recovery completion is not determinable at this time.

### B. Stepdown Outline

1. Control man-caused activities which affect A. welshii and its habitat.
  - 1.1 Ensure that off-road vehicle use and other man-caused activities do not adversely impact A. welshii populations on Federal lands.
    - 1.11 Establish an A. welshii conservation area closed to off-road vehicle use in the Coral Pink Sand Dunes.
    - 1.12 Mark and post the A. welshii conservation area in the Coral Pink Sand Dunes.

- 1.13 Enforce off-road vehicle closure area in the Coral Pink Sand Dunes.
- 1.14 Establish or maintain off-road vehicle closure areas on the Sand Hills and Sand Cove.
- 1.2 Manage the occupied habitat of A. welshii on Coral Pink Sand Dunes State Park.
  - 1.21 Develop a joint habitat/recreation management plan for the entire Coral Pink Sand Dunes ecosystem.
  - 1.22 Establish an A. welshii conservation area closed to off-road vehicle use in the Coral Pink Sand Dunes State Park.
  - 1.23 Mark and post A. welshii conservation area in the Coral Pink Sand Dunes State Park.
  - 1.24 Enforce off-road vehicle closure area in the Coral Pink Sand Dunes State Park.
- 1.3 Monitor all populations of A. welshii for potential threats.
- 1.4 Establish formal land management designations for A. welshii populations.
2. Inventory all suitable habitat for A. welshii.
  - 2.1 Identify, delineate, and census existing populations of A. welshii.
  - 2.2 Identify and survey potential habitat of A. welshii.
3. Determine the biological and ecological factors which control the distribution and vitality of A. welshii populations and the interaction of the significant biotic and abiotic elements of A. welshii and its critical habitat.
4. Establish and conduct minimum viable population studies in each of the populations of A. welshii.
  - 4.1 Establish a minimum viable population study on at least six separate stands of A. welshii in the Coral Pink Sand Dunes.
  - 4.2 Establish a minimum viable population study on the Sand Hills and Sand Cove populations of A. welshii.

5. Develop public awareness, appreciation, and support for the conservation of A. welshii.

C. Narrative

1. Control man-caused activities which affect A. welshii and its habitat. Control of human activities adversely affecting A. welshii and its habitat is central to the preservation of the species and its ecosystem. The species is vulnerable to excessive off-road vehicle use in its limited habitat (see Luckenback and Bury 1983).

- 1.1 Ensure that off-road vehicle use and other man-caused activities do not adversely impact A. welshii populations on Federal lands. Much of the habitat of A. welshii occurs on Federal land under the jurisdiction of the Bureau of Land Management (BLM). The BLM is responsible for ensuring that resource values on lands under its jurisdiction are conserved for current and future generations; this responsibility includes threatened and endangered species and their habitat. The BLM has the authority under the Federal Land Policy and Management Act to regulate and control off-road vehicle use on Federal lands under its jurisdiction and the obligation under the Act to do so for the conservation of A. welshii and its habitat. Potential mineral and energy development activities on Federal land will require the necessary lease permits, etc., from the BLM. The BLM must consult with the Service under Section 7 of the Act for any activity the BLM conducts, permits, or funds affecting A. welshii and its habitat. These effects include recreation, mineral, energy, road development, etc.

At present, off-road vehicle use on the habitat of A. welshii is intense. With increasing popularity and availability of improved off-road vehicles, off-road vehicle use is expected to increase. This can reasonably be expected to result in an increase in damage to the habitat of A. welshii. The BLM should develop and implement off-road vehicle use plans which would regulate off-road vehicle use on the portion of the Coral Pink Sand Dunes under its management and prohibit off-road vehicle use on occupied A. welshii habitat.

- 1.11 Establish an A. welshii conservation area closed to off-road vehicle use in the Coral Pink Sand Dunes. Areas within the Coral Pink Sand Dunes with high concentrations of A. welshii should be designated as an A. welshii conservation area and closed to off-road vehicle use. This action is necessary to protect a viable population of the species on the dunes. The identification of the precise areas to be closed will be accomplished in task 2.1 and coordinated with tasks 1.21 and 1.3.

1.12 Mark and post the A. welshii conservation area in the Coral Pink Sand Dunes.

Asclepias welshii conservation areas will be posted on the ground to alert motorized recreationists of off-road vehicle closure areas designated to protect A. welshii populations and habitat. The Service, BLM, and State of Utah will investigate the possibility of low maintenance, low visual impact posting and/or fencing to control vehicular access into the A. welshii conservation area. This task will be coordinated with tasks 1.22 and 1.3.

1.13 Enforce off-road vehicle closure area in the Coral Pink Sand Dunes.

The Service, BLM, and State of Utah will jointly be responsible for patrolling the A. welshii conservation area within the Coral Pink Sand Dunes to ensure that no off-road vehicle use is taking place within those protected areas. It is recommended that park rangers from the Utah Division of Parks and Recreation be given the responsibility and necessary resources to accomplish this task.

1.14 Establish or maintain off-road vehicle closure areas on the Sand Hills and Sand Cove.

Designate A. welshii critical habitat in the Sand Hills as an off-road vehicle closure area and provide appropriate posting and/or fencing to ensure that the species and its ecosystem are not adversely impacted. The Sand Cove population is within the Paria Canyon--Vermillion Cliffs Wilderness Area and should be secure from off-road vehicle use and most other man-caused impacts.

1.2 Manage the occupied habitat of A. welshii on Coral Pink Sand Dunes State Park.

A significant portion of the population and critical habitat of A. welshii occurs within the State of Utah's Coral Pink Sand Dunes State Park managed by the Utah Division of Parks and Recreation. This population is under the jurisdiction of the State of Utah. Section 6(b) of the Act authorizes the Secretary of the Interior to enter into agreements with States for the purpose of administration and management of any area for the conservation of threatened and endangered species. Section 6(c) of the Act authorizes the Secretary to enter into cooperative agreements with any State which establishes and maintains an adequate and active program for the conservation and protection of threatened and endangered species. The State of Utah and the Service have established such an agreement, which is administered by the State



through the Department of Natural Resources, the parent agency of the Division of Parks and Recreation. The Service will seek funding from appropriations designated by Congress to implement Section 6 of the Act and possibly from other sources to assist the State in the following recovery plan tasks for A. welshii.

1.21 Develop a joint habitat/recreation management plan for the entire Coral Pink Sand Dunes ecosystem.

The Coral Pink Sand Dunes comprise an unique ecosystem with valuable biotic and abiotic components of invaluable intrinsic worth of both regional and national significance. The scenic and recreational value of the Coral Pink Sand Dunes, likewise, is of considerable significance. It is imperative that a joint habitat/recreation management plan be developed between the State of Utah, the Bureau of Land Management, and the U.S. Fish and Wildlife Service (Service), with possibly other groups as involved secondary parties, to guide the management and development of the Coral Pink Sand Dunes as a integrated unit recognizing and providing for the biological and recreational values of this unique ecosystem.

1.22 Establish an A. welshii conservation area closed to off-road vehicle use in the Coral Pink Sand Dunes State Park.

See task 1.11 above.

1.23 Mark and post A. welshii conservation area in the Coral Pink Sand Dunes State Park.

See task 1.12 above.

1.24 Enforce off-road vehicle closure area in the Coral Pink Sand Dunes State Park.

See task 1.13 above.

1.3 Monitor all populations of A. welshii for potential threats.

All populations of A. welshii will be monitored on an ongoing basis for any threat which may affect the species and/or its habitat. Prompt action should be taken to remedy any such threat.

1.4 Establish formal land management designations for A. welshii populations.

In order to consider delisting A. welshii, formal land management designations must be established for each known population to continue protection of the species and its habitat after delisting. Such designations on Federal and State lands may include: areas of critical environmental concern, formal wilderness designation, research natural areas, and formal State designated protective areas. The identification of these special land management designations will be accomplished by management

plans that must specifically include accomplishment of the conservation goals for A. welshii. Before delisting is considered, the Service will evaluate the effectiveness of these designations.

2. Inventory all suitable habitat for A. welshii.

Through an inventory of all suitable habitat, the populations and the habitat necessary to ensure the long-term survival of the species can be identified.

2.1 Identify, delineate, and census existing populations of A. welshii.

Inventories will determine precise locations and extent of all A. welshii populations and an initial total population census. This information will provide a biological baseline necessary for determining population and habitat trend and indications of any currently unrecognized obscure factors affecting the species population.

These surveys will include collecting data on life history characteristics, documentation of losses, population increase or reduction for each population, and the impact of off-road vehicles, grazing, disease, parasitism, etc. This task will be the responsibility of the affected land managing agencies with technical assistance from the Service as needed.

2.2 Identify and survey potential habitat of A. welshii.

The possibility exists that additional populations of A. welshii may exist. Therefore, potential habitat on active aeolian sand dunes near the current range of the species will be surveyed for suitable habitat. The plant species Wyethia scabra var. attenuata may act as an indicator of suitable A. welshii habitat. Additional discovered or introduced populations of the species will increase abundance and could maintain the species in the event of a catastrophic loss of one or more of the existing populations. Unoccupied potential habitat may have harbored populations of the species in the past.

3. Determine the biological and ecological factors which control the distribution and vitality of A. welshii populations and the interaction of the significant biotic and abiotic elements of A. welshii and its critical habitat.

In-depth research of the biology and ecology of A. welshii will assist in the determination of the factors controlling the distribution and vitality of A. welshii populations and provide direction in the management of the species population and habitat. Knowledge is needed concerning the species life history, gross anatomy and morphology, and

its ecological interaction with its environment. Of particular concern is the species response to the effects of off-road vehicles, including trampling, dune destabilization, and reduced pollination and reproduction.

4. Establish and conduct minimum viable population studies in each of the populations of *A. welshii*.

Minimum viable population studies will document demographic stability of the species population. A minimum viable population is defined as: a demographically stable population that is large enough to maintain genetic variation and to enable it to evolve and successfully respond to natural environmental variation (Menges 1986). If, as a consequence of these studies, other factors, natural or man-caused, are identified as possibly having a detrimental effect on the species population which would preclude its eventual delisting, those factors will be addressed and the recovery plan revised to accommodate them. Little is known concerning natural threats such as disease, parasitism, and grazing by native species on *A. welshii*. No known diseases have been reported in this species. Moderate to heavy domestic livestock grazing has been observed to cause physical damage to *A. welshii* plants. It is not known if the populations of *A. welshii* are at population levels that will ensure long-term demographic and genetic viability. This activity will be the responsibility of the affected land managing agencies with technical assistance from the Service.

4.1 Establish monitoring plots for a minimum viable population study in at least six stands of *A. welshii* in the Coral Pink Sand Dunes.

Minimum viable population monitoring stands will be established strategically within the Coral Pink Sand Dunes so that the total variation of habitat types and degree of off-road vehicle use will be represented in the monitoring stands. These stands will be located on both BLM and State park managed lands.

4.2 Establish a minimum viable population study on the Sand Hills and Sand Cove populations of *A. welshii*.

At least one minimum viable population study will be established in both the Sand Hills and Sand Cove populations of *A. welshii*. There is a possibility that these two small populations may not be at demographically stable levels for long-term survival.

5. Develop public awareness, appreciation, and support for the conservation of *A. welshii*.

Education is a vital part of the recovery process. The cooperation of the public is essential in the ultimate success of the above recovery measures. This can be started with educational programs such as pamphlets and audiovisual programs for use in schools and groups interested in conservation. Special effort will be necessary to assist

the State of Utah through the Utah Department of Parks and Recreation at Coral Pink Sand Dunes State Park to educate the recreational users of that area of the significance and value of A. welshii and its sand dune ecosystem.

The introduction and maintenance of A. welshii, in recognized botanical gardens, will assist both in public education of the significance and importance of this species, and in providing for a reserve of seeds and plants for reintroduction into the wild should wild populations be lost. The Service, with assistance from public and private conservation groups and land managing agencies, will be primarily responsible for this activity.

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### III. IMPLEMENTATION SCHEDULE

The Implementation Schedule that follows outlines actions and costs for the recovery program. It is a guide for meeting the objectives elaborated under the Recovery section of this plan. This schedule indicates task priorities, task numbers, task description, duration of tasks ("ongoing" denotes a task that once begun should continue on an annual basis), the responsible agencies, and lastly, estimated costs. These actions, when accomplished, should bring about the recovery of Asclepias welshii and protect its habitat.

Priorities in column one of the following implementation schedule are assigned as follows:

1. Priority 1--An action that must be taken to prevent extinction of, or to prevent the species from declining irreversibly in the foreseeable future.
2. Priority 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. Priority 3--All other actions necessary to meet the recovery objective.

#### Key to Acronyms used in Implementation Schedule

BLM - Bureau of Land Management  
CPC - Center for Plant Conservation  
FWS - Fish and Wildlife Service  
FWE - Fish and Wildlife Enhancement  
LE - Law Enforcement  
SPR - Utah Division of State Parks and Recreation  
MVP - Minimum Viable Population  
NHP - Utah Natural Heritage Program  
ORV - Off-road Vehicle

Implementation Schedule (on file ASWE-IS)

Asclepias welshii (Welsh's Milkweed) Recovery Implementation Schedule

| Priority | Task | Task Description  | Task Duration | Responsible Party |               | Cost Estimates |        |         | Comments |  |
|----------|------|---|---------------|-------------------|---------------|----------------|--------|---------|----------|--|
|          |      |   |               | FWS Region        | Other Program | FY-01          | FY-02  | FY-03   |          |  |
| 2        | 1.11 | Establish BLM ORV closure areas in Coral Pink Sand Dunes                        | 2 years       | 6                 | FWE           | BLM            |        |         | unknown  | to be accomplished after task 2.1 is completed                             |
| 2        | 1.12 | Post BLM ORV closure areas in Coral Pink Sand Dunes                             | 1 year        | 6                 | FWE           | BLM            |        |         | 5,000    |  |
| 2        | 1.13 | Enforce BLM ORV closure area in Coral Pink Sand Dunes                           | ongoing       | 6                 | FWE, LE       | BLM, SPR       | 10,000 |         | 10,000   | cost includes the expense of a seasonal park ranger to enforce ORV closure |
| 2        | 1.14 | Establish or Maintain ORV closure areas in Sand Hills and Sand Cove Populations | 1 year        | 2,6               | FWE           | BLM            |        |         | unknown  |  |
| 2        | 1.21 | Develop management plan for Coral Pink Sand Dunes ecosystem                     | 2 years       | 6                 | FWE           | BLM, SPR       |        | unknown | unknown  |  |
| 2        | 1.22 | Establish ORV closure areas in Coral Pink Sand Dunes State Park                 | 1 year        | 6                 | FWE           | SPR            |        |         | unknown  |  |
| 2        | 1.23 | Post ORV closure areas in Coral Pink Sand Dunes State Park                      | 1 year        | 6                 | FWE           | SPR            |        |         | 5,000    |  |

| Priority | Task | Task Description   | Task Duration | Responsible Party |     |               | Cost Estimates |        |        | Comments                  |
|----------|------|--|---------------|-------------------|-----|---------------|----------------|--------|--------|---------------------------|
|          |      |  |               | FWS Region        | FWE | Other Program | FY-01          | FY-02  | FY-03  |                           |
| 2        | 1.24 | Enforce ORV closure area in Coral Pink Sand Dunes State Park               | ongoing       | 6                 | FWE | SPR           |                | 10,000 | 10,000 | see comment for task 1.13 |
| 2        | 1.3  | Monitor <u>A. welshii</u> populations                                      | ongoing       | 2,6               | FWE | BLM, NHP      | 3,000          | 3,000  | 3,000  |                           |
| 2        | 2.1  | Survey known populations of <u>A. welshii</u>                              | 1 year        | 2,6               | FWE | BLM           | 3,000          |        |        |                           |
| 2        | 3.0  | Determine biological and ecological factors affecting <u>A. welshii</u>    | 5 years       | 2,6               | FWE | BLM, NHP, CPC | 5,000          | 5,000  | 5,000  |                           |
| 2        | 4.1  | Conduct <u>A. welshii</u> MVP studies on Coral Pink Sand Dunes             | ongoing       | 6                 | FWE | BLM, NHP      | 2,000          | 2,000  | 2,000  |                           |
| 2        | 4.2  | Conduct <u>A. welshii</u> MVP studies on The Sand Hills and Sand Cove      | ongoing       | 2,6               | FWE | BLM, NHP      | 1,000          | 1,000  | 1,000  |                           |
| 2        | 5.0  | Develop public education program for the conservation of <u>A. welshii</u> | ongoing       | 2,6               | FWE | BLM, NHP, SPR | 5,000          | 1,000  | 1,000  |                           |
| 3        | 1.4  | Establish formal land management designations                              | unknown       | 2,6               | FWE | BLM, SPR      | unknown        |        |        |                           |
| 3        | 2.2  | Survey potential habitat for <u>A. welshii</u>                             | 2 years       | 2,6               | FWE | BLM, NHP      | 5,000          | 5,000  |        |                           |



This recovery plan was made available to the public for comment as required by the 1988 amendments to the Endangered Species Act of 1973. The public comment period was announced in the Federal Register (56 F.R. 29974) on July 1, 1991, and closed on August 30, 1991. Over 90 press releases were sent to the print media located in Nebraska.

During the public comment period ten letters were received. The comments provided in these letters have been considered, and incorporated as appropriate. Comments addressing recovery tasks that are the responsibility of an agency other than the U.S. Fish and Wildlife Service have been sent to that agency as required by the 1988 amendments to the Act.